

THE DISTRIBUTIVE *PO*-PHRASES IN SLAVIC

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Abstract: Russian *po* shares properties of other quantifiers in having case assigning potential, but it is specific in the sense that it assigns exclusively dative, whereas other quantifiers assign genitive. We may say that *po* assigns inherent case, whereas other quantifiers assign structural case. Like in Russian, the Bosnian distributive *po* is not a preposition. It is an element with a quantificational force, and therefore it should be included in the category of quantifiers. It differs from other quantifiers in selectional properties, taking exclusively a QP as its complement. And in contrast to Russian, it lacks case assigning potential.

Keywords: distributive meaning, quantifiers, prepositions, case assignment, segments.

1. RUSSIAN DISTRIBUTIVE *PO* AND CASE ASSIGNMENT

A peculiar behaviour of Russian distributive preposition *po* in terms of case assigning properties is a long standing problem for linguists trying to provide explanation for behaviour which seems inconsistent. The most recent treatment of this problem is by Franks (1994), and while pointing to the main aspects of his analysis, I will try to elaborate my own which differs in important respects.

The authors dealing with the distributive *po*-phrases frequently point out, and I cite here Franks (1994: 633), that 'Russian *po* applies to a numerically quantified phrase to induce a distributive meaning roughly corresponding to 'each''. However, this statement is not completely accurate. Namely, it is clear from data that a phrase which follows *po* doesn't have to be numerically quantified. For example, in (1a) there is no numeral, whereas in (1b) another type of quantifier is used instead of a numeral, namely a quantifier *neskol'ko* 'several':

- (1) a. Každyj učenik polučil po rublju.
 each student received DIST ruble-DAT SG
- b. Každyj učenik polučil po neskol'ko/ neskol'ku rublej
 each student received DIST several-ACC/ DAT rubles-GEN PL

Franks points out that the NP following *po* is assigned theta-role by the verb, and that *po* itself assigns no theta-role. Therefore, Franks claims that *po* is different from other prepositions in Russian, since it bears no thematic properties of its own. In my approach, this is a reason to think about different categorial status of *po*, analysing it as a quantifier, rather than a preposition. Babby (1980: 34) gives examples of prepositions with quantificational force. In addition to *po*, he mentions *okolo*, and *do* as prepositions having quantificational force.

Franks remarks that distributive *po* appears to be able to assign several different cases, but he rejects this possibility in favour of the claim that only one case is assigned, which he calls the dative of quantification in parallel with the genitive of quantification assigned by numerals.

Other authors who deal with the curious government paradigm of distributive *po* in Russian (cf. Crockett, 1976; Mel'čuk, 1985; Babby, 1985; Neidle, 1988) point out that the particular cases which *po* governs depend to some extent on the cardinality of NP which *po* takes as its complement. These authors assume that distributive *po* may assign dative, as in (2a), or accusative, as in (2b), or genitive, as in (2c):

- (2) a. Každyj učenik polučil po odnomu rublju.
 each student received DIST one-DAT SG ruble-DAT SG
- b. Každyj učenik polučil po pjat' rublej.
 each student received DIST five-ACC/ NOM ruble-GEN PL
- c. Každyj učenik polučil po pjati rublej
 each student received DIST five-GEN/DAT/LOC ruble-GEN PL

Nevertheless, Franks concludes that *po* appears to be a preposition governing the dative. However, he points out that *po* governs the dative on singular NP objects, as in (3):

- (3) po odnomu rublju
 DIST one-DAT ruble-DAT SG

When the distributed NP contains a numeral higher than 'one', this NP does not similarly appear in the dative, as obvious from (4):

- (4) po pjat' rublej
 DIST five ruble-GEN PL

Franks remarks that the numeral *pjat'* in (4) is traditionally regarded as accusative, but he argues that it is rather caseless Q. He notes that the dative cannot be realised in examples like (4), the result being an ungrammatical structure in (5):

- (5) *po pjati rubljam
 DIST five-DAT ruble-DAT PL

Franks claims that this discrepancy in case assignment is only apparent, and that *po* actually governs a single case in both (3) and (4), namely a dative case which he calls the dative of quantification (DAT-Q) and which is assigned at S-Structure in contrast to regular dative which is assigned at D-structure. In order to support his claim, Franks compares distributive *po* with a preposition governing the accusative. Such a preposition (e.g. *čerez* 'in, for') assigns accusative to its NP complement, as in (6a), but this case is blocked when the NP contains a numeral greater than 'one', so that (6c) is ungrammatical, and only (6b) is possible:

- (6) a. *čerez* odnu minutu
in one-ACC minute-ACC SG
- b. *čerez* pjat' minut
in five minute-GEN PL
- c. **čerez* pjat' minuty
in five minute-ACC PL

Franks observes that the case assigned by the preposition - dative for *po* and accusative for *čerez* - is unable to percolate into the numeral phrase.

I will argue that the reason for ungrammatical (6c) is the fact that there is no adjectival accusative form of the numeral *pjat'*. Prepositions (like *čerez*) which assign accusative to their complements cannot assign this case to phrases containing adjectival numerals, because such numerals have deficient declension lacking direct cases, and therefore, there is no available adjectival form of *pjat'* to agree with the accusative form of the head noun *minuty*, the result being an unacceptable structure in (6c). Therefore, prepositions like *čerez* must select a QP and assigning accusative which may be realised on a quantifier, as in (6b).

Franks claims that the numeral when it itself governs is a caseless, frozen form, but he observes that this is not true of the structural dative assigned by *po*, pointing out that in more literary styles of Russian it is also possible for *po* to assign its case exclusively to the numeral, as in (2c) with the dative form *pjati*. Franks says that in this kind of example, *po* appears to be assigning dative to *pjati*, with the quantifier nonetheless still assigning genitive to the nominal material following it, so that *rublej* is genitive in (2c). This is exactly how I believe the construction in (2c) should be analysed. However, here *pjati* should be treated not as a quantifier, but rather a noun, a remnant of a nominal 'five', which appears only in some specific oblique contexts in literary language taking a genitive noun as its complement (cf. Leko, 1997).

Earlier analyses of examples like (2c) (cf. Babby, 1985; Franks, 1986) assumed that *po* and *pjati* in (2c) form a quantificational PP that itself assigns the genitive of quantification. A structure of the type in (7) with a prepositional quantifier is postulated:

- (7) [NP [PP po [NP: DAT-Q pjati]] [N': GEN-Q rublej]]

For Franks this account seems reasonable on both morphosyntactic and semantic ground. However, I believe that it is unacceptable for two reasons: it assumes case assignment by a maximal projection (PP) to the intermediate projection (N'). This contradicts the standard assumption that case is assigned by heads to maximal projections, not intermediate ones.

Franks, however, do not reject (7) for these reasons, but rather because he argues that a more insightful analysis can be constructed.

Babby (1985) extends the analysis in (7) to other putative prepositional quantifiers, such as approximative *okolo* 'about'. Neidle (1988) rejected this proposal emphasising that *po* never assigns its dative case to the paucal numerals, that is numerals 'two', 'three', and 'four', as in (8a), although *okolo* does assign its genitive to these numerals, as in (8b):

- (8) a. po dva/ *dvum rublja
DIST two two-DAT ruble-GEN SG
- b. okolo dvux rublej/ *rublej
about two-GEN ruble-GEN PL/ GEN SG

Indeed, *dva* cannot appear in dative case in (8a), only because there is no inflected quantifier form of 'two', as well as other paucal numerals. Therefore, these numerals cannot receive dative by assignment, but only by agreement, since they have adjectival forms. Consequently, there are no two forms of *dvum*, one quantifier and one adjective, in contrast to two forms of *pjati* (*pjati*₁ - adjective, *pjati*₂ - noun). There is only one, adjectival form of *dvum*.

The preposition *okolo* in (8b) assigns genitive to the following phrase, which percolates down to the N head *rublej* and spreads by agreement to the adjectival numeral which appears in its genitive form *dvux*. So, genitive is not assigned to *dvux*, as claimed by Neidle (1988), but is rather a result of agreement with the N head *rublej*.

In connection with examples in (8), Franks concludes that distributive *po* is not able to assign case to the paucal numerals, only to *pjat'* and higher numerals.

I claim that *po* is equally able to assign case both to the paucal and higher numerals. However, there are no inflected nominal counterparts of paucal numerals, and therefore they cannot appear in the morphologically distinct dative case, in contrast to higher numerals which do have remnants of inflected nominal counterparts, now restricted exclusively to literary language, as in (2c).

Franks wrongly links his conclusion with the fact that the paucal numerals are morphologically opposed to the higher numerals in being essentially adjectival rather than nominal. However, he fails to observe that higher numerals in Russian do have adjectival counterparts, namely forms which appear in oblique cases in agreement with the head noun, and in that respect they do not differ from paucal numerals. Cardinal numerals in Russian are either quantifiers (in direct cases), or adjectives (in oblique cases). As quantifiers, they may be heads of QPs and assign genitive case to their NP complements. As adjectives, they agree with the head noun of NP. Quantifiers and adjectival numerals are in complementary distribution: only adjectival numerals appear in oblique contexts, whereas quantifier numerals are found only in direct cases. These two categories of numerals have incomplete declensions: adjectival numerals have only oblique cases, quantifiers only direct cases. In addition, higher numerals may manifest inflected nominal forms in specific oblique contexts in literary language, as in (2c).

Franks concludes that (8a) is unacceptable because case cannot be assigned to APs, and therefore dative cannot be assigned to the adjectival numeral *dvum* in (8a). However, he fails

to observe that *dvux* in (8b) is presumably also adjectival and still nothing prevents assignment of genitive case to it, because in his system case on *dvux* is not a result of agreement, as I claim, but rather of assignment.

In order to explain dative case on *pjati* in (2c), Franks resorts to the mechanism of Exceptional Case Marking (ECM). He claims that *po* assigns dative to the numeral phrase directly, rather than to the phrase containing the numeral. In other words, (2c) results if *po* is able exceptionally to assign its case to the specifier of its complement rather than to the complement itself. Franks believes that the existence of the type of *po*-phrase in (2c) provides support for his claim that distributive *po* assigns a structural dative case, since the possibility of ECM only exists for structural cases, as claimed by Chomsky (1981) and Speas (1990).

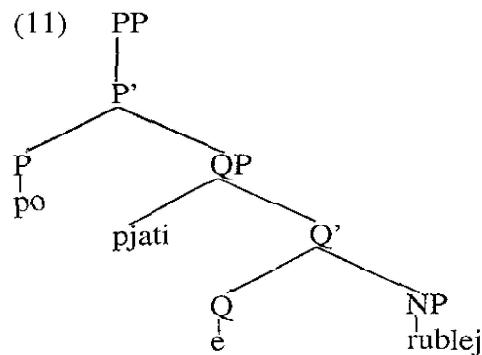
In my approach, numerals that behave like quantifiers are heads taking NP complements. Franks does not agree with this, but he admits that one would ideally like the numeral to be a head *Q* that takes an NP complement, as in (9):

- (9) [Q_P [Q' [Q *pjat'*] [NP *rublej*]]]

This is exactly the structure that I adopt, but Franks rejects, although he points out that case is standardly argued to be assigned by the heads of various categories to the noun phrases that they govern. He rejects (9) because it is not able to assimilate *po* to ECM constructions, and therefore he claims that it must be revised so that *pjat'* is the specifier of the QP, as in (10):

- (10) [Q_P *pjat'* [Q' [Q *e*] [NP *rublej*]]]

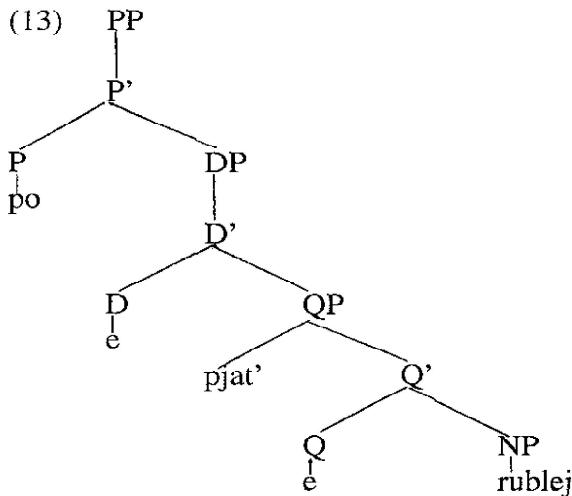
The motivation for this structure is Franks' wish to enable *po*, which takes this QP as its complement, to assign its structural DAT-Q to *pjati*, whereas the null quantifier in turn may assign its structural GEN-Q to the NP *rublej*. This is possible if the QP is headed by an empty quantifier and the numeral is its specifier, as represented in (11):



He assumes the relation between *Q* and its NP complement to be constant in all types of numeral phrases, that is an empty quantifier selects an NP complement, with the numeral being in the [Spec, QP]. However, in order to prevent ECM with numeral phrases including *pjat'* instead of *pjati*, he is forced to propose that QPs may be embedded in DPs, and therefore he claims that in addition to the structure in (10), the structure in (12) also exists:

- (12) [D_P [D' [D *e*] [Q_P *pjat'*] [Q' [Q *e*] [NP *rublej*]]]]]

So, he assumes two types of numeral phrases: QPs with the structure as in (10), and DPs with the structure in (12). Owing to this distinction, he is able to protect the numeral from ECM by the preposition, if a DP is selected rather than a QP. In such a case the numeral is no longer the specifier of the complement, as represented in (13):



If one compares Franks' structures of QP in (11) and in (13), it is clear that they are identical, with an empty quantifier head taking NP as its complement and having a numeral in a specifier position. Being in a specifier position, this numeral should be, by definition, a maximal projection. Franks is not specific about the categorial status of this phrase, but from the discussion of some previous examples, we may conclude that it is also a QP. In structures like (11), this QP is case marked, but in (13), as pointed out by Franks, *pjat'* should in fact have no source for case. Therefore, Franks concludes that it is caseless, a frozen form, contrary to the traditional belief that it is accusative. In order to support his claim, he points out that the numeral *tysjača* 'thousand' cannot be used in its accusative form after *po*, as in:

- (14) po tysjačе/ *tysjačу rublej
 DIST thousand-DAT/ ACC rubles-GEN PL

The accusative form *tysjaču* is unacceptable in *po*-phrases, but this fact is still not a support for Franks' claim that the traditional view that the form *pjat'* in (13) is accusative cannot be maintained. Nor does it prove that *pjat'* is caseless. Namely, *pjat'* and *tysjača* differ in categorial status, *pjat'* being a Q, and *tysjača* a N. His conclusion that the form *tysjače* is dative leads him to suggest that here *po* can only take a QP complement, never a DP one, since there is no caseless form of *tysjača*, in contrast to 'five'. Franks claims that *tysjača* has the same position as other numerals, namely the specifier of the QP, with the QP and its empty head being caseless.

My explanation for these facts is the following: *tysjača* in Russian is fully nominal, that is, there is no quantifier, or adjectival form of *tysjača*. Since there is no Q *tysjača*, the dative case assigned by *po* percolates to *tysjača*, which is the head of DP. However, it should be pointed out that there are two possibilities in instrumental, as in (15):

- (15) a. s tysjačej druzej
 with thousand friends-GEN PL

- b. s tysjač'ju druzjami
with thousand friends-INST PL

Therefore, I conclude that there is a remnant of adjectival declension of *tysjača* preserved only in instrumental, in the same way as there is a remnant of nominal declension of *pjat'* preserved only in dative and used exclusively in *po*-phrases in literary language, as in (2c).

Next Franks discusses agreement possibilities exhibited by subject *po*-phrases, as in (16):

- (16) a. Každuju knjigu *pročitali/ pročitalo po pjat' studentov.
each book-ACC read-PL/ NEUT SG DIST five students-GEN
'Five students read each book.'
- b. Na každom zavode *rabotali/ rabotalo po sto človek.
at each factory-LOC worked-PL/ N SG DIST hundred people-GEN
'A hundred people worked at each factory.'

Franks points out that the neuter singular is the only possible agreement form of the predicate in (16). Therefore, he concludes that *po*-phrases in Russian are only PPs, never DPs (since only DPs induce subject-verb agreement), or QPs (as claimed by Pesetsky). He emphasises that *po*-phrases can function as semantic subjects and, as such, they exhibit the subject-verb agreement expected of PP subjects generally. This claim cannot be maintained in view of the example in (17) with plural agreement which is acceptable for some speakers:

- (17) Každuju knjigu pročitali po dva studenta.
each book-ACC read-3PL DIST two students-GEN PL

Comparable examples in Bosnian have plural agreement form of the predicate if *po*-phrase in the subject position contains paucal numerals, as in (18a), whereas singular agreement form is found if *po*-phrase contains higher numerals, as in (18b):

- (18) a. Po dva studenta dolaze svakom profesoru.
DIST two student-GEN PAUC come-3PL each-DAT professor-DAT
'Two students come to each professor.'
- b. Po pet studenata dolazi svakom profesoru.
DIST five student-GEN PL come-3SG each-DAT professor-DAT

These examples show that the apparent PP subjects do not exhibit the expected agreement behaviour, and that predicates do not appear always in expected singular form. Franks himself realises the problem with the claim that singular semantic agreement is obligatory with PP subjects, and points out that under certain circumstances plural agreement with PP subjects is admissible, as discussed by e.g. Chvany (1975), Crockett (1976), Babby (1980, 1985) and Neidle (1988).

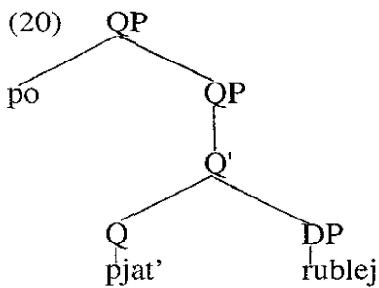
Babby (1980: 34) shows that sometimes the plural (alongside the expected neuter singular) is acceptable with quantificational PP subjects, citing examples with subjects such as those in (19):

- (19) a. okolo četyrexsot predstavitelej
about 400-GEN representatives-GEN PL
- b. do trexsot oficerov
up to 300-GEN officers-GEN PL

Franks takes this to be an instance of semantic agreement, so that the form of the verb reflects the plurality of the lexical head noun, despite the syntactic fact that it is technically an oblique complement to a functional Q head. He concludes with the claim that *po*-phrase subjects are simply PPs, which behave similarly to other PP subjects in this regard, allowing optional plural semantic agreement.

2. THE CATEGORIAL STATUS OF DISTRIBUTIVE *PO*-PHRASES

In my approach, quantificational *po*-phrases (as well as others, headed by *okolo*, *do*) are not PPs, but rather QPs, and plural agreement forms of the predicate with subject *po*-phrases are actually instances of syntactic agreement, in the same way as singular forms are also cases of syntactic agreement. In order to explain this agreement paradox, we have to analyse differently the categorial status of distributive *po*-phrases. They should be analysed not as PPs, which is generally assumed, but rather as QPs. Therefore, in my approach, the distributive *po* is treated as a segment, that is *po* and a QP are treated as two segments of one category (cf. May, 1985; Chomsky, 1986; Kayne, 1994), as in (20):



In cases when a quantificational element is not overtly present in *po*-phrases, as in (21a), or when a quantificational element lacks Q counterpart, as in (21b), the Q head of the lower segment is empty, and the quantificational element is realised either in its adjectival form inside DP, as *odnomu* in (21b), or as a N head, as in (21c) in case of numerals which are exclusively nouns, without adjectival or Q counterpart (e.g. *tysjača*).

- (21) a. Každyj učenik polučil po rublju.
each student received DIST ruble-DAT SG
- b. Každyj učenik polučil po odnomu rublju.
each student received DIST one-DAT SG ruble-DAT SG
- c. Každyj učenik polučil po tysjače rubljej.
each student received DIST thousand-DAT rubles-GEN PL

However, when a quantificational element has Q, in addition to adjectival counterpart, Q head must be filled, as in (22a), and the option with the adjectival form of the quantificational element is excluded, as in (22b):

- (22) a. po pjat' rublej
DIST five rubles-GEN PL
- b. *po pjati rubljam
DIST five-DAT rubles-DAT PL

Po shares properties of other quantifiers in having case assigning potential. However, it is specific in the sense that it assigns exclusively dative, whereas other quantifiers assign genitive. We may say that *po* assigns inherent case, whereas other quantifiers assign structural case. Being a segment, *po* is not able to project its own properties to both segments of a common QP category. This is an explanation for different agreement patterns of the predicate when the subject position is occupied by *po*-phrases. The features of the lower Q head are projected to both segments of QP, and therefore we find both singular and plural agreement forms of the predicate depending on the number features of the lower Q head. I explain the option *po pjati rublej* as a remnant of a stage when *pjat'* was a noun with full nominal declension, and the dative form *pjati* survived only in literary language.

3. THE DISTRIBUTIVE *PO*-PHRASES IN BOSNIAN

I claim that in Bosnian, like in Russian, the distributive *po* is not a preposition. Consider the examples given in (23):

- (23) a. Po jedan student ulazi svaki sat.
DIST one-NOM MASC SG student-NOM MASC SG enters each hour
- b. Odriču se po jednog zahtjeva svakog mjeseca.
reject-3PL REFL DIST one-GEN M request-GEN M each month
'They renounce one request each month.'
- c. Nagradu dodjeljuju po jednom studentu svake godine.
award-ACC give-3PL DIST one-DAT student-DAT each year
'They give the award to one student each year.'
- d. Svaki student je pročitao po jednu knjigu.
each student AUX-3SG read DIST one-ACC MASC book-ACC
- e. Svaki knez vlada po jednim gradom.
each prince rules DIST one-INST MASC town-INST MASC
- f. Svaki student je govorio o po jednom dogadjaju.
each student AUX-3SG spoke about DIST one-LOC M event-LOC MASC

These examples show that *po* doesn't assign its own case, as already observed by Dickey (1992). Rather, the appropriate case to the complement of *po* is always assigned by another case assignor: locative in (23f) is assigned by a preposition *o* 'about', nominative in (23a) by

INFL, whereas genitive (23b), dative (23c), accusative (23d), and instrumental (23e) are assigned by respective verbs. Prepositions in Bosnian obligatorily assign case, therefore we may conclude that *po* in (23) is not a preposition. It is an element with a quantificational force, and therefore I include it in the category of quantifiers. It differs, however, from other quantifiers in selectional properties, taking exclusively a QP as its complement. And, in contrast to Russian, it lacks case assigning potential. Neither can it receive a case. It is the only quantifier which is genuinely caseless element. The case assigned to QP by V (or P, or INFL) simply percolates to the lower head which can receive case. If a lower Q head is filled, it receives the case. If it is empty, as in our examples in (23), the percolation of case continues all the way down the tree to the N head.

To support the claim that *po* in (23) is not a preposition, and that it does not assign case, I offer the examples in (24) which should be compared with (23e):

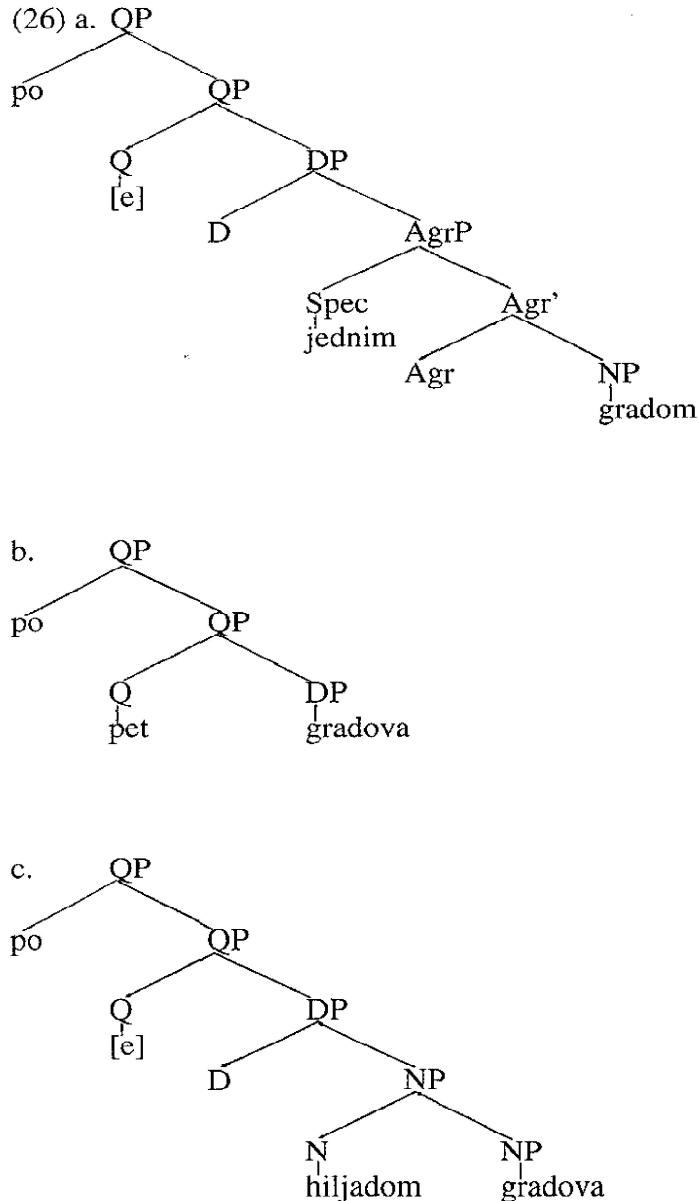
- (24) a. *Svaki knez vlada po dva grada.
 b. *Svaki knez vlada po pet gradova.
 c. Svaki knez vlada sa po dva grada.
 d. Svaki knez vlada sa po pet gradova.

I have emphasised earlier that ungrammatical structures in dative and instrumental contexts can be rescued by inserting a preposition which has potential to assign dative and instrumental case, respectively. The presence of the preposition which lacks that case assigning potential, like *po*, cannot rescue the structure as obvious from ungrammatical (24a,b). I still claim, however, that *sa* in (24c,d) doesn't assign instrumental to the quantified complement. It only serves to licence the structure and actually performs the role of the instrumental case ending since quantifiers lack morphological case endings to indicate that the instrumental was assigned.

Let me finally illustrate structures I assume with *po*-phrases which include adjectival, nominal and quantifier numerals in examples of instrumental context, as those given in (25):

- (25) a. Svaki knez vlada po jednim gradom.
 'Each prince rules one city.'
 b. Svaki knez vlada sa po pet gradova.
 'Each prince rules five cities.'
 c. Svaki knez vlada sa po hiljadom gradova.
 'Each prince rules thousand cities.'

The configurations of *po*-phrases in (25) are given in (26):



4. CONCLUSIONS

Russian *po* shares properties of other quantifiers in having case assigning potential, but it is specific in the sense that it assigns exclusively dative, whereas other quantifiers assign genitive. We may say that *po* assigns inherent case, whereas other quantifiers assign structural case. Being a segment, *po* is not able to project its own properties to both segments of a common QP category. Like in Russian, the Bosnian distributive *po* is not a preposition. It is an element with a quantificational force, and therefore I include it in the category of quantifiers. It differs from other quantifiers in selectional properties, taking exclusively a QP as its complement. And in contrast to Russian, it lacks case assigning potential. Neither can it receive a case. It is the only quantifier which is genuinely caseless.

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