Case Syncretism in Russian Numeral Constructions

LAGB 2017 *Outstanding Undergraduate Dissertation in Linguistics*

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May 2020

Abstract

The aim of this paper is to explore the various problems which arise in Russian numeral constructions, focusing on the peculiar case patterns following the lower numerals 2, 3, and 4. After these numerals, nouns realize what looks like genitive singular morphology. However, this morphological realization is inconsistent, notably in accusative environments and lexical case environments. To explain these patterns, I propose that Russian lower numerals co-occur with paucal number, and not what is traditionally seen as singular morphology. While the idea of paucal number in Russian is not necessarily novel, previous analyses of paucal number identify these basic patterns as instances of nominative paucal morphology (Bailyn & Nevins 2008, Rakhlin 2003). I argue that what we are seeing is paucal number with default genitive case (cf. Pesetsky 2013).

Keywords genitive case, numerals, paucal number, quantificational genitive; Russian

Queen Mary's OPAL #43
Occasional Papers Advancing Linguistics

1.   Introduction

The aim of this paper is to explore the various problems which arise in Russian numeral constructions, focusing on the peculiar case patterns following the lower numerals 2, 3, and 4, and words denoting small groups. The general problem lies in the realization of case and number morphology after these numerals. In these environments, nouns typically realize genitive singular morphology (1).

(1)   dve/tri/četyre košk-i
       two/three/four cat-F.GEN.SG
       'two/three/four cats'

This is interesting, as after the higher numerals (5+), the noun typically realizes genitive plural morphology (2).

(2)   pjat' košek-Ø
       five cats-F.GEN.PL
       'five cats'

There are five problems that occur in this context, which are the focus of this paper. The first general problem is that nouns realize genitive singular case morphology, while adjectives realize genitive plural morphology (3).

(3)   dve/tri/četyre čern-yx   košk-i
       two/three/four black-GEN.PL cat-F.GEN.SG
       'two/three/four black cats'

Secondly, feminine nouns are the exception to this pattern, as they can allow nominative plural morphology on the adjective, instead of genitive (4).

(4)   dve/tri/četyre čern-ye   košk-i
       two/three/four black-NOM.PL cat-F.GEN.SG
       'two/three/four black cats'

This is particularly interesting as the feminine genitive singular morpheme is largely syncretic with the nominative plural morpheme, calling into question what case or number is realized after lower numerals.

In addition to this, there are five words in the Russian language which show a stress shift from the stem to the suffix only after lower numerals. These five words have been frequently used as counterexamples to previous analyses, as they, like the feminine noun pattern, seem to call into question the identity of the case after these numerals. In lexical case environment, these patterns change, as all nodes receive the appropriate lexical case morphology. This homogenous case realization is particularly strange in that all nodes also receive plural morphology, instead of singular. While structural case environments are normally exempt from this lexical case pattern, animate nouns when in accusative environments behave like lexical case environments.

To explain these various problems, I propose that Russian lower numerals co-occur with paucal number, and not what is traditionally seen as singular morphology. While the idea of paucal number in Russian is not necessarily novel, previous analyses of paucal number identify these basic patterns as instances of nominative paucal morphology (Bailyn & Nevins 2008; Rakhlin 2003). I argue that what we are seeing is paucal number

with default genitive case (cf. Pesetsky 2013). I propose that Russian cases consist of two separate feature sets, which separates structural cases from lexical cases (Assmann et.al 2014). Importantly, I argue that the structural feature set of [±oblique,±object] and the semantic/lexical feature set of [±f,±g] percolate through the NP differently, especially in lower numeral constructions. Namely, I argue that numerals in Russian are unable to realize structural case features without a semantic feature set or the feature of [+animate]. This prevents structural cases from continuing through the phrase, resulting in something like a 'failure-to-agree' mechanism. With no case being assigned, the noun must default to genitive case, but it is how the noun realizes this genitive case that is the purpose behind this paper. I propose that genitive paucal is largely syncretic with genitive singular, except in a few certain cases. Additionally, paucal lexical cases are syncretic with plural lexical case morphology due to an impoverishment of the [augmented] feature. I will demonstrate that these syncretism patterns account for all of the various problems discussed here.

This paper is laid out as follows: Section 2 will present five problems within Russian numeral constructions. Section 3 will summarize the previous literature addressing these various problems. Section 4 will discuss case and number features on elements within the DP, as well as how case percolates within the syntax. Section 5 will explain how the notion of paucal number can be employed with Russian syncretism patterns across declensions. Section 6 will account for the loss of dual in Russian and expand on remaining issues.

2   Problems with Russian Numeral Constructions

This section will focus on the various issues that arise in Russian numeral constructions. I will address five problems, all of which have been covered within the literature, but, to my knowledge, have not been explained within the same approach. Firstly, adjectives realize genitive plural morphology following lower numerals, while the noun realizes genitive singular morphology (Babby 1987; Franks 1995; Neidle 1988; Pesetsky 1982, 2013; Rappaport 2002, and others). Secondly, for feminine nouns in lower numeral environments, it is common that the adjective realizes nominative plural morphology, instead of the expected genitive (Bailyn & Nevins 2008; Franks 1995; Pesetsky 2013). Thirdly, there are five monosyllabic masculine nouns in Russian that show a stress shift after lower numerals, which is different than the regular genitive singular ending (Bailyn & Nevins 2008; Rappaport 2002; Pesetsky 2013). Additionally, in lexical case environments, all nodes within the DP receive <u>plural</u> lexical case morphology (Babby 1987; Franks 1995; Pesetsky 1982, 2013). Finally, the lower numerals seem to be sensitive to whether the noun is animate or inanimate (Mel'čuk 1980; Pesetsky 2013; Rakhlin 2003).

While all these problems have been addressed in the literature, some of these problems seem to be counter examples to previous analyses of Russian numeral constructions. I will show that within each of these problems, there is a common factor that can be used to explain all the idiosyncrasies. In this section, I will show that these idiosyncrasies can be explained by the inclusion of paucal number in Russian, which is only realized after 2-4.

2.1   Adjective/Noun number mismatch

Russian numeral phrases show a split between lower and higher numerals. The lower numerals consist of the numbers *dve/dva* 'two (f/m)', *tri* 'three', *četyre* 'four', and a group

of words denoting small groups: *pol* 'half', *poltora* 'one and a half', *obe/oba* 'both (f/m)', *četvert* 'quarter', etc. (Babby 1987; Corbett 2010; Franks 1994; Pesetsky 2013; Rappaport 1998, 2002, and others). In lower numeral constructions (henceforth LNCs), nouns realize genitive singular morphology, while adjectives normally realize genitive plural morphology (5).

(5)   dva/tri/četyre krasn-**yx**   stul-**a**
          two/three/four red-**GEN.PL** chair-**GEN.SG**
          'two/three/four red chairs'

When higher adjectives and demonstratives are added above the numeral, they realize nominative plural morphology, while the rest of the numeral phrase realizes genitive (6).

(6)   et-**i**   posledn-**ie** dva/tri/četyre krasn-yx   stul-a
          these-**NOM.PL** last-**NOM.PL** two/three/four red-GEN.PL chair-GEN.SG
          'these last two/three/four red chairs'

This is referred to as heterogeneous case morphology (Babby 1987). This is strange in that not only do the lower adjective and noun realize genitive case morphology, but the adjective does not agree with the noun in its number feature. This number mismatch only occurs in LNCs in structural case assigning environment ts.

The higher numerals consist of numbers 5-19, all compound numerals ending in 5-9 (ex. 25-29), and a group of words denoting large groups or uncountable quantities: *mnogo* 'many', *nemnogo* 'a little', *skol'ko* 'how much', *stol'ko* 'so much', etc. (Pesetsky 2013: 24). These constructions also show heterogeneous morphosyntax, with the nouns and adjectives realizing genitive plural morphology, and the demonstrative, higher adjective, and numeral realizing nominative morphology. While this pattern is the same as the lower numerals, the main difference between the higher numerals and the lower numerals is that there is no number mismatch between the lower adjective and the noun after higher numerals (7).

(7)   et-i   posledn-ie pjat' krasiv-**yx**   stol-**ov**
          these-NOM.PL last-NOM.PL five beautiful-GEN.**PL** table-GEN.P**L**
          'these last five beautiful tables'

2.2   Feminine case patterns

An apparent exception to this genitive plural adjective pattern arises with feminine nouns. In addition to the number mismatch described in Section 1.1, in LNCs with feminine nouns, the lower adjective can appear in either genitive plural or nominative plural, with the latter being the more common variant (Corbett 2010; Pesetsky 2013) (8).

(8)   **Case options in LNCs with feminine noun** (Pesetsky 2013:119, ex 143)
         a.   dv-e   krasiv-yx   lamp-y
             two-F beautiful-GEN.PL lamp-F.GEN.SG
             'two beautiful lamps'
         b.   dv-e   krasiv-ye   lamp-y
             two-F beautiful-NOM.PL lamp-F.GEN.SG
             'two beautiful lamps'

Feminine nouns also differ from most other nouns, in that the genitive singular and nominative plural morphemes are mostly syncretic (Bailyn & Nevins 2008) (9).

(9)   **Syncretism of genitive singular and nominative plural**
    a.   devušk-**i**   igraut na ulicu
           girls-**NOM.PL** play   on street
           'The girls are playing outside.'
    b.   sobaka devušk-**i**
           dog   girl-**GEN.SG**
           'the girl's dog'

Since these constructions allow genitive plural, or more typically for some speakers, nominative plural concord on the adjective, we might wonder which case is actually realized after the lower numerals. It's also important to note here that this pattern does not occur after the higher numerals (10).

(10)   **Higher numerals – *nominative plural**
    a.   pjat' krasiv-yx   lamp-Ø
           five beautiful-GEN.PL lamp-F.GEN.PL
           'five beautiful lamps'
    b.   *pjat' krasiv-ye   lamp-Ø
           five   beautiful-NOM.PL lamp-F.GEN.PL
           'five beautiful lamps'

Feminine nouns exist in two different declension classes in Russian. Class 1 nouns end in -*a* or -*ja*, and Class 3 feminine nouns end in a yer vowel, marked by an apostrophe (') or with the Cyrillic character ъ.[1] Both declension patterns show a syncretism between the genitive singular and the nominative plural. The nominative plural adjective pattern can occur with either class of feminine noun, regardless of morphological ending (11).

(11)   **LNC nominative plural pattern with class 3 noun *kost'* 'bone'**
    a.   tri   star-ye   kost-i
           three old-NOM.PL bone-GEN.SG/NOM.PL
           'three old bones'
    b.   ?tri star-yx   kost-i
           three old-GEN.PL bone-GEN.SG/NOM.PL
           'three old bones'

Note that with the Class 3 noun, certain speakers seem to be hesitant to accept a genitive plural adjective (11b). Additionally, speakers typically reject the genitive plural adjective marking when there is more than one adjective within the LNC (12b).

(12)   **LNC nominative plural with multiple adjectives**
    a.   tri   star-ye   bel-ye   kost-i
           three old-NOM.PL white-NOM.PL bone-GEN.SG/NOM.PL
           'three old white bones'
    b.   *tri   star-yx   bel-yx   kost-i
           three old-GEN.PL white-GEN.PL bone-GEN.SG/NOM.PL
           'three old white bones'

---

[1] This includes morphologically feminine nouns that are semantically masculine, such as *mužčina* 'man'. These nouns also allow nominative plural morphology on the adjective.

I only use this as evidence of a preference for nominative plural adjectives in LNCs over genitive plural. As for class 3 nouns, this pattern disappears with higher numerals (13).

(13)   Higher numerals: class 3 - *nominative plural
    a.   *pjat' bel-ye   kost-ej
       five white-NOM.PL bone-GEN.PL
       'five white bones'
    b.   pjat' bel-yx   kost-ej
       five white-GEN.PL bone-GEN.PL
       'five white bones'

Masculine nouns belong to two main declension patterns (both of which are included in class 2). Most morphologically masculine nouns end in a consonant, but there is a small set of masculine nouns that end in a yer vowel. Unlike feminine nouns, neither the animate nor the inanimate masculine nouns show a syncretism between the genitive singular and the nominative plural.[2] They also do not allow a nominative plural adjective in LNCs (14-15).

(14)   **Inanimate masculine -ъ noun *kogot'* 'claw'**
    tri   ostr-yx   / *ostr-ye kogt-ja
    three sharp-GEN.PL/*NOM.PL claw-GEN.SG
    'three sharp claws'

(15)   **Animate masculine -ъ noun *gost'* 'guest'**
    tri   prijatn-yx   /*prijatn-ye gost-ja
    three nice-GEN.PL/NOM.PL   guest-GEN.SG
    'three nice guests'

Neuter nouns (also class 2) end in -o or -e, and do not allow a nominative plural adjective in LNCs (16).

(16)   **Neuter noun - *nominative plural**
    a.   tri   star-yx   pis'm-a
       three old-GEN.PL letter-GEN.SG
       'three old letters'
    b.   *tri star-ye   pis'm-a
       three old-NOM.PL letter-GEN.SG
       'three old letters'

Like the feminine nouns, the morphological endings for nominative plural and genitive singular are segmentally the same, but they differ in stress (17).

(17)   **Neuter stress difference**
    a.   pís'ma   lezat na stole
       letter-**NOM.PL** lay   on table-LOC.SG
       'The letters are on the table.'
    b.   tri   pis'má   lezat na stole
       three letter-**GEN.SG** lay   on table-LOC.SG

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[2] Masculine nouns in Russian distinguish animacy in singular and plural, while feminine and neuter nouns only differentiate in plural.

'Three letters are on the table.'

As will be discussed further in 5.2, I will argue that this stress difference is a clear distinction between the two morphemes. The lack of a syncretism between nominative plural and genitive singular places neuter nouns closer to masculine nouns than feminine nouns, with regards to LNCs. I will use this syncretism to account for the nominative case pattern with feminine nouns.

2.3 Stress shift pattern

There are five nouns in Russian which behave differently in LNCs. In these environments, the stress differs from the genitive singular. *Rjad* 'row', *šar* 'sphere', *sled* 'trace', *čas* 'hour', and *šag* 'step' are all monosyllabic masculine nouns, and they are the only nouns that show this difference (18-19).

(18)   **In genitive case assigning environments**
         s   perv-ogo   šág-a
         since_GEN first-GEN.SG step-GEN.SG
         'since the first step'

(19)   **In LNCs (stress shift)**
         dva šag-á
         two step-GEN.SG?
         'two steps'

These nouns shift the stress to the suffix only in LNCs, while in other genitive environments the stress is on the first syllable. This pattern has been used as a counterexample to previous analyses of Russian numeral constructions (Rappaport 2002). Since this stress shift occurs in lower numeral constructions, I will argue in Section 5.3 that this is a manifestation of paucal number and not just a quirk of the phonology.

2.4 Lexical case overwrite

When either a higher or lower numeral construction is merged with a lexical case assigning verb or preposition, every element within the DP realizes lexical case. This is referred to as homogenous morphosyntax (Babby 1987). In lexical case assigning environments, the number mismatch previously seen in structural environments disappears (Babby 1987; Franks 1995; Freidin & Babby 1984; Pesetsky 1982, 2013, and others). Both the adjective and the noun realize plural morphology in lower and higher numeral phrases following lexical case environments, as modeled with prepositions in 20.

(20)   **Lexical case overwrite**
         a. *Genitive - lower numerals*
             u   dv-ux/tr-ex/četyr-ex malen'k-ix   mal'čik-ov
             of_GEN two/three/four-GEN young-GEN.PL boy-GEN.PL
             'of two/three/four young boys'
         b. *Dative – lower numerals*
             k   dv-um/tr-em/četyr-em malen'k-im   mal'čik-am

6

       toDAT two/three/four-DAT   young-DAT.PL boy-DAT.PL
       'to two/three/four young boys'

  c. *Instrumental – lower numerals*
       s   dv-umja/tr-emja/četyr'-mja   krasn-ymi   vas-ami
       withINST two/three/four-INST   red-INST.PL vase-INST.PL
       'with two/three/four red vases'

  d. *Locative – lower numerals*
       o   dv-ux/tr-ex/četyr-ex krasn-yx   vas-ax
       aboutLOC two/three/four-LOC red-LOC.PL vase-LOC.PL
       'about two/three/four red vases'

These patterns present an interesting complication to an already complicated problem. Why would lexical case environments require the noun to realize plural morphology, when it realized singular case morphology in structural case environments? If the lower numerals required a specific case like genitive, or paucal case, as has been argued by Rappaport (2002) and others, we wouldn't expect the noun to change in number *and* case in lexical case environments. I propose in Section 5.4 that this is further evidence of a paucal number feature underlying LNCs, and that this paucal number feature in lexical cases is syncretic with the plural morphology.

2.5 Accusative case and animate nouns

All genders of Russian nouns differentiate animacy in the plural (Baerman et al 2002; Mel'čuk 1980; Müller 2004). This is highlighted in the accusative case, where animate accusative is syncretic with genitive case morphology in both singular and plural (21-22).

(21) **Masculine animate nouns (Rakhlin 2003)**
    a. Pavel ljubit   Ivan-a
       Pavel lovesACC Ivan-ACC.SG
       'Paul loves Ivan.'
    b. Pavel boitsja   Ivan-a
       Pavel fearsGEN Ivan-GEN.SG
       'Pavel is afraid of Ivan.'

(22) **Feminine animate nouns**
    ja   xočuACC tr-ex   čern-yx   košek
    1SG want   three-GEN black-AN.GEN.PL cat-AN.GEN.PL
    'I want three black cats'

For inanimate nouns, the accusative case is syncretic with the nominative case (23).

(23) Inanimate masculine nouns
    a. Ivan kupilACC stol
       Ivan bought   table-ACC.SG
       'Ivan bought a table.'
    b. Stol na kuxne
       table in kitchen
       'The table is in the kitchen'

This genitive/accusative syncretism in animate nouns extends to lower numeral environments. When an animate masculine noun is in an LNC, the entire phrase, including the numeral, realizes genitive/accusative morphology (24).

(24)　**Animate vs inanimate accusative masc. nouns in accusative (Rakhlin 2003)**
　　a.　Sasha　　　videl tri　dom-a
　　　　Sasha-NOM saw　three house-GEN.SG
　　　　'Sasha saw three houses.'
　　b.　Sasha videl tr-jox　　　　malčik-ov　/*tri　　malčik-a
　　　　Sasha saw　three-GEN.PL boy-GEN.PL /*three boy-GEN.SG
　　　　'Sasha saw three boys.'

This accusative pattern doesn't occur with higher numerals. With higher numerals, the numeral itself does not decline, regardless if the noun is animate or not (25).

(25)　ona ljubit et-ix　　　　pjat' / *pjat-i　　sovermenn-yx　　　　xudožnik-ov
　　　She loves these-GEN five-NOM/*GEN contemporary-GEN.PL artists-GEN.PL
　　　'She loves these five contemporary artists.'

　　This animacy pattern seems to be something special with the lower numerals, which historically used to be adjectives. In Modern Russian, the only apparent adjectival remnant is in *dve/dva* 'two' and *obe/oba* 'both', which distinguish between feminine and masculine/neuter. This sensitivity to animacy seems to be an additional example of semi-adjectival nature of the lower numerals.
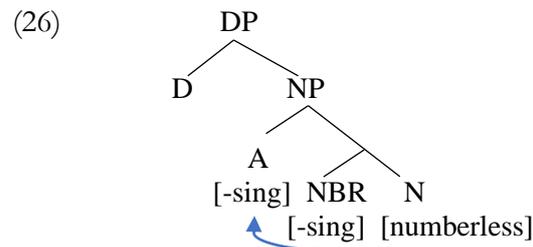

3　　Approaches to Russian Numeral Constructions

This general problem of genitive singular morphology after lower numerals has been widely discussed. Previous approaches have attempted to resolve this by proposing paucal case and paucal number. Paucal case, or *sčëtnaja forma* 'numeral form', which has been largely argued against, would mean that Russian has a completely separate case, which solely appears after lower numeral elements (Franks 1994, 1995, Mel'čuk 1985:174; Rappaport 2002; Zaliznjak 1967:46-48). This approach will not be entertained within this proposal. However, the notion of paucal number in Russian, as I will show, should not be ruled out entirely. Two main analyses of this variety, Bailyn and Nevins (2008) and Rakhlin (2003), mainly focus on the co-occurrence of paucal number on nodes following lower numerals. In addition, they propose that what is typically glossed as genitive singular is really *nominative paucal*, which is where I will differ. I maintain that genitive case *is* realized, and that the case after lower numerals is *default* genitive case (Pesetsky 2013). It is within Pesetsky's model that I will root my proposal, and it is where I shall begin.

3.1　　Pesetsky's (2013) model

Pesetsky (2013) presents an explanation for the number mismatch in LNCs. He proposes that in LNCs nouns enter the derivation numberless, which is categorized as 'elsewhere' number and realized as singular number morphology (Pesetsky 2013: 9 ex. 15c). However, since the noun bears no number feature, this requires the noun to merge with some number specification. Paucals or lower numerals are free standing instances of number (NBR) which are additionally specified as dual, trial, or quadral. Such NBR heads carry the feature [-singular]. Any adjectives within the LNC merge ahead of NBR, enter

into a concord relation with NBR head, and realize the [-singular] feature as plural morphology (26).

(26)

```
                DP
              /    \
            D       NP
                   /   \
                  A     \
               [-sing]  NBR    N
                        [-sing] [numberless]
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As to the matter of genitive case in LNCs, he proposes that all parts of speech assign a certain case. For Russian, nouns don't enter the derivation in nominative, rather they enter in 'primeval' genitive. Nominals receive nominative case after D merges, accusative after V merges, and all oblique cases from different instantiations of P (27).[3]

(27)   **Reduction of Russian cases to part-of-speech categories (Pesetsky 2013:4)**
        N – Genitive   V – Accusative
        D – Nominative   P – Oblique cases

Case features are then copied to the complement and are realized morphologically on all *accessible* lexical items (emphasis mine). These restrictions based on the Feature Assignment Rule are stated more explicitly in 28.

(28)   **Feature Assignment (Pesetsky 2013)**
        a. Copying: when α merges with β, forming [$_\alpha$ α β], if α has satisfied its complementation requirements and is a designated feature-assigner for β, its features are immediately merged with β…
        b. Realization: … and are realized as morphology on all accessible lexical items dominated by β.

For example, in an accusative environment, the noun enters the derivation under the N head, applying genitive case. D would then merge ahead of N, assigning nominative case. V could merge ahead of D and apply accusative case to the entire DP (29).

(29)   Case stacking
        Ja kupila roz-u
        I   bought rose-ACC
        [V$_{ACC}$ kupila [D$_{NOM}$ Ø [N$_{GEN}$ roz –y] –a] –u]

These restrictions on case assignment would imply that Russian has overt case stacking, which is not the case. To prevent this, Pesetsky adopts a One Suffix Rule, where only the last case assigned is the one that is pronounced (2013:11).

These heads have a complementation requirement that its complement must satisfy. For example, in the context of lower numeral constructions, D has a requirement that if there is a free-standing instance of NBR, it must move to the complement (30).

(30)   Movement of NBR to Complement of D (Pesetsky 2013:10)

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[3] For verbs that assign lexical cases, Pesetsky proposes that a null P head is what assigns the oblique case, not the V head.
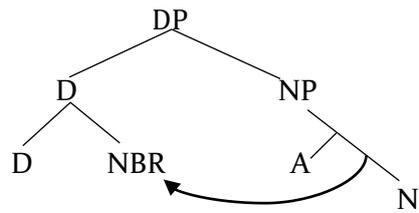
In LNCs, this movement, by complement-forming undermerge, forces D to copy its nominative feature onto NBR. This results nominative on the numeral in NBR and the rest of the NP in genitive (31).

(31)   Case assignment
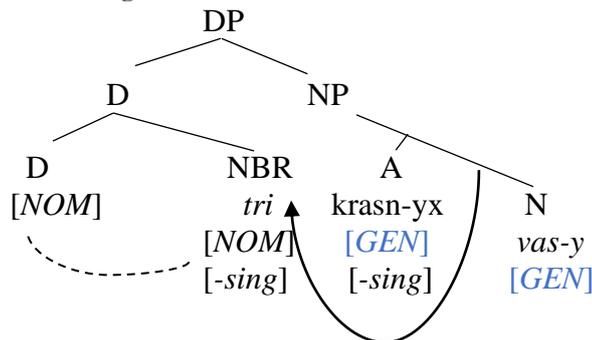
If NBR doesn't move to D, then nominative case would percolate through the NP, which is not what we see in Russian numeral constructions. This effectively blocks nominative case from appearing throughout the entire DP. As for the adjective/noun number mismatch, since the adjective appears to the left of the numeral prior to movement, the adjective agrees with the numeral, instead of the noun, and realizes [-singular] as plural morphology. The movement of NBR to the complement of D changes the word order from [Adj Paucal N], to the standard word order of LNCs [Paucal Adj N]. These assumptions predict the correct word order of [Paucal Adj N], the realization of case, and the number mismatch.

To account for the homogenous case pattern, Pesetsky proposes that prepositions (null and overt) bear an unvalued uninterpretable number feature which probes for the closest instance of NBR. Assuming that phi-features spread with case, and given that NBR is [-singular], P sets that value and distributes it to all nodes within the DP. This homogenous distribution of a number and case in LNCs by P accounts for the pattern described in Section 2.4.

According to this analysis, the five nouns *rjad, šar, čas, šled,* and *šag* that display a stress shift in paucal constructions behave this way because the nouns in LNCs are *numberless*. He argues that because the two constructions are segmentally identical, that the realization of numberless 'primeval' genitive results in *rjad-á* instead of *rjád-a* in other genitive constructions (Pesetsky 2013: 49-50). He cites about 50 words in Russian that have idiosyncratic number-dependent stress shift. I will go into further detail about these patterns in Section 5.0.

Pesetsky devotes an Appendix (2013: 54-57) to the issue of feminine case patterns in LNCs. He suggests that the movement of QUANT, which is the phrase for higher numerals, to D is optional if NBR has moved to QUANT. This optional movement allows for both case patterns seen with feminine nouns, but this also assumes that the noun is in nominative plural when the adjective is also in nominative plural. The movement stipulation is modeled after verb agreement alternations with quantified nominals (*mnogie* 'many'). Quantified nominals cannot trigger default (neuter) verb

agreement, they only trigger plural agreement. This also occurs with feminine nouns with a nominative plural adjective, but not with genitive plural adjectives (32).

(32)   Verb agreement alternation patterns (Pesetsky 2013: 55-56, ex 105-107)
    a.   *Quantified nominal: only plural verb*
         Na stole leža-l-i / *-o   mnog-ie   bo'lš-ie   predmet-y
         on table lie-PST-PL/*NEU.SG many-NOM large-NOM.PL object-NOM.PL
         'There were many large objects on the table.'
    b.   *Feminine noun with nom.pl adjective: only plural verb*
         Na stole leža-l-i / *-o   dve bol'š-ie   knig-i
         on table lie-PST-PL/*NEU.SG two large-NOM.PL book-GEN.SG/NOM.PL
         'There were two large books on the table.'
    c.   *Feminine noun with gen.pl adjective: either plural verb or neuter singular*
         Na stole leža-l-i/-o   dve bol'š-ix   knig-i
         on table lie-PST-PL/NEU.SG two large-GEN.PL book-GEN.SG/NOM.PL
         'There were two large books on the table.'

He concludes that this pattern doesn't falsify his analysis, but this problem raises more questions as to the exact case realized on nouns in LNCs, whether it's nominative or genitive. I will address this in Section 5.1.

3.2   Issues with 'paucal'

Some have also proposed that LNCs are simply nominative paucal, instead of quantificational genitive case (Bailyn & Nevins 2008; Rakhlin 2003). In sum, these approaches propose that paucal number, not genitive singular, co-occurs with the lower numerals. Paucal number is realized as plural morphology on the adjective. Nevins and Bailyn (2008) present a wider proposal regarding Russian genitive syncretism, which relies on Russian nouns neutralizing gender morphemes. For example, a feminine noun like *kniga* 'book' doesn't actually contain a feminine suffix –a, but rather has a null suffix. If a derivational suffix is added to the noun, it deletes the final vowel, usually assumed to be the nominative suffix. Bailyn and Nevins assume that the genitive singular suffix on nouns in LNCs is actually a nominative paucal suffix, which just happens to be syncretic with the genitive singular (33).

(33)   **Number endings in Nominative**:

Nouns-Nom	Singular	Paucal	Plural
Class 1	-Ø	-i	-i
Class 2a	-Ø	-a	-i
Class 2b	-Ø	-a	-a
Class 3	-Ø	-i	-i
Adjectives-Nom			
Fem	-aja	-yje	-yje
Neu	-oje	-yx	-yje
Masc	-yj	-yx	-yje

By proposing this system, they attempt to address the issue of verb agreement with LNCs. When a numeral phrase is the subject of a clause, the verb can either realize plural or neuter singular (default) agreement morphology (34).

(34) **Verbal agreement with LNCs (Bailyn & Nevins 2008: ex. 55)**
  a. tri   student-a   byl-**i**   na konserte
      three student-GEN.SG be-PST.**PL** in concert
      'Three students were in the concert.'
  b. tri   student-a   byl-**o**   na konserte
      three student-GEN.SG be-PST.**NEU** in concert
      'Three students were in the concert.'

Since there is a concord relation with the lower numerals, specifically *dve/dva* 'two f/m' and *obe/oba* 'both f/m', the possibility of plural verbal agreement with no nominative element is puzzling. This nominative paucal construction and the adaptation of a markedness-based impoverishment rule deleting [-augmented] on verbs explains the possibility of plural agreement on the verb. However, this analysis only addresses LNCs in unmarked nominative and accusative environments, as they assume that [+augmented] is neutralized in all other contexts.

While they rely on the feminine noun allowing nominative plural adjectives, stress shift, and lexical case overwrite to make their case for paucal number, their morphophonological mechanism cannot account for the animacy feature in accusative environments. This entire analysis hinges on Russian neutralizing gender information, and that all genitive singular morphemes happen to be syncretic with nominative paucal.

Rakhlin (2003) argues in favor of paucal number in Russian given the historical precedent of dual number in Old Slavonic. She asserts that the entire numeral phrase is realizing the structural case required, citing that the lower numerals realize genitive morphology when the noun is animate (35).

(35) ja   xoču$_{\text{ACC}}$ tr-ex   čern-yx   košek-Ø
      1SG want   three-GEN black-AN.GEN.PL cat-AN.GEN.PL
      'I want three black cats'

For most nouns, animate accusative is syncretic with genitive morphology. This syncretism will be further discussed in Section 5.4. In order to explain homogenous morphosyntax in accusative animate contexts, she asserts that lower numerals still behave like adjectives, as they had historically in Old Slavonic. Like in all other accusative contexts, it seems that [+animate] is specifically relevant to LNCs and not the higher numerals due to this innate adjectival property of LNCs.

To address the patterns in lower numeral constructions, she claims that the similarity between genitive singular and structural paucal is merely an idiosyncrasy of Russian morphology. She, like Bailyn and Nevins (2008), claims that the nominative paucal for these nouns just resembles genitive singular as a quirk of the morphology. Her analysis does not address the variance in feminine case patterns, or nouns that differentiate between nominative and genitive in stress. The difference in segmental stress between the feminine genitive singular morpheme and the nominative plural morpheme effectively calls into question her assertion of homogenous realization of *nominative* paucal.

It's unlikely that almost all of the genitive singular morphemes for nouns and genitive plural for adjectives could be syncretic with *nominative* paucal morphemes, as was previously claimed by Rakhlin (2003) and Bailyn and Nevins (2008). While Rakhlin has some more viable points regarding the animacy distribution of paucal number, her analysis doesn't seem to explain how nominative paucal nominal morphemes could be almost exactly syncretic with genitive singular. In the next section, I will give an overview of my analysis and explain how this fits within the literature.

4 Features on Nouns

In this section, I will propose a modification to Pesetsky's model, in that we are not seeing genitive singular, but genitive *paucal*. I will suggest that the syncretism we're seeing within numeral constructions is still genitive case, but differs in number. We might link this to the historical use of genitive case after numerals in Old Slavonic, and the continued use of the genitive case throughout other Slavic languages (Franks 1995). It is unusual, however, that a language would have a paucal number distinction without having a dual distinction, as per Greenberg's universal number 34 (Greenberg 1963). I do not think this is fatal to this analysis, given the historical connection to dual number in Old Slavonic, which will be addressed in Section 6.1.

My analysis will assume with Rakhlin (2003) that the lower numerals (2, 3, 4) co-occur with paucal number. However, the main innovation of my account is that I will propose that the lower numerals are unable to realize structural case features of [$\pm$obl(ique), $\pm$obj(ect)] without a feature of [+animate] or a semantic feature set of [$\pm$f, $\pm$g].[4] The numerals' inability to realize these features blocks further case percolation through the phrase, resulting in the rest of the phrase realizing default $N_{GEN,}$ as proposed by Pesetsky (2013). Paucal number in default N_{GEN} is largely syncretic with genitive singular, apart from a few exceptions. I will use these exceptions to model default genitive case in lower numeral constructions. In lexical case or animate accusative environments, however, paucal number morphology is syncretic with plural morphology.

I will maintain Pesetsky's (2013) analysis that nouns are 'born' genitive, and adopt his analysis of case percolation, while proposing a new restriction. This will result in something similar to a failure-to-agree mechanism, whereby the numeral cannot recognize the structural case features and case percolation through the phrase fails (Preminger 2010, 2011). This then leaves the entire NumP without case, requiring default case to be assigned. This results in numerals realizing nominative case morphology, while the proceeding nodes realize 'primeval' genitive, or N_{GEN}. Since numerals can value the semantic feature set [$\pm$f, $\pm$g], which is percolated by lexically assigning prepositions, the entire phrase is able to realize homogenous lexical case. In the next two chapters, I will provide a detailed analysis of how paucal number behaves with case features. This section will focus on case features, case percolation, and default case assignment.

4.1 Structural case features

Russian has six cases: nominative, accusative, genitive, dative, instrumental, and locative.[5] Within Distributed Morphology (Halle & Marantz 1993), morphological case corresponds to a set of features with morphological insertion rules. Instead of basing Russian case morphology features on traditional features for Russian (cf. Jakobson 1984; Neidle 1988; Franks 1995), I will base this analysis on the set of case features from Assmann et. al (2014) for Udmurt. This analysis of Udmurt separates structural case features from lexical case features, in addition to including a system of feature percolation, which, I will argue, is more relevant to the Russian case system, than the system previously proposed by Jakobson (1984). I will maintain that nominative, (default)

---

[4] For the purposes of this analysis, the content of the values f and g is inconsequential. Here they are simply representative values for semantic cases. The features of semantic cases in Russian will not be discussed here.

[5] This does not include: the partitive, which is normally syncretic with the genitive and classified as so, various other flavors of genitive (e.g. quantificational genitive).

genitive, and accusative are structural cases in Russian (Halle 1997). Structural cases are represented with [±obl(ique),±obj(ect)] , while (lexical) genitive, dative, instrumental, and locative are all semantic/lexical cases, which are marked with [+obl, +obj] and a separate set of features [±f, ±g]. The case features I will be assuming for Russian, based on Assmann et. al (2014), are stated in 36.

(36)   Features for Russian cases
   NOM: [-obl, -obj]   DAT: [+obl, +obj] [+f, -g]
   ACC: [-obl, +obj]   LOC: [+obl, +obj] [+f, +g]
   GEN: [+obl, -obj]   INST: [+obl, +obj] [-f, +g]
                                 GEN$_L$: [+obl, +obj] [-f, -g]

Genitive case behaves differently from other cases in Russian, as it can behave like a lexical case in that it allows lexical case overwrite in lower numeral constructions (37).

(37)   **Genitive lexical overwrite**
   a. *genitive of negation*
      […]esli na nebe net tr-ex   zvezd-Ø
      […]if   in sky   not three-GEN star-F.GEN.**PL**
      '[…] if there aren't three stars in the sky.'
      (from Oleg Grinevsky, *The East is a delicate matter*, pub 1998, via Russian National Corpus)
   b. *prepositional genitive*
      u   dv-ux/tr-ex/četyr-ex malen'k-ix   mal'čik-ov
      of$_{GEN}$ two/three/four-GEN young-GEN.PL boy-GEN.**PL**
      'of (belonging to) two/three/four young boys'

In 37a, genitive of negation behaves similarly to other lexical environments (37b), in that the numeral realizes genitive morphology, and the noun realizes genitive *plural*. It can also behave like a structural case with regards to adnominal genitive (38).

(38)   kniga stix-ov
       book poems-GEN.PL
       'a book of poems'

Genitive, like accusative, distinguishes between animate and inanimate in the plural (Bailyn & Nevins 2008; Rakhlin 2003; Wade 2011, and others) (39).

(39)   Table of animate/inanimate distinction in genitive and accusative

Gender	Gen.Pl Ani	Acc.Pl Ani	Gen.Pl. inani	Acc.Pl inani
Fem	sobak-Ø	sobak-Ø	knig-Ø	knig-i
Masc	advokat-ov	advokat-ov	stol-ov	stol-y
Neu	sušestv-Ø	sušestv-Ø	mest-Ø	mest-á

In the table in (39), genitive and accusative animate plural are syncretic for all genders. If we were to assume that genitive was solely a lexical case, we would expect it to behave like the rest of the lexical cases. As it turns out, dative, instrumental, and prepositional don't distinguish animacy in any number, unlike genitive.

It's clear that there is more to the genitive case in regard to identity than most other morphological cases in Russian (Bailyn 2003). In LNCs, the genitive case can behave like a lexical case and realize homogenous morphosyntax when it's assigned by a preposition,

a NEG element, or a verb. In these contexts, all the elements within the LNC realize plural morphology, which is different from the normal genitive singular morphology after lower numerals. The question remaining is: do these environments actually realize *genitive* singular in structural case positions, or are we seeing a *nominative* syncretism similar to what was proposed by Bailyn and Nevins (2008)?

I will classify the genitive case as both a structural case and a lexical case. The structural genitive feature of [+obl, -obj] accounts for N_{GEN} distribution in numeral constructions as well as adnominal genitives. The lexical genitive of [+obl, +obj] [-f, -g] will account for all instances that exhibit case overwrite in LNCs, which includes prepositions, verbs, and genitive of negation. The next section will explain case feature percolation in LNCs.

## 4.2 Structural features in numeral constructions

Numeral constructions in nominative case environments exhibit heterogeneous morphosyntax, with all nodes to the right of the numeral receiving what looks like genitive case. Unlike previous analyses which called this case *nominative* paucal, I believe that these morphemes are still in genitive case. However, instead of Num moving to the complement of D to prevent the assignment of nominative case, Num head is unable to carry structural case features, which prevents them from percolating through the rest of the phrase. I propose that these nodes remain in default genitive because the numerals are unable to carry the structural case features [±obl,±obj] without a semantic feature set or [+animate]. Since numerals can't carry these features, these structural case features can't percolate through the rest of the phrase. I propose a new restriction on case percolation in 40.

(40) **Restriction on case percolation**
Case features:
i. can only percolate within the complement domain (based on Pesetsky 2013:49),
ii. <u>if and only if, the target of percolation carries an unvalued version of at least one of the features involved.</u>

Numeral constructions consist of a maximal projection NumP, headed by Num, which takes a NP complement. In structural case environments, which will be exemplified by D_{NOM}, D merges ahead of NumP and attempts to assign nominative to its complement NumP (41).

(41)
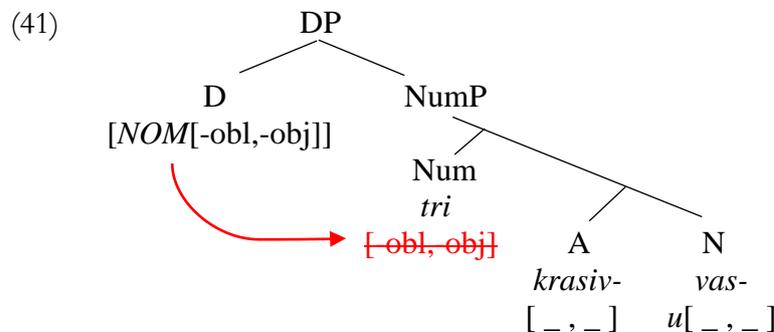
In 41, since Num is unable to carry the structural case features of [-obl,-obj], as indicated by the red arrow. Case feature percolation fails at this point, leaving the proceeding nodes unvalued for case. At this point in case percolation, these nodes are in violation of the

Case Filter (Chomsky 1981; Vergnaud 2006). This failure to assign case behaves like 'failure-to-agree' mechanism (Preminger 2010, 2011). This then requires the numeral to realize default case morphology, which is what is typically seen as 'nominative' for numerals. Default case for nominals behaves similarly, since nouns are under the head N, which assigns N_{GEN}, it is at this point that default N_{GEN} is realized on the noun (42).

(42)

```
                    DP
                  /    \
                 D      NumP
        [NOM[-obl,-obj]]  /  \
                      Num     \
                      tri      \
                             /    \
                            A      N
                       krasiv-yx  roz-y
                      [+obl,-obj] [+obl,-obj]
```
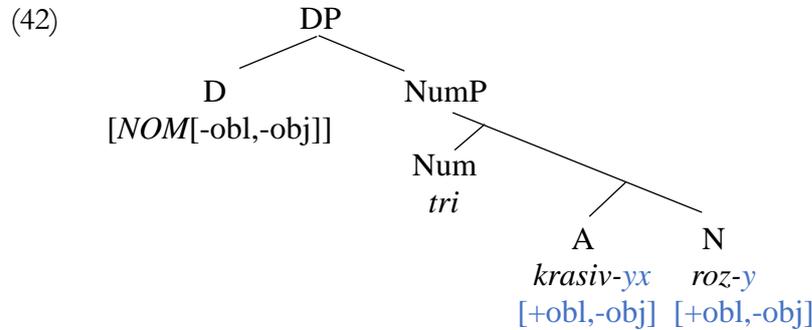
After all case features have been assigned, the adjective goes into concord with the head noun, realizing the appropriate case morphology, which is genitive morphology in nominative environments.

In Old Slavonic, the lower numerals behaved like adjectives and agreed with the noun in number, gender, and case (Babby 1987; Gorškov 1963; Khabrayev 1974; Nesset 2015; Rakhlin 2003) (43).

(43)   Declension of Old Slavonic numerals (modified from Nesset 2015: 131; Gorškov 1963: 148)

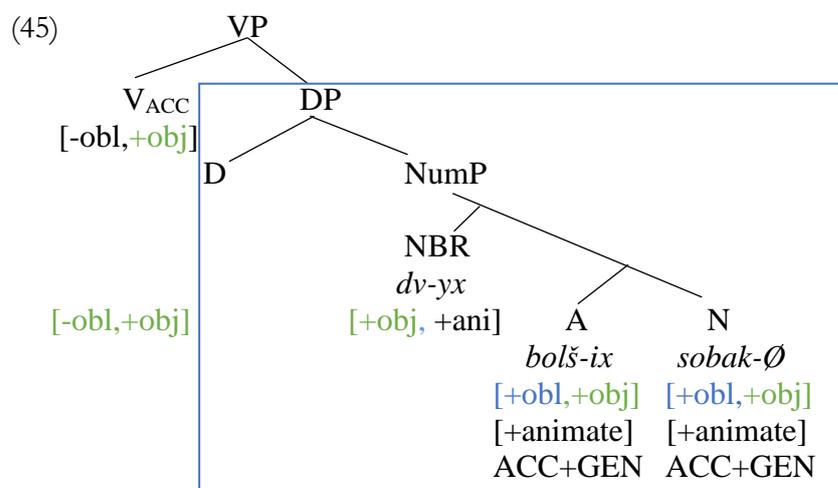|	Masc	Fem	Neu	Masc	Fem	Neu	Masc	Fem	Neu
Nom	d'va	d'vě		tr'e	tri		četyre	četyri	
Acc				tri			četyri		
Gen	d'voju			trii			četyr'		
Dat	d'věma			trim'			četyr'mě		
Inst				tr'mi			četyr'mi		
Prep	d'voju			tr'xě			četyr'xě		

In Modern Russian, only *dve/dva* 'two (f/m)' and *obe/oba* 'both (f/m) still agree in gender with the head noun, and it seems that the lower numerals are sensitive to the animacy feature on the head noun. In accusative contexts, if the noun is animate, the entire phrase realizes genitive plural morphology, which is syncretic with accusative animate. This overwrite pattern doesn't happen when the noun is inanimate. My proposal will explain this animacy effect by allowing animacy agreement to facilitate case percolation and allow for case stacking.

Since structural case features can't percolate past Num, the animacy feature from the noun must be copied onto Num when it merges with the NP (44).

(44)   dv-e   bol'š-ix   sobak-i
        two-F.NOM(ANI) big-GEN.PL dog-GEN.SG(ANI)
        'two big dogs'

This [+animate] feature allows structural case features to bypass Num and continue through the phrase. Assmann et. al. (2014) proposes that case stacking in Udmurt is based on the addition of features. Within this framework this would mean that when V

assigns [-obl,+obj] to its complement, this feature could pass Num and combine with the default case features on the proceeding nodes. V_{ACC} [-obl,+obj] added to N_{GEN} [+obl,-obj] would result in [+obl,+obj] on the noun.

(45)

```
                    VP
          ┌──────────┴────────┐
        V_ACC               DP
      [-obl,+obj]      ┌──────┴──────┐
                       D           NumP
                              ┌──────┴──────┐
                            NBR
                            dv-yx
      [-obl,+obj]        [+obj, +ani]    ┌───┴───┐
                                         A        N
                                      bolš-ix   sobak-Ø
                                    [+obl,+obj] [+obl,+obj]
                                    [+animate]  [+animate]
                                    ACC+GEN     ACC+GEN
```

However, there is no case that directly corresponds to [+obl,+obj] without a semantic feature set. This is closer to GEN_L [+obl,+obj][-f,-g]. Given that animate accusative contexts behave exactly like lexical genitive contexts, it seems that the [+animate] feature behaves similarly to [-f,-g] resulting in the homogenous realization of genitive case, as Num is morphologically able to value [+obj +ani] as lexical genitive morphology.
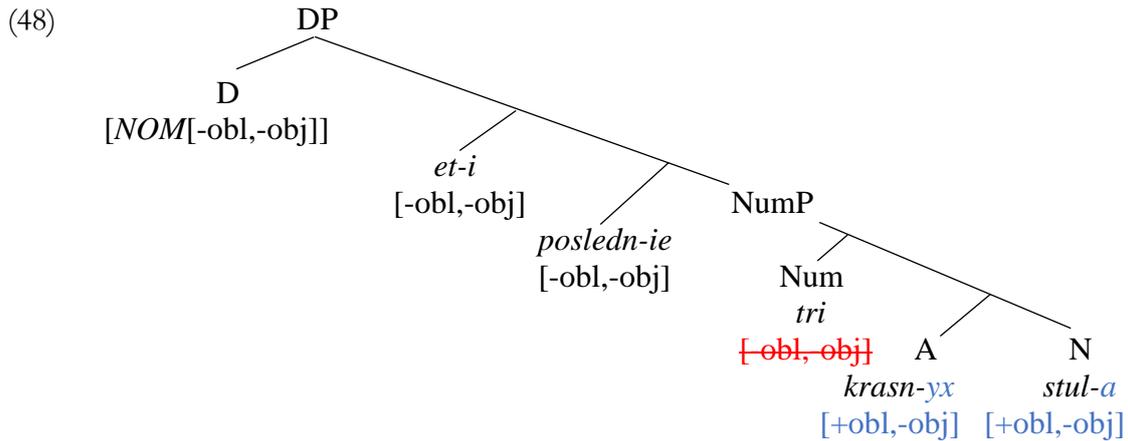
In inanimate accusative contexts, the derivation is almost the same as in nominative environments. The lack of a [+animate] feature on Num blocks the percolation of V_{ACC} from continuing through the sentence, as Num is unable to carry structural case features without [+animate] feature. This results in the patterns like 46, where the numeral has realized default morphology and all other nodes remain in N_{GEN}, even though it's in an accusative environment.

(46) Ja videla   tri   krasiv-yx   roz-y
      1SG saw_ACC three beautiful-GEN.PL rose-GEN.SG
      'I saw three beautiful roses.'

Numerals inability to carry structural case features is apparent with higher adjectives. As was mentioned in 1.1, adjectives to the left of numerals receive nominative plural morphology, while everything to the right realizes genitive case morphology. This is exactly the pattern we would expect if D_{NOM} is blocked by the lower numerals (47).

(47) et-i   posledn-ie   tri krasn-yx   stul-a
      these-NOM.PL last-NOM.PL three red-GEN.PL chair-GEN.SG
      'these last two/three/four red chairs'

For 47, D assigns nominative case to its complement, as nominative case percolates to each node that is able to value the case features. The demonstrative *eti* and the higher adjective *poslednie* are able to realize the case features of [-obl,-obj], while Num is unable to value the features.

(48)

```
                    DP
          ┌──────────┴──────────┐
          D                      │
     [NOM[-obl,-obj]]            │
                      ┌──────────┴──────────┐
                    et-i                     │
                  [-obl,-obj]                │
                            ┌────────────────┴────────┐
                       posledn-ie                   NumP
                       [-obl,-obj]          ┌─────────┴─────────┐
                                          Num                    │
                                          tri                    │
                                      [ -obl, obj]    ┌──────────┴──────────┐
                                                      A                      N
                                                  krasn-yx                stul-a
                                                [+obl,-obj]            [+obl,-obj]
```
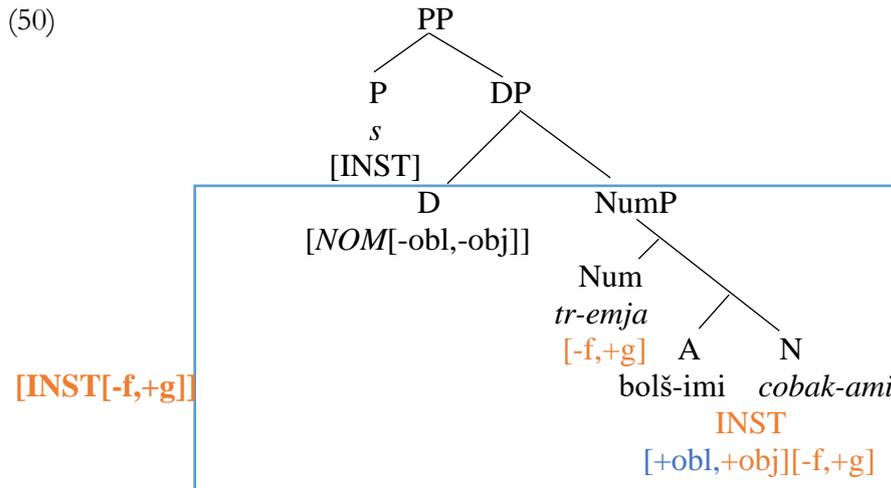
4.3 Lexical case features

Lexical cases in Russian are assigned by prepositions and they overwrite structural case in Russian, as exhibited by numeral constructions (Pesetsky 1982, 2013; Babby 1987; Franks 1995). These cases are semantic cases, which are represented with a separate matrix of features [$\pm$f, $\pm$g]. Since Russian numerals can carry these features, they percolate through to the entire NumP, allowing lexical case overwrite (49).

(49) s [INST tr-emja   bol'š-imi   sobak-ami]
      with three-INST big-INST.PL dog-INST.PL
      'with three big dogs'

Lexical case feature percolation occurs after D$_{NOM}$ has failed to percolate, and after default case assignment. For example, when P$_{INST}$ is merged, it assigns the lexical case features of [+obl,+obj][-f,+g] to the entire DP, which has already been assigned default case. Num is able to value the feature set [-f,+g], and therefore allows the percolation of both case features sets throughout the phrase (50).

(50)

```
                         PP
                  ┌───────┴───────┐
                  P               DP
                  s        ┌───────┴───────┐
               [INST]      │                │
          ┌─────────────────────────────────────────────┐
          │               D              NumP            │
          │         [NOM[-obl,-obj]]  ┌─────┴─────┐      │
          │                         Num            │     │
          │                       tr-emja          │     │
          │                       [-f,+g]   ┌──────┴──────┐
 [INST[-f,+g]]                              A              N
          │                            bolš-imi       cobak-ami
          │                                             INST
          │                                      [+obl,+obj][-f,+g]
          └─────────────────────────────────────────────┘
```

What's interesting here is the number of these case morphemes, as *plural* lexical case morphology is realized. In the next section, I will account for this difference in number from structural cases to lexical cases.

5 Case Syncretism with Paucal Number

In this section, I will explain the various case syncretism patterns within Russian. I propose that paucal number exists in Russian. I will illustrate how paucal number [-singular,-augmented] is realized morphologically throughout the Russian declensions. These patterns, particularly the syncretism between genitive singular and nominative plural (feminine), and animate accusative will illustrate the existence of paucal number in Russian.

Paucal number in default genitive case is largely syncretic with genitive singular, however in lexical case environments, paucal number is syncretic with plural. I will continue on the assumption that Russian is a language that has paucal number, but not dual. I base the paucal number feature off of Bailyn and Nevins' (2008) adaption for paucal in Russian with the inclusion of [±augmented], which refers to large groups (cf. Harbour 2006, 2014)(51).

(51)   Singular: [+singular, -augmented]
        Paucal: [-singular, -augmented]
        Plural: [-singular, +augmented]

I will assume that in LNCs the feature of [singular] is deleted by Impoverishment, seeing as the structural genitive paucal is more similar to singular than it is to plural.

(52)   Impoverishment of singular:
        Delete [singular] in the context of [-augmented][+obl,-obj] on a terminal node of a noun.

This analysis distinguishes the difference between structural case singular/paucal and plural as the difference between [+/-augmented]. To demonstrate this, there are pairs of words in Russian that have different forms for the singular and plural, much like 'person/people' in English (*čelovek/ljudi* 'person/people'). In Russian LNCs, only the singular form of the pair can be used (53-54).

(53)   tri   čelovek-a   /*ljud-ej
        three person-GEN.SG /*people-GEN.PL
        'three people'

(54)   tri   rebënk-a   /*det-ej
        three child-GEN.SG /*children-GEN.PL
        'three children'

If [-singular] isn't deleted, it's not entirely clear that we would expect the plural form of the word to be ungrammatical in 53-54. However, in lexical case environments, only the plural form *ljudi* or *deti* is permitted (55-56).

(55)   k   dv-um ljud-jam   /*čelovek-am
        to_DAT two-DAT people-DAT.PL /*person-DAT.SG
        'to two people'

(56)   k   dv-um det-jam   /*rebënk-u
        to_DAT two-DAT children-DAT.PL /*child-DAT.SG
        'to two children'

Given this, I posit that in lexical case environments the [augmented] feature is deleted (57).

(57)   Impoverishment:
        Delete [augmented] on adjectives and nouns in lexical case environments.

Based on this observation, the rest of the section will examine the case syncretism for each of the grammatical genders in Russian, adjectives, and finally lexical case environments. From this point, nouns that would've previously been glossed as GEN.SG after lower numerals, will now be labelled GEN.PC to avoid confusion with differences from genitive singular morphemes. If the genitive singular and the genitive paucal are syncretic they will be glossed as GEN.PC(sg), if they are not syncretic there will be a clear distinction in glossing between the genitive singular and paucal. The case of adjectives will be discussed below, but the number feature will be glossed as PC to show concord with the noun. The glossing of nodes after lexical case will be discussed.

5.1   Feminine nouns

Most feminine nouns in Russian either end in /-a/, /-ja/, or /-ь/ (yer vowel (Lightner 1972)). For inanimate class 1 and 3 nouns, the genitive singular, nominative and accusative plural are mainly syncretic. The table in 58 shows the declension patterns for the inanimate feminine nouns *rabota* 'work', *pesnja* 'song', *kost'* 'bone', *reka* 'river'.

(58)   Feminine inanimate noun structural case syncretism

Inanimate	Singular				Plural			
NOM	rabot-a	pesn-ja	kost-ь	rek-á	rabot-y	pesn-i	kost-i	rék-i
ACC	rabot-u	pesn-ju		rék-u				
GEN	rabot-y	pesn-i	kost-i	rek-í	rabot-Ø	pesen-Ø	kost-ej	rék-Ø

As mentioned in Section 1.2, the genitive singular, nominative plural, and accusative plural are syncretic for most inanimate feminine nouns. This is an interesting syncretism as we see that feminine nouns can also have a nominative plural adjective in LNCs. This raises the question as to what case we are really seeing after the lower numerals. There are a few words in Russian, like *reka* 'river' that differentiate between the nominative plural and the genitive singular with stress (59).

(59)   *reka* **gen.sg ≠ nom.pl**
        a. tečenie rek-í   /*réki
            current river-GEN.SG /*NOM.PL
            'the river's current'
        b. širok-ie   rék-i   /*rekí
            wide-NOM.PL river-NOM.PL /*GEN.SG
            'the wide rivers'

    In LNCs, *reka* can take either a genitive plural or nominative plural adjective, but can only have the stress on the final –i, which is the genitive singular segment (60).

(60)   dve širok-ix   /širok-ie   rek-í   /* rék-i
        two wide-GEN.PC(PL)/NOM.PC(PL) river-GEN.PC(SG)/*NOM.PL
        'two wide rivers'

While this might show that *reka* is not in nominative plural, it still doesn't explain why 58 allows both genitive plural and nominative plural morphology on the adjective. I propose that the ending –í in 60 isn't genitive singular, but genitive paucal. In 60, the lower numeral *dve* 'two' co-occurs with paucal number [-singular,-augmented] on the noun *reka*. When D merges ahead of the numeral and attempts to assign nominative to its complement, *dve* fails to realize the structural case [-obl, -obj], leaving the NumP without case. Default genitive case of [+obl, -obj] is assigned to the noun. *Reka* now bears the features [+fem,-masc,+obl,-obj,-sing,-aug]. In structural environments, nouns undergo an Impoverishment of [singular] feature, resulting in the following feature set for the morpheme –í (61).

(61)   Class 1 noun: genitive singular/paucal insertion *reka* 'river'
        -í → [+obl ,-obj, +fem, -masc, -aug]

Given the data, I will continue on the basis that feminine nouns actually realize N$_{GEN}$ paucal morphemes, and not nominative plural.

This pattern is exemplified by the declension patterns of feminine animate nouns. Table 62 shows the structural case declension patterns for *sobaka* 'dog', *boginja* 'goddess', and *doč'* 'daughter', which is an irregularly declining noun.

(62)   Feminine animate noun structural case syncretism

Animate	Singular			Plural		
NOM	sobak-a	bogin-ja	doč-ъ	sobak-i	bogin-i	doč-ъ
ACC	sobak-u	bogin-ju	doč-ъ	sobak- Ø	bogin-ъ	doč-erej
GEN	sobak-i	bogin-i	doč-eri			

Like *reka*, *doč'* only appears in genitive singular (paucal), and allows both nominative and genitive plural adjectives, even though there is no nominative plural syncretism (63).

(63)   tri   krasiv-ye   /krasiv-yx   doč-eri   /*doč'
        three beautiful-NOM.PC(PL)/GEN.PC(PL) daughter-GEN.PC(SG)/*NOM.PL
        'three beautiful daughters'

While most animate feminine nouns regularly realize genitive singular/paucal and nominative plural as the same morpheme, the irregularly declining noun *doč'* is yet another example of the presence of genitive case features and not nominative case features.

It seems clear that nominative is not the case realized after the lower numerals, as Bailyn and Nevins (2008) have previously asserted, until you focus on the nominative plural adjective pattern with feminine nouns. In order to account for this variation, I will present two insertion rules for the genitive plural adjective pattern and the nominative plural pattern. Firstly, adjectives realize the features [+obl,-obj,-sing,-aug] on the noun as genitive plural morphology, through the Impoverishment of the [augmented] feature.

(64)   Adjectives:
        [augmented] goes to Ø in all contexts.

Adjectives can only distinguish between [±singular] in Russian. This allows for genitive plural case morphology on all adjectives regardless of gender, as all gender features are deleted in [-singular]. This presents a particular problem as it's apparent that [+feminine] is the only distinction which allows adjectives to appear in nominative plural instead of

genitive plural. [+feminine] is a marked feature in [-sing,-aug], which is why we only see this nominative plural pattern with feminine nouns and no other gender. For adjectives in concord with feminine nouns in LNCs, the two following insertion rules are possible (65).

(65)   Insertion rule for feminine adjectives in LNCs
        For adjectives with the features: [+obl, -obj, +fem, -masc, -sing, -aug]
        gen.pl –yx → [-obj, +fem, -masc, -sing]
        nom.pl –ye → [-obj, +fem, -masc, -aug]

5.2   Neuter nouns

Neuter nouns end in –o or –e and, like feminine nouns, only distinguish animacy in nonsingular contexts. Nominative and accusative are syncretic in both singular and plural for all inanimate neuter nouns, but for the few animate neuter nouns in Russian, the accusative and the genitive plural are syncretic. The morpheme for genitive singular is similar to the nominative plural morpheme except it differs in stress, like the feminine noun *reka*. Table 66 shows the declension patterns for the inanimate neuter nouns *mesto* 'place' and *more* 'sea', and the animate neuter noun *sušestvo* 'creature'.

(66)   Neuter structural case syncretism

	Singular			Plural		
NOM	mést-o	mor-e	sušestv-o	mest-á	mor-já	sušestv-á
ACC						sušectv-Ø
GEN	mést-a	mór-ja	sušestv-á	mest-Ø	mor-ej	

Unlike feminine nouns, there's no possibility for a nominative plural adjective with an inanimate noun. This is due to significant difference between the genitive singular unstressed –a, and the nominative plural stressed –á (67-68).

(67)   tri   bolš-ix   /*bolš-ie   mést-a   /*mest-á
        three big-GEN.PC(pl)/*NOM.PC(PL) place-GEN.PC(SG)/*NOM.PL
        'three big places'
(68)   otkryt-ye   mest-á   /*mést-a
        open-NOM.PL place-NOM.PL/*GEN.SG
        'open places'

Unlike the feminine nouns, nominative plural adjectives are not permitted with neuter nouns, even though most of them show a similar syncretism pattern. The difference for these morphemes is their [-feminine] feature, which they share with masculine nouns. As mentioned in Section 5.1 this is predicted as gender features are deleted in [-singular] contexts.
        Even though the animate neuter noun *sušestvo* 'creature' has the same stressed –á morpheme for both genitive [-augmented] and the nominative plural, it does not allow a nominative plural adjective (69).

(69)   tri   strann-yx   /*-ye   sušestv-á
        three strange-GEN.PC(pl)/*NOM.PC(pl) creature-GEN.PC(sg)
        'three strange creatures'

This further demonstrates that the nominative plural case pattern is exclusive for nouns that carry [+feminine]. Otherwise, we might expect that speakers would allow a nominative plural adjective, given this syncretism pattern from *sušestvo*.

5.3 Masculine nouns

For inanimate masculine nouns, nominative and accusative cases are syncretic, but these nouns don't show the same syncretism pattern as feminine nouns, as they are not transparadigmatic. However, there are the five masculine nouns that exhibit a stress shift in LNCs from 2.3. Table 70 shows the general syncretism pattern for a regularly declining masculine noun *stol* 'table', and for one of the stress shift nouns *šag* 'step'.

(70) Masculine inanimate noun structural case syncretism

Inanimate	Singular		Plural	
NOM	stol	šag	stol-y	šag-i
ACC				
GEN	stol-a	šág-a	stol-ov	šag-ov

Since these nouns do not show a syncretism between the genitive and accusative, it's unsurprising that they fail to exhibit accusative case overwrite in LNCs, as will be discussed in the next section. As a result, regularly declining inanimate masculine nouns behave as expected, bearing syncretic genitive singular/paucal case morphology, through the impoverishment of [singular] within LNCs.

However, the stress shift difference of, what now will be referred to as the genitive paucal, *šagá* has yet to be addressed. As discussed in 2.3, *šag, šar, čas, rjad,* and *sled* all display a stress shift from the stem to the suffix only in LNCs (18-19; repeated here as 71-72).

(71) **In genitive case assigning environments**
  s   perv-ogo   šág-a
  since_GEN first-GEN.SG step-GEN.SG
  'since the first step'

(72) **In LNCs (stress shift)**
  dva šag-á
  two step-GEN.PC
  'two steps'

For these five nouns, there is no Impoverishment of [singular], as there is clearly a distinct morpheme for the genitive paucal, which is separate from that of both genitive singular unstressed –a and plural –ov. As was previously shown in 5.1, stressed and unstressed morphemes are the result of different features. It would seem that these 5 monosyllabic masculine words are lexically exempt from the Impoverishment of singular. For these exceptions, there are the following two insertion rules (73).

(73) **Insertion rules genitive singular and paucal**
  a. –a → [-fem, +masc, +obl, -obj, +sing, -aug]
  b. –á → [-fem, +masc, +obl, -obj, -sing, -aug]

5.4 Lexical case and animacy

Lexical cases assign case uniformly through the DP complement, given the nature of case percolation. All nodes realize these lexical case features with plural morphology. In lexical environments, [augmented] is deleted by Impoverishment in the environment of a semantic feature set.

(74)   Impoverishment:
        Delete [augmented] when on the same complex node as [±f,±g].

In the context of dative case assignment ([+obl,+obj][+f,-g]) by the preposition *k* 'to', *k* merges ahead of the DP after nominative case has already failed to be assigned by D. The lower adjective carries the case features [+obl,-obj,-sing,-aug], and noun carries [+obl,-obj,-sing,-aug]. The dative case features [+obl,+obj,+f,-g] are percolated through the DP, which are realized as plural on each node, after the impoverishment of [augmented] (75).

(75)   k [DAT posledn-im tr-em   bol'š-im   kot-am]
        to   last-DAT.PL three-DAT big-DAT.PL cat-DAT.PL
        'to the last three big cats'

This pattern can be extended to the animate accusative pattern, as animate nouns show universal syncretism between the genitive case and accusative case in the plural. Given the impoverishment of [augmented] in this context, the plural morphemes are the most relevant in regard to the animate accusative case pattern in LNCs. The animate accusative case pattern occurs in LNCs regardless of the gender of the noun. Animate accusative plural morphemes are universally syncretic with genitive plural morphemes (Wade 2011: 69). I will treat this animate accusative pattern simply as genitive case differential object marking (Bossong 1991). In animate accusative contexts, the features [+obj,+ani] results in the insertion of lexical genitive case morpheme insertion, as was discussed in 4.2.

6   Remaining Issues

While this analysis does cover the various issues with lower numeral constructions, there is a much wider scope to this problem. My analysis hinges on the possibility of Russian being a language with a number system that has paucal, but not dual. Additionally, paucal number only appears after specified lexical items referring to small groups, it's not seen without a specified lexical item. I will address this by analyzing the distribution of dual number in Old Slavonic. The idea that numerals fail to value structural case features might seem peculiar, as they do end up realizing what looks like nominative case morphology anyway. As it happens, there's another class of adjectives, called prequantifiers (Babby 1987), which appear to the left of the numeral and show genitive case morphology. These adjectives seem to demonstrate the numerals inability to receive structural case features.

6.1   Where's the dual?

Historically, Old Slavonic had dual number, but not paucal. The separation between lower and higher numerals was similar to what it is in Modern Russian, and many other modern Slavic languages. 2 represented dual number, 3 and 4 were lower numerals, exhibiting similar patterns to modern-day, and numerals 5+ were separate. The lower

numerals, including 2, in Old Slavonic behaved more like adjectives, as they were in concord in number, case, gender, and animacy. 5+, on the other hand, were feminine nouns ending in a yer vowel. Given the lower numerals' sensitivity to animacy, it's evident that this semi-adjectival nature is still present within the native speakers' identity of these numerals. This is especially true with the two words in the language which semantically represent a quantity of two, *dve/dva* 'two' and *obe/oba* 'both', which have two distinct genders for [±feminine]. This might suggest that there is still some innate nature of duality present in Modern Russian. Moreover, some frozen dual forms are still present in the Russian language (Nesset 2015: 94, Table 17) (76).

(76) Old dual and Modern plural forms

	Old dual form	Old plural form	Modern plural form
rog 'antler'	*rog-a*	*roz-i*	*rog-a*
glaz 'eye'	*glaz-a*	*glaz-i*	*glaz-a*
bereg 'river bank'	*bereg-a*	*berez-i*	*bereg-a*
rukav 'sleeve'	*rukav-a*	*rukav-i*	*rukav-a*

In Old Slavonic, gender was only distinguished in nominative and accusative cases. Three and four co-occurred with the genitive singular, and nouns after 5-9 realized genitive plural. Old Slavonic *d'va/d'vɪ* co-occurred with the dual form. Over the course of time, these dual forms were reanalyzed as genitive singular forms, as genitive singular forms also had the morpheme –a (Nesset 2015: 130). This reanalysis of case forms from Old Slavonic might suggest that either the dual was expanded to include numerals not semantically related to dual, or rather that the nature of dual became something closer to paucal with the inclusion of 3, 4 and all words denoting small groups.

The gender agreement pattern makes 2 different than 3 and 4 in Modern Russian. Other than gender agreement, 2 bears no other difference to 3 and 4. All the lower numerals seem to co-occur with paucal number uniformly, and trigger [-singular] agreement on the verb. They are also sensitive to [+animate], while the higher numerals do not seem to show this sensitivity. It would seem that the dual from Old Slavonic has merged into paucal over the course of time (Franks 1995; Nesset 2015). This is a possibility as some Slavic languages, like Slovene and Sorbian, still have a dual number (Comrie & Corbett 1993). Most other Slavic languages have a similar divide between the lower and higher numerals, which could be used to show a consistent historical change. While it is uncommon to find a language with paucal and not dual, it is not unheard of, as Bayso is one such language that has this number system (Harbour 2014).

5.2 Prequantifiers and higher numerals

There is another strange pattern that occurs with numerals in Russian, namely, there are a class of adjectives that appear before the numeral with genitive case morphology (Babby 1987) (77).

(77) **cel-yx**   četyre čas-á   v   lesu
        whole-**GEN.PC(PL)** four   hour-GEN.PC in forest-LOC
        'a whole four hours in the forest'

These adjectives are taken to only modify the numeral, and not the rest of the phrase. This possible pattern isn't predicted given the restrictions on case percolation in 4.2, however, they can give further insight to the percolation of case features in Russian

numeral constructions. Given the semantic nature of these adjectives, we should treat them as adjuncts of the Num head. Based on this analysis, if Num fails to value structural nominative case features of [-obl,-obj], these case features would also fail to percolate within the entire NumP, and not just the complement. As D$_{NOM}$ attempts to percolate through the complement, Num fails to value nominative case features. When the prequantifier goes into concord with the numeral, it finds the numeral with unvalued case features. During default case assignment, the prequantifier must realize a case, so like the lower numerals which also realize genitive case in concord with N, the prequantifier defaults to genitive case (78).

(78)
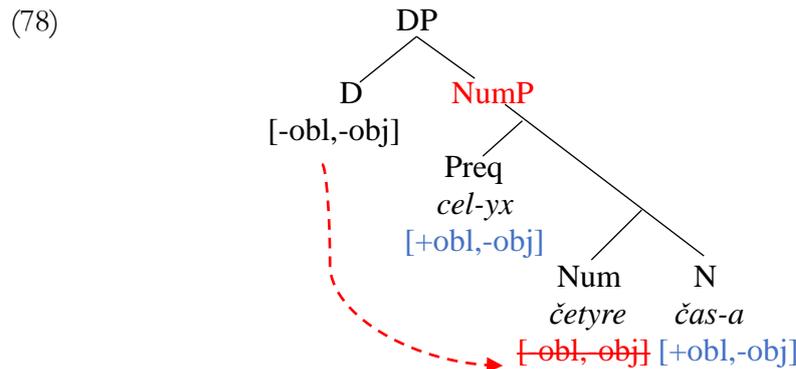
If we were to expect that the numeral is capable of valuing structural case features, especially nominative case features [-obl,-obj], then we would expect the prequantifier to also realize these features in concord with the numeral. While a nominative prequantifier pattern also seems to be accepted among certain speakers of Russian, it is historically marked as ungrammatical in the literature (Babby 1987: 93, ex 8b).

6   Conclusion

The concept of numerals not bearing structural case features can be generally applied cross-linguistically, especially to other Slavic languages like Serbo-Croatian and Polish. Serbo-Croatian exhibits similar patterns in numeral constructions, however, unlike Russian, it does not allow lexical case overwrite (Franks 1994: 605-606). This could potentially be viewed in two ways: the first being that numerals in Serbo-Croatian are unable to realize *any* case features, structural or lexical, which would result in the preservation of the default genitive case. This would be under the assumption that Serbo-Croatian parts-of-speech assign the same cases as in Russian. Given that Serbo-Croatian is an NP language and lacks a DP layer, it's likely that this isn't the exact same pattern as in Russian (Bošković 2009). The second interpretation might be that numerals in languages like Serbo-Croatian are phase boundaries, which prevent the further assignment of case features. Should this be the case, it's clear that this is not the pattern found in Russian given the possibility of lexical case overwrite. However, these various patterns in Slavic languages could give further insight as to the nature of default case assignment.

Russian isn't the only language which has different case morphology on nodes after numerals. While this is obviously a pattern common to Slavic languages, Finnish, Estonian, Inari Saami, as well as others, also realize a different case after certain numbers (Nelson & Tiovonen 2000 – Inari Saami; Norris 2014 – Estonian). The existence of such a pattern within various language families poses many questions as to the true nature of numerals.

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