Russian Case Morphology and the Syntactic Categories*

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"Единственное число при таких словах, как *два*, *три* и *четыре*, где ясно указана множественность, представляется на первый взгляд очень странным и является характерным примером того, насколько грамматическое мышление может расходиться с логическим."

(Peshkovsky 1956, 438)[1]

1 Introduction to the puzzles

It is the oddest facts that sometimes provide the most useful clues to significant properties of language. In this paper, I argue that the peculiarities of Russian nominal phrases provide clues of just this sort concerning the syntactic side of morphological case. In fact, the richest evidence will come from the most peculiar of these phrases: those that involve a member of the closed class traditionally called the *paucal numerals*. This class includes the low numerals *dva* 'two', *oba* 'both', *tri* 'three' and *četyre* 'four', as well as several expressions of fractional quantity that I will not discuss at any length (*pol* 'half'; *poltora* 'one and a half'; and certain uses of *četvert'* 'quarter', Mel'čuk 1985, 322ff.). I will call these elements "paucals" rather than "paucal numerals", for reasons that will become clear in section 4.

The peculiar behavior of nominal phrases with paucals can be easily observed by constructing minimal pairs like (1a-b), which differ only in the presence vs. absence of a paucal. Both examples exhibit the forms found in nominative environments, such as subject of a finite clause:

(1)a. **no paucal (or non-paucal numeral)** **(nominative environment)**
no mismatches
èt-i posledn-ie krasiv-ye stol-y
these-**NOM.PL** last-**NOM.PL** beautiful-**NOM.PL** table-**NOM.PL**
'these last beautiful tables'

b. **with paucal** **(nominative environment)**
case mismatch*, *number mismatch
èt-i posledn-ie dva krasiv-yx stol-a
these-**NOM.PL** last-**NOM.PL** two-**M.NOM** beautiful-**GEN.PL** table-**GEN.SG**
'these last two beautiful tables'

In (1a), the demonstrative, adjectives, and noun agree in both number (plural) and case (nominative), just as one expects from a well-behaved Indo-European language. When a paucal such as *dva* 'two' is added, however, as in (1b), two types of mismatch appear:

- **Number mismatch:** The noun is *singular*; but the modifiers and demonstrative are *plural*.
- **Case mismatch:** The noun and adjective that follow the paucal show *genitive* case; but the paucal, along with the determiner and adjective that precede it, are *nominative*.[2]

Complicating the picture further, if the paucal in (1b) is replaced with a non-paucal numeral such as *pjat'* 'five'[3] the case mismatch remains, but the number mismatch disappears. The noun is now plural, as seen in (2):

(2) **with non-paucal numeral (nominative environment)**
case mismatch*, *but no number mismatch
èt-i posledn-ie pjat' krasiv-yx stol-ov
these-**NOM.PL** last-**NOM.PL** five-**NOM** beautiful-**GEN.PL** table-**GEN.PL**
'these last five beautiful tables'

Finally, in oblique-case environments (exemplified here by the dative), all mismatches disappear, regardless of the presence or absence of paucals and non-paucal numerals. Instead, we find what Babby (1987, 100) called the "homogeneous pattern", as opposed to the "heterogeneous" patterns of (1b) and (2): full agreement in case and number:[4]

(3)a. **no paucal (or non-paucal numeral) (oblique environment)**
no mismatches
èt-im posledn-im krasiv-ym stol-am
these-**DAT.PL** last-**DAT.PL** beautiful-**DAT.PL** table-**DAT.PL**
'these last beautiful tables'

b. **with paucal (oblique environment)**
no mismatches
èt-im posledn-im dvu-m krasiv-ym stol-am
these-**DAT.PL** last-**DAT.PL** two-**DAT.PL** beautiful-**DAT.PL** table-**DAT.PL**
'to these last two beautiful tables'

c. **with non-paucal numeral (oblique environment)**
no mismatches
èt-im posledn-im pjat-i krasiv-ym stol-am
these-**DAT.PL** last-**DAT.PL** five-**DAT** beautiful-**DAT.PL** table-**DAT.PL**
'to these last five beautiful tables'

On the face of it, the facts collected in (1)-(3) may look like mere eccentricities of the language. In keeping with the dictum with which this paper began, however, I will argue that they are not eccentricities at all, but predictable patterns whose explanation sheds light on the very nature of case morphology and the laws that govern its distribution.

2 Do we need the traditional case categories?

It is an obvious fact about Russian that most nouns, adjectives, numerals and demonstratives bear a case suffix, and that the choice of case suffix is determined by two factors: *morphological environment* (the lexical properties of the stem to which the suffix attaches) and *syntactic environment*. The traditional cross-classification of Russian case affixes by case category ("nominative", "genitive", etc.) vs. declension class and gender directly reflects the distinct roles of syntactic and morphological environment in determining the choice of case suffix.[5] At the same time, though the traditional case categories do reflect the syntactic side of morphological case, it is a striking fact that they are irrelevant elsewhere in syntax. They are *sui generis* categories relevant only to the theory of case itself. This observation is not merely terminological, but reflects a substantive claim: that case morphology, though governed by rules that refer to the syntax, constitutes an *independent level of linguistic analysis* — whose function is to mediate between the categories and configurations of syntax and the actual forms supplied by the morphology.

This should not strike us as a comfortable conclusion. All things being equal, one hopes that independent mediating levels of this sort will turn out to be eliminable from the theory of grammar. Otherwise, they raise but leave unanswered the question: why are they there? In a better world, the apparent need for special case terminology would turn out to reflect a mere inadequacy of understanding rather than an actual property of human languages. Unfortunately, however, we do not yet live in that better world. To the best of my knowledge, no characterization of languages like Russian has managed to dispense with some version of the traditional roster of cases — for good reasons.

Suppose, for example, one were to attempt a theory of the syntactic distribution of the Russian case suffixes in which all reference to a case category like "genitive" is eliminated in favor of direct reference to the actual suffixes (*-a*, *-y*, etc.). Such a proposal would leave unexplained the fact that the *syntactic* generalizations relevant to the choice of suffix are utterly insensitive to their phonological shape. A syntactic environment that calls for genitive case never cares that it might be realized in many ways, depending on the declension class, gender, number and syntactic category of the stem (as *-a*, *-y* *-ov, -ej, -ogo*, *-oj*, *-yx* or as a surface zero). There are syntactic environments that require or disallow genitive case, but no syntactic environment that requires or disallows, for example, the suffix *-a* or *-y*. Similar observations can be made for all the case categories of Russian. From this, we conclude that reference to notions like "genitive" cannot be eliminated in favor of reference to actual suffixes such as *-a* or *-y*.

Suppose instead that one were to attempt the other obvious reduction: eliminating the special case categories in favor of direct reference to categories and configurations independently motivated within syntax. This enterprise too might seem doomed from the outset — if only because, at least at first glance, the mapping between Russian case and sentence-level syntax looks complex and decidedly not one-to-one. If we were to restrict our attention to examples like (1a) and (2), for example, it could be imagined that the term "genitive" is eliminable in favor of the purely syntactic notion "post-paucal/post-numeral". In fact, however, as we saw in (3b-c), post-numeral position sometimes fails to trigger genitive morphology. Furthermore, sets of suffixes identical to those found in post-numeral position in (1b) and (2) also appear in other syntactic configurations (as possessors and complements of N, for example).[6]

It is probably for reasons like these that researchers have consistently posited the existence of case-specific notions such as "genitive" as an essential ingredient of the interface between syntax and morphology. It has generally seemed an inescapable conclusion that the rules of syntax assign words and phrases to case categories, and the rules of morphology determine how case categories are realized — with the case categories themselves functioning as a *middleman*, mediating between syntactic configuration and morphological realization.[7]

It seems to me, however, that though the arguments against replacing the list of case categories with lists of actual suffixes are straightforward, the arguments against a *reduction to syntax* are considerably less compelling — if only because our understanding of the syntactic side of case remains so strikingly incomplete. Because the distribution of case forms across syntactic configurations still presents numerous complex and unsolved puzzles, it is at least conceivable that the solution to one or more open questions about the syntax of case might allow us to "eliminate the middleman" after all, by reducing the case categories to independently attested properties of the syntax.

The goal of this paper is to suggest a possible advance of just this sort. Our starting point will be an account for the pattern of case and number mismatches shown in (1)-(3). I will argue on the basis

of an analysis of the special properties of constructions with paucals and non-paucal numerals that the Russian cases are not independent categories, but are actually affixal realizations of the various *parts of speech*, as shown in (4):

(4) **Reduction of the Russian cases to part-of-speech categories**

Genitive	=	N	Accusative	=	V
Nominative	=	D	Obliques	=	P

If this proposal is correct, a genitive-marked word is simply a stem to which a morpheme of category N has been attached; a nominative-marked word is a stem with an affix of category D; an accusative-marked word bears an affix of category V; and a dative, instrumental, prepositional or locative-marked word bears an affix of category P. Only the distinctions among these last cases in Russian will fail to correspond to a traditional part-of-speech distinction.[8] My hope is that the differences among dative, instrumental, prepositional and locative cases will turn out to reflect the properties that independently distinguish subcategories of overt prepositions, but I will not make an explicit proposal to this effect — so this aspect of the proposal will remain incomplete. Throughout the paper, when discussing the various cases in the context of the proposal summarized in (4), I will often use the abbreviations **NGEN, DNOM, VACC, POBL** (or **PDAT, etc.**) to remind us of the traditional names for the cases whose actual nature is simply N, D, V, and P (or P with additional features).[9]

At the heart of the analysis will be an account of how NGEN, DNOM, VACC, and PDAT end up as case suffixes on nouns, adjectives, determiners, paucals and non-paucal numerals. I will argue that there are two paths by which part-of-speech suffixes end up on words.

One path by which a part-of-speech suffix may end up on a word is by *assignment in the course of the syntactic derivation*, a process in which part-of-speech features of an *assigner* (along with certain other grammatical features) are copied onto one or more *recipients*. The notion that case has an assigner and an assignee recalls many older proposals that also posited rules of case assignment under particular structural conditions (Vergnaud 2006 [orig. 1976]; Rouveret & Vergnaud 1980; Chomsky 1980, 1981), even though our specific proposals about the nature of these features are new:[10]

(5) **Feature Assignment (FA), version 1 of 5**

a. ***Copying:*** When α merges with β, forming $[_{\alpha}\ \alpha\ \beta]$, the grammatical features of α are immediately copied onto β, ...
b. ***Realization:*** **...**and are realized as morphology on all lexical items dominated by β.

Two independent properties of syntax will interact with FA (rule (5)) in particularly illuminating ways. One is *movement*, which, by altering the structural relation between α and β, may block feature copying (case assignment) from α to β. The other is the rule of *Spell-out* that has been argued to apply whenever a particular type of syntactic domain called a *phase is* created (Chomsky 2001, 2004). Spell-out establishes and fixes the pronunciation of the terminal elements of a phase, and sends this information from the syntax to the phonology, where it may not be altered by any subsequent operation of the syntax, including FA. The value of these two processes (movement and Spell-out) for our discussion will lie in their ability to freeze for our inspection earlier stages of the derivation that might otherwise reflect the morphological consequences of feature copying. This will allow us to test predictions concerning that derivation, and will play a crucial role in the account of (1)-(3).

The second path by which a part-of-speech suffix may end up on a word is *lexical*. If (4) is correct, every element that comes from the lexicon as a noun, determiner, verb or preposition could

equally well be described as coming from the lexicon assigned to the corresponding case-categories. In other words, from the point of view of the syntax, every noun can be described as "born genitive", every verb as "born accusative", every determiner as "born nominative", and every preposition as "born oblique".

For uninflected, monomorphemic words, such statements have little or no empirical import. Not much will follow, for example, from the statement that a dative-assigning preposition like Russian *k* 'to' assigns PDAT to its complement because the preposition itself belongs to the category PDAT. The consequences of FA are much more interesting, however, for inflected categories such as nouns. If Marantz (1997) and others are correct in suggesting that the core of every noun is a category-neutral root to which a categorizing morpheme is added (as head of the newly formed word), a noun to which no other case has been assigned will always take the form **[[root] NGEN]**, i.e. it will bear what traditional descriptions call genitive case.[11] This means that the presence of NGEN morphology on a noun does not necessarily reflect the result of the rule FA in (5), but might represent the noun's "primeval state" — i.e. the form in which it entered the syntactic derivation, as in (6):[12]

(6) **"Primeval genitive" conjecture**
NGEN categorizes a Russian root as a noun (in the lexicon).

We also expect, however, to find other instances of NGEN morphology that *are* assigned. For example, if FA is a correct proposal, because a noun *is* a word of category NGEN, it will also assign NGEN to anything that merges with it. And indeed, most Russian nouns do assign genitive to adnominals, a fact that will provide converging evidence in section 4.2 for the idea that nouns are "born genitive".[13]

If nouns are "born genitive", of course, immediate questions arise concerning the morphology of all those nouns that do not *look* genitive — for example, nouns whose sole visible case suffix realizes DNOM or VACC, or one of the POBL cases. This is the principal topic of the next section, in which we begin to develop the account of (1)-(3).

3 Russian as a Case-Stacking language

The "primeval genitive" conjecture in (6) is a clear non-starter, unless we can explain why NGEN morphology is not visible whenever the noun bears any other kind of case morphology. A nominative-marked noun, on the proposal just sketched, should be the result of merging D to an NP whose head bears primeval NGEN — followed by copying of DNOM morphology onto the terminals of that NP, in accordance with (5). In fact, however, the surface form of nominative nouns in Russian shows no evidence of an NGEN suffix inside the DNOM. Thus, either (4), (5) and (6) are false, or else DNOM morphology must somehow *suppress* the pronunciation of the NGEN morphology with which the noun entered the syntax. Fortunately for (6), this is not a property particular to DNOM and NGEN. It is a pervasive and exceptionless fact about Russian: no noun, adjective or determiner bears more than one visible case suffix. The grammar of Russian must therefore include some rule with the effect of (7), independent of the truth of (6):

(7) **The One-Suffix Rule** **(later replaced by (97))**
Delete all but the outermost case suffix.

Let us see how the One-Suffix Rule works in tandem with (4), (5) and (6).[14] Since the shape of case morphology is sensitive to morphological environment, we must first be careful to distinguish the affixation of NGEN, a syntactic feature-bundle, from the *realization* of these features as actual suffixes.

The examples in (8) show the varying shape of NGEN morphology for regular nouns of declension class 1 and 2.

(8) **Realization of NGEN on singular and plural nouns**

	stem		**NGEN sg.**		**stem**		**NGEN pl.**		
a.	stol	-	a	b.	stol	-	ov	'table'	(class 1)
c.	lamp	-	y	d.	lamp	-	ъ	'lamp'	(class 2)

I use the Cyrillic character ъ in (8d) and elsewhere to indicate a suffix that is phonologically zero on the surface. In some analyses of Russian phonology, this suffix is an underlying vowel called a 'yer' (historically a lax high vowel), realized as zero in (8d), but capable of surfacing as a full vowel elsewhere (Lightner 1972). The precise phonology of the suffix is not important to this paper[15], however, but its reality as a morpheme is. For one thing, if the discussion in the previous section is correct, then without the affixation of NGEN, the root *lamp-* 'lamp' would not be categorized as N and usable as a noun in the syntax. Furthermore, as we shall shortly see, superficially zero case morphemes are visible to the One-Suffix Rule.[16]

Suppose, as I have claimed, that nominative morphology on the terminal elements of an NP arises as a consequence of FA. When NP merges with DNOM (forming a DP), the part-of-speech features of DNOM are copied onto the NP and realized on the lexical items that NP dominates. Were it not for the One-Suffix Rule in (7), the expected result might have been visible "case stacking" on the noun, i.e. pronunciation of both an NGEN suffix and a DNOM suffix. The One-Suffix Rule, however, guarantees that such case stacking will not be observable in surface forms. The examples in (9) show the posited underlying stacking of DNOM outside NGEN, as well as the consequence of the One-Suffix Rule for the surface appearance of the nominative forms of the lexical items in (8) (indicated by parentheses surrounding suppressed suffixes):

(9) **Suppression of NGEN by DNOM (indicated by parentheses)**

	stem	**NGEN sg.**	**DNOM sg.**		**stem**	**NGEN pl.**	**DNOM pl.**	
a.	stol	(-a)	-ъ	b.	stol	(-ov)	-y	'table'
	by (7): ***stol***				by (7): ***stoly***			
c.	lamp	(-y)	-a	d.	lamp	(-ъ)	-y	'lamp'
	by (7): ***lampa***				by (7): ***lampy***			

Note that the phonologically null suffix -ъ in (9a) suppresses the (otherwise non-null) genitive -*a*, an argument in favor of the existence of the -ъ suffix, if the overall proposal is correct.

If an oblique-assigning P (which itself might be null)[17] is now merged with the DP, the POBL morphology assigned by P to the lexical items of DP should suppress the pronunciation of DNOM suffixes, just as DNOM suppressed NGEN. (Throughout this paper, I exemplify POBL with dative.) The facts once more accord with the One-Suffix Rule:

(10) **Suppression of DNOM morphology by POBL (PDAT)**

	stem	NGENsg.	DNOM sg.	PDAT sg.		stem	NGEN pl.	DNOM pl.	PDAT sg.
a.	**stol**	(-a)	(-ъ)	**-u**	b.	**stol**	(-ov)	(-y)	**-am**
	by (7): ***stolu***					by (7): ***stolam***			
c.	**lamp**	(-y)	(-a)	**-e**	d.	**lamp**	(-ъ)	(-y)	**-am**
	by (7): ***lampe***					by (7): ***lampam***			

A proposal with the goals outlined in the first sections of this paper is thus driven to the conclusion that Russian is a case stacking language "behind the scenes". This conclusion has in fact been argued for, on independent grounds, by Richards (2007), in the context of an investigation of differences between structural and inherent case that revealed certain deep similarities between overt case-stacking in Lardil and comparable phenomena in Russian. My proposal, though distinct from Richards', was directly inspired by his work.[18]

Of course, I have not yet presented empirical arguments for any aspect of the proposal: neither for the view that nouns are born genitive; nor for the view that nominative case is assigned by D on top of genitive; nor for the claim that dative morphology is added by P outside previous nominative and genitive case-marking. The remainder of the paper will present two such arguments in depth, and will situate them within a broader view of Russian case. These arguments center around the facts introduced in the introduction and related phenomena. If correct, they provide essential support for the proposals advanced here — and in turn suggest that the loftier goal discussed in section 2, the elimination of independent status for the case-categories, might be achievable after all.

4 Argument 1 for the core proposal: NGEN, DNOM and POBL

The first argument concerns the case and number mismatches observed in section 1. I begin first with a discussion of paucal constructions, and then take up the differences between paucals and the non-paucal numerals.

4.1 *Number mismatch with paucals*

As seen first in (1b), when a expression containing a nominative paucal such as *dva* 'two', *tri* 'three' or *četyre* 'four', combines with a noun, the noun shows morphology usually described as genitive singular. Example (11) shows the same phenomenon in simpler examples that contain only the paucal and a noun:[19]

(11) **Paucal + N.GEN.SG (nominative environment)**

a.	b.	c.
dva stol-a	tri dnj-a	četyre stakan-a
two table-GEN.SG	three day-GEN.SG	four glass-GEN.SG
'two tables'	'three days'	'four glasses'

The use of the singular here is the feature characterized by Peshkovsky (in the epigraph to this paper) as a "typical example of the extent to which grammatical and logical thinking may diverge". In this section, I attempt to prove Peshkovsky wrong, by suggesting that a hidden logic does underlie these facts after all.

The attractiveness of this challenge is enhanced by the number mismatch that appears when an attributive adjective is added to the right of the paucal. As we saw, the adjective takes genitive *plural*

morphology, in apparent disagreement with the noun's morphology, but in full agreement with the "logical thinking" about number seemingly absent from the noun:

(12) **A + N apparent number mismatch:**
Paucal + A.GEN.PL + N.GEN.SG (nominative environment)

a. dva nov-yx stol-a.
two-NOM new-GEN.**PL** table-GEN.**SG** 'two new tables'

b. tri solnečn-yx dnj-a.
three-NOM sunny-GEN.**PL** day-GEN.**SG** 'three sunny days'

c. četyre čist-yx stakan-a.
four-NOM clean-GEN.**PL** glass-GEN.**SG** 'four clean glasses'

Elsewhere in Russian, when an attributive adjective merges with a projection of N, its morphological number is determined by the number of the nominal expression that it modifies, as demonstrated in (13). If N is singular, the adjective is singular; and if N is plural, the adjective is plural.[20]

(13) **A + N number agreement**

a. nov-yj stol-ъ
new-NOM.SG table-NOM.SG
'new table'

b. nov-ye stol-y
new-NOM.PL table-NOM.PL
'new tables'

Can we show that the adjectives in (12) conform to the general pattern of (13), despite appearances, and display plural morphology for the same reason as their counterparts in (13): the plurality of the expression with which they have merged? This is not possible if one assumes the most obvious structure for the phrases of (12) stated as *hypothesis A* below, in which the adjective merges first with the noun, followed by the paucal, since in this structure the plural adjective has clearly not merged with a plural. Suppose instead, however, that the initial structure of the phrases in (12) is actually *hypothesis B*, where it is the paucal that merges first with the noun, followed by the adjective:

(14) **Imaginable underlying structures for (12)**
hypothesis A: [paucal [A N]]
hypothesis B: [A [paucal N]]

In the structure associated with hypothesis B, though the bare noun is not plural, the *combination of noun and paucal* might count as plural for the purposes of adjectival agreement — in which case, adjectival number with paucals might conform to the general pattern after all. Let us therefore consider how hypothesis B might contribute to an overall solution to the various puzzles posed by paucal phrases.

Consider first the apparent number mismatch in examples like (12a-c). Even if hypothesis B can explain why the adjective is plural despite the absence of plural morphology on the noun, why does the noun lack plural morphology in the first place? The constituent structure of hypothesis B suggests a solution to the problem.

I propose that the noun in paucal constructions like (12a-c) is not singular at all, but *numberless* — entirely lacking the number feature (NBR) — and that the paucals are not numerals at all, but free-standing instances of NBR. A paucal, on this view, supplies a number specification for NP that would

otherwise have entered the derivation as a property of the head noun.[21] If this proposal is correct, paucals like *dva*, *tri*, and *četyre* that are traditionally glossed as 'two', 'three' and 'four' are actually markers of *dual*, *trial* and *quadral number*, respectively. (That is why I chose not to call these elements paucal *numerals*.) There is no number mismatch at all, just an alternation between periphrastic and synthetic ways of expressing nominal number.[22] On this view, the basic constituent structure of paucal constructions under hypothesis B is exactly the same as the constituent structure of a comparable example without a paucal, e.g. (13b). The sole difference lies in whether NBR is realized as part of the noun's morphology (added in the lexicon) or as a free morpheme (merged in the syntax).[23]

To be explicit, I propose that the grammar of Russian number has the syntactic and morphological properties listed in (15):

(15) **The NBR feature and its realization in Russian**

a. **Feature geometry**
The major featural distinction relevant to NBR is [±SINGULAR]. A Russian noun that is [-SINGULAR] may be additionally specified as DUAL, TRIAL or QUADRAL, as warranted by the semantics of the expression in which it occurs.[24]

b. **Low attachment**
Only an N that has already combined with NBR may merge with other elements in the syntax. N may combine with NBR in one of two ways:

1. *Synthetically:* N enters the syntax already bearing NBR (because the nominalizer NGEN that formed the noun in the lexicon bears NBR); or

2. *Periphrastically:* N enters the syntax not bearing NBR (because the nominalizer NGEN that formed the noun does not bear NBR), and immediately merges with an instance of NBR.

In Russian, the only lexical items that bear DUAL, TRIAL and QUADRAL number are the paucals, which are free morphemes. These morphemes select for N.

c. **Morphological realization**
Russian case morphology makes a two-way number distinction, traditionally identified as "singular" vs. "plural". If the proposals advanced here are correct, however, only the forms traditionally identified as "plural" unambiguously realize a particular number specification, namely [-SINGULAR]. The forms traditionally identified as "singular" are actually *default* number forms, compatible with everything *except* [-SINGULAR] — crucially including both [+SINGULAR] and absence of NBR. That is:

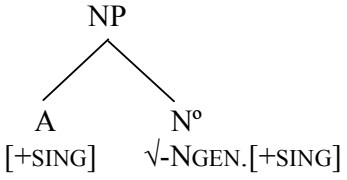
traditional designation	***if this paper is correct***
plural morphology	[-SINGULAR]
singular morphology	"elsewhere" number (singular or absence of NBR)

The apparent number mismatch seen with paucals now disappears. An adjective that merges with N or with a projection of N simply agrees with the closest number-bearing element. Since the paucal features DUAL, TRIAL and QUADRAL are subfeatures of [-SINGULAR] (and since these feature specifications are found only on paucals, which are exclusively adnominal), an adjective modifying a paucal phrase shows [-SINGULAR] number morphology, the morphology traditionally called "plural" —

as illustrated in (16c) below, where the dual paucal exemplifies the periphrastic pattern also found with the trial and quadral paucals:

(16) **NBR features and NBR morphology**

a. *synthetic singular NBR*

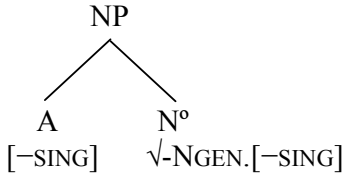


cf. (13a)

NBR morphology on A: default
(traditional name: *singular*)

NBR morphology on N: default
(traditional name: *singular*)

b. *synthetic plural NBR*

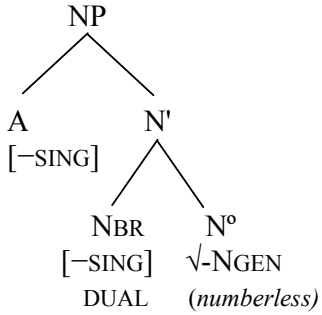


cf. (13b)

NBR morphology on A: [−SING]
(traditional name: *plural*)

NBR morphology on N: [−SING]
(traditional name: *plural*)

c. *periphrastic dual NBR*



cf. (12a)

NBR morphology on A: [−SING]
(traditional name: *plural*)

NBR morphology on N: default
(traditional name: *singular*)

4.2 Word order and the case mismatch with paucals

The proposal adopted above raises an obvious question concerning word order. The explanation offered for the apparent number mismatch between genitive A and N in paucal constructions leads us to expect the order *A paucal N*, but the actual normal order is *paucal A N*, as in (12a-c).[25]

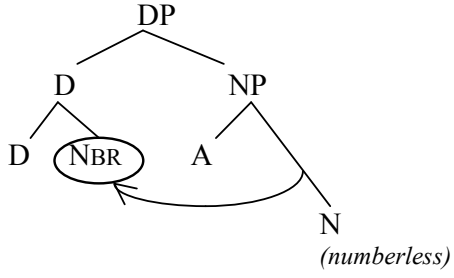
(17) **Paucal numeral precedes adjective**[26]

a. dva nov-yx stol-a
two-NOM new-GEN.PL table-GEN.SGº

b. *novyx dva stol-a[27]

If our account of the apparent number mismatch is correct nonetheless, the contrast in (17) may be taken as evidence for obligatory leftward movement of NBR. I will argue that its landing site is D, as shown in (18):[28]

(18) **NBR-to-D movement**



Of course, the word order problem could also be taken as an argument against our account of the number mismatch, so it is important to seek independent evidence for the movement in (18). I will

argue that the distribution of *case* in paucal constructions provides just such evidence — and that the movement in (18) resolves the second puzzle discussed in the introduction to this paper: the *case mismatch*.

The viability of (18) as a component of the analysis of Russian paucal constructions presupposes, of course, that head movement exists more generally: a matter of some recent controversy. The well-known output structure for head-to-head movement proposed by Travis (1984) and supported by much subsequent work, (e.g. Baker 1988), in effect posits a *complement-creating* rule (though it is not usually described as such) — in that its input is a configuration of the form [X° YP] and its output is [[X° H] YP]. (If the Travis's "Head Movement Constraint" is correct, H is also the head of YP.) Let us call complement-forming movement *undermerge*. Though the characterization of head-to-head movement as undermerge is supported by the fact that X° and H behave as a constituent for later processes, it has caused some unease, because in this respect it looks unlike the instances of syntactic movement whose properties have been the most intensively studied (Matushansky 2006, 71) — which are not instances of undermerge. This concern has motivated numerous reanalyses of phenomena otherwise thought to involve undermerge-style head movement. One body of work has suggested, for example, that what looks like head movement might represent a chain of remnant phrasal movements instead (Mahajan 2000, Koopman & Szabolcsi 2000, among others). Another approach accepts the existence of head movement, but argues that the moving head forms a (non-phrasal) specifier, not a complement — and thus behaves just like the better accepted instances of movement (Matushansky 2006, and works cited there). According to this approach, what forms a constituent out of the moved head and its host is not the movement process itself, but a secondary, morphological process.[29]

Both of these alternative approaches are motivated (at least in part) by the belief that the apparent undermerge property of head movement is not found with phrasal movement. Acceptance of the derived structure posited by Travis (1984), it is thought, thus entails acceptance of a property unique to head movement, rendering the analysis suspicious. In fact, however, the literature does contain numerous strong arguments for complement-forming *phrasal* movement — so it is not a special demerit of the standard proposals for head movement that it too forms complements. McCloskey (1984), for example, offers an array of arguments for complement-forming movement to P in Irish. Likewise, Sportiche (2005) has argued that the D that appears on a DP argument of a verb is always generated as a head somewhere on the path between C and V, and joins with its NP by internal Merge (movement), rather than external Merge, as generally proposed. Sportiche's proposal has received additional support from the phenomenon of "determiner sharing" (McCawley 1993), as analyzed by Johnson (2000) and by Lin (2000) — as well as from arguments that the construction of negative DPs involves phrasal undermerge of an NP to a negative head (Kratzer 1995; Penka 2001). Finally, of course, phrasal movement forming a complement of V ("Raising to Object") was proposed by Rosenbaum (Rosenbaum (1967)) and defended by Postal (1974) and others.

It thus seems possible that undermerge is a phenomenon as real and ubiquitous as movement to specifier position — and thus, that complement-forming head movement of the sort posited in (18) should not be rejected out of hand as an instance of an otherwise unattested process. I will assume therefore, that just as a head may require a particular specifier (an instance of the requirement often called EPP), which may be contributed by External or by Internal Merge, so a particular head may require a given *complement* as a lexical requirement — which also may be supplied by either Internal or External Merge. For External Merge, such requirements have been familiar since Chomsky (1965) under the rubric of *subcategorization*. The present proposal, in effect, merely generalizes the notion of subcategorization so that such requirements may be satisfied by Internal Merge as well. What governs

the choice of complement formation vs. specifier formation to satisfy a given requirement, however, will remain an open question for Internal Merge (just as it is for external Merge).[30]

Let us now return to the case mismatch found with paucal nominals in nominative environments. Since the paucals *dva* 'two', *tri* 'three', and *četyre* 'four' do have distinct genitive forms (*dvux*, *trëx*, *četyrëx*; see section 8), we can be sure that the paucals in examples like (12) show nominative morphology, while N and A are genitive.

If nominative morphology is DNOM, its presence on the paucals in (12) is no surprise. Given the rule FA as formulated in (5), undermerge of D with NBR is immediately followed by assignment of DNOM to NBR. This formulation of FA, however, makes a wrong prediction about the morphology of A and N, since the earlier merge of D and NP should also have triggered assignment of DNOM to NP. Suppose instead that *only an element whose complementation requirements have been met qualifies as a feature assigner* (where "complementation requirements" include those satisfied by head-movement as well as external merge) — so that the correct formulation of FA is (19):[31]

(19) **Feature Assignment (FA), version 2 of 5**

a. ***Copying:*** When α merges with β, forming [$_{\alpha}$ α β], *if α has satisfied its complementation requirements*, its grammatical features are immediately copied onto β...

b. ***Realization: ...***and are realized as morphology on all lexical items dominated by β.

Given (19), D in a configuration like (18) never assigns DNOM to NP. Since merger of D with NP did not satisfy D's complementation requirements, D could not assign DNOM at that point in the derivation. Ultimately, NBR-to-D movement does satisfy D's complementation requirements, but at the point it is too late for D to copy its morphology onto NP, since another Merge operation (internal Merge of NBR) has intervened. As a consequence, N and A never receive DNOM morphology.

What morphology should N and A bear instead? Let us consider N first. If the reduction of case categories to parts of speech in (4) is correct, every noun enters the syntax bearing "primeval" NGEN, as stated in (6). Consequently, if a noun in a paucal construction never receives DNOM (and if no other element copies its morphology onto the noun, the topic of the next section), we expect this noun to continue to show the overt NGEN morphology with which it entered the syntactic derivation.

Consider now the morphology of A in (18). FA entails that an element belonging to the category N does not only *bear* NGEN, it also *assigns* NGEN — to any element that merges with it, immediately after Merge takes place. Furthermore, since feature-assignment under (20) is not restricted to lexical heads, *any* element that merges with a projection of N should receive NGEN, not just elements that merge directly with the noun itself. Consequently, the adjective in (18) should receive NGEN from the N-headed constituent [*paucal* N] with which it merges, immediately upon merging with it. Once again, if D fails to assign DNOM to the NP that contains this adjective (because its complementation requirements are not yet met) the morphology we expect to see on the adjective is the NGEN morphology that it was assigned by the constituent [*paucal* N] — as is in fact the case.

Finally, consider the morphology that we expect to find on the paucal NBR. Since internal merge of NBR to D does satisfy D's complementation requirements, we expect that D will assign DNOM morphology to the paucal, yielding precisely the case mismatch that we have observed between the nominative paucal and the genitive elements left within NP.

On this account, the genitive case found in paucal constructions is thus a kind of derivational "fossil", preserving NGEN morphology that would otherwise have been overwritten after merger with D. In this respect, the present account differs from most standard descriptions and previous accounts, in which the paucal does not prevent overwriting of a "primeval" genitive, but assigns it in the first place (Pesetsky 1982; Franks 1995; Babby 1987; Bailyn 2003; among others).

The present proposal also accounts for the presence of DNOM morphology on pre-paucal demonstratives and adjectives, a facet of the case mismatch puzzle first observed in (1b), repeated in (20) below. Since feature-assignment is not restricted to lexical heads, once D has satisfied its complementation requirements by undermerging with the paucal, elements that merge with projections of D should also receive DNOM. This is exactly what we find:[32]

(20) **DNOM assigned by D' as well as D**
[$_{DP}$ **èt-i** [$_{D'}$ **posledn-ie** [$_{D'}$ D+dva [$_{NP}$ krasiv-yx [t_{paucal} stol-a]]]]]
these-NOM.PL last-NOM.PL two-**M.NOM** beautiful-**GEN.PL** table-**GEN.SG**^{o}
'these last two beautiful tables'

The proposal also predicts the contrast between paucal constructions and nominals that lack a paucal, such as (13a) or (13b). In such constructions, the complementation requirements of D *are* satisfied by merger with NP. Consequently, Merge of D with NP in such cases *is* immediately followed by the assignment of DNOM to NP. In conformity with the One-Suffix Rule, DNOM morphology overwrites NGEN both the primeval genitive morphology on N and the N-assigned genitive morphology on A, yielding a nominal all of whose dependents are morphologically nominative.

Note finally that the proposal presupposes a very particular logic behind the selectional requirement of D that triggers movement of the paucal in the constructions discussed so far. As examples like (1a) demonstrate, there is nothing wrong with a DP in which there is no independent NBR head. No element moves to D in such examples, and the result is the homogeneous pattern of DNOM morphology observed throughout the nominal phrase. On the other hand, whenever D is able to successfully probe for a free-standing paucal NBR, it does so — and acquires the selectional property that produces the non-homogeneous case pattern and motivates movement of NBR to D. This is not the logic of probe-goal relations and movement first posited by Chomsky (2000, 2001) and widely adopted in subsequent literature; but it is a logic that has been defended as a more adequate proposal in recent work by Preminger (2010) (under the slogan "You can fail, but you must try"). Preminger shows that in a Hebrew sentence in which the unvalued φ-features of T can probe and find a φ-bearing DP, this DP must raise to form Spec,TP, i.e. a preverbal subject. When probing is unsuccessful, however, the result is not a failed derivation. Instead the finite verb bears default agreement morphology, and no element raises to preverbal position. If the proposal advanced so far is correct, it provides another instance of the same logic.[33]

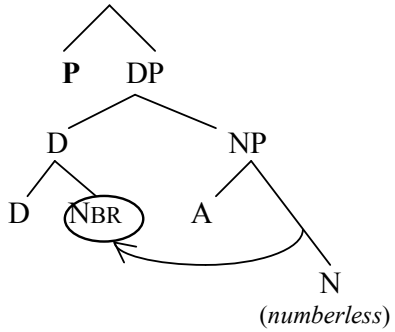
The advantage of the present proposal so far lies in the fact that it attributes several otherwise distinct properties of paucal constructions in nominative environments to the consequences of D requiring movement of free-standing NBR (when it is present) — so long as we make the crucial assumption that nominative case is DNOM and that genitive is NGEN. The same complementation requirement of D that blocks DNOM assignment to the NP-remnant (which thus retains its primeval genitive morphology) also predicts the assignment of DNOM to NBR itself and to any later elements merged with projections of D — and simultaneously resolves the word order problem raised by the underlying structure posited for paucal constructions (which in turn explained the number mismatch).

In the next section, I strengthen the argument by showing that the disappearance of case mismatch in oblique environments seen first in (3) is also predicted by the analysis.

4.3 *Paucal constructions in oblique environments and the role of Agree*

I have suggested that a DP of the sort seen in (12) shows a case mismatch because D has a second complementation requirement that motivates undermerge of the paucal to it — leaving its first complement, the NP, unable to receive DNOM morphology. What if this DP is itself now merged with a new morphology-assigning head that does *not* have an unsatisfied complementation requirement? Consider, for example, the configuration in (21), in which a preposition has been merged to the DP in (18):

(21) **Merging P to (18)**



Suppose that P has oblique case morphology of its own to assign (e.g. PDAT), and that P (unlike D) has no second complementation requirement that motivates head-movement to it. Such a P should uniformly assign its morphology to all the terminal elements of DP. Furthermore, given the One-Suffix Rule, the new morphology assigned by P should suppress the pronunciation of all previously assigned case morphology, including both DNOM on NBR and NGEN on the adjective and noun. As a consequence, the case mismatch should disappear, and the paucal, all adjectives, and the noun should uniformly show the morphology that P has assigned. This prediction is correct, as we saw in (3b), repeated below with additional examples:

(22) **DPs with a paucal numeral in a dative environment**[34]

a. (k) dv-um xoroš-im stol-am
to two-DAT.PL good-DAT.PL table-DAT.PL

b. (k) tr-ëm solnečn-ym dnj-am
to three-DAT.PL sunny-DAT.PL day-DAT.PL

c. (k) èt-im posledn-im četyr-ëm krasiv-ym stakan-am
to these-DAT.PL last-DAT.PL four-DAT.PL beautiful-DAT.PL glass-DAT.PL

This "homogeneous" case pattern found in oblique environments is a much-discussed problem of Russian syntax, which has almost always been taken to motivate special stipulations about oblique nominals (Pesetsky 1982; Freidin & Babby 1984; Babby1987; Franks 1995). In the present account, however, the homogeneous case pattern follows from the independently motivated One-Suffix Rule and the independent, banal fact that PPs are built by first constructing a DP and then merging a P.

The phrases in (22) are not merely homogeneous in case, however. They are also homogeneous in *number*, a fact not predicted by the proposal so far. The case suffixes of the terminal elements in (22) are all plural, in contrast to the "number mismatch" seen in (12), where only the adjectives were plural (more accurately, [-SINGULAR]). This is not a peculiarity of dative case. Other oblique case environments show exactly the same pattern:

(23) **DPs with a paucal numeral in instrumental and locative environments**

a. (s) tr-emi solnečn-ymi dnj-ami
with three-INSTR.PL sunny-INSTR.PL day-INSTR.**PL**

b. o dv-ux xoroš-ix stol-ax[35]
about two-PREP.PL good-PREP.PL table-PREP.**PL**

The most obvious puzzle in these phrases is the plural morphology on N. If N in constructions like (12) is numberless, as argued in the previous section, the [-SINGULAR] feature of the case morphology found on N in (22)-(23) must be a property of the case morpheme itself — not a reflection of the features of the N to which it attaches. If this case morphology is simply a copy of the grammatical features of P, it must be P itself that comes to bear plural features in the presence of a plural complement (and singular otherwise).

We thus conclude that prepositions (both null and overt) bear an unvalued, presumably uninterpretable number feature (*u*NBR[ ], in the notation of Pesetsky & Torrego 2006), which receives its value by acting as a probe and triggering Agree with the closest bearer of valued NBR. In (21), this will set the value of NBR on P to [-SINGULAR]. The process of realizing the features of P that have been affixed to N (as well as those affixed to A and NBR) will thus take into account not only the properties of P that distinguish among dative, prepositional and instrumental cases, but also the feature [-SINGULAR].

At this point, we should note (because this matter will be of importance later) that when a noun enters the syntax not numberless (as in the paucal constructions just discussed), but pre-valued as singular or plural, the shape of case morphology assigned to it by the rule FA reflects the *noun's own lexical value for NBR* — not the NBR value of the assigner. Thus, for example, when a conjunction of singular nouns produces a constituent that agreeing elements such as adjectives treat as a plural, the morphology on each conjunct will be singular, even though the morphology on elements that agree with the conjunction as a whole is plural:

(24) **DNOM morphology on a conjunction of singulars and plural agreeing elements**

a. *nominative*
mo-**i** dorog-**ie** [syn-**ъ** i dočk-**a**]
my-NOM.**PL** dear-NOM.**PL** son-NOM.**SG** and daughter-NOM.**SG**

b. *dative*
(k) mo-**im** dorog-**im** [syn-**u** i dočer-**i**]
to my-DAT.**PL** dear-DAT.**PL** son-DAT.**SG** and daughter-DAT.**SG**

The number value of the morphology assigner is decisive only in cases like the paucal construction, where the noun itself fails to bear a value for NBR:

(25) **How the NBR specification of case morphology is determined**
Morphology assigned by α to β under FA reflects:
(i) the NBR value of β if β is valued for NBR, and
(ii) the NBR value of α otherwise.

Let us now review the discussion so far. The number mismatch between adjective and noun in a nominative paucal construction motivated a structure that, left to its own devices, incorrectly predicts the order *adjective-paucal-noun*. The proposal that NBR moves to D solves this problem, yielding the correct order *numeral-adjective-noun*, and simultaneously entails a derivation in which the complementation requirements of D are not met until a point at which it is too late for D to assign DNOM to the terminal elements of NP (assuming FA as formulated in (20)). Only the paucal and those elements that merge with higher projections of D are predicted to receive DNOM from D — a correct prediction. The remainder of the NP continues to bear "primeval" NGEN morphology — once again, a correct prediction. Finally, the proposal also correctly predicts that a higher assigner such as P should overwrite both nominative and genitive in DP with oblique morphology. Finally, it should be possible in principle for the number value of the morphology assigned by an element such as P to be determined by Agree, and this appears to happen as well.

Though our proposal does explain the case and number mismatches introduced so far, at least one key claim that lies at the heart of our story has not been supported by independent evidence: the proposal that the paucal originates *low* in the nominal phrase (in fact, as a sister to N) and ends up *high* (merged with D) only as a consequence of movement. It is the initial low position of the paucal that explains the apparent number mismatch, and its later high position undermerged to D that helps explain the case mismatch. It would be reasonable at this point to ask for independent evidence of the proposed disparity between the underlying low position and the surface high position of paucals. The next section presents evidence of just this sort. I will argue that a quirk of adjectival gender agreement provides independent support for the low initial merge position of paucals within a nominal phrase.

5 An independent argument from gender agreement for the initial low position of paucals[36]

Russian distinguishes three grammatical genders: masculine, feminine and neuter. The gender of a noun or nominal phrase can be detected by agreement patterns of the sort found in many Indo-European languages. In Russian, gender agreement is found with predicative and attributive adjectives, with demonstratives and relative pronouns, as well as verbs inflected for past tense (historically descended from participles). For nouns denoting non-humans, gender is almost always predictable from declension class, with only a small number of exceptions (mostly systematic). Non-human nouns of declension class 1 such as *stol* 'table' trigger masculine agreement — except for those whose nominative singular ending is *-o*, which are neuter. Non-human nouns of declension class 2 such as *lampa* 'lamp' trigger feminine agreement, as do most inanimates of declension class 3 such as *tetrad'* 'notebook'.[37]

Nouns that denote humans behave somewhat differently. Though feminine agreement is the norm for nouns of class 2, as just discussed, when a noun of this category unambiguously denotes a male human, it is always treated as masculine. Examples include *djadja* 'uncle', *deduška* 'grandfather' and a large class of male hypocoristics such as *Vanja* (< *Ivan*), *Kolja* (< *Nikolai*), and *Volodja* (<*Vladimir*), all of which consistently trigger masculine agreement. Furthermore, nouns of class 2 that denote humans without specification of sex are obligatorily treated as masculine in gender when they refer to men (or to individuals whose sex is unimportant to the context), and as feminines when they

refer to women. Examples include *sirota* 'orphan', *plaksa* 'crybaby', *pjanica* 'drunkard', *sudja* 'judge', *brodjaga* 'vagabond', and many others (the class that Crockett 1976, 69 ff. calls *epicenes*). A class 2 noun that triggers masculine agreement behaves syntactically like any other masculine noun.

The phenomenon of interest to us, however, is a more complex agreement pattern found when a noun of *class 1*, a class that otherwise triggers masculine agreement, is used to refer to a female human. The most common examples of this sort are profession-denoting nouns such as *vrač* 'doctor', *professor* 'professor', *fotograf* 'photographer', *avtor* 'author', and many others. When a noun of this type is used to refer to a woman, it may trigger feminine, rather than masculine, agreement on adnominals such as adjectives and demonstratives. It may also trigger feminine subject agreement on past-tense verbs and predicative adjectives. Unlike the class 2 pattern discussed in the previous paragraph, however, this type of sex-determined gender agreement is *optional* — and subject to several significant constraints that will preoccupy us below. It is these constraints that will shortly provide us with an independent argument for the low initial position that we have posited for paucals.

Consider first a sentence in which a noun like *vrač* 'doctor' is used to refer to a woman, and appears with both an adnominal adjectival modifier and a past-tense main verb. In constructions of this sort, the adjective and verb may show either masculine or feminine agreement.[38] Crucially, however, not all combinations are possible. In particular, though the verb may be feminine while the adjective remains masculine, feminine adjectival agreement entails feminine agreement on the verb, as shown in (26):[39]

(26) **Feminine adjective→ feminine main verb with *vrač* 'doctor' with female referent**

a. Nov-yj vrač-ъ prišël-ъ. [✔masculine adjective, masculine verb]
new-***M***.NOM.SG doctor-NOM.SG arrived-***M***.SG

b. Nov-yj vrač-ъ prišl-a. [✔masculine adjective, feminine verb]
new-***M***.NOM.SG doctor-NOM.SG arrived-***F***.SG

c. *Nov-aja vrač-ъ prišël-ъ [*feminine adjective, masculine verb]
new-***F***.NOM.SG doctor-NOM.SG arrived-***M***.SG

d. Nov-aja vrač-ъ prišl-a. [✔feminine adjective, feminine verb]
new-***F***.NOM.SG doctor-NOM.SG arrived-***F***.SG

Furthermore, not all adnominal adjectives may bear feminine agreement when modifying a noun such as *vrač*. As Crockett (1976, 95 ff.) discusses (developing an observation by Skoblikova 1971, 183), feminine agreement is impossible with the kinds of adjectives that cross-linguistically appear at the lowest levels of the nominal phrase — those that have non-intersective, idiomatic or argumental interpretation:[40]

(27) ***Feminine agreement on *low adjective* modifying *vrač*-class noun with female referent**

a. Glavn-yj/*Glavn-aja vrač-ъ poliklinik-i skazal-a, čtoby...
head-***M***/*-***F***.NOM.SG doctor-NOM.SG clinic-GEN.SG say-PST.F.SG that.SUBJ...
'The (female) head doctor of the clinic ordered that...'

b. Klassn-yj/*Klassn-aja rukovoditel'-ь soobščil-a Česnokovu, čto...
class-***M***/*-***F***.NOM.SG supervisor-NOM.SG inform-PST.F.SG Chesnokov-DAT.SG that
'The (female) class supervisor informed Chesnokov that...'

c. Priiskov-yj/*Priiskov-aja sčetovod-ъ ser'ëzno zabolel-a.
mine.***M***/**F***.NOM.SG accountant-NOM.SG seriously take-ill.PST.F.SG
'The (female) mine accountant took seriously ill.' (Crockett 1976, 95-97)

As Crockett also observes, when a low adjective co-occurs with high adjectives (or possessive pronouns) that do allow feminine agreement, speakers even allow a DP-internal gender mismatch in which a low adjective is masculine, while higher modifiers are feminine:[41]

(28) **High/low gender mismatch: [FEM [MASC...]]**

a. V 17 — očen' xoroš-aja glavn-yj vrač-ъ i zam u neë super.
In 17 very good-***F***.NOM.SG head-***M***.NOM.SG doctor-NOM.SG ...
'In [maternity hospital] no. 17 there is a very good (female) head doctor, and her deputy is super.'
(http://www.babyblog.ru/user/gorokha/665647, accessed March 20, 2010)

b. U nas byl-a očen' xoroš-aja zubn-oj vrač-ъ.
by us COP-PST.**F**.SG very good-***F***.NOM.SG dental-***M***.NOM.SG doctor-NOM.SG
'We had a very good (female) dentist.' (Skoblikova 1971, 183; also cited by Crockett 1976, 97)

c. moj-a nov-aja klassn-yj rukovoditel'-ь vsë pričital-a...
my-**F**.NOM.SG new-**F**.NOM.SG class-**M**.NOM.SG supervisor-NOM.SG ITER complain-PST.F.SG
'my new (female) class supervisor continually complained (that)...'
(http://detochka.ru/forum/index.php?showtopic=19618&st=30, accessed September 14, 2008)

A similar mismatch is also marginally possible internal to a group of high adjectives, though I have found no speaker who accepts such examples without qualms. Still there is a crucial contrast. Though an outer high *feminine* adjective may marginally cooccur with an inner high *masculine* adjective, the opposite pattern is completely excluded. Once a feminine adjective is used to modify a nominal, any higher adjective must also be feminine:

(29) **High/high gender mismatch: ?[FEM [MASC...]]] vs. *[MASC [FEM...]]**

a. ?U menja očen' interesn-aja nov-yj vrač-ъ.
by me very interesting-NOM.***F*****.**SG new-NOM.***M*****.**SG doctor-NOM.SG
'I have a very interesting new (female) doctor.'

b. *U menja očen' interesn-yj nov-aja vrač-ъ.
by me very interesting-NOM.***M*****.**SG new-NOM.***A*****.**SG doctor-NOM
'I have a very interesting new (female) doctor.'

A simple derivational generalization may be extracted from all the patterns seen in (26)-(29). *Every nominal headed by a class 1 noun like vrač always enters the syntax masculine, but may be "feminized" in the course of the syntactic derivation.* Feminization is optional and may occur at any one of several points — but once it occurs, it is irreversible. That is why DP-internal (adjective-noun) feminine agreement entails DP-external (subject-verb) agreement, but not vice-versa, as seen in (26). It is also why inner-adjective feminine agreement entails outer-adjective feminine agreement, but not vice-versa, as seen in (29). Furthermore, *feminization may not occur "too early"* in the derivation of a nominal. In particular, it may not precede the merger of low adjectives, as (27) and (28) show.

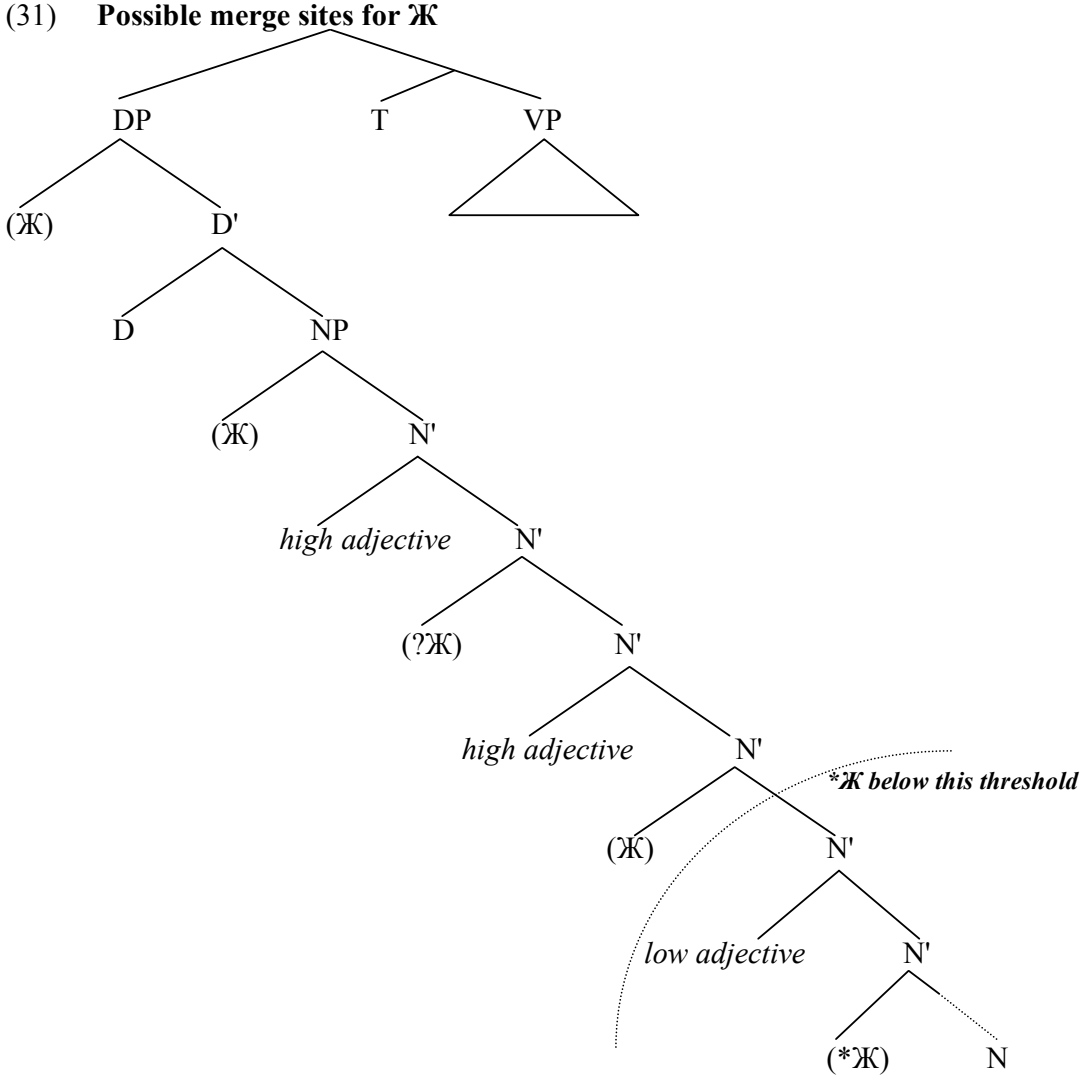
I propose that "feminization" is the consequence of the adnominal merger of a phonologically null morpheme whose denotation is 'female', whose properties are given in (30). I will represent this morpheme with the Cyrillic letter **Ж** (pronounced "že"), the first letter of *ženščina* 'woman' and many related words. The diagram in (31) shows where Ж may and may not merge, on this analysis, as summarized in (30):

(30) **Analysis of feminine agreement with *vrač*-class nouns**

a. An optional null morpheme Ж 'female' may be merged at *any point above a certain structural threshhold* within NP. Low adjectives fall below this threshold.

b. Once Ж merges, the nominal counts as feminine for agreement purposes from then on.[42]

(31) **Possible merge sites for Ж**



Let us now consider how this proposal accounts for the patterns of gender agreement that we have observed. The differing patterns of agreement in (26b) and (26d) reflect the difference between merging **Ж** above and merging **Ж** below the single high adjective. The unacceptability of (26c) results from the fact that feminine agreement on the adjective indicates a merge site for **Ж** below the adjective; but this renders the DP feminine by (30b), and should have triggered feminine agreement on the verb.

The absence of any feminine agreement in (26a) indicates a derivation in which Ж was not merged at all:

(32) **Analysis of (26a-d)**

a. [$_{(M)}$ Nov-yj [$_{(M)}$ vrač-ъ]] prišël-ъ. [✔masculine adjective, masculine verb]

b. [$_{(F)}$ **Ж** [$_{(M)}$ nov-yj [$_{(M)}$ vrač-ъ]]] prišl-a. [✔masculine adjective, feminine verb]

c. *[$_{(F)}$ Nov-aja [$_{(F)}$ **Ж** [$_{(M)}$ vrač-ъ]]] prišël-ъ [*feminine adjective, masculine verb]

d. [$_{(F)}$ Nov-aja [$_{(F)}$ **Ж** [$_{(M)}$ vrač]]] prišl-a. [✔feminine adjective, feminine verb]

Gender mismatches between high and low adjectives as in (28) reflect a merge site for Ж between the high and low adjective. The marginally acceptable gender mismatch seen with a pair of high adjectives in (29a) likewise reflects a merge site available between them.

(33)a. **Analysis of nominal in (28a)**

[$_{(F)}$ xoroš-aja [$_{(F)}$ **Ж** [$_{(M)}$ zubn-oj [$_{(M)}$ vrač-ъ]]]
good-F.NOM dental-M.NOM doctor-NOM.SG

b. **Analysis of nominal in (29a)**

[$_{(F)}$ očen' interesn-aja [$_{(F)}$ **Ж** [$_{(M)}$ nov-yj [$_{(M)}$ vrač-ъ]]]
very interesting-F.NOM new-M.NOM doctor-NOM.SG

The unacceptability of (29b) results from the fact that since the lower of two high adjectives is feminine, Ж must have merged below both of them — but then the higher adjective should have been feminine as well. The unacceptability of the feminine variants of (27), however, reflects something different: *the ban on merger of Ж below the threshold marked in* (31*)*. It is this phenomenon that will now provide us with an independent argument that the initial position of paucals is extremely low within NP.

There are three paucals in Russian that show gender agreement: *dva* 'two', *oba* 'both' and *poltora* 'one and a half', whose feminine forms are *dve*, *obe* and *poltory*, respectively. Gender agreement with these paucals is illustrated in (34) with the class 1 masculine noun *stol* 'table' and the class 2 feminine noun *lampa* 'lamp', in a nominative environment.

(34) **Gender agreement in paucals *dva* 'two', *oba* 'both' (nominative environment)**

a. dv-a/ob-a/poltor-a stol-a b. dv-e/ob-e/poltor-y lamp-y
two/both/1½-M.NOM table-GEN two/both-F.NOM lamp-GEN

Recall now that our account of the number mismatch between the noun and adjectives in paucal constructions relied on the following crucial premise: although the surface position of a paucal is high within DP (sister to D), its initial position was extremely low (sister to N) — and in particular, *lower than the lowest position in which any adjective merges*. This description must be as true of low adjectives as it is of high adjectives, since low adjectives display the same apparent number mismatch with paucals as high adjectives do:

(35) **Number mismatch with paucals and low adjectives**

a. dva glavn-yx vrač-a.
two-NOM head-GEN.**PL** doctor-GEN.SG^{o} 'two head doctors

b. tri zubn-yx vrač-a.
three-NOM dental-GEN.**PL** doctor-GEN.SG^{o} 'two dentists'

c. četyre klassn-yx rukovoditelj-a.
four-NOM class-GEN.**PL** supervisors-GEN.SG^{o} 'four class supervisors'

The fact that certain paucals have special feminine forms now permits us to test a key prediction of the proposal. If the initial merge position of paucals is lower than the lowest initial merge position for low adjectives, then *a fortiori* it also lies below the threshold for merger of Ж. Consequently, despite the high surface position of paucals, we expect feminine agreement with a class 1 noun to be impossible, all things being equal — even when the nominal refers to a female.

The prediction is confirmed. In a nominative environment, the feminine forms of paucal numerals may not be used with nouns like *vrač*:[43]

(36) **No feminine agreement between paucal and *vrač*-class noun (nominative environment)**

a. dva/oba/poltora vrača
two/both/1½-M.NOM.SG doctor-GEN.SG^{o}
'two doctors', 'both doctors', 'one and a half doctors' (male or female)

b. *dve/*obe/*poltory vrača
two/both/1½-F.NOM.SG doctor-GEN
'two (female) doctors', 'both (female) doctors', 'one and a half (female) doctors'

This account of the contrast in (36a-b), if correct, offers precisely the independent support that we sought for the structurally low initial merge position of the paucals — a proposal that was in turn crucial to the account of the number and case mismatches with which this paper began.

As an alternative, one might entertain the hypothesis that examples like (36b) are not excluded by this paper's proposals concerning the initial merge position of paucals, but by some idiosyncratic prohibition on the cooccurrence of Ж and paucals. In principle, a simple experiment should be able to distinguish the hypotheses. Unfortunately, as I will now show, the experiment, though simple, cannot be performed because of independent idiosyncracies of Russian morphology.

Our account of (36) not only permits Ж to cooccur with a paucal, it actually predicts that adnominals added to a DP like (36a) may be feminine, so long as they do not belong to the class of obligatorily low adjectives. Thus, for example, in an example such as (37), if Ж is present where indicated, the high adjective and the demonstrative might both be feminine (and if Ж were merged later, the demonstrative might be feminine and the adjective masculine) even though the paucal is not feminine:

(37) **Gender of high adjectives above Ж in a paucal construction**

èti dva nov-yx Ж vrač-a
these-(F?).NOM.PL two-NOM new-(F?).GEN.PL doctor-GEN.SG^{o}
'these two new (female) doctors'

The problem with this experiment is the fact that Russian morphology suppresses almost all gender distinctions in the plural. (I discuss the sole exception immediately below.) Since adjectives and demonstratives in paucal constructions are plural, for reasons discussed earlier, there is no way to check the gender of the adjective or demonstrative in examples like (37), so this prediction cannot be tested.

There is, however, another way to show that Ж may in principle co-occur with a paucal — to which I now turn. Note first that our account of the impossibility of (36b) entails that D does *not* bear an unvalued gender feature in Russian (unlike adjectives and demonstratives). The visible morphology on *dva* and *oba* in (36a) is DNOM, copied from D by the rule FA. Consequently, *D must not undergo gender* agreement. Otherwise, in the presence of Ж, it would be feminine and would copy a *feminine* version of its morphology onto the paucal, incorrectly deriving (36b). The logic of this possibility would be the same as that underlying our explanation for the plural oblique case morphology in (22) and (23), where P assigns the plural variant of its morphology to the terminal elements of DP as a consequence of number agreement with its complement.

On the other hand, our account predicts that if a version of the DP in (36a) that includes Ж is merged with a higher head that *does* bear unvalued gender features, this higher head will copy a feminine version of its grammatical features onto all the terminals of DP — including the paucal itself. In such an environment, we *would* see a feminine paucal with a noun like *vrač*, providing an argument against any independent restriction on such a combination.

In fact, as I will now argue, Russian POBL appears to be a head of exactly the desired type, behaving just as we expect from a category that bears an unvalued gender feature in addition to its unvalued number features. Given the general suppression of gender distinctions in the plural, it might seem impossible to tell whether a paucal inside a DP complement to POBL is masculine or feminine, since it will be plural. By a stroke of luck, however, one of these two paucals, *oba* 'both', has another idiosyncracy that makes this test possible. *Oba* is the sole lexeme in the entire Russian language that distinguishes masculine and feminine forms in the plural. The other paucals, including *dva* 'two', do not, as (38) exemplifies:

(38) **Gender distinctions in the plural**

masculine	*feminine*
a. (k) ob-**o**-im stol-am to both-**M**-DAT.PL table.DAT.PL	b. (k) ob-**e**-im lamp-am[44] to both-**F**-DAT.PL lamp.DAT.PL
c. (k) dv-um stol-am to two.DAT.PL table.DAT.PL	d. (k) dv-um lamp-am to two.DAT.PL lamp.DAT.PL

When an oblique DP like those in (38a-b) contains a noun like *vrač* and the paucal *oba* 'both', and refers to a female, the paucal may indeed appear in its feminine form, in direct and striking contrast to (36b):

(39) **Feminine forms of *dva/oba* 'two'/'both' with *vrač*-class noun in oblique environments**

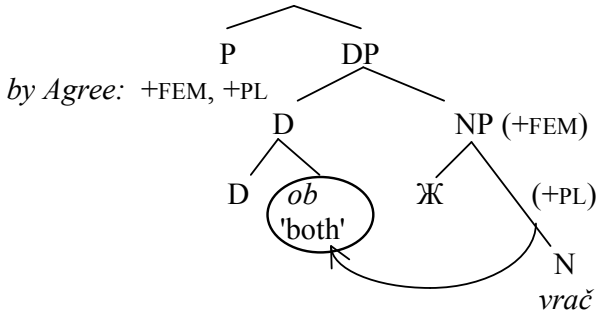
a. (k) ob-**e-im** vrač-am
to both-**F**-DAT.PL doctor.DAT.PL

b. (s) ob-**e-imi** vrač-ami
with both-**F**-INSTR.PL doctor.INSTR.PL

c. ob ob-**e-ix** vrač-ax
about both-**F-**PREP.PL doctor.PREP.PL

In (39a-c), the paucal merged too early to agree in feminine gender with Ж, and (since D does not undergo gender agreement), received masculine DNOM morphology from D after movement. When P merged with DP, it agreed with the feminine gender introduced by Ж and with the plural number introduced by the paucal — and then copied feminine plural POBL morphology onto *oba,* suppressing previous masculine DNOM morphology (and onto *vrač*, surpressing previous numberless NGEN morphology):

(40) **P copies feminine, plural POBL morphology on *oba* and *vrač***



The feminine forms of *oba* are, of course, optional here, reflecting the optionality of Ж itself, and it is not possible to determine from (39) exactly where in the DP the morpheme Ж has merged. What the possibility of (39a-c) does make clear, however, is that Russian imposes no general ban on the cooccurence of Ж and a paucal. This conclusion supports the account provided here for the unacceptability of (36b), which in turn supports our general proposal concerning the low origin of paucals within NP — one of the empirical foundations of our entire proposal.[45]

6 Numerals and other quantifiers

6.1 The category QUANT

As noted in the opening section of this paper, there is a class of quantificational elements in Russian (henceforth **QUANT**) that show exactly the same pattern of case as that found with paucals, but not the same pattern of number. The QUANT class comprises the higher non-compound numerals through 100,[46] such as *pjat'* 'five', *šest'* 'six', etc. as well as a small group of non-numeral quantifiers such as *mnogo* 'many', *nemnogo* 'a little', *stol'ko* 'so much', and *skol'ko* 'how much'. In a nominative environment, the head noun in constructions with these elements displays NGEN morphology, just as it does in constructions with paucals. The same is true of adjectives that appear to the right of QUANT, while (once again, just as in paucal constructions), an adjective or demonstrative that precedes QUANT displays DNOM — as does QUANT itself. The sole contrast with paucal constructions is the absence of any "number mismatch". The head noun in constructions with QUANT IS *plural*, as illustrated in (2), repeated below as (41):

(41) **Quantificational construction (no paucal) (nominative environment)**
case mismatch*, *but no "number mismatch"
èt-i posledn-ie pjat'-ь krasiv-yx stol-ov
these-**NOM.PL** last-**NOM.PL** five-**NOM** beautiful-**GEN.PL** table-**GEN.PL**
'these last five beautiful tables'

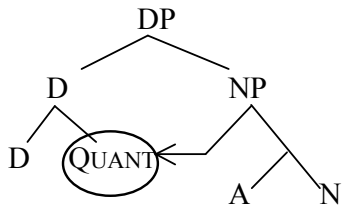
In oblique environments, constructions with QUANT also behave like paucal constructions. Every element of the nominal expression displays POBL morphology, and both agreeing elements and noun are plural, as shown in (3b), repeated as (42):[47]

(42) **Quantificational construction (no paucal) (oblique environment, here PDAT)**
no mismatches
èt-im posledn-im pjat-i krasiv-ym stol-am
these-**DAT.PL** last-**DAT.PL** five-**DAT** beautiful-**DAT.PL** table-**DAT.PL**
'to these last five beautiful tables'

The case patterns in (41) and (42) may receive an explanation identical to that offered for the comparable patterns in paucal constructions, so long as we suppose that some element is required to move to D in examples like (41), to satisfy a requirement of D, just as in paucal constructions. From this point on (but not before), D assigns DNOM to each element that merges with D (or with a projection of D). The head noun and adjectives that remain within NP, however, will continue to bear NGEN — unless DP itself merges next as the complement of P, in which case all previous case morphology in the nominal will be overwritten by POBL, yielding the "homogeneous pattern" of (42).

But what *is* the element that moves to D in constructions like (41), if this analysis is correct? The obvious candidate is QUANT itself. Consider first what we know about the most likely initial merge site for QUANT. For a numeral instance of QUANT, at least, the cross-linguistic investigations that have motivated and supported Greenberg's (1963) "Universal 20" suggest that its initial merge site is NP-internal, and that its position in the NP is higher than all NP-internal adjectives — and, of course, below D, since it is NP-internal (Cinque 2005) . The fact that the numeral bears DNOM morphology in constructions like (41), however, suggests that it undergoes movement from this NP-internal position to D (or to a projection of D). QUANT is thus a very plausible candidate for an element that moves to D just like the paucals that we have investigated in preceding sections — and with identical consequences for the distribution of case morphology in both nominative and oblique environments:

(43) **QUANT-to-D movement**



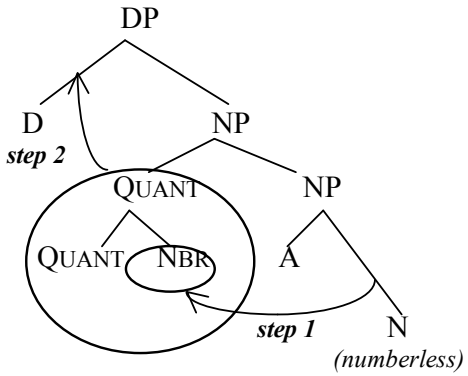
On the other hand, however similar the final position of QUANT might be to the final position of paucals, their initial positions are clearly not the same. I have argued at length that a paucal is an instance of NBR, and that its initial merge site is extremely low within N. A paucal is merged directly with a numberless N, thus supplying the NP with the grammatical number specification that other nouns receive in the lexicon — an apparent precondition for further merge to projections of N, as noted

in (15b). By contrast, if the initial position of QUANT is governed by the principles behind Greenberg's Universal 20, its initial merge site must be extremely *high* within NP. Given (15b) once again, this means that QUANT, unlike the paucals, does *not* merge to a numberless projection of N, but merges instead to a projection of a noun that has already been marked for number. Given the semantics of the elements in the QUANT class ('five', 'many', etc.), it is no surprise that the head noun in QUANT constructions is generally plural — not numberless as it is in paucal constructions. The absence of a seeming "number mismatch" in the QUANT construction is thus explained.[48]

This proposal now contains an odd disjunction, which should concern us. If the proposal is correct as stated so far, some feature of D must probe for an element that may belong to either of two distinct categories, QUANT and NBR. Can we avoid this conclusion?

A plausible alternative is in fact available, if we refine our view of the path by which NBR ends up in D in paucal constructions. I have assumed so far that paucal NBR moves to D in a single step, but this was not a necessary assumption. In particular, since the QUANT is located between NBR and D, it is also possible that QUANT provides a landing site for NBR on its way to D. In particular, it is possible that NBR only moves in the first place because it is attracted by a feature of QUANT — and moves to QUANT, rather than to D. Since examples like (41) teach us that D, in turn, attracts QUANT, it is possible that NBR ends up in D not as a result of direct NBR-to-D movement, but rather as a consequence of pied-piping by QUANT when QUANT (not the paucal itself) is attracted by D. In other words: first NBR moves to QUANT, then when QUANT moves to D, it takes NBR with it:

(44) **A two-step theory of how NBR ends up in D: NBR-to-QUANT followed by QUANT-to-D**



Note that step 2, in which QUANT pied-pipes NBR to D, is not dispensable. We do know that the final position of paucal NBR is external to NP, because it ends up bearing DNOM — unlike the adjectives and noun left behind in NP, but just like such QUANT elements as *pjat'* 'five' in (41).

What must we say about the distribution and properties of D and QUANT, if the two-step proposal in (44) is correct? Let us begin by noting that not every DP shows movement of QUANT to D. In a nominal that has neither a paucal nor an overt instance of QUANT in it, no QUANT-to-D movement takes place. That is why D in a such a nominal assigns DNOM to all the elements of NP, as illustrated in (1a), repeated as (45) below:

(45) **no paucal, no QUANT: no movement to D, DNOM throughout (nominative environment)**
èt-i posledn-ie krasiv-ye stol-y
these-**NOM.PL** last-**NOM.PL** beautiful-**NOM.PL** table-**NOM.PL**
'these last beautiful tables'

I will assume that in constructions like these, QUANT is simply missing. This entails that whatever feature of D probes for QUANT and attracts it to D when it is found does not crash the derivation if QUANT is not found, but receives a default value and does not require movement of any sort.

On the other hand, when dual, trial or quadral NBR is present in an NP, QUANT must also be present. Otherwise, NBR in a paucal construction would be free to remain in its low base position, nothing would move to D, and D would assign DNOM morphology to all the elements of NP, contrary to fact. Thus, if (44) is correct, something in the overall theory must entail that a paucal obligatorily cooccurs with a null QUANT, and some feature of this null QUANT must successfully probe and attract the paucal.

What this suggests is that a Russian nominal phrase that denotes two, three or four of some entity *always* contains a genuine numeral of the QUANT class whose interpretation is 'two', 'three', 'four' — just like phrases that denote a higher quantity of an entity, e.g. 'five'. The favored mode of expression for this numeral, however, is a null QUANT that comes from the lexicon unvalued for the features that permit it to denote a precise quantity. Null QUANT is usable in a nominal phrase when it is able to value its quantity features, which it may do if enters into an Agree relation with an appropriate instance of NBR. In Russian, this is possible for just those quantities that have corresponding instances of NBR, i.e. the paucals. It is when null QUANT cannot be valued in this way that the language resorts to QUANT words that come from the lexicon pre-valued for the relevant features, including numerals like *pjat'* 'five' and the others mentioned above.

The Russian lexicon actually contains special overt forms of QUANT that denote 'two', 'three' and 'four' as well. As predicted by the proposal, these are used primarily when the minimally differing structure with null QUANT is unavailable — which will happen when the kind of NBR that can provide a value to the features of QUANT is itself unavailable. One place where this situation arises is the domain of *pluralia tantum*: entity-denoting nouns idiosyncratically pre-specified as plural in the lexicon (Pesetsky & Torrego 2007; Acquaviva 2008). Because a *plurale tantum* noun must be grammatically plural, it lacks the numberless form that a paucal requires. Since paucal NBR cannot be used with such a noun, null QUANT is also impossible, since it relies on NBR for valuation. Instead, a set of special numerals *dvoe*, *troe* and *četvero* are used in nominative environments.[49] The claim that these numerals belong to the same class as QUANT numerals such as *pjat'* 'five' in (41) is supported by the fact that their syntax and interaction with case morphology is identical. Example (46) illustrates this with *sutki* '24-hour period', a *plurale tantum*. Note the presence of the characteristic case mismatch, and the absence of the "number mismatch" found with paucals (and null QUANT, in the analysis under discussion in this section):

(46) **Special low QUANT numerals with *pluralia tantum* (nominative environment)**

èt-i	posledn-ie	dvo-e	strašn-yx	sutok-**ъ**
these-**NOM.PL**	last-**NOM.PL**	two (QUANT)-**NOM**	terrible-**GEN.PL**	24h-**GEN.PL**

'these last two terrible days' (*any variant with paucal *dv-a*)

Certain other nominals regularly require these special QUANT forms for the low numerals, arguably (in the context of the present proposal) because they too lack a numberless form that can be used with dual, trial or quadral free-standing NBR. One prominent category are those masculine nouns denoting male humans that belong to the otherwise feminine declension class 2, such as *mužčina* 'man'. The forms otherwise expected (e.g. **dv-a mužcin-y* 'two-M.NOM man-GEN.SG^{o}') are disallowed, and a construction

with the special overt QUANT form of the low numeral once again must be used instead (Mel'čuk 1985, 391; Yadroff 1999, 142):[50]

(47) **Special low numerals with masculine class 2 nouns (nominative environment)**
èt-i posledn-ie dvo-e molod-yx mužčin-ъ
these-**NOM.PL** last-**NOM.PL** two (QUANT)-**NOM** young-**GEN.PL** man-**GEN.PL**
'these last two young men' (*any variant with paucal *dv-a*)

The "last resort" character of the use of the special QUANT forms can also be seen in the fact that when nominal phrases like (46) and (47) are used in an oblique environment, where unpronounceable numberless NGEN morphology on N is expected to be overwritten by plural POBL morphology, versions with normal paucals (and null QUANT) are preferred over versions that include special QUANT forms. The special QUANT form for 'two' with PDAT morphology would be *dvoim* rather than *dvum*:[51]

(48) **Paucal rather than special QUANT numerals in oblique variant of** (46)
(k) èt-im posledn-im dvu-m strašn-ym sutk-am
(to) these-**DAT.PL** last-**DAT.PL** two (paucal)-**DAT** terrible-**DAT.PL** 24h-**DAT.PL**
'to these last two terrible days'

The existence of overt QUANT numerals for 'two', 'three' and 'four' lends credence to the idea that QUANT *may* cooccur with the lower numerals. This is a useful conclusion, because it supports a crucial precondition of the two-step analysis of paucal constructions in (44) that requires the *obligatory* presence of this position in paucal constructions.

We conclude that D uniformly attracts QUANT. Paucals that end up in D do so by first moving to QUANT, and then moving to D as part of QUANT-to-D movement.[52]

6.2 Quantifiers that always show a homogeneous case pattern

Not all quantificational nominal phrases display the non-homogeneous case patterns diagnostic of QUANT-to-D movement. In some cases, we can be fairly sure of the reason: the quantifiers in question are not instances of QUANT (nor elements that move to QUANT). Universal and generic quantifiers such as *každyj* 'every' and *ves'* 'all', *vsjakij* 'any, every' and *ljuboj* 'any' (free-choice), for example, all display homogeneous case patterns in nominative environments:

(49) **Universal/generic quantifiers with a homogeneous case pattern**
a. každ-yj krasiv-yj stol-ъ
each-M.NOM.SG beautiful-M.NOM.SG table-NOM.SG
'each beautful table'

b. vs-e krasiv-ye stol-y
all-NOM.PL beautiful-NOM.PL table-NOM.PL
'all beautiful tables'

A universal quantifier in this group may also cooccur with a numeral, in which case the universal quantifier precedes the numeral. Like the pre-numeral demonstrative and adjectives in examples like (1b) and (2), the universal quantifier bears DNOM morphology in a nominative environment. Such facts suggest that we are not dealing with an instance of QUANT, but rather with a quantifier that is

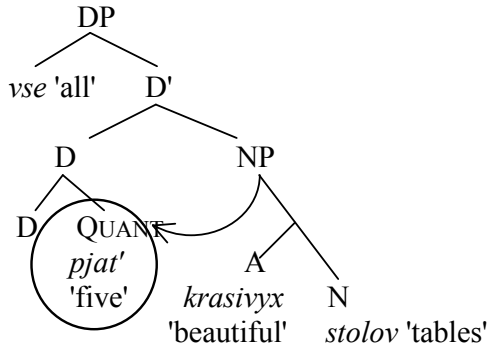
introduced as a sister to a projection of D, just like those pre-numeral demonstrative and adjectives. In that position, D assigns DNOM to it as expected:

(50) **Evidence that the quantifiers of (49) are dependents of D**

a. V učebnom grafike,
každ-ye pjat'-ь učebn-yx nedel'-ь
each-NOM.PL five-NOM teaching (*adj*.)-GEN.PL week-GEN.PL
zaveršajutsja kanikulami.
'In the teaching schedule, every five teaching weeks concludes with a vacation.'
[http://school10.cuso-edu.ru/images/material-images/2009.doc, accessed August 2, 2010]

b. vs-e pjat'-ь krasiv-yx stol-ov
all-NOM.PL five-NOM beautiful-GEN.PL table-GEN.PL
'all five beautiful tables'

(51) **Structure of (50b)**



There are a few other cases where we also find a homogeneous case pattern in a quantified noun phrase. Examples in this category include phrases with *mnogie* 'many' and *nemnogie* 'a few', which function as doublets for the QUANT elements *mnogo* 'many' and *nemnogo* 'a few' (Rappaport 2002, 337). It is conceivable that these quantifiers are DP-dependents, like *vse* 'all' in (51). If their semantics determines their initial position, however, they are more likely to be QUANT elements whose initial position is the same as that of their near-synonyms *mnogo* and *nemnogo* — but which fail to raise to D, because they lack the feature for which D probes.[53]

(52) **Homogeneous case pattern with *mnogie***

S texničeskoj točki zrenija,
mnog-ie krasiv-ye motocikl-y
many-NOM.PL beautiful-NOM.PL motorcycle-NOM.PL
neudačny
'From a technical point of view, many beautiful motorcycles are unsuccesful.'
(http://autopilot.kommersant.ru/issues/auto/2001/06/078.HTML, accessed August 2, 2010)

Similar issues arise for constructions with the word *odin*. This is the normal Russian rendering of the numeral 'one' when it functions as an adnominal, but it may also be used to mean 'alone', 'some' as opposed to 'others' (in its plural form) — and occasionally has the force of the English indefinite article. Nominal phrases with *odin* (in any of its senses) also show a fully homogeneous case pattern in both nominative and non-nominative environments (as mentioned in note 3):

(53) **Homogeneous pattern with *odin* 'one'**

a. ***no mismatches*** **(nominative environment)**
odin-ъ krasiv-yj stol-ъ
one-M.NOM.SG beautiful-M.NOM.SG table-NOM.SG
'one beautiful table'

b. ***no mismatches*** **(oblique environment)**
odn-omu krasiv-omu stol-u
one-M.DAT.SG beautiful-M.DAT.SG table-DAT.SG
'one beautiful table'

Despite denoting a quantity lower than any paucal, *odin* is clearly not a paucal, i.e. it is not an instance of NBR. The argument comes from its interaction with gender in the contexts discussed in section 5. Like *dva* 'two' and *oba* 'both' discussed there, *odin* shows gender agreement (in this case distinguishing all three genders). Our argument in section 5 for the low initial merge site of paucals came from the inability of *dva* and *oba* to show feminine agreement with class 1 nouns like *vrač* doctor (and the independent observation that low adjectives share the same inability). In contrast to the paucals, *odin* does allow feminine agreement with such nouns. This means that its initial merge position is not the low position where paucal NBR is introduced, but is higher:

(54) **Feminine agreement between *odin* 'one' and *vrač*-class nouns**
Byl-a na učastke odn-a xoroš-aja vrač-ъ, tak eë uvolili.
was-F.SG on district one-NOM.F.SG good-NOM.F.SG doctor-NOM.SG, so her they.fired
'There was one good (female) doctor in the district, so they fired her.'
(http://blogs.mail.ru/mail/lisik-85/2CEA82BA9BD08D0D.html?thread=45FDC4013365EB02&skip=0, accessed Jul 31, 2010)

The fact that it may be used as a numeral suggests that *odin* too is an instance of QUANT that is not attracted to D, at least in its numeral use.[54] (If QUANT is the highest head within NP, the linear position of an element that remains in QUANT will be indistinguishable from the linear position of a QUANT that has moved to D.) On the other hand, its similarity in other uses to the English definite article might suggest, however, that it is actually an instance of D, or a dependent of D like the universal and generic quantifiers considered above. Likewise, its ability to function as an adjective meaning 'alone' might group it with the adjectives. Any one of these proposals (or any combination of them) is compatible with the homogeneous pattern, and unfortunately I have no argument that settles the question.[55]

7 VACC and the morpho-syntax of direct objects

7.1 FA and complements of V

In section 2, it was suggested that accusative case morphology found on DP complements to transitive active verbs (like all case morphology) is a consequence of the assignment of VACC by V, in conformity with the rule FA.[56] In fact, although certain types of DPs do show distinct morphology in accusative environments, others appear in their nominative form, showing no sign whatsoever of any morphology assignment by V. The types of DP with this property are shown in (55). Though it is traditional to gloss the direct objects in examples like these as bearing accusative case, I gloss such forms as NOM here and elsewhere, reserving ACC for forms distinct from the nominative.

(55) **DP complements to V that do not receive VACC morphology**

a. **Inanimate masculine or neuter singular DP**
My videli ètot krasiv-yj stol-ъ
we saw this.M.NOM.SG beautiful-M.NOM.SG table-NOM.SG (M)
'We saw this beautiful table.'

b. **Inanimate plural DP (any gender)**
masculine noun
My videli èt-i krasiv-ye stol-y
we saw these.NOM.PL beautiful-NOM.PL table-NOM.PL (M)
'We saw these beautiful tables'

feminine noun
My videli èt-i krasiv-ye lamp-y
we saw these.NOM.PL beautiful-NOM.PL lamp-NOM.PL (F)
'We saw these beautiful lamps'

c. **Inanimate paucal construction (any gender)**
masculine noun
My videli èt-i dv-a krasiv-yx stol-a
we saw these.M.NOM.PL DUAL.M.NOM beautiful-GEN.PL table-GEN.SG^{o} (M)
'We saw these two beautiful tables'

feminine noun[57]
My videli èt-i dv-e krasiv-yx lamp-y
we saw these.M.NOM.PL DUAL.F.NOM beautiful-GEN.PL lamp-GEN.SG^{o} (F)
'We saw these two beautiful lamps'

d. **Inanimate QUANT construction with QUANT-to-D (any gender)**
masculine noun
My videli èt-i pjat'-ь krasiv-yx stol-ov
we saw these.M.NOM.PL five.NOM beautiful-GEN.PL table-GEN.PL (M)
'We saw these five beautiful tables'

feminine noun
My videli èt-i pjat'-ь krasiv-yx lamp-ъ
we saw these.M.NOM.PL five.NOM beautiful-GEN.PL table-GEN.PL (F)
'We saw these five beautiful lamps'

Those DPs that do show distinct accusative forms fall into one of three categories: (1) feminine singular; (2) animate; or (3) pronominal. Only a terminal element of a DP that falls into one of these three categories will ever show an accusative form distinct from the nominative. Consequently, we must regard membership in one of these three categories as a prerequisite for receiving VACC morphology from V.

This conclusion means that FA does not *always* apply when two elements merge, a possibility not countenanced by the formulation of FA in (19). We therefore restate FA in (56), to allow for such restrictions, and stipulate the conditions (for Russian) under which VACC is assigned in (57):

(56) **Feature Assignment (FA), version 3 of 5**

a. ***Copying:*** When α merges with β, forming [$_{\alpha}$ α β], if α has satisfied its complementation requirements *and is designated as a feature-assigner for β*, its grammatical features are immediately copied onto β...

b. ***Realization:*** and are realized as morphology on all lexical items dominated by β.

(57) **Rule for assignment of VACC**

V assigns VACC to β under FA only if:

a. β is [+feminine] and not [−singular]; or

b. β is [+animate]; or

c. β is [+pronominal].

As is true throughout the Russian case system, the actual realization of VACC on individual words depends on the declension class to which the given word belongs. Recall that most Russian nouns fall into one of three major declension classes, and that a noun's grammatical gender is mostly predictable from its declension class and its value for the feature [±human]. Other elements in the noun phrase, such as adjectives, demonstratives and agreeing quantifiers, receive their gender as a consequence of agreement in the syntax. The declension class of these elements is completely predictable from gender. In accordance with the findings reported by Halle & Matushansky (2006), I will assume that agreeing elements within the nominal phrase belong to two of the same declension classes relevant to nouns, despite superficial appearances, according to the following rules:

(58) **Rules for declension class assignment to agreeing elements (adjectives, demonstratives, etc.)**

a. [+feminine] → Class 2

b. otherwise → Class 1

Declension class distinctions are suppressed in plural forms (not just plural forms of VACC). I will assume that this is the result of a rule that assigns all bases to Class 1 in the presence of a plural case suffix, regardless of the declension class membership of the corresponding singular:

(59) **Declension class assignment to [-SINGULAR] words**

base → Class 1 / __ [suffix, -SINGULAR]

Rule (59) is fed by rule (25), which determines the number of the case suffix in the first place (on the basis of the NBR value of the base, if it has one, and the NBR value of the feature assigned under FA otherwise).

The rules by which VACC is realized can now be stated for our purposes as in (60). In the interests of clarity, this formulation ignores the details of underlying phonology that allowed Halle & Matushansky to justify the conclusions in (58) in the first place. I will also omit from further discussion the idiosyncratic morphology of personal pronouns:

(60) **Rules for realization of VACC**

a. VACC is realized as *-uju* (adjectives) or *-u* (other elements) / Class 2

b. VACC is syncretic with NGEN / Class 1

c. Otherwise, VACC is not realized.[58]

These realization rules will come into play, of course, only when VACC has been assigned in the first place, in conformity with (57). This means (ignoring personal pronouns) that they will have an effect only within a DP that is either feminine singular or animate.

(61) **DP complements to V that are assigned VACC under (57a) (feminine singular DPs)**

a. *noun is class 2; falling under (60a)*
modifiers are feminine, hence class 2 by (58a); falling under (60a)
My videli èt-u krasiv-uju lamp-u
we saw this.F.ACC.SG beautiful-F.ACC.SG lamp-ACC.SG (F)
'We saw this beautiful lamp.'

b. *noun is class 3, falling under (60c)*
modifiers are feminine, hence class 2 by (58a); falling under (60a)
My videli èt-u krasiv-uju tetrad'-ь
we saw this.F.ACC.SG beautiful-F.ACC.SG notebook-ACC.SG (F)
'We saw this beautiful notebook.'

(62) **DP complements to V that are assigned VACC under (57b) (animate DPs)**

a. *noun is class 1 (hence masculine) and singular; falling under (60b)*
modifiers are masculine singular, hence class 1 by (58b); falling under (60b)
My videli èt-ogo molod-ogo otc-a.
we saw this-M.ACC=GEN.SG young-M.ACC=GEN.SG father-ACC=GEN.SG (M)
'We saw this young father.'

b. *noun is class 2, feminine, and singular* [redundantly assigned VACC under (57a)]
modifiers are feminine, hence class 2 by (58a); falling under (60a)
My videli èt-u molod-uju ženščin-u.
we saw this-F.ACC.SG young-F.ACC.SG woman-ACC (F)
'We saw this young woman.'

c. *noun is class 2, masculine, and singular; falling under (60a)*
modifiers are masculine singular, hence class 1 by (58b); falling under (60b)
My videli èt-ogo molod-ogo mužčin-u.
we saw this-M.ACC=GEN.SG young-M.ACC=GEN.SG man-ACC.SG (M)
'We saw this young man.'

d. *noun is class 3 (hence feminine) and singular; falling under (60c)*
modifiers are feminine, hence class 2 by (58a); falling under (60a)
My videli èt-u molod-uju mat'-ь.
we saw this-F.ACC.SG young-F.ACC.SG mother-ACC (F)
'We saw this young mother.'

e. *noun is plural, hence class 1 by (59) regardless of class in singular; falling under (60b)*
modifiers are plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
My videli èt-ix molod-yx otc-ov / ženščin-ъ / mužčin-ъ / mater-ej.
we saw this-ACC=GEN.PL young-ACC=GEN.PL father/woman/man/mother -ACC=GEN.PL
'We saw these young fathers / women / men / mothers.'

When VACC is assigned to a paucal nominal, the pattern of number morphology is exactly the same as that found in nominals assigned POBL, such as (22) and (23). Not only agreeing elements such as demonstratives and adjectives, but also the numberless noun itself shows plural morphology, as can be seen in (63):

(63) DP complements to V that are assigned VACC under (57b) (animate DPs) [continued]
paucal constructions
noun is plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
paucal NBR is plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
modifiers are plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
My videli dv-ux molod-yx otc-ov / ženščin-ъ / mužčin-ъ / mater-ej.
we saw two-ACC=GEN young-ACC=GEN.PL father/woman/man/mother -M.ACC=GEN.PL
'We saw two young fathers / women / men / mothers.'

The explanation that applies to the identical pattern in oblique nominals applies here as well. V, like P, bears an unvalued, uninterpretable number feature, which probes and receives its value from the closest bearer of valued NBR as a consequence of the operation Agree. Note that VACC is only assigned in the first place to a paucal nominal if it is animate, given the conditions in (57), as (55c) demonstrates.[59] The presence of plural morphology on the noun in (63) also makes it clear that the morphology syncretic with the genitive found on direct object DPs is *not* the "primeval NGEN", but morphology that has been assigned under the rule FA.[60]

Let us consider how VACC applies to QUANT constructions with a non-paucal numeral such as *pjat'* (and a number of other quantifiers such as *mnogo* 'many'). As observed in footnote 47, many of these elements are morphologically exceptional in taking singular case suffixes, despite being grammatically plural.[61] For this reason, they do not trigger the declension class-assigning rule in (59) when case suffixes are added, but retain their lexical declension class. If such a word does not lexically belong to Class 1 or 2 already (and in fact, none do), it will fall under the "elsewhere" VACC realization rule (60c), and will fail to realize VACC morphology — even inside a DP that has been assigned VACC (so that other elements besides QUANT might realize VACC). This is the case with the non-paucal numerals and some other QUANT elements that move to D.[62] The forms *pjat'* and *mnogo* in (64) are therefore identical to the nominative singular, reflecting the absence of any realization for VACC:[63]

(64) **DP complements to V that are assigned VACC under (57b) (animate DPs) [continued]**
non-paucal numeral constructions
noun is plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
modifiers are plural, hence class 1 by (59) regardless of class in singular; falling under (60b)
numeral is class 3 and exceptionally receives singular case morphology; falling under (60c)

My videli pjat' / mnogo molod-yx otc-ov / ženščin-ъ / mužčin-ъ / mater-ej.
we saw five / many young-ACC=GEN.PL father/woman/man/motherACC=GEN.PL
'We saw five/many young fathers / women / men / mothers.'

7.2 Vergnaud-licensing, "default nominative" and the case of subjects

I have proposed that VACC morphology on the elements of a DP is a consequence of the DP's merger with a projection of V. When this happens, if the requirements in (57) are also met, FA applies, with the morphological consequences we have discussed above. As argued in Pesetsky (1982), the same rule by which V assigns VACC to its direct object is probably responsible for the VACC morphology on duration phrases like the bracketed phrase in (65), which has also arguably merged with a projection of V:

(65) **Duration phrase assigned VACC by V'**
My peli èt-u pesnj-u [vsj-u nedelj-u].
we sang this-FEM.ACC.SG song-ACC.SG all-FEM.ACC.SG week-ACC.SG

Examples like these suggest that this paper is correct in offering a purely structural account of the distribution of accusative morphology. It is sisterhood to a projection of V that matters, not, for example, bearing a particular grammatical relation or θ-role.

On the other hand, not every DP that satisfies (57) and merges with V ends up bearing VACC. In an unaccusative or passive construction in Russian, as in many other languages, the DP that initially merges with V typically bears DNOM morphology at the end of the derivation, rather than VACC (cf. Chvany 1975; Pesetsky 1982; Moore & Perlmutter 2000; among many others):

(66) **DNOM**

a. *passive*
[Èt-a krasiv-aja lamp-a] byl-a kuplen-a včera.
this-F.NOM.SG beautiful-F.NOM.SG lamp-NOM.SG was-F.SG bought-F.SG yesterday
'This beautiful lamp was bought yesterday.'

b. *unaccusative*
Bol'š-aja rek-a rastajal-a.
big-F.NOM.SG river-NOM.SG melted-F.SG
'The big river melted.'

The nominative DP in these constructions has a full array of properties otherwise associated exclusively with subjects in Russian (such as the ability to bind a reflexive pronoun and to control the subject of a verbal adverb clause). Such facts suggest that after initially merging with V, the DP remerges as a specifier of T (just as it does in languages like English).

It has always been tempting to link the subject properties of such nominals to their nominative case marking, That is why it is commonly proposed that nominative case is assigned to the underlying object by the same head that attracts it into subject position — namely, by T. In this paper, however, I have argued for a very different view of nominative morphology. Though I have sometimes made informal reference to the notion "nominative environment", we have never needed to assume that nominative morphology is assigned to the elements of DP by anything other than D itself. Nothing external to the DP has played any role in the assignment of nominative morphology. Recall, for example, the logic of our explanation for the fact that a direct object DP failing to meet the requirements for VACC assignment by V in (57) bears nominative morphology. Nominative morphology appears on such a DP, not because some external element has assigned it, but rather because no external assigner of distinct morphology has erased it.

An explanation with the same logic might be offered for passive and unaccusative examples like (66a-b) as well. That is, we might propose that though the DPs in these examples seem to meet the requirements for VACC assignment in their initial position, FA is blocked from applying to them there — and after they move, finite T assigns no morphology to them either. Here too the appearance of DNOM on the lexical items of a DP would once again be attributed to the absence of overwriting by other morphology, not to the presence of a DP-external DNOM assigner.

To what might we attribute the failure of VACC assignment to the underlying complement of an passive or unaccusative verb? The answer must lie in some property that distinguishes such verbs from their active, non-unaccusative counterparts. An obvious candidate is their inability to satisfy the special licensing requirement for DPs first posited by Vergnaud (1976, published as Vergnaud 2006). Though Vergnaud and his successors called this requirement *Case*, I will call it *Vergnaud-licensing*, to avoid confusion. As Burzio (1981, 1986), Chomsky (1981, ch. 2) and others observed in the wake of Vergnaud's proposal, if the direct object position in an unaccusative or passive VP is not a position of Vergnaud-licensing, but a position such as the specifier of finite T is, the obligatory raising of the DP complement to passive and unaccusative verbs could be explained.

Vergnaud-licensing was called "Case" (and the licensing requirement, the "Case Filter"), because of the similarity between the repertoire of Vergnaud-licensing positions and the set of positions that the various types of case morphology in languages like Latin. In the context of this paper, however, examples like (66a-b) suggest that the link between case morphology and licensing is actually limited to the principle in (67):

(67) **FA and Licensing**
FA applies to DP only in the position in which it is Vergnaud-licensed.

Given (67), if the case morphology on a DP reflects an external assigner at all, it reflects the assigner available in the position where that DP is Vergnaud-licensed. Whenever a DP merges in a Vergnaud-licensing position where FA fails to apply, however, and whenever a DP merges in a *non*-Vergnaud-licensing position that where FA might otherwise have applied, the lexical items of that DP will bear morphology that does not reflect an external assigner: the DNOM morphology that they received from D.

Though we have arrived at this conclusion as a result of our own proposals concerning NGEN and the morpho-syntax of Russian, the conclusion itself is far from new. It amounts to the claim that nominative case in Russian is a *default*, in precisely the sense enunciated and explored by Schütze (2001, 1997). Schütze argued that nominative case in languages such as German and Icelandic is a strictly morphological default, assigned to the elements of a nominal when no other case morphology has been assigned. At the same time, however, he stressed that "licensing and morphological case are independent systems... [D]efault case in my sense can never 'save' a DP from violating the Case Filter." (Schütze 2001, 206). Schütze's arguments and conclusions converge with ours.

Furthermore, although Russian finite T does not assign its features under FA, in contrast to D, N, V and P[64] (with the consequence that what appears on the subject of a finite clause is "default" DNOM), T might be a morphology-assigner in other languages. For example, although the English pronominal series traditionally called "accusative" (*me*, *him*, *her*, etc.) appears to be a default, as argued by Schütze, the pronominal series traditionally called "nominative" (*I*, *he, she*, etc.) might reflect the assignment of morphology under FA by T. This might explain why the "nominative" forms are used in

spoken English only for pronouns that are merged with T, and not in the many other environments where languages like Russian and Latin show DNOM morphology such as the focus of a cleft (*It is me who...*), conjunct (*Sue and me are...*), etc.

Even in Russian, where finite T does not assign morphology to elements such as its specifier, it is possible certain types of *non-finite* T do assign morphology. If some infinitival TPs can be analyzed as headed by a null counterpart to the English infinitival marker *to*, and if the subject position of such an infinitival is a Vergnaud-licensing environment, the assignment of PDAT to the subject of the infinitive, which is quite common in Russian (Moore & Perlmutter 2000; and references cited there), comes as no surprise:

(68) **Dative subject of infinitive: assigned by null *to*?**
[Èt-omu student-u] ne sda-t' èkzamen.
this-M.DAT.SG student-DAT.SG NEG pass-INF examination-NOM (trad. ACC)
'It's not (in the cards) for this student to pass the exam.'
[expanded from Moore & Perlmutter 2000, 387 ex.(24a)]

Note finally that (67) does not prevent A-bar movement or scrambling from applying to a DP that has received morphology under FA, and retaining this morphology after movement. For example, VACC morphology is preserved under *wh*-movement:

(69) **VACC preserved under *wh*-movement**
Kak-uju lamp-u vy videli?
what.kind.of-F.ACC.SG lamp-ACC.SG (F) you saw
'What kind of lamp did you see?'

7.3 Loose end: prepositions that appear to assign VACC

VACC morphology is not limited to DP direct objects of main verbs, but is also found on the nominal objects of a small class of prepositions as well. Though I will not have a full analysis of this fact to offer, it cannot be overlooked or swept under the rug — since the very existence of VACC on the object of a preposition might be taken as a challenge to this paper's central claim: that syntactic categories and cases are one and the same. All things being equal, we do not expect to find a preposition assigning the morphology that has been declared the exclusive province of V.

We might conjecture, however, that VACC in these prepositional constructions actually is assigned by a verb: a null element that cooccurs with the visible preposition. Fortunately, some evidence does support the presence of an unseen head in these constructions. As is often observed (for example, by Timberlake 2004,181-182), almost every "accusative-assigning" preposition in Russian has a second use in which its object bears some version of POBL. If we focus on the spatial uses of these prepositions, it turns out that the VACC variant denotes motion along a *path towards* the very same location that the POBL variant denotes *location in*. This is illustrated for four prepositions in this class in (70):[65]

(70) **POBL-VACC alternations among prepositions with spatial uses (feminine noun)**

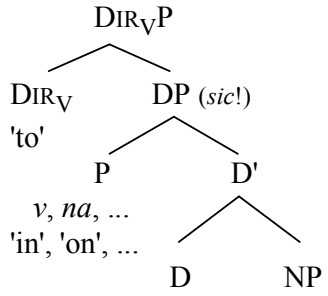
	location	***direction***
a.	Ona žila [v malen'k-oj komnat-e]. she lived in small-F.SG.PREP room-PREP 'She lived in a small room.'	b. Ona pošla [v malen'k-uju komnat-u]. she went in small-F.SG.ACC room-ACC 'She went into a small room.'
c.	Miša sidel [na skamejk-e]. Misha sat on bench-PREP 'Misha was sitting on the bench.'	d. Miša sel [na skamejk-u]. Misha sat on bench-ACC 'Misha sat down on the bench.'
e.	Ol'ga rabotaet [za granic-ej]. Olga works beyond border-INSTR 'Olga works abroad.'	f. Ol'ga často ezdit [za granic-u]. Ol'ga often goes beyond border-ACC 'Olga often travels abroad.'
g.	Den'gi naxodjatsja [pod podušk-oj] money is.located under pillow-INSTR 'The money is located under the pillow.'	h. On položil den'gi [pod podušk-u]. He put money under pillow-ACC 'He put the money under the pillow.'

Similar phenomena have been extensively investigated in other Indo-European languages such as German. This research has concluded that the structure of a VACC spatial preposition construction is more complex it seems, containing (at the very least) a directional head called DIR (or PATH), whose complement is a location-denoting phrase containing the kind of preposition that we expect to assign POBL (cf. Koopman 2000; Riemsdijk & Huybregts 2001, 2006; and papers collected in Cinque & Rizzi 2010) . The semantic intuition behind these analyses is that of Jackendoff (1990, 45) and others who have suggested that an expression like *into the room* in *John went into the room* or (70b) is semantically decomposed as $[_{PATH}$ TO $[_{PLACE}$ IN $[_{THING}$ ROOM]]]. Though the higher DIR head may be silent in some languages (such as Russian), in others, such as the Caucasian language Lezgian, it is overt (Riemsdijk & Huybregts 2001, 2006; data from Haspelmath 1993).

In an analysis of the German counterparts to (70), Noonan (2010, 169) proposes that the element responsible for the case of the DP object of P in directional constructions is DIR itself, and that the case assigned by DIR is *accusative* because DIR belongs to the category V. (She calls this verb "abstract GO".) If we adopt her proposal for Russian as well, the presence of VACC morphology in the directional constructions of (70) no longer poses any special challenge to the central hypotheses of this paper. All things being equal, VACC morphology is just what one expects to find on the terminal elements of a phrase that merges with a verb.

Crucially, the locational complement to DIR must be a DP and not a PP, as shown in (71), or else wrong predictions are made about the case marking of certain nominals.

(71) **Structure of directional constructions**



If the sister of DIR were headed by P rather than D as in (71), POBL morphology would be assigned to the nominal itself, just as it is in non-directional PPs. Before DIR is merged, the nominals in the right column of (70) would receive exactly the morphology that they bear in the left column. Once DIR merges, if the nominal is feminine, animate or pronominal (assuming P inherits those properties from the nominal, perhaps by Agree), POBL morphology will overwritten by VACC, as provided by rule (57). This does yield the correct result for these cases.

The problem arises if the nominal is neither feminine, nor animate, nor pronominal — the circumstances under which rule (57) *refrains* from assigning VACC. For nominal direct objects, this proposal had the correct consequence that the morphology that survives on the lexical items a masculine inanimate non-pronominal DP is the morphology that was assigned most recently to it, namely DNOM. If the complement to DIR in (71) were a PP, however, the morphology assigned most recently would not be DNOM, but POBL. This is not what we find. A masculine inanimate DP in a directional phrase does not bear POBL morphology, but DNOM, just as it does when it is the direct object of a verb:

(72) **POBL-DNOM alternations among prepositions with spatial uses (masculine inanimate noun)**

a. Ona žila [v malen'k-om dom-e].
she lived in small-M.SG.PREP house-PREP
'She lived in a small house.'

b. Ona pošla [v malen'k-ij dom-ъ].
she went in small-M.SG.NOM house-NOM
'She went into a small house.'

If the correct structure is (71), however, the correct predictions are made in such cases. If P is not the head of the phrase that contains it, it will not assign POBL morphology to its sister in (71). Consequently, when DIR merges, the most recently assigned morphology on the elements of DP is DNOM. Since VACC is not assigned to a masculine inanimate object, it should continue to show DNOM. As (72b) shows, this prediction is correct.

As we shall see in the next section, an entirely different set of considerations leads to precisely the same conclusion, lending support to the structure in (71) and our treatment of what looked like VACC-assigning prepositions. Of course it is now be important to establish the principles that require the pattern of projection in (71), while restricting similar D-headed prepositional constructions in other environments. We do not find phrases elsewhere that look like PPs, but are transparent to case-assignment from outside, like the DP in (71). What motivates the unusual choice of head in (71) is therefore a property of DIR that is unique to this construction: for example a semantic requirement for a phrase that *names* a location, rather than supplying a locational argument for a predicate (as in the left column of (70)) — a distinction that might correlate with a DP/PP distinction. Though this is a significant loose end, I must leave it untied in the present paper.

Non-spatial uses of prepositions with accusative nominals will be left as another loose end. My hope is that they too will turn out to present the structure in (71), either with a distinct higher abstract verb (a null verb other than DIR) or with a use of DIR in which the spatial sense is interpreted metaphorically — but firm conclusions must await a more detailed investigation.

8 Argument 2 for the core proposal: you are what you assign

8.1 FA and adnominals

Though we have seen a number of arguments that Russian nouns are "born genitive", and acquire other types of case-marking derivationally, we have not yet explored one of the most significant consequences of this proposal in any depth: the expectation that because N *is* genitive, it should also *assign* genitive. This section takes up this topic. In the course of investigating genitive assignment by N, we will also be exploring another topic missing from the discussion so far: the interaction of morphology assignment by FA with the laws that regulate how the syntax communicates with the phonology.

We have already appealed to assignment of NGEN by N as an explanation for the presence of NGEN morphology on adjectives in paucal and QUANT constructions like (1b) and (2). These adjectives receive NGEN from N (after merging with N') for the same reason that demonstratives and adjectives that precede paucals and QUANT receive DNOM morphology from D (after merging with D'), as discussed in section 4.2. The very same idea is also the most obvious explanation for the most prominent use of genitive case cross-linguistically: as a marker of *adnominal* DPs. These adnominal DPs are a semantically heterogeneous class that includes complements, possessors[66], and the "genitive of quality" constructions explored by Nikolaeva (2007) and others. If the bracketed adnominal DPs in (73a-b) enter the derivation by merging with a projection of N, we may straightforwardly analyze their NGEN morphology as a consequence of FA.[67] A category that merges with a projection of N is expected to receive NGEN morphology:

(73) **Adnominal genitive DPs (nominative environment)**

a. krasivy-j stol-ъ [$_{DP}$ molod-ogo aktër-a] (*possessor*)
beautiful-M.NOM.SG table-NOM.SG young-M.GEN.SG actor-GEN.SG
'the young actor's beautiful table'

b. poln-oe uničtoženi-e [$_{DP}$ bol'š-ogo gorod-a] (*complement*)
complete-N.NOM.SG destruction-NOM.SG big-M.GEN.SG city-GEN.SG
'the complete destruction of the big city'

c. roskošn-oe kresl-o [$_{DP}$ krasn-oj plastmass-y] (*gen. of quality*)
luxurious-N.NOM.SG armchair-NOM.SG red-F.GEN.SG plastic-GEN.SG
'a luxurious armchair (made of) red plastic' (Nikolaeva 2007, 60 ex. (187))

In the context of the present paper, we should ask first, of course, whether the genitive morphology on the bracketed DPs in (73) really is assigned from outside the bracketed DP, or whether alternatively it might realize "primeval genitive" (perhaps because some hidden element moves to D within the adnominal). The behavior of paucal and QUANT and elements, and especially the behavior of pre-D adjectives and demonstratives in genitive adnominals makes it clear that this instance of genitive case truly is assigned from outside the DP. Every element in the DP, including the paucal or QUANT

element, bears NGEN morphology here, which we expect only if the source of NGEN morphology is an assigner external to DP:[68]

(74) **Paucal adnominal genitive DPs (nominative environment)**

a. krasivy-j stol-ъ [$_{DP}$ èt-ix posledn-ix dvu-x molod-yx aktër-ov]
beautiful-M.NOM.SG table-NOM.SG this-GEN.PL last-GEN.PL DUAL-GEN young-GEN.PL actor-GEN.PL
'these last two young actors' beautiful table'

b. poln-oe uničtoženi-e [$_{DP}$ èt-ix posledn-ix pjat-i bol'š-ix gorod-ov]
complete-N.NOM.SG destruction-NOM.SG this-GEN.PL last-GEN.PL five-GEN big-GEN.PL city-GEN.PL
'the complete destruction of these last five big cities'

c. malen'k-ij rebënok-ъ [$_{DP}$ dvu-x let-ъ][69]
small-M.NOM.SG child-NOM.SG two-GEN year-GEN.PL
'a small child of two years' (i.e. 'two years old')

For the theory presented in this paper, the assignment of genitive to adnominals is just the flipside of the fact that N itself is born genitive. The morphology of adnominals in examples like (73) and (74) thus appears to provide crucial evidence for the overall proposal.[70]

8.2 An apparent locality restriction on FA

Nonetheless, there is a serious problem with the analysis in its present form. I have argued that nominal phrases in Russian are DPs. This means that the nominal phrases in (73) and (74) that embed the bracketed DPs are themselves NPs, merged as complements to D. None of these examples contains any QUANT element that needs to move to D. Consequently, the theory so far incorrectly predicts that this D should assign DNOM morphology to *all* the terminal elements of its complement. Though this prediction might appear correct for the head nouns *stol* 'table' and *uničtoženie* 'destruction' and the adjectives that modify them — it is wildly incorrect for the adnominal possessive DP in (73a) and (74a) and the complement DP in (73b) and (74b) — or else we would never had had the chance to observe the adnominal genitive morphology that has been the topic of this section so far. Instead, the result should have been uniform DNOM morphology, i.e. the homogeneous patterns in (75):

(75) **False prediction for adnominal DPs (nominative environment)**

a. * [$_{DP}$ D [$_{NP}$ krasivy-j stol-ъ [$_{DP}$ molod-oj aktër-ъ]]]
beautiful-NOM.SG table-NOM.SG young-NOM.SG actor-NOM.SG

b. *[$_{DP}$ D [$_{NP}$ poln-oe uničtoženi-e [$_{DP}$ bol'š-oj gorod-ъ]]]
complete-NOM.SG destruction-NOM.SG big-NOM.SG city-NOM.SG

What prevents the higher D from placing DNOM morphology on the terminal elements of the embedded adnominal in (73)-(74)? The problem is in fact much more general. Not only the higher D, but *every* element merged later than this D is unable to assign morphology into the bracketed adnominal. For example, if a preposition that assigns POBL morphology is merged with the DPs in (73) or (74), it will deposit dative morphology on the head noun and other elements within the higher DP — but once again, the terminal elements of the adnominal DP remain untouched and genitive, as (76) and (77) show:

(76) **Adnominal genitive DPs** **(oblique environment)**

a. [$_{PP}$ (k) [$_{DP}$ D [$_{NP}$ krasiv-omu stol-u [$_{DP}$ molod-ogo aktër-a]]]]
(to) beautiful-DAT.SG table-DAT.SG young-**GEN**.SG actor-**GEN**.SG
'to the young actor's beautiful table'

b. [$_{PP}$ (k) [$_{DP}$ D [$_{NP}$ poln-omu uničtoženij-u [$_{DP}$ bol'š-ogo gorod-a]]]]
(to) complete-DAT.SG destruction-DAT.SG big-**GEN**.SG city-**GEN**.SG
'to the complete destruction of the big city'

(77) **False prediction for adnominal DPs** **(oblique environment)**

a. * [$_{PP}$ (k) [$_{DP}$ D [$_{NP}$ krasiv-omu stol-u [$_{DP}$ molod-omu aktër-u]]]]
(to) beautiful-DAT.SG table-DAT.SG young-**DAT**.SG actor-**DAT**.SG

b. *[$_{PP}$ (k) [$_{DP}$ D [$_{NP}$ poln-omu uničtoženij-u [$_{DP}$ bol'š-omu gorod-u]]]]
(to) complete-DAT.SG destruction-DAT.SG big-**DAT**.SG city-**DAT**.SG

The same problem arises if a verb is substituted for the preposition. If a DP like those under discussion merges with V, and the DP has the right properties to receive VACC from the verb (as discussed in the preceding section), the proposal predicts incorrectly that the terminal elements of the adnominal DP should show VACC morphology. In reality, though the rest of the nominal does receive VACC morphology, the adnominal itself once again remains genitive:

(78) **Adnominal genitive DPs** **(accusative environment)**

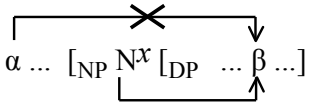
My videli [$_{DP}$ D [$_{NP}$ krasiv-uju lamp-u [$_{DP}$ molod-oj aktris-y]
we saw beautiful-F.ACC.SG lamp-ACC.SG young-GEN.SG actress-GEN.SG
'We saw the young actress's beautiful lamp.'

(79) **False prediction for adnominal DPs** **(accusative environment)**

*My videli [$_{DP}$ D [$_{NP}$ krasiv-uju lamp-u [$_{DP}$ molod-uju aktris-u]
we saw beautiful-F.ACC.SG lamp-ACC.SG young-ACC.SG actress-ACC.SG

It looks as though feature assignment to the terminal elements of an adnominal DP is being blocked when its source is any element other than the N (or projection of N) with which the adnominal DP was merged. This observation is schematized in (80).

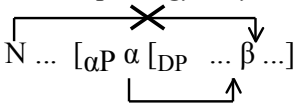
(80) *α's morphology may not end up on β*



N's morphology may end up on β

The problem is even more widespread. Consider a configuration that is the inverse of (80), with N^x and α switching places. If N or a projection of N attempts to assign NGEN to a DP that did not merge with it, but is instead *contained within* a phrase that merged with it, it is now NGEN assignment by N^x that fails, as schematized in (81):

(81) *N's morphology may not end up on β*



α's morphology may end up on β

The noun *ljubov'* 'love', for example, takes a PP complement (bearing the θ-role "target of emotion") headed by the PDAT-assigning preposition *k* 'to, for'. The terminal elements of the DP complement to P in this configuration bear the PDAT morphology that *k* assigns. Crucially, this morphology is not overwritten by NGEN assigned by N, as should happen under the theory so far:

(82) **Adnominal complement PP containing a DP** **(nominative environment)**
[ljubov'-ь [$_{PP}$ k [$_{DP}$ D [$_{NP}$ trë-m apel'sin-am]]]]
love-NOM for three-DAT orange-DAT.PL
'love for three oranges'

(83) **False prediction for adnominal complement PP containing a DP**
(nominative environment)
*[ljubov'-ь [$_{PP}$ k [$_{DP}$ D [$_{NP}$ trë-x apel'sin-ov]]]]
love-NOM for three-GEN orange-GEN.PL
'love for three oranges'

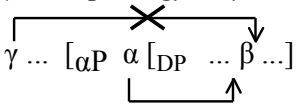
The same noun may also take a non-complement DP adnominal (bearing the θ-role "experiencer"), which omits the preposition. Under these circumstances and these circumstances alone, NGEN appears on the terminal elements of the adnominal non-complement:

(84) **Adnominal DP** **(nominative environment)**
[ljubov'-ь [$_{DP}$ D [$_{NP}$ trë-x apel'sin-ov]]]
love-NOM three-GEN orange-GEN.PL
'love of (i.e. on the part of) three oranges'

It looks as though if we are dealing with a locality restriction on Feature Assignment — but of what sort? The problem is clearly not a general prohibition on assigning morphology across a maximal projection. Throughout our discussion, we have seen many examples in which morphology is assigned across such a boundary (for example, the assignment of DNOM to elements of NP and the assignment of POBL or VACC to the elements of DP). Nor is the problem as simple as a prohibition against assignment across *multiple* maximal projections, since we have seen many examples of this as well. For example, when assignment by P deposits POBL case morphology on the elements of an NP, it crosses both a DP and an NP boundary to do so. The same happens when V places VACC morphology on the elements of NP within its DP complement.

Instead, the problem appears to be specific to assignment across a *DP* boundary. Here too, however, we cannot exclude assignment across DP in general, since we have also seen many examples in which P, V — and now N — deposit morphology on the terminal elements of DPs that merge with them. Instead, what (80) and (81) suggest is that assignment across a DP boundary is restricted to the element with which that DP merged, as schematized in (85):

(85) *γ's morphology may not end up on β*



α's morphology may end up on β

8.3 Explanation for the locality restriction

DPs have, of course, been argued to be special in another context: they belong to the subset of constituents called *phases*. The construction of a phase by iterated, recursive Merge has been argued to trigger the operation *Spell-out*, which transmits information about the syntactic derivation to the phonological components of the grammar. Though there are different proposals about the kinds of information that are transmitted and about the impact of Spell-out on the syntax itself (Chomsky 2001, 2004; Matushansky 2005; Fox & Pesetsky 2005) — constant across the various proposals is the idea that Spell-out of a phase tells the phonology what syntactic units it needs to pronounce, and how they should be linearized. This information may be supplemented as the result of later instances of Spell-out, but may not be erased. The relation between the syntactic and phonological derivations is monotonic.

Assume that spell-out of a phase Φ tells the phonology, among other things, what morphemes are present on the lexical items contained within Φ.[71] If this is so, then no instance of FA that applies after the Spell-out of Φ will ever have a detectable effect on the pronunciation of the terminal elements of Φ. The lexical items of Φ will be forever frozen in the form that they had already taken at the moment of Spell-out. The presence of genitive morphology on the terminal elements of the adnominals in (73), (74), (76), (78), (82) and (84) — despite the presence of higher elements that should have deposited their features in the form of morphology on these terminal elements — may then be taken as examples of the freezing effect of Spell-out on the pronunciation of the adnominal DP.

What becomes crucial is the timing of Spell-out: when precisely is a phase spelled out? The observation in (85) appears to teach us that Spell-out of a phase Φ is triggered only after Φ has undergone Merge, and that FA applies immediately *before* Spell-out, as outlined in (86):

(86) **Timing of operations relevant to Spell-out of a phase Φ**
Step 1: The syntax constructs Φ.
Step 2: Merge (α, Φ).
Step 3. FA applies
Step 4: Spell-out applies to Φ (freezing it for further applications of FA).

For the sake of clarity, we might also revise FA as follows, where "accessible" means "not contained within a previously spelled-out domain":[72]

(87) **Feature Assignment (FA), version 4 of 5**
a. ***Copying:*** When α merges with β, forming [$_{\alpha}$ α β], if α has satisfied its complementation requirements and is designated as a feature-assigner for β, its grammatical features are immediately copied onto β...
b. ***Realization: ...***and are realized as morphology on all *accessible* lexical items dominated by β.

If this proposal is tenable, we solve the problems considered in this section. When an adnominal DP merges with N, FA applies immediately, assigning NGEN morphology to the elements of the adnominal DP. The next step in the derivation spells out the adnominal DP. From this point on, its terminals will retain the NGEN morphology that they bore at the moment of Spell-out. Likewise, in (82), merger of the preposition *k* with its object DP was followed by assignment of PDAT to the terminal elements of DP, an operation that in turn was immediately followed by Spell-out of that DP. As a consequence, when the PP headed by *k* is merged as a complement of N, NGEN does not show up on the DP object of the preposition, since the pronunciation of the contents of this DP are frozen in the form they took at the moment of Spell-out.

This result, if correct, provides the promised second reason for positing the D-headed prepositional construction in (71) that was crucial to our analysis of prepositions that (seem to) assign VACC. If the complement to DIR were a PP (rather than the preposition-containing DP motivated by the morphological facts), DIR would not be able to assign VACC across PP to the nominal. DIR would be an instance of γ in (85), and the PP would be instance of αP, blocking FA by DIR to β, the nominal. If the complement is a DP, DIR is α and the DP is β, posing no obstacle to the assignment of VACC to the nominal.

Finally, small-clause constructions suggest that Spell-out, like FA, also applies to DP only once it is Vergnaud-licensed. If the bracketed DP in (88) enters the derivation as the subject of a small clause whose predicate is the adjective 'beautiful', Spell-out of this DP must be delayed until the higher verb is merged, or else we expect to find its lexical items marked with DNOM morphology, not the VACC morphology that actually appears:[73]

(88) **Small clause construction**
Ja sčitaju [èt-u lamp-u] krasiv-oj.
I consider this-F.ACC.SG lamp-ACC.SG beautiful-F.INSTR.SG[74]
'I consider this lamp beautiful.'

Suppose the subject of a small clause must raise into the higher VP in order to be Vergnaud-licensed (as argued for English ECM constructions by Chomsky 2008, adapting proposals by Lasnik & Saito 1991 and Postal 1974). If a DP undergoes Spell-out only once it is Vergnaud-licensed, the presence of VACC on *ètu lampu* in (88), rather than DNOM, is accounted for. The bracketed DP does not undergo Spell-out until after it re-merges with a projection of the higher verb, which assigns VACC to it.

8.4 Loose end: prepositions that appear to assign NGEN

Just as we needed to acknowledge the existence of prepositions that appear to assign VACC at the end of our discussion of accusative case in section 7.3, so we must note the existence of prepositions that appear to assign NGEN — and for the same reasons. The apparent existence of NGEN-assigning prepositions threatens the claim that the syntactic categories and the cases should be identified.

For many of the expressions listed in Russian dictionaries as "prepositions that govern the genitive", there is an easy resolution to this problem. These prepositions are transparently complex, consisting of an independently attested preposition (typically *v* 'in', *na* 'on' or *po* 'along') followed by a morpheme that independently occurs as a noun, and bears its own case suffix. Examples include *v-vidu* 'in view of' (< 'in view-PREP.SG'), *v-mesto* 'instead of' (< 'into place-ACC.SG'), *vo-krug* 'around' (< 'into circle-ACC.SG'), *na-sčët* 'concerning' (<'onto account-ACC.SG'), *po-verx* 'on top of' (< 'up.against top'). In

other cases, the second component is not an independently occurring noun in the modern language, but bears a case suffix that allows it to be parsed as a probable noun. For example, the second component of *v-nutri* 'inside (locative)' and *v-nutr′* 'inside (directional)' is clearly the same morpheme in each case: a class 3 noun *nutr′* 'interior' that bears PLOC morphology in the first example and the kind of morphology expected of direct objects in the second. Despite the fact that the word *nutr′* is hardly used in the contemporary language except as a component of *vnutri* and *vnutr′*, this is clearly the correct analysis, since it makes immediate sense of the semantic distinction between the two expressions as an instance of the same alternation seen in (70):[75] $[_{PP}\ v_P\ [_{NP}$ *nutr-i* DP]] vs. $[_{DIRP}\ DIR_V\ [_{DP}\ v_P$ *nutr-′* DP]]. *Po-zadi* 'behind' presents a similar case, consisting of an independently occurring preposition and the PPREP (prepositional case) form of a class 3 noun *zad′* that does not otherwise exist, but shares a root with a large number of words that are used independently — and there are other examples as well.

Can a similar analysis be extended to *all* other prepositions that govern the genitive? If one is willing to accept some startlingly creative morpheme divisions for which synchronic support is otherwise lacking, a number of other examples can be analyzed in much the same fashion as those just discussed, e.g. *pro-tiv* 'against, opposite from'; *o-kolo* 'near'; *po-sle* 'after'. In each instance, the material before the hyphen is a preposition of the language, even though the material after the hyphen is otherwise unknown.[76] In other cases the existence of a P+N paraphrase for a seemingly monomorphemic preposition might be taken (as it is in much current work) as support for a phrasal analysis, e.g. *krome* 'except', with its an equally common P+N paraphrase *za isključeniem* 'with the exception of'; both take a genitive DP. Finally, directional prepositions that denote 'motion from' uniformly take a genitive DP: *iz* 'from', *ot* 'from' and *s* 'down from'. Here one might imagine that the same DIR posited in our discussion of accusative-governing prepositions might take a null noun whose meaning is exclusionary ('complement set of') as its object, with this noun in turn assigning NGEN to its complement: $[DIR_V\ [$COMPLEMENT-SET-OF$_N$ DP]].[77]

A residue remains, which includes several of the most common prepositions of the language: *bez* 'without', *dlja* 'for', *do* 'up to', *mimo* 'past', *u* 'at, by, belonging to'. While it is not inconceivable that a fuller analysis of the syntax associated with these prepositions will reveal a nominal component, it is also possible that the objects of these prepositions bear NGEN for some other reason. As was the case with our discussion of a subset of prepositions that seem to assign VACC, I must leave the matter open.[78]

9 Feature Assignment and the notion *prototype*

9.1 Number in adnominal paucal constructions

One important detail of the Russian adnominal genitive still remains unaccounted for. I will first sketch a resolution that involves a modification of the view of FA taken so far. I will then suggest that this modification might in turn shed light on the parameter that distinguishes "case languages" like Russian from languages without case morphology such as English or French.

As noted in footnote 68, when a paucal nominal phrase is merged as an adnominal, not only are all accessible elements of the paucal marked with NGEN morphology, but also this morphology is uniformly *plural*. Plural NGEN morphology is also present on the noun of the paucal construction. Recall that this noun entered the derivation numberless, so the fact that it bears a plural version of NGEN morphology within an adnominal DP is unexpected. These facts were exemplified in example (74a), repeated below with the surprising plural morphology boldfaced:

(89) **Paucal adnominal genitive DP** **[** = (74a)]
krasivy-j stol-ъ [$_{DP}$ èt-ix posledn-ix dvu-x molod-yx aktër-**ov**]
beautiful-NOM.SG table-NOM.SG this.GEN.PL last.GEN PL DUAL-GEN young-GEN.PL actor-GEN.**PL**
'these last two young actors' beautiful table'

We did, of course, face an almost identical problem in section 4.2, when we examined the morphology of POBL assigned to the elements of a paucal nominal — but if we apply the solution that worked for POBL to adnominal NGEN, a significant problem arises. Recall that the noun in an oblique paucal construction, like the embedded noun in (89), bears a plural version of its case morphology, as shown in (90) below (once again, despite the fact that it entered the derivation numberless):

(90) **Paucal oblique DP** [modeled on (3b)]
(k) [$_{DP}$ èt-im posledn-im dvu-m molod-ym aktër-**am**]
(to) these-DAT.PL last-DAT.PL DUAL-DAT.PL young-DAT.PL actor-DAT.**PL**
'to these last two young actors'

The plural morphology on the noun in (90) was attributed to number agreement, triggered by unvalued NBR features on the element responsible for assigning POBL case morphology to it. This element was assumed to be P itself. As discussed, when the unvalued NBR features of this element probe the paucal DP, the first goals that they meet are valued [-SINGULAR]. Consequently, its previously unvalued NBR features are valued [-SINGULAR], and plural POBL morphology is deposited on the numberless noun by FA, in accordance with rule (25)).

This explanation for (90) cannot be straightforwardly extended to adnominal constructions such as (89), however, unless we revise some aspects of our theory of FA. We have assumed that when α merges with β, α itself is directly responsible for the assignment of morphology to β. Consequently, if we learn that certain features of the morphology assigner are unvalued, it must be α itself that bears unvalued versions of these features. That conclusion could be maintained for POBL, since no data contradict the supposition that prepositions enter the derivation with unvalued NBR features. A comparable conclusion cannot be maintained for NGEN, however. Nouns clearly *do* enter the derivation knowing whether they are [-SINGULAR] or [+SINGULAR] (or numberless). This assumption was in fact crucial to our account of other aspects of the paucal construction, as can be seen by re-examining the presentation in (15).[79]

Consequently, we must make two related revisions in our understanding FA. First, in light of examples like (89), we can no longer assume that what is copied onto β when it merges with α is the matrix of grammatical features of α itself, including its values for such features as NBR. Instead, what is copied must be a reduced, "least common denominator" feature matrix, whose features for part of speech are valued, but whose other features are unvalued. I will call this reduced version of α the *prototype* of α, and notate it with a dot, e.g. α•:

(91) **Prototype**
A feature matrix $\alpha^{\bullet}$ is the *prototype* of a lexical item α whose part of speech is *x* iff:
i. for every feature F of some lexical item in *x*, F∈ $\alpha^{\bullet}$; and
ii. for every feature F∈ $\alpha^{\bullet}$, F is valued iff F is a part-of-speech feature.

What FA does when α merges with β is to *copy* $\alpha^{\bullet}$ *onto* β. It is α•, not α, whose unvalued features probe β, and it is α• that is directly responsible for morphology on the terminal elements of β. That is why

this morphology reflects the part of speech of α, but reflects the NBR specification of β, in examples like (89) (and, we may now assume, (90) as well).

In addition, if it is the features of α•, and not the features of α itself, that probe β, FA must also specify the *specific structural position* occupied by α•, from which its unvalued features probe β. This position must c-command β, but it must not c-command α. — or else the unvalued features of α• would enter an Agree relation with their valued counterparts on α, quite the wrong result. We conclude, therefore, that FA merges α• directly with β, as stated in (92)

(92) **Feature Assignment (FA), version 5 of 5**

a. **Copying:** When α merges with β, forming $[_{\alpha}\ \alpha\ \beta]$, if α has satisfied its complementation requirements and is designated as a feature-assigner for β, *its prototype α• is immediately merged with β, forming* $[_{\alpha}\ \alpha\ [_{\beta}\ \alpha^{\bullet}\ \beta]]$.

b. **Realization as morphology:** α• is realized as morphology on all *accessible* lexical items dominated by β.

We can now explain why the NGEN morphology assigned to the N of the paucal adnominal in (89) is plural (*aktër-**ov***), even though the higher N 'table' ultimately responsible for NGEN assignment to the adnominal is singular. Though the N is singular, its prototype N• is unvalued for NBR. Its NBR features receive the value [-SINGULAR] by probing and agreeing with the adnominal DP. From its position as a sister to the adnominal, N• assigns morphology to the terminal elements of the DP it has been merged with, just as we have been claiming throughout this paper. Because N• now bears [-SINGULAR], it will assign the plural version of NGEN morphology to the otherwise numberless N of a paucal construction, as required under rule (25). Note that the same account can now be given for the POBL example in (90) as well. Regardless of whether P itself is lexically valued for NBR (a question that is now irrelevant and perhaps untestable), its prototype P• is unvalued for NBR (by definition), and FA applies as above. In direct object position, where the requirements for assignment of VACC are met, V• will behave the same way.

9.2 Stress shifts in numberless nouns

With an analysis of adnominal genitive case assignment in place, we are now in a position to discuss a famous phonological peculiarity of paucal constructions that has often been taken as crucial evidence in favor of approaches to paucal constructions quite different from the one developed in this paper. We have claimed that the case morphology on a noun in a nominative paucal construction is the same as that found on the noun of an adnominal DP: namely, NGEN. Famously, however, five Russian nouns of declension class 1 show a difference in word stress between these two environments: *rjad* 'row', *čas* 'hour', *šar* 'sphere', *šag* 'step', and *sled* 'trace'. Though the segmental content of the case suffix is the same (*-a*), stress falls on the stem in an adnominal genitive DP, but on the suffix in a nominative paucal construction:

(93)a. **Adnominal non-paucal DP with a noun of the *rjad* group (nominative environment)**
stem stress
konec-ъ $[_{DP}$ èt-ogo posledn-ego rj*á*d-a]
end-NOM.SG this-NOM.SG last-GEN.SG row-GEN.SG
'the end of this last row'

b. **Paucal DP with a noun of the *rjad* group** **(nominative environment)**
suffix stress
èt-i posledn-ie dva rjad-*á*
these.NOM.PL last-NOM.PL DUAL.NOM row-GEN.NUMBERLESS
'these last two rows'

Though the suffix found in a nominative paucal environment on the five nouns of this class is segmentally identical to the normal NGEN suffix *-a*, as can be seen in **(93**a-b), this difference in stress has been taken by some researchers as evidence that the case of a noun in a nominative paucal construction is not genitive at all — in sharp contrast to the proposal advanced here. Some of these researchers posit a special case assigned by the paucal numerals (Isačenko 1962, 529-530, as cited by Mel'čuk 1985,174; Zaliznjak 1967, 46-48; Rappaport 2002, 2003; cf. also Franks 1994, 600 n. 3) — called the *sčëtnaja forma* 'numerative form' by Isačenko and Zaliznjak and *paucal case* by Rappaport.[80] Others suggest that the inflection found on nouns in nominative paucal constructions is actually the *nominative* form of a special *paucal number* on nouns; and that what looks like genitive plural morphology on modifying elements is actually the nominative-case, paucal-number form of these adjectives (Kobiljanskij 1953, as cited by Mel'čuk 1985,173; Yadroff 1999, 147-149; Rakhlin 2003; Nevins & Bailyn 2008).

By contrast, the assumption that the noun *rjad* bears NGEN in both constructions in (93) is crucial to the broader claims of this paper. The idea that nouns assign genitive because they *are* genitive is one of our central arguments for the claim that the case categories are in fact just the syntactic categories. If the noun in a paucal construction does not bear NGEN morphology after all, this argument vanishes.

Any discussion of the problem should begin with an acknowledgement that no proposal is likely to be able to *predict* the anomalous behavior of the five nouns that display the stress shift in (93). They share no common feature that distinguishes them from other nouns of the same declension class that do not behave anomalously.[81] The strongest argument that could ever favor one analysis over another must therefore concern *degree of anomaly*: to what extent does a given proposal provide an independently motivated pigeonhole into which the anomaly fits?

Proposals like Zaliznjak's and his successors that posit distinct cases for *rjád-a* in (93a) and *rjad-á* (93b) make no predictions about what form these case suffixes will take. These proposals therefore face the challenge of explaining why the form taken by nouns in nominative paucal constructions is segmentally identical to the genitive singular across all declension classes and genders. A proposal like ours that identifies both forms as genitive has the advantage here, because it predicts segmental identity. On the other hand, it needs to offer an account of the stress shift.

In fact, the proposal developed in this paper does contain a pigeonhole into which the exceptional stress pattern of nouns like *rjad* can be fit. Although the NGEN suffix in both the adnominal construction of (93a) and the paucal construction of (93b) takes the default form (*-a*, for declension class 1) expected of any case morpheme that is not [-SINGULAR], these two instances of *-a* do differ in number. The *-a* suffixed to N in the adnominal construction of (93a) is a [+SINGULAR] variant of NGEN, reflecting the fact that the noun itself entered the derivation with the property [+SINGULAR], and therefore receives [+SINGULAR] variants of the case suffixes that attach to it in the course of the derivation. The *-a* suffixed to N in the paucal construction of (93b), on the other hand, is a *numberless* variant of NGEN (as the gloss for (93a) indicated, with malice aforethought). This *-a* is a realization "of

primeval" NGEN, which made a noun out of a root in the lexicon; and no other morphology has overwritten it in the course of the syntactic derivation.

As it happens, idiosyncratic number-dependent stress shifts are fairly common in the Russian nominal system. In declension class 1, to which the five nouns like *rjad* belong, approximately 50 nouns with an otherwise normal declensional paradigm show a stress shift from stem to suffix in the plural: e.g. *nós-u*, *nós-e*, *nós-om* 'nose.DAT/PREP/INSTR.SG' vs. *nos-ám, nos-áx*, *nos-ámi* 'nose.DAT/PREP/INSTR.PL' (Garde 1980, 183-184).[82]

Strikingly, all five nouns of the *rjad* group belong to this class as well: cf. *rjád-u*, *rjád-e, rjád-om* 'row.DAT/PREP/INSTR.SG' vs. *rjad-ám, rjad-áx, rjad-ámi* 'row.DAT/PREP/INSTR.PL'. All that needs to be said about the five nouns that behave like *rjad* is that *the stress shift that they exhibit in the plural is exceptionally extended to numberless forms* — in contrast to other nouns of stress-shifting class that group their numberless forms with the singular. We may conclude that the stress shift seen in (93b) is *not* a phenomenon peculiar to paucal constructions. Consequently, it does not motivate the postulation of a special case or number paradigm.

9.3 Overt prototypes in languages without case morphology

At this point, one might reasonably object that the revision to FA developed in 9.1 is undermotivated, having been developed solely to solve the problem of nominal number morphology on one lexical item of (89). Is there any *independent* evidence that merger of α with β is followed by the merger of α• with β, as we have argued?

In fact, if the second clause of FA (92b) is taken to be a locus of variation across languages, independent evidence may indeed be found. "Copying" without "realization as morphology" might offer an analysis of the free-standing "little words" that serve so often as the counterparts to case morphology in languages like French or English that largely lack this morphology. Suppose, for example, that N merges with DP as in (89), triggering the secondary merger of N• with DP, as required by the first clause of FA, (92a). Now suppose that in some languages, this copying is *not* followed by realization of the prototype as morphology on the elements of DP. Instead, N• is realized in situ, as a free morpheme prefixed to the adnominal DP itself. The result might provide a partial theory of morphemes like French *de* and English *of*, and their relation to NGEN morphology in languages like Russian — namely, that they are instances of NGEN that have undergone only the first of the two processes given in (92):

(94) **Non-morphological N• in French?**
la table$_N$ [$_{DP}$ **de$_{N•}$** [ces deux jeunes acteurs]]
the table of these two young actors

The distribution of *de* in the French nominal system bears a particularly striking degree of similarity to the distribution of NGEN morphology in Russian, in ways that suggest the possible fruitfulness of this approach — and might ultimately provide a testing ground for it. Suppose, for example, that not only the elements assigned by FA as a consequence of merge, but also categorizing elements such as the "primeval genitive" that creates nouns, are prototypes. Suppose further that a single parameter governs the realization of prototypes, whether merged in the lexicon (as part of the process of categorizing a root for part of speech) or by FA in the syntax. We might state the parameter as follows, with (95a) intended as a replacement for (92b), the second clause of FA:

(95) **Prototype parameter**
A prototype $\alpha^{\bullet}$ merged with β (whether in the lexicon or syntax) is (also) ...
a. **languages like Russian:** ... merged (as morphology) with all accessible lexical items reflexively dominated by β, and pronounced there.
b. **languages like French:** ... merged with the maximal projection of β, and pronounced there.

In a language like Russian, if $N^{\bullet}$ is merged in the lexicon with a root R (as part of the process of creating a noun), it satisfies (95a) trivially (without remerge). When it is merged in the syntax with a phrasal projection, it will be remerged with the accessible terminal elements of that projection, as discussed throughout this paper. In a language like French, on the other hand, it is merger of $N^{\bullet}$ with an adnominal phrase as required by FA that is the trivial case, satisfying (95b) without any remerger. It is lexical merger of $N^{\bullet}$ with a root that requires remerger of $N^{\bullet}$ with NP. That is why where Russian shows an NP whose head bears "primeval" NGEN, French shows *de* prefixed to the NP as a whole:

(96) **French QUANT construction (nominative environment)**
a. beaucoup $[_{NP}\ de_{\mathbf{N^{\bullet}}}$ jeunes acteurs]
many of young.PL actors.PL
"many young actors"

b. *cf. Russian*
mnogo $[_{NP}$ molod-yx aktër-$ov_{\mathbf{N^{\bullet}}}$]
many young.GEN.PL actors.GEN.PL

Suppose now that the One-Suffix Rule is generalized to cover phrasal as well as word-internal occurrences of prototypes:

(97) **The One-Prototype Rule [replaces the One-Suffix Rule in (7)]**[83]
In the configuration $[_{\beta^n}\ x^{\bullet}\ [_{\beta^n}\ y^{\bullet}$ ... β ...]] (order irrelevant), delete $y^{\bullet}$.

We now expect the addition of D to a non-quantificational NP to generally suppress *de* in French, just as it suppresses NGEN morphology in Russian. The realization of French D might be null in some circumstances, as it is in some declension classes of Russian:[84]

(98) **French QUANT construction (nominative environment)**
a. ces D $[_{NP}\ \mathbf{D^{\bullet}}\ (de_{\mathbf{N^{\bullet}}})$ jeunes acteurs] (*ces jeunes acteurs*)
these -- of young.PL actors.PL
"these young actors"

b. *cf. Russian*
èti D $[_{NP}$ molod-$(yx_{\mathbf{N^{\bullet}}})$-$ye_{\mathbf{D^{\bullet}}}$ aktër-$(ov_{\mathbf{N^{\bullet}}})$-$y_{\mathbf{D^{\bullet}}}$] (*èti molodye aktëry*)
these young-(GEN.PL)-NOM.PL actors-(GEN.PL)-nom.pl

What saves *de* from suppression in (96a) might then be the same QUANT-seeking property of D that saves NGEN morphology from suppression in its Russian counterpart (96b), with possibly the same QUANT-to-D movement as well. The null $D^{\bullet}$ element that would be the French counterpart to DNOM morphology in Russian is prefixed to *beaucoup* itself:

(99) **French QUANT construction (nominative environment)**

$[_{DP}\ D + [D^{\bullet}\ beaucoup]\ [_{NP}\ de_{N^{\bullet}}\ \_\_\ jeunes\ acteurs]]$

Because French lacks a distinct class of paucals, and because the choice of the (b) value for the parameter in (95) limits the circumstances under which prototype elements stack, a linguist specializing in French would be very unlikely to arrive at the analysis sketched in (99) on the basis of French evidence alone. On the other hand, there are so many other similarities between the Russian and French nominal systems, particularly as they concern quantificational elements like *beaucoup/mnogo*, that it may well be profitable for the analysis of each language to be informed by the results achieved by studying the other. Both languages, for example, have a "genitive of negation" construction.[85] In both languages, the class of non-numeral quantifiers that behave like *beaucoup/mnogo* is roughly the same — including the word for *how many*, which may separate from its NP under *wh* in both languages, obeying many of the same constraints (Obenauer 1984, Pesetsky 1982, Podobryaev 2010). Furthermore, although numeral constructions do not straightforwardly behave like *beaucoup* in French, since they do not normally contain an instance of *de* between the numeral and NP, they do take a genitive clitic when the NP is pronominal — and a *de* surfaces obligatorily before a right-dislocated NP corresponding to such a pronoun (Milner 1978).

Consequently, though firm conclusions about languages like French in this context must await more detailed investigation, it is possible that the distribution of *de* will support the notion of "prototype" cross-linguistically — and in particular, the following proposals:[86]

1. that it is $\alpha^{\bullet}$ (not α itself) that FA assigns as a sister to β after α merges with β; and
2. that a root R is assigned to syntactic category α by the merger of $\alpha^{\bullet}$ with R.

10 Conclusions

It might be considered a defect of the proposals presented in the preceding section that they rely on auxiliary proposals that are independent of the central ideas of this paper concerning case and the syntactic categories: in particular, the movement operations that have been posited (on the part of NBR and QUANT) and the ordering of Merge, FA and Spell-out stipulated in (86). At the same time, there is an interesting logic to our findings that mitigates this objection, I believe — albeit in a somewhat curious manner.

Let us imagine, for the sake of the argument, that our overall proposal is true: that nouns are born genitive, that they and other elements assign their features in accordance with FA as stated in (56), and that Russian suppresses inner case morphology in accordance with the One-Suffix Rule in (7). Note now the following curious fact: were it not for the movement requirements of D that preserve primeval genitive in paucal and QUANT constructions, and were it not for the timing of phasal Spell-out that insulates adnominals from the effects of DNOM morphology assigned in the higher DP, the language would offer *so sign whatsoever* that nouns have anything at all to do with genitive case. All evidence that a noun is primevally genitive and all evidence that it may assign genitive morphology would be obliterated by the assignment of DNOM by the D that selects the noun's maximal projection as a complement. Though these considerations do not argue in favor of either our overall proposal nor the specific analyses of Russian that have been presented here, they do teach us that there is probably no simpler variant of our overall approach that might dispense with our auxiliary proposals, while still meeting the challenge of the facts.

For these reasons, I believe that the proposals defended here argue in favor of the independently desirable conclusions suggested in section 2. The special case categories that have been considered indispensible in the description of languages like Russian may indeed reduce to independent categories of the syntax. I have proposed that the major case categories nominative, genitive, accusative and oblique are simply the *parts of speech* D, N, V and P — and that a lexical item that assigns a particular type of case morphology is simply copying a version of its own part of speech features. If my arguments in favor of this proposal are correct, we have, to a significant extent "eliminated the middleman": always a step forward.

Appendix 1: Nominative plural adjectives in paucal constructions

When an adjective modifies a feminine noun in a paucal construction, contemporary speakers tolerate two distinct patterns of case morphology on the adjective. The adjective may be genitive plural, just as it is when the noun belongs to the masculine or neuter gender. This is the pattern discussed in the body of the paper, and predicted by its proposals. Alternatively, however, the adjective may be *nominative* plural, which is not predicted by the analysis in the body of the paper. Both alternatives are robustly attested with feminine nouns, but the unexplained nominative plural option for the adjective is several times more common than the predicted genitive plural (Suprun 1959, 73; Corbett 1993, 26), so it cannot be ignored.[87]

Though it is clear that the nominative variant is not predicted, it is not clear precisely how the problem should be characterized. At issue is a question seldom raised by traditional or generative grammarians in this context: what morphology does the feminine *noun* bear when used with a nominative plural adjective? This question arises because the genitive non-plural (singular and numberless) form of feminine nouns in Russian is almost always syncretic with the nominative plural, as can be seen in (100a-b) below, which exemplifies the two patterns found in paucal constructions with a feminine noun of declension class 2. (Feminine nouns of declension class 3 show the same syncretism.)

(100) **Case options in paucal constructions with feminine N (nominative environment)**

a. dv-e krasiv-yx lamp-y
two-F.NOM beautiful-GEN.PL lamp-GEN.SG^{o}/NOM.PL

b. dv-e krasiv-ye lamp-y
two-F.NOM beautiful-NOM.PL lamp-GEN.SG^{o}/NOM.PL

Though it is commonly assumed that the noun in both patterns is non-plural and genitive, it is also conceivable that the noun found with the nominative plural adjective in constructions like (100b) is actually *plural* and *nominative*, like the adjective that modifies it. If so, the variant in (100b) could now be described as an instance of the *homogeneous* pattern: in our terms, plural DNOM morphology assigned by D to all the elements of NP.

A puzzle would still remain, of course. What permits feminine nominal phrases to display a homogeneous pattern in environments where non-feminines disallow it? On the other hand, a DP in which every element is nominative plural is a less exotic puzzle in the context of our proposals than one in which the noun is genitive non-plural and the adjective is nominative plural. There is at least a pigeonhole made available by the theory, into which we can fit a nominative plural analysis of the noun in (100b). This is the same pigeonhole into which we fit the agreeing quantifiers discussed in section 6.2. We might thus stipulate the following:

(101) **QUANT-to-D optionality**
QUANT movement to D is optional in a feminine nominal phrase if NBR has moved to QUANT.[88]

The optional application of QUANT-to-D movement will yield the pattern in (100a) (familiar from non-feminine nominals), while the option of non-movement will yield the novel pattern in (100b), on the assumption that the noun here is nominative plural.[89]

An interesting pattern of verbal agreement uncovered by Suprun (1959, 76-77) and developed by Corbett (2006, 196-197) provides an argument in favor of this proposal: in particular, that QUANT-to-D movement is absent from examples like (100b), and that such examples do indeed instantiate the "homogeneous" pattern. When the highest argument of a clause is a quantified nominal of the sort that we have analyzed as showing QUANT-to-D movement, the finite verb shows a much-studied alternation between plural and default (neuter singular) agreement on the finite verb (cf. note 64). Crucially, the uniformly homogeneous quantified nominals discussed in section 6.2 in which QUANT does not move to D, do not participate in this alternation. When such nominals are the highest argument in their clause, agreement on the finite verb must be plural:

(102) **Verb agreement alternation with quantified nominal in which QUANT moves to D (yielding a heterogeneous nominal)**

a. Na stole leža-l-o pjat'-ь bol'š-ix predmet-ov.
On table-LOC.SG lie-PST-N.SG five-NOM large-GEN.PL object-GEN.PL

b. Na stole leža-l-i pjat'-ь bol'š-ix predmet-ov.
On table-LOC.SG lie-PST-PL five-NOM large-GEN.PL object-GEN.PL
'On the table were lying five large objects.'

(103) **No verb agreement alternation with quantified nominal in which QUANT does *not* move to D (yielding a homogeneous nominal)**

a. *Na stole leža-l-o mnogi-e bol'š-ie predmet-y.
On table-LOC.SG lie-PST-N.SG many-NOM large-NOM.PL object-NOM.PL

b. Na stole leža-l-i mnogie-e bol'š-ie predmet-y.
On table-LOC.SG lie-PST-PL four-NOM large-NOM.PL object-NOM.PL
'On the table were lying many large objects.'

When the highest argument is a feminine nominal that contains a paucal and a modifying adjective bearing *genitive plural* morphology, as in (100a), both plural and default singular agreement on the verb are possible, just as in (102), as shown in (104). Suprun and Corbett observe, however, that if the modifying adjective in such a sentence bears *nominative plural* instead, the alternation disappears. Only plural agreement is possible on the finite verb, as shown in (105):[90]

(104) **Verb agreement alternation with a feminine paucal nominal and *genitive plural* adjective [pattern (100a)]**

a. Na stole leža-l-o dv-e bol'š-ix knig-i.
On table-LOC.SG lie-PST-N.SG two-F.NOM large-GEN.PL book-GEN.SG^{o}

b. Na stole leža-l-i dv-e bol'š-ix knig-i.
On table-LOC.SG lie-PST-PL two-F.NOM large-GEN.PL book-GEN.SG^{o}

(105) **No verb agreement alternation with a feminine paucal nominal and *nominative* plural adjective [pattern (100b)]**

a. *Na stole leža-l-o dv-e bol'š-ie knig-i.
On table-LOC.SG lie-PST-N.SG two-F.NOM large-NOM.PL book-GEN.SG°/NOM.PL

b. Na stole leža-l-i dv-e bol'š-ie knig-i.
On table-LOC.SG lie-PST-PL two-F.NOM large-NOM.PL book-GEN.SG°/NOM.PL
[(104)-(105) adapted from Corbett 2006, 196-197, exx. (42)-(45)]

In this respect, the paucal nominal in (105) behaves exactly like the corresponding quantified nominal in (103). If (101) is correct, and QUANT does not have to move to D in a feminine paucal nominal, we may attribute the impossibility of default verbal agreement to the same factor in both cases: the absence of QUANT in D. The same factor predicts that we will see the same homogeneous morphological pattern within the noun phrase. This prediction too is confirmed — so long as we can assume that the noun bears nominative plural morphology, not the homophonous genitive singular morphology that it bears when the adjective is genitive plural.

But can we actually make this assumption? Unfortunately, to the extent that it is possible to independently determine whether the feminine noun in paucal constructions like (100b) is nominative plural or genitive non-plural, the evidence is annoyingly equivocal. What we need to examine are situations in which the two forms can be distinguished — for example, situations in which they are not syncretic. There are two such situations.

In the first of these instances, we find some possible support for the nominative plural analysis. Surnames formed with the suffixes *-in* or *-ov* such as *Puškina* or *Ivanova* show what is traditionally called a "mixed" declension pattern. When nominative and accusative, they bear the case suffixes typical of feminine nouns, but in other case forms (including the genitive), they bear the suffixes typical of agreeing elements such as adjectives, determiners and agreeing quantifiers. As a consequence, the genitive non-plural and the plural nominative forms of these surnames are distinct (*Ivanov-oj* vs. *Ivanov-y*, respectively). As noted by Franks (1994, 600 n. 3; 1995, 52) and by Isakadze (1998, 54), in a paucal construction in a nominative environment, we find the unambiguously nominative plural form:[91]

(106) **Nominative plural of feminine surname in paucal constructions**
V našem klasse učilis' dv-e Ivanov-y.
In our class studied.PL two-NOM.FEM Ivanova-NOM.PL
'In our class there were two Ivanovas.' [Isakadze (1998, 54 ex. (6)]

While this might seem like a strong argument in favor of our proposal concerning (100b), there is another possible analysis that removes this support. It is possible that surnames in *-in* and *-ov* are actually adjectives, perhaps modifying a null noun. If so, the nominative plural morphology in (106) becomes simply another case of the puzzle with which we began this appendix, and tells us nothing special about the case of nouns. Since there are indeed other common surname types whose morphology is entirely adjectival (e..g. *Stravinskij,* fem. *Stravinskaja*) this possibility cannot be excluded in principle.[92] A possible argument against this counterproposal might be sought in additional data discussed by Isakadze. He marks as unacceptable the *genitive plural* form (*Ivanov-yx*) that should be available as an alternative to the nominative plural in (106) if the surname is an adjective (and is correctly predicted to be unavailable if the surname is a noun). Unfortunately, there is a counter-argument to the counter-argument: the genitive non-plural form that should be available as an alternative if the surname is indeed a noun (*Ivanov-oj*) is also impossible, as Franks notes.

(Furthermore, the genitive plural form disallowed by Isakadze is not unknown in actual use, as a Google search reveals.) Consequently, (106) cannot be taken as a decisive argument in favor of the nominative plural analysis of the noun in constructions like (100b).

The other circumstance of relevance to the status of the noun in (100b) concerns several groups of feminine nouns whose genitive non-plural and nominative plural forms are segmentally syncretic, but differ in stress: e.g. *gor-ý/gór-y* 'mountain (GEN.SG/NOM.PL)'.[93] If the noun in constructions like (100b) is nominative, we might expect the stress pattern of the plural. If instead the traditional description is correct, and the noun is genitive, we would expect the stress pattern of the non-plural.

In fact, it is reported in the literature that speakers *avoid* such constructions. Though I do not know of quantitative study that might confirm this observation, the use of a nominative plural adjective is repeatedly cited as dispreferred in paucal constructions where stress would otherwise disambiguate between nominative plural and genitive non-plural forms of the noun. Speakers resort instead to the genitive plural variant (Crockett 1976, p. 341, citing Galkina-Fedoruk 1964, p. 365, and Kozyreva & Xmelevskaja 1972, p. 341; Rappaport 2002, p. 340).[94] Furthermore, in nominal phrases without adjectives, the only possible stress pattern available for such nouns is the one that associated with the genitive non-plural — i.e. the form we expect if QUANT-to-D does apply. It is as if the language itself requires that the status of the noun in constructions like (100b) remains ambiguous between the two distinct case/number possibilities.[95]

Though I believe the proposal sketched in this section has not been falsified, and supported by Corbett's observation concerning verbal agreement, the issue is not settled. The correct analysis of the pattern in (100b) remains open.

Finally, note that the 19th century pattern in which even masculine nouns could optionally cooccur with nominative plural adjectives is not explained by any variant of (101), since the genitive singular and nominative plural are not syncretic (at least for the vast majority of such nouns). As is often noted, the modern Russian use of the genitive singular in the paucal construction is probably the diachronic heir to the old Russian nominative dual, which was uniformly syncretic with the genitive singular. Though I argued in section 9.2 against the proposal advanced by several rearchers that the noun in a contemporary Russian paucal construction is nominative and belongs to a special "paucal number", it is possible that this is precisely the correct analysis of the earlier variant in which a nominative [-SINGULAR] adjective co-occurs with a noun bearing what looks like genitive singular morphology. I will leave this matter open as well.

Appendix 2: A defectivity puzzle: the numeral-classifier construction

The Russian *numeral-classifier* construction investigated by Sussex (1976) and Yadroff (1999) can be viewed as an adnominal genitive construction that conforms to the proposals of this paper, but with a slightly different profile due to interfering factors. One of these facts poses a puzzle for the analyses in this paper.

Examples (107) and (108) show this construction in its most straightforward form, though not all speakers find this version of the construction natural.[96] Syntactically, these examples look like normal nominals containing an adnominal genitive (the bracketed phrase) and a numeral or paucal that has moved to D. The head noun in constructions featuring this type of adnominal, however, functions semantically as a classifier, and must be drawn from a class limited for most contemporary speakers to the two nouns shown: *štuka* 'unit' for inanimates and *čelovek* 'person' for humans (but cf. Yadroff, p. 91 n. 9 for some stylistically marked alternatives).

(107) a. pjat'-ь štuk-ъ [starinn-yx knig-ъ] (Yadroff 1999, 109)
five-NOM unit-GEN.PL antique-GEN.PL book-GEN.PL
'five antique books'

b. dv-e štuk-i [starinn-yx knig-ъ]
two-F.NOM unit-GEN.SG^{o} antique-GEN.PL book -GEN.PL
'two antique books'

(108) a. desjat' čelovek-ъ [naš-ix oficer-ov]
ten person-GEN.PL our-GEN.PL officer-GEN.PL
'ten officers of ours'

b. tri čelovek-a [naš-ix oficer-ov]
three-NOM person-GEN.SG^{o} our-GEN.PL officer-GEN.PL (Yadroff 1999, 146)
'three officers of ours'

Yadroff shows that despite appearances, the classifier in these constructions is not a normal noun. (He assigns it to a category MEASURE.) In particular, it may not be modified by an adjective and must co-occur with a numeral or paucal (pp. 151-153). Crucially, it is also incapable of bearing (what we would call) POBL. This means that while the variant of (109) in which POBL has been assigned across a DP phase boundary is impossible for reasons explained by our proposal, the variant in which the adnominal retains NGEN morphology, is also impossible:

(109) *(k) pjat-i štuk-am [starinn-ym knig-am] / *[starinn-yx knig-ъ]
(to) five-DAT unit-DAT.PL antique-DAT.PL book-DAT.PL / antique-GEN.PL book-GEN.PL

In the absence of a principled explanation for this behavior, we might appeal to an independent notion of *defectivity* that can filter out the morphological results of otherwise legal applications of FA. Some QUANT elements have similar properties: for example, *malo* 'few', which also lacks POBL forms. It is not obvious that this is the right move, however. Morphological defectivity is commonly an idiosyncrasy of individual lexical items (such as *malo* among the QUANT elements). The defectivity relevant here, however, appears to be a property of an entire class of elements, as we can see by examining some particularly ingenious observations from Yadroff (1999).

The versions of (107)-(108) that are by far the most common (and most acceptable to speakers) involve an additional process of *Approximative Inversion*, which reverses the linear order of classifier and numeral, with the semantic effect of approximation:

(110) štuk-ъ pjat'-ь [starinn-yx knig-ъ]
unit-GEN.PL five-NOM antique-GEN.PL book-GEN.PL
'about five antique books', 'some five antique books'

We may analyze this as movement of the classifier to D *before* QUANT-to-D takes place. DNOM is not assigned to the classifier by D because its movement requirements have not yet been satisfied, by the same logic that helped explain the case pattern in the "modified cardinal construction" discussed in note 52. Why this movement correlates with approximative semantics, however, is a mystery that has not been solved, nor can I explain why (110) is more common or acceptable than its non-approximative counterparts in (107) and (108).

Crucially, approximative inversion is also possible in nominals that have no obvious classifier, such as (111):

(111) knig-ъ pjat'-ь
book-GEN.PL five-NOM
'about five books', 'some five books'

Yadroff (pp. 146-161) points out, however, that the noun in constructions like (111) shares the special properties that in (107), (108) and (110) hold of the special classifier-words *štuka* and *čelovek*.[97] First, it may not be modified by an adjective: adding *starinnyx* 'antique-GEN.PL' anywhere in (111) renders the example unacceptable. Crucially, the construction in (111) is also excluded from POBL environments:[98]

(112) *(k) knig-am pjat-i
(to) book-DAT.PL five-DAT
'to about five books'

Yadroff proposes that approximative inversion constructions like (111) are classifier constructions like (110), contrary to appearances. He argues that in the absence of an adnominal (which is optional in all classifier constructions, including the examples presented above), ordinary nouns may be coerced into the classifier class. If a noun coerced into the classifier class inherits an inability to bear POBL morphology, it is likely that we are not dealing with simple defectivity (an idiosyncratic property of individual lexical items) but with some deeper factor that creates a conflict between oblique environments and classifiers.[99] The existence of such a factor comes as a surprise in the context of the proposals presented in this paper. Yadroff's discoveries thus present an unsolved problem for the analysis.

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NOTES

[1] *translation:* "The singular with such words as *dva* 'two', *tri* 'three' and *četyre* 'four', where plurality is clearly indicated, seems at first glance very strange, and constitutes a typical example of the extent to which grammatical and logical thinking may diverge." A. M. Peshkovsky's (1878-1933) book *Russkij sintaksis v naučnom osveščenii* (*Russian Syntax in a Scientific Light*) remains to this day a source of insight into most of the central problems of Russian grammar (except, perhaps, this one).

[2] The noun *stol* 'table' in (1) is masculine. Substituting a feminine head noun sometimes produces a different pattern, in which post-paucal adjectives show nominative rather than genitive morphology — though the pattern found with masculine nouns remains possible and is also common. The pattern that mirrors the masculine (genitive plural) is sometimes felt to be more colloquial, and is sometimes held to differ in meaning from the alternative pattern (which is considered the literary norm). I will ignore the alternative form of feminine examples throughout the body of the paper, returning to the topic in Appendix 2.

[3] A few preliminary remarks about other numerals and quantifiers may be useful at this point:

a. Some non-numeral quantifiers behave like the non-paucal numerals. These are discussed in section 6.1.

b. Additive compound numerals such as *dvadcat' pjat'* 'twenty-five' whose second component is a non-paucal numeral show the same pattern as well. Additive compound numerals whose final component is a paucal, however, generally show the pattern of simplex *paucals*. In a nominative environment, a nominal containing *dvadcat' dva* 'twenty-two', for example, will show the same pattern of number and case as that seen with *dva* 'two' in (1b). Ionin & Matushansky (2006) argue that such examples actually involve NP coordination along the lines of "these last [twenty (~~beautiful tables~~)] and [two beautiful tables]". They tentatively suggest that backwards ellipsis applies as indicated to yield the observed form. Though their proposal raises some questions (including a few to which I return below), I will tentatively assume it for the remainder of the paper.

c. The numeral *odin* 'one' (and additive compound numerals ending in *odin*, e.g. *dvadcat' odin* 'twenty-one') differs in its behavior from all other numerals. I ignore *odin* for the time being, and take up its morpho-syntax briefly in section 6.2.

[4] The non-paucal numerals themselves show the case morphology expected of a *singular* noun, rather than the case morphology characteristic of a plural. The *-i* suffix on *pjat-i* is thus the same as that found on dative *singular* nouns of the declension class 3. This fact will be important in section 7.

[5] The traditional list of Russian cases consists of: *nominative* (NOM)*, genitive* (GEN)*, dative* (DAT)*, accusative* (ACC)*, instrumental* (INSTR) *and prepositional* (PREP) — plus, for some masculine nouns, a distinct *partitive* variant of genitive and a distinct *locative* variant of prepositional. There are three major declension classes (with some subclasses) and three genders (masculine, feminine and neuter). This paper follows the tradition in Russian linguistics that calls the (mostly feminine) declension class whose nominative suffix is *-a* "class 2". This corresponds, somewhat confusingly, to the "first declension" familiar from Latin and Greek traditional grammar (and some grammars of Russian as well).

[6] Five masculine nouns show a different stress pattern in post-paucal position than in (other) genitive environments. This fact is sometimes invoked to argue that post-paucal nouns do not bear genuine genitive case at all. I will discuss these nouns, and argue that they do display genitive morphology, despite the stress difference, in section 9.2.

[7] In theories like those advanced by Neidle (1988, 2-6) and Franks (1995, 41-55), cases such as "genitive" are not atomic categories, but matrices of distinctive features that cross-classify the various cases and characterize markedness relations among them. These features themselves, however, are just as *sui generis* as the traditional case categories, and function as middlemen between syntax and morphology in just the same way. They are therefore subject to the same criticisms. These approaches were, however, inspired by the proposals of Jakobson (1984 [orig. 1936]; 1985 [orig. 1958]), who can be read as attempting to remedy some of the same flaws in the conventional view as those I have discussed here. Jakobson posited a feature system in which each case either bears a fixed *semantic* value, or else stands in opposition to a case with fixed semantic value (i.e. signaling the absence of that value). His particular proposals have been sharply and effectively criticized on empirical grounds, however, by Neidle and Franks (esp. pp. 43-44). (See also Pesetsky & Torrego 2001, 407 n. 17.)

[8] Genitive case is traditionally grouped among the obliques, but is treated separately here, for reasons that will become clear in the next section. The so-called prepositional and locative cases are mostly syncretic, but differ for a small class of nouns. There are also partitive forms for some nouns, which I will not discuss here, and vocatives, which will also not be discussed.

[9] The proposal will not depend on any particular feature theory for the parts of speech that are featurally distinguished. For the major lexical categories, we may assume the well-known two-feature system (±N, ±V) proposed by Chomsky & Lasnik (1977; but cf. Baker 2003). I will make no explicit proposals concerning the featural decomposition of other categories discussed here, such as D.

[10] This proposal may seem to contrast with more recent proposals according to which case morphology reflects a process of agreement. In section 4.3, I argue that the agreement does play a role in the distribution of case morphology, but that this role can be distinguished from the role played by the assignment rule in (5). In section 7.2, I will also argue that Vergnaud's syntactic "Case theory" (often viewed today as part of the theory of agreement) is a system distinct from the system that assigns case morphology discussed in this paper — no matter how much the technical side of FA may remind us of Vergnaud's and Chomsky's early proposals concerning "Case assignment". As we will note, our conclusions on this matter converge strikingly with proposals of Schütze (2001, 1997) concerning "default case" and its relation to "Case theory".

[11] If Marantz & Halle (1994) are correct that the so-called "theme vowel" attached to the stem of the Russian verb is the verbalizer of a category-neutral root, then we should view this vowel, in light of (4), as an instance of V$_{ACC}$.

[12] The proposal advanced in this paper is not compatible with Marantz's proposal that nominalizers and verbalizers are introduced syntactically outside a root-headed phrase that includes complements and modifiers. It will be quite crucial, for example that when a complement merges with a head H, H is already categorized as a noun, verb, etc. — as in traditional approaches. The idea that nouns involve a categoriless root and a nominalizing morpheme is, of course, logically independent of the question of where the nominalization process takes place.

[13] In section 7.2, I will also argue, in very similar fashion, that the category D is "born nominative" (which will turn out to be equivalent to Schütze's (2001, 1997) claim that nominative is a morphological default) — and for this reason assigns nominative to its syntactic dependents.

[14] Since many case-suffixes are single (surface) vowels, it might be thought that this effect is phonological: attributable to "Jakobson's rule", which reliably deletes a vowel before another vowel in inflectional contexts. Unfortunately, some case-suffixes that are regularly suppressed by others end in a consonant (e.g. the adjectival genitive plural suffix -*y*x), so Jakobson's rule cannot be a general solution.

[15] See Nevins and Bailyn (2008) for independent evidence for a phonologically zero (but underlyingly vocalic) genitive plural suffix in examples like (8d).

[16] My use of the *yer* symbol will be inconsistent in this paper. I use it when it is important to note the presence of a null case suffix, but will omit it otherwise (including in many places where a yer-minded phonologist would posit one). I will also silently replace ъ (the "back yer") with the distinct symbol ь (the "front yer") after palatalized consonants — but only because the use of the former would unduly discomfort readers who know something about the language.

[17] When oblique morphology is found on the object of an overt P (e.g. when dative is found on the object of *k* 'to', or instrumental on the object of *pod* 'under'), I will argue that the overt P assigns the case. When there is no overt P, I will assume that there is a null P, as argued independently for languages such as Basque by Rezac (2008), among others.

[18] Proposals concerning case morphology in Slavic languages along related lines have also been advanced by Matushansky (2007) and by Caha (2009), who posit derivations in which multiple case heads (Caha) or case features (Matushansky) accumulate on nominals — while certain rules of grammar, as in the present proposal, conspire to create the appearance of a single case suffix. Merchant (2006) explores a similar idea for certain types of ergative splits. I have not attempted an explicit comparison of the present proposal with these alternatives (or with Richards' proposals) here.

[19] With the inanimate nouns shown in (11), accusative environments behave exactly like nominative environments. I delay discussion of accusative until section 7. I will also limit the discussion to masculine nouns of the declension class seen in (11) (declension class 1), for reasons discussed in Appendix 1.

[20] See the discussion of (24) below for plural adjectival agreement with a conjunction of singular nominals.

[21] This proposal resembles the suggestion tentatively entertained by Zaliznjak (1967, 46 n.17) (who also cited precedents from Hungarian and Estonian numeral constructions) that "in these circumstances, the meaning of plurality might be contained only in the numeral, while the noun only names the type of objects counted".

[22] The proposed Russian dual, trial, and quaternal thus have the properties of the Sanskrit dual, which was usable without an additional (overt) numeral to denote a set containing two individuals — and crucially differs from the Slovenian dual in Slovenian, which "tends to be used only when the quantifiers 'two' or 'both' are explicitly stated in the context, and are replaced by the plural when this quantifier is unstated, even if a pair of referents are obviously implicit" (Priestly 1993, 440-441; cited

by Corbett 2000, 43)). I am grateful to Greville Corbett (personal communication) for clarification of this point.

In section 6.1, I will suggest that a null numeral is actually present when Russian dual, trial and quaternal is used. Note also that the paucal *oba* 'both' must presumably be viewed as instance of dual number that licenses a null 'all', since 'both' is 'all two'.

[23] One possible objection to the present proposal is the fact that it posits free-standing instances of number that do not appear to have bound-morpheme counterparts in other languages with number morphology. Though I posit a free-morpheme exponent of "quadral" number, for example, Corbett (2000, 26-30) suggests that genuine quadrals, i.e. "a set of forms specifically for the quantity four", are unattested. He argues that the few cases that have been argued to instantiate this possibility do not in fact show genuine quadral forms. Furthermore, in the context of the proposals developed here, we must probably view the paucals *pol* 'half' and the paucal uses of *četvert'* 'quarter' discussed by Mel'čuk (1985, 322ff) as instances of fractional number specifications — with *poltora* 'one and a half' perhaps a portmanteau form of an additive complex numeral (cf. note 3) whose second component is 'half' (though its etymology is actually 'half of the second'; Vasmer 1986, 319). Morphologically bound instances of fractional number also appear to be unattested.

I will not attempt to answer this objection, but will leave it as a worry for the future. If the present proposal is correct, UG might indeed exclude quadral and fractional morphology, but crucially must not prevent a language from using a feature system for number that allows such values in principle. We might then speculate that it is precisely the fact that the Russian feature system countenances quadral and fractional number that requires it to have free-standing morphemes as exponents of these feature sets. Speculating further, one might imagine an implicational universal that requires the exponents of dual and trial number to be free rather than bound morphology, precisely because quadral number must be free-standing : "If a language has free standing number morpheme for quantity *n*, all morphemes for quantities less than *n* must be free-standing as well" (a possible elaboration of Greenberg's Universal 34: "No language has a trial number unless it has a dual. No language has a dual unless it has a plural"). Since I have not investigated these questions further, I will leave the issue for further research.

[24] I believe that nothing in this paper hinges on the precise internal organization of the subfeatures of [-SINGULAR] that yield dual, trial, and quadral number. See Harley & Ritter (2002) for an approach that could be extended to suit the needs of the present analysis.

[25] I return shortly to the morphology of pre-paucal non-genitive adjectives like *poslednie* 'last (pl.)' in (1).

[26] For compatibility with standard conventions, I will continue to gloss the genitive form of N used with a paucal in a nominative environment as singular, but I will annotate the gloss with a degree sign (i.e. GEN.SG^{o}) when the present analysis would actually analyze the form as numberless. (Occasionally, where I wish to call special attention to numberlessness, I will mark it explicitly as numberless.)

[27] The word order in (17b) is not completely impossible, but requires strong focus on the adjective, and is not compatible with a neutral information structure within the nominal: I will assume that the order in (17) results from DP-internal focus movement of the adjective, of the sort discussed by Irurtzun & Madariaga (2010).

[28] This proposal requires that Russian nominal phrases are DPs, despite the general absence of overt determiners. This conflicts with Bošković's (2008; 2010) proposal that such phrases in Russian (and other Slavic languages) are bare NPs. See Pereltsvaig (2007), however, for a series of independent arguments against this claim. The proposals in this paper, taken as a whole, constitute an additional set of arguments.

[29] A third approach, advanced by Chomsky (1995), accepts head movement at face value as a phenomenon, but attributes it to a "phonological" rule that applies outside the syntactic derivation (and therefore fails to feed LF). For arguments against this approach, see Lechner (2006) and Hartman (to appear), who demonstrate semantic effects associated with head movement.

[30] See Pesetsky & Torrego (2001, 363) for a specific proposal, the "Head Movement Generalization". Because it subsumes Travis's (1991) Head Movement Constraint, their proposal is incompatible with the head movement posited in this section, but it is compatible with the final form of the proposal as it will be developed in section 6.

[31] The new components of each revision of FA will be indicated with italics throughout this paper.

[32] It is important that the demonstrative be a specifier (or modifier) of D, rather than an instance of D itself, or else we would not account for either its linear position or its case-marking. Demonstratives may also modify N, in which case it appears to the right of D (here, to the right of the paucal) and bears NGEN morphology, as predicted: *dv-a èt-ix krasiv-yx stol-a* 'two-M.NOM these-GEN.PL beautiful-GEN.PL table-GEN.SG^{o}". Mel'čuk (1980, 805 n. 9), commenting on a comparable example with a non-paucal numeral, notes a semantic difference. When the demonstrative follows D, only the noun and its modifiers refer to a "definite set...specified for both interlocutors before".

[33] In section 6.1, I will suggest that NBR actually moves to D in two steps, first moving to an element that I will call QUANT, and then pied-piping to D as a consequence of QUANT-to-D movement. Preminger's logic will remain, however, and will apply to both steps of movement.

[34] As discussed in footnote 17, I will assume that oblique cases such as dative always result from the presence of a preposition, which is sometimes null.

[35] Russian contains no null P that assigns of prepositional case, which thus always depends on the presence of an overt preposition. Some nouns have a distinct locative case form, with the same property.

[36] This section owes its existence to a conversation with Liudmila Nikolaeva, who raised the question of (36b) and its possible relevance to the analysis of paucals in this paper.

[37] The exceptions are few in number. Approximately ten class 3 inanimates, which share an independent declensional peculiarity, are neuter; one class 3 noun *put*' 'road' is masculine; diminutives present a few complications; and a few archaic words have unexpected gender. There are also indeclinable nouns, mostly foreign borrowings, which belong to no declension class. Their gender is also generally predictable (masculine or feminine if animate, neuter otherwise), with a few exceptions. I will not be discussing these nouns here.

[38] Some speakers have prescriptivist objections to any instance of feminine agreement with class 1 nouns (Crockett 1976, p. 93-4). Others allow feminine agreement on the verb, but not on an attributive adjective (cf. Mel'čuk 1985, 475). There is social and regional variation as well, as well as a correlation with educational level (see Corbett 1983, 30-39, who cites a number of surveys). Nonetheless, the option is solidly attested in the contemporary language, and, as far as I can tell, speakers consistently detect the crucial contrast between the excluded pattern in (26c) and the alternatives exemplified by (26b) and (26d).

[39] This contrast has been frequently noted. The 1970 Academy Grammar (Švedova 1970, p. 555 §1300.3) remarks that though generally "there is no strict rule for choosing the gender form" of nouns like *vrač* when they refer to a female individual, an exception is made for "circumstances in which the subject is accompanied by an agreeing word-form in the feminine gender... In these circumstances the feminine form in the predicate is obligatory: *Naša direktor skazala* ['our.FEM director said.FEM'], *Novaja sekretar' vsë pereputala* ['the new.FEM secretary mixed.up.FEM everything']". Pereltsvaig (2006, 485 n. 39) annotates the patterns in both (26a) and (26d) with two question marks, but still reports a contrast with the pattern of (26c), to which she assigns an asterisk. Timberlake (2004, 164) describes the agreement pattern in (26a) as "oldest, formal", (26b) as "newer, informal, now standard", and (26d) as "newest, not normative" — but tags (26c) as "systematically outlawed".

[40]See Asarina (2008) for some suggestions concerning the semantic roots of this fact.

[41] Such examples are not fully acceptable to all speakers.

[42] This idea can be developed technically in several different ways. One possibility would build on the fact that any noun that (unambiguously) denotes a female human belongs to the feminine gender in Russian, and extend this rule to phrases as well. Once Ж is merged — but not before, in the case of nouns like *vrač* — the resulting phrasal projection of N denotes a female. Application of the regular rule will assign the resulting nominal projection to the feminine gender.

[43] This contrast was noted by Crockett (1976, 114-5) (though described in slightly different terms). Crockett cites a number of independent sources for the data, in addition to the judgments of her own consultants. In my own experience, I have found that even speakers who are uncomfortable with some instances of feminine agreement with class 1 nouns (see note 38), report that feminine agreement on a nominative paucal is much worse.

[44] Zaliznjak (1967, 71 and 77) describes the distinct feminine form in the plural of 'both' as disappearing, but my consultants find these examples unexceptionable. Furthermore, while non-feminine plural forms of 'both' with feminine nouns are robustly attested in Web citations, an informal investigation suggests that they are significantly outnumbered by their feminine counterparts.

[45] Complicating the picture, in the singular, feminine adjectives are completely excluded as a modifier of a class 1 *vrač*-type noun in any case other than the nominative (Crockett 1976, 92 ex. (68b), 100):

(i) My govorili s nov-ym / *nov-oj vrač-ëm.
we spoke with new-M.INSTR.SG / new-F.INSTR.SG doctor-INSTR.SG
'We spoke with the new (female) doctor.'

If D (the assigner of DNOM) is unique among case-morphology assigners in not bearing an unvalued gender feature (as claimed above), it will be the only assigner to assign a gender-neutral version of itself under FA in the environment of Ж. We might then attribute the unacceptability of feminine agreement with every other case to an incompatibility between the feminine features of the morphology that these assigners copy onto *vrač* (because they bear a gender feature valued by Ж) and the roster of cases suffixes available to a class 1 noun when it attempts to realize the case features assigned to it. If the lexicon contains no way to realize [+FEMININE, +SINGULAR] versions of POBL, VACC or NGEN on a class 1 noun (because all its singular case suffixes are specified as masculine), examples like (i) will be excluded as instances of "realization failure". The nominative counterpart will be acceptable, because DNOM does not copy any gender of its own onto N. In the plural, I suggest below that all stems are assigned to class 1, masculine, feminine and neuter alike — reflecting the fact that no gender distinctions are made in the plural (and the fact that the accusative form of all animate nouns in the plural follows a pattern that is limited in the singular to class 1 nouns). This means that there are [+FEMININE, -SINGULAR] suffixes available to plural class 1 nouns, in contrast to the singular, thus accounting for the acceptability of examples like (40).

In this context, it is worth noting that one consultant did describe examples like (40) as sounding "odd", while noting a sharp contrast with the nominative counterpart in (36b).

[46]See footnote 3 for the syntax of additive compound numerals. "Super-high" numerals such as *million*, *milliard* 'billion', *trillion*, etc. have the syntax of normal nouns with a DP adnominal, rather than the syntax of a numeral. The properties of these adnominals are identical to those other nouns, as discussed in section 8 below. *Tysjača* 'thousand' optionally behaves like a higher numeral or like a normal noun (Mel'čuk 1985, 289ff.; Timberlake 2004, 190-191). I will not discuss these numerals further.

[47] As mentioned in note 4, the numeral *pjat'* (and many other QUANT elements), though treated as plural by the syntax, bears case morphology otherwise typical of *singular* nouns (of declension class 3). Such elements are exceptions to the general rule (25) that otherwise dictates the choice of singular or plural case morphology on the basis of the number specification of the base. QUANT elements like *pjat'*, though plural, stipulate that their case morphology is singular. Note that we can be sure that *pjat'* is grammatically plural (i.e. [-SINGULAR]) because the higher elements such as the demonstratives and adjective 'last' seen in (41) and (42) obligatorily bear plural morphology.

[48] When *mnogo* is used with a mass rather than a count noun (translating English 'much' rather than 'many'), the noun is singular, as expected: *mnogo vod-y* 'a lot of water.GEN.SG'.

Some mass nouns belonging to declension class 1 take a special "partitive" form of NGEN morphology in this environment: *-u* instead of the normal NGEN suffix *-a* found on class 1 nouns (*mnogo čaj-u* 'a lot of tea'). This form is not limited to particular syntactic environments however. It is found not only in the environment of QUANT elements, but also in adnominal genitive constructions (cf. section 8) whose head denotes a unit of measure, e.g. *stakan čaj-u* 'a cup of tea'. Consequently, we may view this partitive genitive as a semantically conditioned variant of NGEN.

The form is also found as a direct object in a construction with no overt QUANT or head noun: *nalit' čaj-u* 'to pour some tea', cf. French *verser du thé* 'lit. pour of.the tea, pour some tea'. Here we might posit a null noun with the syntax of a QUANT element, since the partitive genitive is replaced by oblique morphology in POBL environments, as we would expect from a QUANT construction.

[49] Mel'čuk (1985, 378) observes that these forms may not be used as the final component of an additive compound numeral, e.g. **dvadcat' dvoe* 'twenty-two', a fact for which I cannot offer an explanation. Consequently, as noted by Mel'čuk, there is an effability gap. Although for most numerals there is a way to say "*n x*", where *n* is a numeral and *x* is a *plurale tantum* noun (see note 51), this is impossible when *n* is a numeral greater than twenty whose final digit is 2, 3, or 4. For example, though it is possible to speak of two, five or twenty-five 24-hour periods, there is no way to speak of twenty-*two* 24-hour periods.

[50] Something similar is true of adjectives used without an overt noun, e.g. *časovoj* 'sentry' (lit. 'hour's-length', *adj.*) , *bol'noj* 'sick person, patient' (lit. 'sick', *adj.*). These too generally demand the special numerals that I claim are overt instances of QUANT numerals, and disallow paucals If there is a null noun in these constructions, the impossibility of a paucal might be attributable to the absence of a numberless use of the null noun.

[51] The reader may wonder how we can possibly know what the dative forms of these numerals look like, if they are always replaced by the combination of null QUANT and a paucal. The answer is the following: the special forms under discussion for 'two', 'three' and 'four' also belong to a series that continues into the higher numerals as well, which grammarians of Russian usually call the *collective numerals*. The collective form of *pjat'* 'five', for example, is *pjatero*. (Most members of the collective series higher than 'five' are formed by affixing *-ero* to the normal form. The collective variant of 'four', *četvero* also contains this suffix, though the root is altered.)

The collective series as a whole (high numerals as well as low) is used in a variety of contexts, though speakers' judgments are often subtle, and vary (see Timberlake 2004, 195-6, as well as Mel'čuk 1985, 376-405, who presents a complex picture of the facts to which this brief discussion will not do justice). Roughly speaking, the collectives are used to count humans (for some speakers, males only) identified as members of larger groups, when the utterance "focuses on the fact that the group exists" (Timberlake 2004, 196). For this reason, they are commonly used with nationality nouns such as *amerikanec* 'American (*n.*)' and "social role" nouns such as *student* 'student' — and to count the children in a family, when the focus is on the children as group and not as individuals. They are also used obligatorily, as Mel'čuk (pp. 64 and 380) notes, in non-anaphoric contexts where English would use a bare numeral in an argument position to denote a group of people, as in Mel'čuk's example *U samoj vody ležali pjatero / *pjat'* 'At the water's edge there were five (*collective* / **non-collective*) (sc. people) lying around'.

Crucially, as also noted by Mel'čuk (p. 385), the use of collective numerals with inanimate *pluralia tantum*, unlike the uses of collectives just described, are limited to the low numerals 'two', 'three' and 'four'. Thus, for example, if we replace 'two' with 'five' in (46), the non-collective form *pjat'* is robustly preferred over the collective *pjatero*, just as dative paucal *dvum* in (48) is preferred over its collective counterpart. This is so because the unforced use of numerals from the collective series is limited to humans (with the special semantics sketched above). Similarly, though more subtly, if we replace 'two' with 'five' in (47), the use of collective *pjatero* has the effect described above, i.e. calling attention to men as a larger group. The neutral version is the non-collective *pjat*'.

The picture given in the text is therefore correct as far it goes: the "special" forms of low numerals are used when paucal constructions are unavailable for lexical-grammatical reasons. The picture is complicated by the independent use of the numeral series that includes these low numerals

when quantifying over human individuals with particular semantic properties. When these factors excluded, either by using inanimate nouns or paying attention to the presence or absence of semantic restrictions, the relevance of these numerals to the present proposal emerges.

[52] This claim does not entail that QUANT is the only element that ever head-moves to D in Russian. Multiple head-movement to D should, however, have an interesting property: DNOM should not be assigned until the final instance of movement takes place. As a result, elements that move to D early should not be assigned DNOM, but should retain NGEN morphology — unless overwritten by later applications of FA. Under these circumstances (and under these circumstances alone) we might see a phrase marked with NGEN, rather than DNOM, to the left of a nominative paucal or numeral in D.

One candidate might be the "modified cardinal construction" (Ionin & Matushansky 2004) studied by Crockett (1976, 345-247), Corbett (1979) and Babby (1987, 1985), among others:

(i) dobr-yx pjat'-ь krasiv-yx stol-ov (nominative enviroment)
good(ly)-GEN.PL five-NOM beautiful-GEN.PL table-GEN.PL
'a good five beautiful tables'

Only a small set of adjectives participate in the construction, possibly limited to *celyj* 'whole', *lišnij* 'extra', *polnyj* 'full', *nepolnyj* 'almost' (lit. 'incomplete') and *kakie-nibud'* 'some', in addition to *dobryj* seen in (i). Semantically, as Crockett notes, "the genitive attributes only modify the numerals — they are QP modifiers rather than NP modifiers" (cf. Solt 2007, building on Kayne 2005, for a related view of the English counterpart). To Crockett, this observation suggested a syntactic analysis in which these adjectives originate as modifiers of QUANTP. If we incorporate Crockett's proposal into the analysis of this paper, NGEN on the adjective would reflect assignment of NGEN by N to a QUANTP sister to N'. Its plural number would result from QUANTP-internal agreement between the modifier and QUANT.

If QUANT head-moves on its own to D, as argued throughout this paper, however, the word order poses a puzzle. On the relevant reading, *celyx* and the other adjectives under discussion do not appear to the right of the numeral (except as an uncommon, marked order; cf. Corbett 1979, 5, exx. (15)-(17)) . If QUANTP moves as a whole to D, however, we wrongly predict that the QUANT-modifying adjective should receive DNOM alongside QUANT itself. The solution might be the following: Both the QUANT-modifier and QUANT are separately attracted by D, in that order. Because the QUANT-modifier moves first, before D's requirement for QUANT is satisfied, FA does not apply, and DNOM is not assigned to it. Once QUANT moves next (tucking in below the QUANT-modifier), the requirements of D are now met, so DNOM is assigned to QUANT.

This proposal makes two correct predictions. First, if a demonstrative or adjective such as *poslednij* 'last' externally merges with a projection of D later in the derivation, it should receive DNOM, resulting in a superficially "super-heterogeneous pattern":

(ii) Posledn-ie cel-yx sem'-ь let-ъ! — otdany polnometražnomu xudožestvennomu filmu...
last-NOM.PL whole-GEN.PL seven-NOM years-GEN.PL
'The last whole seven years! — devoted to a feature film...
(http://www.novayagazeta.ru/data/2009/133/06.html)

Second, in a oblique environment, the QUANT-modifier should receive the same oblique morphology as the rest of the DP. As Babby (p. 124, n. 27) observes, this prediction is also correct. Though Franks (1995, 126 n. 16) reports that some speakers disagree with Babby's claim, written examples are easily found:

(iii) Tak u nas ved' uže est' kontrakty
[s cel-ymi pjat'-ju krupn-ymi klient-ami],
with whole-instr.pl five-instr major-instr.pl client-instr.pl
na naš vek xvatit.
'And after all, we already have contracts with a whole five major clients, enough to last our lifetime.' [text mocking the reasoning of certain naive ad agencies.]
(http://mmr.net.ua/issues/year/2007/num/4/news/164/, accessed August 26, 2010)

[53] Mel'čuk (1985, 309ff.), Timberlake (2004, 197), and others note a semantic distinction between the homogeneous quantifiers in this group and their non-homogeneous counterparts — though the details of the distinction remains somewhat unclear. Mel'čuk, for example, appears to suggest that the restriction on the quantification is understood as old information in the homogeneous variant, yielding an interpretation that might be described as partitive: e.g. *many of the tables*, rather than *many tables*. He also suggests that the restriction is more likely to be viewed as composed of individual parts in the homogeneous variant, and as an undifferentiated mass in the heterogeneous variant. I have not investigated these differences. Mel'čuk also notes that in case forms other than (what I would identify as) DNOM and PDAT, there is homophony between *mnogo/nemnogo* and *mnogie/nemnogie*, so the relevant semantic distinctions cannot be detected in other environments.

[54] The paucal numerals of Polish behave similarly (except when associated with a masculine personal, i.e. adult human, noun), showing a fully homogeneous pattern even in nominative environments: e.g. *Dwaj mili chłopcy śpią* 'Two.NOM nice-NOM.PL boy-NOM.PL sleep-PRES.3.PL' (Rappaport (2003, 132 ex. (23b)). For the syntax of numerals with masculine personal nominals, see footnote 58 below.

[55] Additive complex numerals whose final component is *odin* show singular morphology on all NP-internal elements, including N and NP-internal adjectives. Agreeing elements that I have analyzed as merging with a projection of D, however, show plural agreement:

(i) "Twenty one" (nominative environment)
a. èt-i posledn-ie dvadcat' odin-ъ stol-ъ
these-NOM.PL last-NOM.PL twenty-NOM one-M.NOM.SG table-NOM.SG

b. dvadcat' odin-ъ krasiv-yj stol-ъ
twenty-NOM one-M.NOM.SG beautiful-M.NOM.SG table-NOM.SG

(For unclear reasons, my consultants find comparable examples that simultaneously contain both pre- and post-numeral adjectives unacceptable, e.g. *èti poslednie dvadcat' odin krasivyj stol* 'these last twenty-one beautiful tables'. No alternative morphological pattern renders the example more acceptable, however.)

If we continue to adopt Ionin & Matushansky's (2006) proposal that additive complex numerals involve coordination and backwards ellipsis, as discussed in footnote 3, and also analyze numerals as moved to D, then examples like (ia-b) must involve coordination at the D' level, e.g.

[$_{DP}$ (*these last*) [$_{D'}$ *twenty* (~~*beautiful) tables*~~)] *and* [$_{D'}$ *one* (beautiful) table]]. 'Twenty' moves to D in the left-hand conjunct, while 'one' does not move to D in the right-hand conjunct. The adjective 'beautiful' in the right-hand conjunct modifies a singular noun, and bears singular morphology, since its own NBR feature was valued [+SINGULAR] by agreement with N. The demonstrative and D'-level adjective 'last' bear plural morphology because they modify a conjunction structure, resulting in the value [-SINGULAR] for their NBR features; cf. the discussion of (24) above.

In an oblique environment, though the NBR feature of POBL will be valued [-SINGULAR], like the demonstrative and D'-level adjective 'last' in (i), it is a singular version of oblique case morphology that will appear on N and on its modifying adjective. This is predicted by the convention for determining the number specification of case morphology given in (25). Since N in the right-hand conjunct is lexically valued as [+SINGULAR] (not numberless, since this is not a paucal construction), the variant of POBL morphology that will appear on N is correspondingly [+SINGULAR]. The same choice is made for the modifying adjective, which receives the same [+SINGULAR] NBR value by agreement with N:

(ii) "Twenty one" (oblique environment)
(k) èt-im posledn-im dvadcat-i odn-omu krasiv-omu stol-u
(to) these-DAT.PL last-DAT.PL twenty-DAT one-M.DAT.SG beautiful-M.DAT.SG table-NOM.SG

When N is a *plurale tantum* such as *sutki* '24-hour period' (discussed in section 6.1), it is valued [-SINGULAR] in the lexicon, and *odin* within an additive compound numeral actually shows plural morphology:

(iii) dvadvat' odn-i sutk-i (nominative environment)
twenty-NOM one-NOM.PL 24h-NOM.PL 'twenty-one days'

[56] The complements of some verbs appear to idiosyncratically bear oblique cases. In the theory presented here, these verbs actually select a PP complement whose head is null. Thus, for example, the verb *pomoč'* 'to help', which appears to take a DP complement marked with PDAT morphology, actually selects a PP complement whose head is a silent dative-assigning preposition.

[57] The alternative pattern discussed in Appendix 1, in which the adjective is nominative plural, is also available in this environment. (It is also more common, as discussed there.)

[58] An empirically equivalent statement for Russian would be "Otherwise, it is syncretic with DNOM", which would avoid the stipulation that certain assigned cases are not morphologically realized. On the other hand, the possibility that certain instances of FA do not result in realized morphology might explain puzzling patterns elsewhere. For example, in Polish, where the morphosyntax of nominals with higher numerals otherwise resembles Russian, a masculine personal higher numeral nominal — in an environment that one would otherwise call nominative — shows NGEN morphology (Rappaport 2003, 126). If Polish higher numerals move to D, like their Russian counterparts (with the same effect on the NP left behind as in Russian), we can account for the NGEN morphology on the numeral if there is simply no realization rule for DNOM for a masculine personal numeral.

[59] Since a paucal DP is plural, (57a) does not apply — so feminine gender by itself will not trigger assignment of VACC to a paucal construction.

[60] When a DP contains an additive compound numeral whose last element is a paucal, VACC morphology on the paucal is described as highly disfavored (Mel'čuk 1980, 810 ex. (31); 1985, 200ff.; Timberlake 2004, 192 esp. n. 28) or "bookish" (Rappaport 2003, 19). Instead, the paucal bears DNOM morphology, as if the object were inanimate, as shown in (i), an abridgement of Mel'čuk's example:

(i) Terroristy otpustili [tridcat' četyre/*cetyr-ëx založnik-a]
terrorists released thirty-NOM four-NOM/*ACC=GEN hostage-GEN.SG^{o}
'The terrorists released thirty-four hostages.'

If we adopt Ionin & Matushansky's (2006) proposal for compound numerals (cf. notes 3 and 55), there is no obvious account for these facts, which I leave as a problem. Mel'čuk (1980, 810; 1985, 427) also notes, with reference to (i), that if one tries to add a form of *vse* 'all' to the object DP in (i), the result is ineffable. Neither the animate VACC (=genitive) form *vse-x* nor the inanimate DNOM form *vse* is possible. I must leave this unexplained as well.

[61] If numerals like *pjat'* were grammatically singular, i.e. genuine *singularia tantum* as Halle (1990, 170) proposes, they should license singular number agreement on agreeing elements inside DP, e.g. demonstratives, that probe into NP to determine their value for NBR. As Babby (1987, 102) and others have noted, this was in fact the norm in Old Russian, but is not the case in the modern language, where the plural demonstrative seen in (2) is the only option.

[62] Rappaport (2003) cites examples of non-standard usage from Krys'ko (1994), in which a paucal in an animate nominal fails to show the accusative form syncretic with the genitive seen in (63). Instead, it patterns with numerals like *pjat'* in (64) in showing a form identical with the nominative (and with the compound numerals discussed in fn. 60). Since the actual case suffixes found on paucals are not completely identical to those found with plural nouns or adjectives in any case, we might attribute this usage to a non-standard grammar in which paucals fail to undergo rule (59), which would otherwise assign them to declension class 1.

[63] I owe to Halle (1990, 170) the idea that the absence of genitive-accusative syncretism for words like *pjat'* should be attributed to their declension class and the idiosyncratic fact that their case morphology is exclusively singular. I differ only on the small point that it is not membership in declension class 3 that is crucial to the absence of genitive-accusative syncretism, but rather failure to belong to class 1. This side-steps the objection to Halle's approach by Rappaport (2003), who notes correctly that numerals such as *sorok* 'forty' *devjanosto* 'ninety' and *sto* 'hundred' show the same pattern as *pjat'*, while not belong to class 3. As it happens, these numerals all belong to aberrant declension classes of their own, otherwise unattested in Russian. Consequently, it is reasonable to exclude them from class 1.

Although my account rests on these two unexplained (and possibly unexplainable) facts, they are facts that are true *independent* of the issues under discussion here. This property of the proposal contrasts favorably, I believe, with alternatives such as those proposed by Babby (1987, 110-111) and Rappaport (2002, 339), who posit a special property of such numerals (absence of animacy features) whose sole consequence is to provide an explanation for (64).

Also relevant is the fact that the *collective numerals* such as *dvoe*, analyzed as "special QUANT forms" in section 6.1 (cf. note 51), do show accusative-genitive syncretism in animate DPs (Mel'čuk 1980). Except for an idiosyncratic DNOM suffix *-o*, their declension is otherwise that of plural agreeing

elements such as adjectives, i.e. class 1. The contrast with non-collective numerals in accusative-genitive syncretism is predicted.

[64] Two special uses of Russian prepositions might be candidates for instances of P that fail to assign features under FA, thus leaving their objects marked with DNOM, morphologically unaffected by the preposition.

The first involves preposition *v* (which otherwise means 'in' or 'into', as discussed in the next section) in expressions of "assuming a role" (Mel'čuk 1985, 461-489; Pereltsvaig 2006; Corbett 2008). In this construction, the object of the preposition is required to be plural (a fact that I will not explain) and bears nominative morphology, otherwise unknown for this preposition:

(i) Putin soglasen ballotirovat'sja v prezident-y.
Putin.NOM agrees to.run *v* presidents-NOM
'Putin agrees to run for president.' Pereltsvaig (2006), 477 ex (66)

The second concerns the distributive preposition *po*, which has the following much-studied peculiarity (Franks 1995, 139ff.): when its DP complement does not contain a paucal or numeral moved to D, it assigns PDAT, as seen in (ii)a-b, but when its DP complement does contain a paucal or numeral in D, the DP is generally nominative, as seen in (ii)c-d :

(ii) Každaja devuška priglasila ...
'Each girl invited...

***no paucal or numeral:* PDAT object**

a. po mal'čik-u
DISTR boy-DAT.SG
...a boy each'

b. po odn-omu mal'čik-u
DISTR one-DAT.SG boy-DAT.SG
...one boy each'

***paucal or numeral:* DNOM object**

c. po dva mal'čik-a
DISTR two-NOM boy-GEN.SG^{o}
...two boys each'

d. po pjat'-ь mal'čik-ov
DISTR five-NOM boy-GEN.PL
...five boys each'

As Harves notes (246, n. 6; crediting Yakov Testelec, p.c.), a *po*-phrase of any description may not itself function as an object of a preposition, which provides an argument that we are indeed dealing with a species of P in (ii)c-d, and not just (ii)a-b.

As observed by Borik (1995, 29; cited by Harves 2003, 237), the (c-d) variants also contrast with the (a-b) variants in another, surprising respect. Only the latter may function as the external argument (hence, the subject) of a transitive verb. We might speculate that the POBL property of *po* in (ii)a-b is incompatible with satisfaction of the EPP property of T, and that this property is absent from the version of *po* that is allowed to select a DP containing a paucal or numeral — hence the retention of DNOM morphology.

The sensitivity of *po* to the presence or absence in D of a paucal or numeral (or more generally, QUANT) is perhaps connected to the well-known sensitivity of verbal number agreement to the same factor, to which I return briefly in Appendix 1. As discussed by Pesetsky (1982), Corbett (1983) and

many others, default neuter singular subject agreement alternates with plural agreement on the finite verb (subject to a variety of syntactic and semantic conditions) — but only when the relevant DP contains a paucal, numeral or other QUANT element in D (under the present analysis). The option is missing for other DPs in standard Russian.

[65] Two of the three exceptions cited by Timberlake (*čerez*, and *skvoz'*) mean 'through', and might lack a non-accusative use for semantic reasons (since the goal of motion changes continuously as the path is traversed). The third exception, *pro* 'about' is non-spatial, and is harder to explain away.

[66] I will assume without further comment that phrasal possessors are merged as specifiers of N, not D, at least in the constructions under discussion. Pronominal possessors (e.g. *moj* 'my') and possessors formed from certain proper names and kinship terms (e.g. *mamin* 'mama's', *mišin* 'Misha's') may be merged higher, since their behavior in paucal and QUANT constructions resembles the behavior of demonstratives and other pre-D elements.

Note that this theory of adnominal genitive requires that the various elements that merge between N and D do not head their own independent projections. There is, for example, no NBRP formed by the merger of NBR and N in a paucal construction, nor do adjectives project when they merge with the phrases that they modify. Though the idea that elements such as NBR project is often coupled with the idea that UG requires such elements to be merged in a strict, cross-linguistically stable sequence, these ideas are separable (as far as I can tell). The somewhat "conservative" syntax supported by the analyses in this paper is thus compatible, I believe, with the "cartographic" discoveries about the internal structure of nominals and clauses that have been made by Cinque (1999, 2005) and others.

[67] We may also assume that they are Vergnaud-licensed (i.e. assigned what has traditionally been called abstract Case) within NP, either by N or by some higher functional element. There is probably no need to suppose that this licensing is special — for example, that it is an instance of "inherent case" rather than "structural case", as suggested by Rappaport (to appear).

[68] I return below to the plural number morphology on N and on the post-paucal adjective in (74a).

[69] As Nikolaeva (2007, 51) notes, the "genitive of quality" permits numerals only in expressions of age such as (74c), for unknown reasons.

[70] Some nouns have distinct case forms within a normal adnominal and in the context of a higher numeral. This phenomenon could be seen as a counterexample to the proposal that both adnominals and numeral contexts display NGEN (and thus as a threat to the argument that nouns assign genitive because they are "born genitive"). These examples divide into two categories, neither of which constitutes a true counterexample, I believe.

The first category consists of the noun *čelovek* 'person' and *god* 'year' . In an adnominal DP, these nouns show the expected genitive plural forms *ljud-ej* and *god-ov* (as in *načalo 90-yx godov* 'beginning of the 90's', lit. 'beginning of the ninetieth years'). (The stem *čelovek-* is replaced by the suppletive stem *ljud-* in the plural, so *ljud-ej* is indeed expected.) When in the context of a numeral and plural, however, we find *čelovek-ъ* and *let-ъ* instead (e.g. *pjat' čelovek* 'five people', and (74c)). (*Let-ъ* is otherwise the genitive plural of *leto* 'summer'.) In fact, however, one also find these forms in the context of "counting words" that are not syntactically numerals, such as *kuča* 'a whole bunch of' (e.g.

kuča čelovek 'a whole bunch of people'), which has the morpho-syntax of a normal noun. This fact suggests that it is the semantics of *counting*, rather than the syntax of numerals, that governs the special distribution of these forms.

The second category (which is productive) consists of measurement terms such as *kilogramm*, for which the expected genitive plural *kilogramm-ov* is commonly replaced in numeral contexts by *kilogramm-ъ* (e.g. *pjat' kilogramm* 'five kilos'). It is possible, however, that these special forms are not genitive versions of normal nouns, but rather are the genitive plural versions of homophonous *classifiers* — a category independently attested in Russian (Sussex 1976 and Yadroff 1999) and discussed in detail in Appendix 2. As noted there (following Yadroff), classifiers can be distinguished from normal nouns by their inability to support adjectival modification. This is also true of the special genitive forms found in numeral contexts. Thus, while *pjat'-ъ kilogramm-ъ* rather than *pjat'-ъ kilogramm-ov* is the normal way to express a weight of five kilograms, *kilogramm-ov* rather than *kilogramm-y* is used in the presence of a modifying adjective: *pjat'-ъ polnovesn-yx kilogramm-ov* (**kilogramm-ъ* 'five full-weight kilogramms'). (As discussed in Appendix 2, č*elovek-ъ* may also be used as a classifier, providing a second possible analysis of this form.)

[71] Realization rules like those for VACC in (60) might apply in the phonology, taking as input the information received from the syntax as the result of Spell-out.

[72] This emendation is unnecessary if one is willing to posit applications of FA across phase boundaries that remain undetectable because they no longer influence the phonology (and nothing else interacts with the morphology assigned under FA). The emendation is also unnecessary if spelling out of a constituent renders the lexical items that it dominates invisible to subsequent processes — as proposals like Chomsky's entail (but not others, e.g. Fox & Pesetsky 2005).

[73] If the speculations offered at the end of section 7.2 concerning the morphology of subject pronouns and infinitival subjects prove correct, they will provide further arguments for the same point: FA must be able to affect a DP after it moves for reasons of Vergnaud-licensing.

[74] The presence of PINSTR morphology on this and a variety of other adjectival and nominal predicates in Russian suggests the presence within the small clause of a null preposition that assigns this morphology, perhaps a counterpart to English *as* in *I regard this lamp as beautiful*.

[75] It is listed as an alternative form of *nutro* 'interior' in the historical dictionary of Russian by Dal' (1998 reprint), and appears in three relevant citations found in the Russian National Corpus.

[76] Vasmer's etymological dictionary (Vasmer 1986) does suggest a diachronic connection between *kolo* of *okolo* and *koleso* 'wheel', and between the *sle* of *posle* and the root found in words for 'follow' and 'trace' (*sled*).

[77] Conceivably this noun is overt in the preposition *v-ne* 'outside' (thus perhaps more literally: 'in the complement set of'), which also requires a genitive DP.

[78] The complements of certain verbs such as *bojat'-sja* 'fear' show genitive morphology. As with apparent oblique complements, I will assume that these verbs actually take a PP complement, within which the DP object is assigned NGEN. This PP in turn, will be a null counterpart of those discussed in this section, whatever the right analysis of such PPs may turn out to be.

[79] If we are ultimately successful in analyzing prepositions that appear to assign NGEN as syntactically complex objects that contain a nominal (which actually assigns the genitive morphology), then the same considerations hold for these prepositions. When a preposition in this group takes a paucal DP, the morpho-syntax of the DP is exactly the same as that seen in adnominals like the bracketed DP in (89). For example:

(i) okolo [$_{DP}$ èt-ix posledn-ix dvu-x molod-yx aktër-**ov**]
near this.GEN.PL last.GEN PL DUAL-GEN young-GEN.PL actor-GEN.**PL**
'near these last two young actors'

[80] Zaliznjak presents an extraordinarily explicit discovery procedure for case distinctions in Russian, and argues that even if the exceptional stress pattern of these five nouns did not exist, other properties of his system would still justify positing a special *sčëtnaja forma*.

[81] In fact, the noun *šar* 'sphere' that normally exhibits anomalous suffixal stress in a paucal constructions loses this property when used as a mathematical term (Zaliznjak 1977, 528).

[82] There exist other nouns of declension class 1 whose stress pattern is superficially similar to nouns like *nos* and *zub*, but which are irrelevant to our discussion. These nouns also show stem-stress in the singular and suffix-stress in the plural, but with one key difference: stem stress is retained in the nominative plural (for example *zub* 'tooth'). If Halle's (1997) theory of Russian accentuation is correct, these are nouns whose stems are lexically unaccented. They are not instances of idiosyncratic number-related stress shift. The nominative plural is the only class 1 plural suffix that lacks a lexical accent. This places stress on the initial syllable by the general rules of the language.

[83] Were it not necessary to posit deletion of internal instances of prototype categories, it would be tempting to identify the piling up of prototypes under FA with the "case sequence" that Caha (2009) posits as the outer structural shell of nominals in languages of the Slavic group and elsewhere. The actual ordering of cases posited by Caha differs substantially (and indispensably), however, from the ordering that would be found in a variant of the present proposal that dispensed with the "One-Prototype Rule", so the two proposals are not easily unifiable.

[84] Just as prepositions fail to bear case morphology in Russian (in contrast to Japanese, for example, where adnominal PPs bear NGEN), so it must be claimed that APs (and PPs) do not realize N•, or else we would expect adjectives in constructions like (96a) to be preceded by *de*, just like adnominal DPs.

[85] In the much-studied "genitive of negation" construction of Russian, an internal argument of V in a negative sentence bears genitive morphology under particular semantic conditions that are the topic of some debate. See Harves (2002, 32-91) for a survey of the research that this construction has sparked:

(i) Genitive of negation construction
Ivan ne čital [xoroš-ix knig-ъ]
Ivan.NOM NEG read.PST good-GEN.PL books-GEN.PL
'Ivan hasn't read (any) good books.'

In the context of this paper, genitive case on this nominal must clearly be attributed to an outside assigner of NGEN. The genitive of negation is not an instance of "primeval genitive" — since

in a noun phrase that contains a paucal or QUANT element that moves to D, everything including the material in D bears genitive case, and N must be plural, just as in other instances of assigned genitive discussed above:

(ii) Paucal nominal in genitive of negation construction
Ivan ne čital [dvu-x knig-ъ]
Ivan.NOM NEG read.PST two-GEN.PL books-GEN.PL
'Ivan hasn't read two books.'

One possibility might attribute assignment of NGEN to a silent nominal negative polarity item or minimizer. As it happens, the French genitive of negation construction includes just such an element in the form of *pas* — traditionally viewed a negation marker, but also a nominal meaning 'step':

(iii) French genitive of negation construction
Jean n' a pas lu de$_{N\bullet}$ bons livres.
Jean *ne* AUX *pas* read.PCP of good.M.PL book.PL
'Jean hasn't read (any) good books.' (cf. Kayne 1981, 48ff.)

If at some point in the derivation, *pas* is a sister to the object nominal, the presence of *de* is explained. A parallel analysis for Russian will also explain the presence of NGEN morphology. I will not pursue these conjectures further, and leave the matter for future investigation.

[86] Outside the domain of NP, there are other candidates for the status of prototype that might merit investigation. For example, the distribution of "accusative *a*" found (mostly) on animate objects in Spanish (and ad-phrasal elements with similar distribution in other languages, such as Romanian *pe*) recalls the realization of VACC morphology in Russian, and might be viewed as an instance of V• following the (b) setting of the prototype parameter. Comparable proposals for POBL might provide the right analysis of the final component of complex prepositional expressions such as the second component of English *next to*, *instead of*, etc.

The kinds of elements sometimes classified as "linkers" may have a similar character (Collins 2003; Baker & Collins 2006; Den Dikken & Singhapreecha 2004; Den Dikken 2006). For example, the nominal-internal raising studied by Den Dikken and his colleagues that triggers the occurrence of English *of* and its counterparts in constructions like *that idiot of a doctor* or French *une pizza de chaude*, lit. 'a pizza of hot', i.e. 'a hot pizza' might indeed serve simply as a host for the moved element, as suggested in the works cited. Alternatively, one might alternatively imagine a connection more analogous to that proposed in the current paper for the presence of NGEN morphology when Russian QUANT raises to D. For example, *une pizza de chaude* might involve raising of N to D, with the requirements of D in this construction blocking the overwriting of N• (*de*) by D•.

[87] A nominative plural adjective was also possible with non-feminine nouns in the 19th century and earlier, but has all but disappeared as an option in the modern language (as Corbett's survey of actual usage makes clear). I will return to this possibility below, but ignore it for now.

[88] This analysis depends crucially on the two-step proposal introduced in section 6.1, by which NBR moves first to QUANT, since paucals in feminine constructions like (100b) linearly precede nominative adjectives within NP, just like their counterparts in paucal constructions with genitive adjectives. This

indicates clearly that even though they might not move to D, they do not remain in their base position either.

[89] This treatment of the nominative plural pattern predicts that adjectival case should be uniform throughout the DP. In a relevant nominal with multiple adjectives, it should be impossible for some to bear genitive plural morphology, while others bear nominative plural. This prediction is correct.

An observation by Corbett (1979, 6) shows that this prediction also extends to pre-quantifier adjectives in the modified cardinal construction discussed in footnote 52. In the examples discussed there (which uniformly contained masculine nouns), these adjectives appeared with genitive plural morphology, which we attributed to an initial NP-internal position in which N assigned NGEN. With a feminine noun, the case of the pre-quantifier adjective must match the case of any adjectives that appear NP-internally, which supports the claim that these adjectives originate NP-internally, as Corbett noted:

(i) ✓cel-ye / *cel-yx dv-e svobodn-**ye** nedel-i
✓whole-NOM.PL/*GEN.PL two-F.NOM free-**NOM.PL** week-GEN.SG°/NOM.PL

(ii) *cel-ye / ✓cel-yx dv-e svobodn-**yx** nedel-i
*whole-NOM.PL/ ✓GEN.PL two-F.NOM free-**GEN.PL** week-GEN.SG°/NOM.PL
'a whole two weeks'

[90] Corbett notes that "speakers have varying preferences" among the patterns exemplified by (104a-b) and (105a). My consultants, for example, disprefer (104b) compared to (104a) and (105b). Corbett describes the contrast between all three of these examples and (105a), however, as "clear-cut", a judgment confirmed by my consultants as well.

[91] Franks describes the observation differently, suggesting that what we find is just the nominal, rather than adjectival *genitive singular* form — i.e. a deviation from the partly adjectival pattern of morphology otherwise typical of these surnames. Since the genitive singular of feminine nouns is syncretic with the nominative plural (fully syncretic, including stress, for these surnames), the alternative description given in our text fits the facts just as well as Franks' description does.

[92] Russian also has a semi-productive class of possessive adjectives that surnames in *-in* and *-ov* strongly resemble, which also have a "mixed declension". As Garde (1980, 207) notes, however, the declension of these adjectives is not completely identical to that of the corresponding surnames, differing in the prepositional case form for masculine/neuter singular (*-e*, as in nominals, for surnames; *-om*, as in agreeing elements, for possessive adjectives).

[93] Some of these nouns shift stress only in the nominative and accusative forms of the plural, while others shift stress in other plural forms as well. This distinction is not relevant to our discussion.

[94] The October 7, 2005 edition of Marina Koroleva's language column in the *Nedelja* supplement to the newspaper *Rossijskaja Gazeta* offers a stronger version of the same observation, while simultaneously reassuring her nervous readers that both nominative plural and genitive plural adjectives are equally acceptable with other feminine nouns (Koroleva 2005).

[95] Genitive singular and nominative plural are also syncretic for neuter nouns. In this connection, it might be of interest that Corbett's (1993, 26) corpus data (though not Suprun's survey cited by Corbett) suggest that a nominative plural adjective is marginally available to neuter nominals (occurring in 7% of relevant neuter nominals vs. 69% for feminine nominals), in contrast to masculines, for which it is unavailable (0%). If the contrast were stronger, it might justify revising (101) as: "QUANT movement to D is optional whenever it brings about no phonological change in N," a generalization that would raise many interesting questions about the relation between syntactic processes and morphological realization.

[96] Though my consultants do not find these examples utterly impossible, they find them significantly worse than counterparts with approximative inversion such as (110) below. They also report that without approximative inversion, classifier constructions with paucal numerals such as (107b) and (108b) are noticeably less acceptable than corresponding examples with non-paucals such as such as (107a) and (108a). I will offer no account of these contrasts.

[97] Yadroff builds on earlier investigations by Mel'čuk (1985, 147ff.) and Franks (1994; 1995, 165ff.).

[98] As Franks (1995, 170) notes, when a DP is an object of a (seemingly) accusative-assigning preposition, the noun commonly precedes the preposition (as well as the numeral) in the approximative inversion construction. I will not attempt to explain this pattern here.

[99] See Billings (1995) for similar constraints on a distinct approximative construction with the preposition *s* (which could be analyzed along similar lines).