

# On (partially) quirky subjects, numeral subjects, and subject-oriented anaphor binding: Nominal and non-nominal subjects and their structural positions

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**Abstract:** The paper makes a proposal how to treat certain quirky subjects that pass some but not all subjecthood tests, arguing that they are PPs with a null P. Such quirky subjects are located in a higher subject position than fully quirky subjects, as well as regular agreeing subjects, in line with Bošković's (2024a) proposal that non-nominal subjects satisfy the EPP in a higher position than nominal subjects. The analysis has consequences for determining what counts as a binder of subject-oriented anaphors. In principle, the element in any of the three derived subject positions where the EPP is satisfied in Bošković (2024a), as well as the element in the external argument theta-position can bind subject-oriented anaphors, with the closest subject being the binder when more than one subject is present. However, the binder crucially must be nominal. What distinguishes subject-oriented and "regular" anaphors is then that the latter can be bound by non-subjects as well as by non-nominal (e.g. PP) subjects. The paper also makes a number of proposals regarding how to treat numeral subjects in Slavic (where the noun following the numeral bears genitive), which show rather complex behavior regarding agreement, case, binding of subject-oriented anaphors and control, the main claim being that with some numeral phrases, in particular, agreeing numeral subjects in Russian and non-agreeing numeral subjects in Serbo-Croatian (non-agreeing numeral subjects in Russian are treated differently), a null noun is present, with that null noun assigning genitive (nouns in these languages quite generally assign genitive). Throughout the discussion, special attention is paid to whether various non-canonical subjects are nominal or non-nominal in nature.

**Keywords:** quirky subjects, subject-oriented anaphors, subject positions, control, Case, agreement

## 1. Introduction

There is a well-known but ill-understood crosslinguistic variation regarding the availability of quirky subjects crosslinguistically. While the literature generally presents the variation as binary, as languages either having or not having quirky subjects, the variation is actually not binary (see Poole 2015)—among quirky subject languages, in some languages quirky subjects are more/less of a subject than in others. This paper examines one instance of crosslinguistic variation with respect to quirky subjects that pass some but not all subjecthood tests, the focus being on subject-oriented anaphor binding and control. The proposed analysis will have consequences for what is and what is not nominal when it comes to subjects, as well as for determining what counts as a binder of subject-oriented anaphors. The paper will also address the notorious and hotly debated issue of the proper analysis of Slavic numeral subjects, which display rather peculiar and complex behavior with respect to Case, agreement, and binding.

The paper is organized as follows. In section 2, I examine quirky subjects that cannot bind subject-oriented anaphors but can function as controllers, and propose an analysis for such elements. In sections 3–4, I turn to the issue of what counts as the binder of subject-oriented anaphors (since such anaphors play a prominent role in the discussion of quirky subject diagnostics). The discussion will also lead us into an investigation of the notorious genitive-of-quantification construction in Slavic (in particular, Serbo-Croatian and Russian), where a numeral assigns genitive to the following noun, which shows a very complex pattern of behavior with respect to agreement, case, binding of subject-oriented anaphors and control, with rather interesting differences between Serbo-Croatian and Russian. Throughout the discussion, special attention will be paid to whether various non-canonical subjects are nominal or non-nominal in nature (superficially, they all seem nominal, but it will be argued that this is not always the case, which is reflected in their structural position).

## 2. Variation regarding quirky subjects: Quirky subjects that pass only some subjecthood tests

The literature on quirky subjects, which are illustrated by Icelandic (1), generally tries to capture the quirky subjects vs non-subjects distinction.

- (1) *Mér er kalt.*  
Me.dat is cold  
'I am cold.'  
(Icelandic)

The distinction is actually not simply binary. Taking into consideration the classic Zaenen et al. (1985) tests for quirky subjects, established on the basis of an Icelandic/German difference, where Icelandic passes all of their tests for quirky subjects and German does not pass any (superficially, German does have the exact counterpart of Icelandic (1)), going beyond Icelandic and German, other languages do not line up neatly with respect to the Zaenen et al. tests (see Poole 2015; this actually also holds for Germanic, see Pankau 2016). Compare e.g. Serbo-Croatian (SC) and Russian with respect to the binding of subject-oriented anaphors test for subjecthood.<sup>1</sup> SC does have non-nominative subjects of the kind that Icelandic does (2). In SC, they do not bind subject-oriented anaphors, compare (3) and (4). As noted by e.g. Bailyn (2008), in this respect SC differs from Russian, where quirky subjects do bind subject-oriented anaphors, as shown by (5)–(6). (7)–(8) confirm that in SC the elements in question do not bind subject-oriented anaphors.

- (2) *Jovanu je hladno.*  
Jovan.dat is cold
- (3) \**Jovanu je hladno od svoje klime.*  
Jovan.dat is cold from himself's AC  
'Jovan is cold because of his AC.'
- (4) *Jovan je pobjegao od svoje klime.*  
Jovan.nom is run-away from himself's AC  
'Jovan ran away from his AC.'  
(SC)
- (5) *Navernoe, dedu Morozu xolodno ot svoego moroza, raz on nadel tulup i valenki.*  
probably father Frost.dat cold from self's frost since he put.on fur.coat and valenki  
(www, Russian)
- (6) *Ivanu<sub>i</sub> nužen vrač<sub>k</sub> v svoem<sub>i/\*k</sub> dome.*  
Ivan<sub>DAT</sub> necessary doctor<sub>NOM</sub> in self's house  
'Ivan needs a doctor in his house.'  
(Bailyn 2008, (6)–(8))  
(Russian)
- (7) \**Jovanu<sub>i</sub> treba doktor<sub>k</sub> u svojoj<sub>i</sub> kući.*  
Jovan<sub>DAT</sub> necessary doctor<sub>NOM</sub> in self's house  
'Jovan needs a doctor in his house.'
- (8) \**Jovanu se sviđja [svoj posao].*  
Jovan<sub>DAT</sub> se like [self's work]<sub>NOM</sub>  
'Jovan likes his work.'  
(SC)

Going beyond binding of subject-oriented anaphors, another standard subjecthood test in Slavic (more precisely, a test for subjects located in SpecIP, see Franks 1994 and the discussion below) is control (more

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<sup>1</sup>Icelandic quirky subjects pass the test in question:

(i) *Henni<sub>i</sub> þykir bróðir sinn<sub>1/\*2</sub> leiðinlegur.*  
her.dat thinks brother(N) her boring  
'She thinks her brother boring.'

(Zaenen et al. 1985)

precisely, controlling PRO).<sup>2</sup> Consider (9). Higher numerals in Russian optionally agree with the verb (9a). When they agree they can bind subject-oriented anaphors (9b), which Franks (1994) interprets as indicating that only in this case they are located in SpecIP.

- (9) a. *Pjat' ženščin smotreli/smotrelo na Ivana.*  
 five women looked-PL/N.SG at Ivan  
 b. *Pjat' ženščin smotreli/\*smotrelo na sebja.*  
 five women looked-PL/N.SG at themselves (Russian, Franks 1994)

Importantly, only when they agree they can control the PRO subject of gerunds like the one in (10b). Notice also that (10a) confirms that the issue with (10b) is the control of PRO. Franks (1994) takes the paradigm in (9)–(10) as indicating that binding subject-oriented anaphors and controlling PRO are tests for subjecthood in Slavic.

- (10) a. *Po doroge domoj, pjat' mal'čikov zašli/zašlo v magazine.*  
 on way home five boys dropped-in-PL/N.SG to store  
 b. *Vozvras cajas' domoj, pjat' mal'čikov zašli/\*zašlo v magazine.*  
 returning home five boys dropped-in-PL/N.SG to store (Russian, Franks 1994)

Returning to SC, recall that SC quirky subjects fail the binding of subject-oriented anaphors test for subjecthood. Importantly, they pass the controlling PRO test.<sup>3</sup>

- (11) *Vračajući se kući Jovanu je bilo hladno.*  
 returning se home Jovan.dat is been cold  
 'Returning home, Jovan was cold.'  
 (12) *Vračajući se kući Jovanu je zatrebao doktor.*  
 returning se home Jovan.dat is needed doctor  
 'Returning home, Jovan needed a doctor.'  
 (13) *?Jovanu se sviđja pjevati pijan.*  
 Jovan.dat se likes to-sing drunk  
 'Jovan likes to sing drunk.'

How can we capture the mixed behavior of SC quirky subjects, and its contrast with Russian, where dative subjects pass both tests in question? It has occasionally been suggested that quirky-like cases are assigned by a null P (Bošković 2006b, Horvath 2014; for relevant discussion, see also Bošković 2013, Pesetsky 2013). Appealing to this intuition, I suggest that quirky subjects that do not bind subject-oriented anaphors but pass some subjecthood tests, like control, are subjects, but they are PPs with a null P, the underlying assumption being that binders of subject-oriented anaphors must be nominal (see sections 3–4).<sup>4</sup> The ability to control PRO is consistent with the PP analysis, since true PP subjects can function as controllers, as in (14) (see e.g. Hornstein 2001, Postal 2004).

<sup>2</sup>Note that the control test in question (which might be at least to some extent Slavic-specific) differs from the one used in Poole (2015), which is discussed in section 3.

<sup>3</sup>The same holds for Russian quirky subjects:

(i) [*PRO<sub>k</sub> pridja domaoji*], *Vove stalo skuchno.*  
 coming home Vova(dat) get(past.asp.imp) boring(imp)  
 'On coming home, Vova got bored.' (Kondrashova 1993: 210)

<sup>4</sup>It is worth noting here that some quirky subjects in Italian occur with the preposition *a* (though it is not clear whether *a* in such cases is a true preposition or realization of dative, see Belletti and Rizzi 1988).

(14) [*In the bathroom*]<sub>i</sub> is a great place to hide without PRO<sub>i</sub> really being a good place to live.

An independent argument for the analysis just presented is provided by floating quantifiers. In SC, there is a contrast regarding quantifier float between nominative and quirky subjects, compare (15) and (16). This contrast can be accounted for under the PP analysis of SC quirky subjects if, as often assumed, quantifier float is not possible within a PP.

(15) *Studenti su svi zavoljeli lingvistiku.*  
students.nom are all.nom got-to-love linguistics  
'The students all got to love linguistics.'

(16) ??*Studentima je svima hladno.*  
students.dat are all.dat cold  
'The students all are cold.'

(SC)

Importantly, quirky subjects in Icelandic and Russian, which, as shown above, can bind subject-oriented anaphors, can also float quantifiers.<sup>5</sup>

(17) *Nemend-unum var öll-um kalt.*  
students-dat.the were all-dat cold

(18) *Nemend-urnir voru all-ir handteknir.*  
students-nom.the were all-nom arrested

(19) *Angličanam v Rossii vsem zimoj xolodno.*  
British.dat in Russia all.dat in.winter cold  
'The Brits in Russia are all cold in the winter.'

For additional arguments for the PP status of SC quirky subjects the reader is referred to sections 3 and 4.

### 3. What is the binding domain/binder for subject-oriented anaphors?

One issue that should be addressed in light of the above discussion is what the domain for binding subject-oriented anaphors is, in other words, what counts as the binder for subject-oriented anaphors. Regarding the Russian paradigm in (9)–(10), agreement itself should not be the culprit for the impossibility of binding subject-oriented anaphors and control since SC quirky subjects under consideration, which do not agree, can control (and the Icelandic ones can both control and bind subject-oriented anaphors). Rather, something else should be responsible for the impossibility of binding and control in (9)–(10), with the lack of agreement being the result of that something else. That something, however, should not carry over to SC quirky subjects when it comes to control, but it should when it comes to the binding of subject-oriented anaphors.

Focusing first on (9)–(10), Franks (1994) argues that non-agreeing numeral subjects in Russian stay in SpecvP, while the agreeing ones move to SpecIP, with movement to SpecIP being needed for binding subject-oriented anaphors, control as well as agreement (note that it is not easy to provide independent evidence for his claim regarding different positions for agreeing and agreeing numeral phrases from word order due to the rather extreme freedom of word order in Russian). There is, however, independent evidence that elements in SpecvP can bind subject-oriented anaphors.

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<sup>5</sup>It should be noted that Bošković (2004), McCloskey (2000), and Postal (2004) show that while rare, quantifier float with PPs is not always ruled out crosslinguistically. Some speakers of SC seem to allow quirky subjects to float a quantifier—the option in question may then be available for these speakers.

Bošković (2022, 2024b) addresses the issue of what counts as the subject for binding subject-oriented anaphors by examining distributed coordination constructions (DCCs) like (20).

(20) [*The dogs and the roosters*] were [<sub>vP</sub> *barking*] and [<sub>vP</sub> *crowing*] all night.

Such constructions are interesting in that they display a semantics/agreement mismatch. The elements bearing the external theta-roles in (20) are the individual conjuncts, but agreement is with the whole coordination. To account for this, Bošković (2022, 2024b) argues that the conjuncts start the derivation separately (see also Zhang 2010); the DCC coordination is formed separately during the derivation (see below) and inserted into the structure above the positions where the relevant elements are originally generated. The account is confirmed by binding. Note first that in (21), the raised subject binds the anaphor.

(21) *They<sub>i</sub> seem to each other<sub>i</sub> to be t<sub>i</sub> the best candidates in the convention.*

Parallel to this, in (22), the DCC coordination *Bill and Sue* binds the reciprocal (it also undergoes agreement).

(22) [*Bill and Sue*]<sub>i</sub> seem to each other<sub>i</sub> to be the best candidate in the election and the best nominee for the convention respectively.

However, in (23), the conjuncts bind separately: *Bill* binds *himself* and *Sue* binds *herself*.

(23) [*Bill<sub>j</sub> and Sue<sub>k</sub>*]<sub>i</sub> hired himself<sub>j</sub> and nominated herself<sub>k</sub> respectively.

This shows that the conjuncts start separately. (24) in fact shows that the conjuncts must start separately since they cause a blocking effect for binding separately (the closest subject for the anaphor is *t<sub>i</sub>* in the first conjunct and *t<sub>j</sub>* in the second conjunct).

(24) \**[Bill<sub>i</sub> and Sue<sub>j</sub>]<sub>k</sub> seem to be t<sub>i</sub> the best candidate in each other's<sub>k</sub> campaigns and t<sub>j</sub> the best nominee in each other's<sub>k</sub> parties respectively.*

What the above data show is that when the anaphor is low in the structure, below the position where the relevant elements are base-generated, the relevant elements function as binders separately (23). On the other hand, when the anaphor is high in the structure, where only the DCC coordination is higher than the anaphor, the relevant elements bind jointly (22).

In light of this, Bošković (2022, 2024b) argues for the derivation of (20) shown in (25). Each conjunct is base-generated in the theta-position of its own vP; there is a vP&vP coordination at this point of the derivation but the subjects are still not being conjoined with each other (25a). Another ConjP is then formed through sideward merger (25b) (see also Zhang 2010). This derivationally formed ConjP is inserted back into the structure. Given that this ConjP must be higher than the  $\theta$ -positions of the relevant elements (cf. (23)-(24)), and that it must be below T so that T can probe it, there must be a phrase (XP) between vP and TP, with the derivationally-formed ConjP (see (25b)) introduced into the Spec of this phrase (see (25c)).<sup>6</sup>

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<sup>6</sup>Before the discussion of split INFL/IP below, I will interchangeably use IP and TP, depending on the work cited.

T then probes the derivationally-formed ConjP (25d), before the latter undergoes across-the-board movement to SpecTP (25e).<sup>7</sup>

- (25) a. [<sub>ConjP</sub> [<sub>vP</sub> a dog... ] and [<sub>vP</sub> a rooster ... ]]  
 b. [<sub>ConjP</sub> [a dog] and [a rooster]]  
 c. [<sub>XP</sub>[<sub>ConjP</sub> [a dog] and [a rooster]]] X [<sub>ConjP</sub> [<sub>vP</sub> ~~a dog~~... ] and [<sub>vP</sub> ~~a rooster~~ ... ]]  
 d. T [<sub>XP</sub>[<sub>ConjP</sub> [a dog] and [a rooster]]] X [<sub>ConjP</sub> [<sub>vP</sub> ~~a dog~~... ] and [<sub>vP</sub> ~~a rooster~~ ... ]]  
     |\_\_\_\_\_ Agree  
 e. [<sub>TP</sub> [<sub>ConjP</sub> [a dog] and [a rooster]]] T [<sub>XP</sub>[<sub>ConjP</sub> [~~a dog~~] and [~~a rooster~~]]] X [<sub>ConjP</sub> [<sub>vP</sub> ~~a dog~~... ] and [<sub>vP</sub> ~~a rooster~~ ... ]]

At any rate, what is important for us is that in (26), *the dogs* and *the roosters* start the derivation separately, which means that different elements occupy SpecvP and SpecTP. Due to this mismatch, DCCs have important consequences for the unsettled issue of how subject-oriented anaphors should be analyzed.

(26) [*The dogs<sub>i</sub> and the roosters<sub>j</sub>*]<sub>k</sub> were [<sub>vP</sub> *t<sub>i</sub> barking*] and [<sub>vP</sub> *t<sub>j</sub> crowing*] all night.

Approaches to subject-oriented anaphors in the literature differ regarding whether the element in SpecvP or the element in SpecTP functions as the binder of subject-oriented anaphors when both are present. This has generally been considered a theoretical issue since it has been difficult to find a clear case that can tease the two apart. DCCs provide such a case.

In (27), subject-oriented anaphor *svom* (it can in principle be bound by singular or plural antecedents) is obligatorily bound by the individual conjuncts.

(27) [*Pas<sub>i</sub> i kokoška<sub>j</sub>*]<sub>k</sub> su lajali u [*svom<sub>i/\*k</sub> dvorištu*] i kokodakali u [*svom<sub>j/\*k</sub> kavezu*].  
 dog and chicken<sub>sg</sub> are barked in its<sub>anaphor</sub> yard and crowed in its<sub>anaphor</sub> cage  
 ‘A dog and a chicken barked in its yard and crowed in its cage.’ (SC)

What is important for our purposes is that what is located in SpecvP are the individual conjuncts but what is located in SpecTP and agrees with T is the whole coordination (28).

(28) [<sub>TP</sub>[*Pas<sub>i</sub> i kokoška<sub>j</sub>*]<sub>k</sub> su [<sub>XP</sub> *t<sub>k</sub> [<sub>vP</sub> *t<sub>i</sub> lajali u svom<sub>i/\*k</sub> dvorištu*] i [<sub>vP</sub> *t<sub>i</sub> kokodakali u svom<sub>j/\*k</sub> kavezu*]]].  
 dog and chicken are barked in its<sub>anaph</sub> yard and crowed in its<sub>anaph</sub> cage*

This is a rather rare mismatch, which teases apart different approaches to subject-oriented anaphors. What functions as the binder of *svom* in the examples in (27) and (28) is the element in SpecvP, not the element in SpecTP or the element that undergoes Agree with T.

(29) confirms this (the anaphor can in principle have a sg or pl antecedent, judgment is given for the DCC reading).

(29) ?[*Marija<sub>i</sub> i Ana<sub>j</sub>*]<sub>k</sub> smetaju svome<sub>i/\*k</sub> bratu i dosadjuju svojoj<sub>j/\*k</sub> sestri.  
 Marija and Ana bother her<sub>anaph</sub> brother and bore her<sub>anaph</sub> sister

<sup>7</sup>Gawron and Kehler (2004) observe distributive cases like (i), which cannot be analyzed the way Bošković (2022, 2024b) treats DCCs. Interestingly, anaphor binding of the kind discussed regarding (23) is not possible in (ii), which confirms that they should not be analyzed in the same way.

(i) *I finally met Lyn and Mary yesterday. These two sisters married Bob and dated Bill respectively.*

(ii) *I finally met Lyn and Bill yesterday. \*These two students hired herself and nominated himself respectively.*

(27) and (29) provide evidence for approaches where the binder of subject-oriented anaphors is (or can be) the element located in SpecvP and against approaches where the element in SpecTP and/or the element that undergoes Agree with T must be the binder (for such approaches, see e.g. Pica 1987, Safir 2004, Reuland 2011, Antonenko 2012; (27)/(29) provide evidence against all these approaches).

Turning to Icelandic, as noted above, one of the tests for quirky subjects in Icelandic is subject-oriented anaphor binding (see fn 1), with subjecthood defined in terms of location in SpecTP since Icelandic quirky subject constructions are characterized by the lack of an external  $\theta$ -role (see e.g. Holmberg & Platzack 1995; there is no external argument in (30)), i.e. the lack of vP.

(30) *Henni þykir bróðir sinn leiðinlegur.*  
 her(D) thinks brother(N) self boring (Zaenen et al 1985)

What these SC and Icelandic facts, taken together, indicate is that SpecvP closes the binding domain for subject-oriented anaphors when present: this is the case in (28) but not (30). In other words, the element in SpecvP is the closest subject, hence, when present, it must be the binder of subject-oriented anaphors. When it is not present, then the element in SpecIP is the closest binder; importantly, in principle both SpecvP and SpecIP are positions from which subject-oriented anaphors can be bound. This then argues against Franks's analysis of (9)–(10). Recall that Franks (1994) argues that the reason why the non-agreeing numeral cannot bind subject-oriented anaphors is its location in SpecvP; DCCs, however, provide evidence that this analysis cannot be maintained (for additional relevant evidence, see Saito 2009).

Now, Bošković (2024a) argues for a return to Split IP, furthermore arguing that quirky nominal subjects, agreeing nominal subjects, and non-nominal subjects all occupy different positions when they move out of vP to satisfy the EPP. In particular, Bošković (2024a) argues that quirky nominal subjects are located in SpecTP, agreeing nominal subjects in SpecAgrsP, and non-nominal subjects (like PP and CP subjects) are located in what Bošković (2024a) calls SpecA/A'P, A/A'P being a projection on the border of the traditional A and A' fields—it is higher than AgrsP but lower than the projections in the traditional left periphery (the EPP can be satisfied in all the positions in question; in particular, it is satisfied by the highest Spec present in this domain, see Bošković 2024a for details).

(31) [*A/A'P non-nominal subjects*] [*AgrsP Mary*] [*TP quirky subjects*]

Regarding quirky subjects, as noted above, there is a poorly understood crosslinguistic variation regarding the availability of quirky subjects like (1), repeated below as (32), the distinction between languages that allow and those that do not allow quirky subjects generally assumed to be arbitrary, i.e. not correlated with anything else.

(32) *Mér er kalt.*  
 me(D) is cold (Icelandic)

Bošković (2024a), however, proposes a principled criterion for this distinction. First, as we have seen above and as also noted in Poole (2015), quirky subjects crosslinguistically do not behave uniformly regarding Zaenen et al.'s (1985) tests for quirky subjects. Taking the possibility of binding subject-oriented anaphors as a diagnostic for true quirky subjects, Bošković (2024a) observes that quirky subjects are allowed in Icelandic, Faroese, Laz, Kannada, Korean, Malayalam, Spanish, Telugu, Japanese, Tamil, Polish, Russian, Imbabura, Georgian, Basque, Old French, Marathi, Gujarati, Hindi. What these languages have in common is that they all allow *pro*-drop (full or partial). This leads to (33):

(33) Quirky subjects are allowed only in *pro*-drop languages.

Bošković (2024a) also provides a deduction of (33), the gist of which is the following: The EPP can be satisfied in SpecTP only in what Chomsky (2015) considers strong T languages, which is *pro*-drop languages. Quirky subjects cannot go to SpecAgrsP, which is reserved for agreeing subjects, so they can satisfy the EPP, in SpecTP, only in *pro*-drop languages.

While quirky subjects are incompatible with AgrsP (they are in SpecTP), agreeing nominative subjects are incompatible with SpecTP—if they move preverbally they must be in SpecAgrsP. Agreeing preverbal subjects are then in SpecAgrsP and quirky subjects in SpecTP.

Recall also that Bošković (2024a) argues that non-nominal subjects, like PP and CP subjects, move to SpecA/A'P, satisfying the EPP there. The following then holds regarding the EPP (where the EPP is satisfied in the highest Spec present in this domain).

(34) Only non-nominal subjects satisfy the EPP in SpecA/A'P.

(35) Only agreeing nominative subjects satisfy the EPP in SpecAgrsP.

(36) Only non-agreeing nominal subjects (i.e. quirky subjects) satisfy the EPP in SpecTP. Only T in *pro*-drop languages can be the locus of the EPP satisfaction.

Recall now that, as argued above, SC quirky subjects are PPs. This puts them in a higher structural position than Icelandic quirky subjects—while the latter are in SpecTP, the former are in SpecA/A'P.

This may help us account for another property of SC quirky subjects. One of Zaenen et al.'s (1985) tests for quirky subjects is whether quirky subjects can function as PRO. Thus, they show that they can in Icelandic but not in German. (Poole 2015 shows that languages that pass other tests for quirky subjects actually differ with respect to this particular test.) It turns out that in SC, quirky subjects cannot function as PRO, as shown by (37) (if lexically realized, PRO from (37) would be dative, see (38); note that 'want' in SC can take either an infinitival or a finite complement).<sup>8</sup>

(37) \**Jovanu želi PRO biti hladno.*

Jovan.dat wants to-be cold

'Jovan wants to be cold.'

(38) cf. *Jovan želi da mu bude hladno.*

Jovan.nom wants that him.dat be cold

Now, Bošković (1997) argues that control infinitives are not CPs, i.e. they are smaller than CPs, which can be interpreted as indicating that they lack left-periphery related projections, including the mixed A/A'P projection (which has some left-peripheral properties, see Bošković 2024a). Given that SC quirky subjects are PPs, which puts them in a higher subject position that is missing in control infinitives, it follows that SC quirky subjects cannot be PRO.<sup>9</sup>

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<sup>8</sup>I am not conducting the test in question for Russian due to an interfering factor: PRO has been argued, on rather convincing empirical grounds, to be dative in Russian anyway (Laurençot 1997 interprets this as indicating that null case is realized as dative in Russian, while Babby 1998, Comrie 1974, Landau 2008, Schein 1982, Sigurðsson 2002; among others, simply treat PRO as being dative), which essentially means that a control infinitive SpecIP in Russian is a structural dative case position (as is well-known, Russian infinitives can also have overt dative subjects).

<sup>9</sup>For other cases where non-nominal subjects cannot occur in an infinitive because the infinitive (which is not a restructuring infinitive) is too small, lacking A/A'P, see Bošković (2024a).



Notice furthermore that given the above analysis where SC quirky subjects are in a higher structural position than Icelandic quirky subjects—while the latter are in SpecTP, the former are in SpecA/A’P, we can also account for the different behavior of Icelandic and SC quirky subjects regarding binding subject-oriented anaphors if AgrsP closes the domain for binding subject-oriented anaphors; in other words, if only subjects in pure A (not mixed A/A’-positions) count as binders for subject-oriented anaphors. Then, when there is a subject in SpecvP, that element will be the binder of a subject-oriented anaphor. When there isn’t, the element in SpecTP will be the binder, where only quirky subjects in languages like Icelandic are located in this position. When this position is not filled either, then the element in SpecAgrsP will be the binder. And the buck stops there. This makes SC quirky subjects high enough (and “subject” enough) to control PRO, but they cannot bind subject-oriented anaphors. Interestingly, SC quirky subjects in question can bind non-subject oriented anaphors, as in (39), which means that an element in the mixed A/A’-position, SpecA/A’P, can bind “regular” anaphors.<sup>10</sup>

- (39) a. *Jovanu i Petru je muka jednom od drugoga.*  
 Jov<sub>DAT</sub> and Peter<sub>DAT</sub> is nausea each<sub>DAT</sub> of other<sub>GEN</sub>  
 ‘Jovan and Peter are sick of each other.’  
 b. *?Jovanu i Petru nedostaju slike jednog drugoga.*  
 Jov<sub>DAT</sub> and Peter<sub>DAT</sub> miss pictures each other<sub>GEN</sub>  
 ‘Jovan and Peter miss each other’s pictures. (SC)

Notice also that the presence of a PP is not an impediment to binding in (39), since it is well-known that certain PPs allow binding “through” them, as (40) shows.

(40) *Pictures of himself seem to John to be expensive.*

Can this analysis be extended to Russian (9)–(10)? Simply putting Russian non-agreeing numeral subjects into one of the positions in (31) will not suffice to account for their behavior regarding binding subject-oriented anaphors and control (given that they cannot do either), more would need to be said given the above discussion. Notice, however, that the different subject positions in (31) correlate with a categorial difference: SpecA/A’P is reserved for non-nominal subjects. Interestingly, Franks (1994) argues that there is also a categorial difference between agreeing and non-agreeing numeral subjects in Russian: In particular, he argues that non-agreeing numeral subjects are non-nominal, and agreeing numeral subjects are nominal—the difference in the structural positions he posits for these two types of subjects actually being a by-product of the categorial difference. This opens the door for a treatment of subject-oriented anaphors where what matters regarding the ‘subject’ that binds them is not simply the structural position, but also its category. Recall that structurally, Russian non-agreeing subjects do count as binders for subject-oriented anaphors since they can be external arguments: we have seen, regarding DCCs, that the element in SpecvP can bind (in fact, it is the only possible binder when present) subject-oriented anaphors. If only nominal subjects can bind subject-oriented anaphors (in any of the subject positions noted above, as long as it is the closest subject), we can account for the full paradigm regarding subject-oriented anaphors given the claims

<sup>10</sup>So it is not the case that they cannot bind at all. Note also that quirky quantifier subjects can license bound variables, see (i) (note that *njegove* is a pronoun, not an anaphor). Such binding is also possible with PP subjects in English (ii).

(i) *Svakome<sub>i</sub> je hladno od njegove<sub>i</sub> klime.*  
 everyone.dat is cold from his AC

(ii) *His<sub>i</sub> student seems to every professor<sub>i</sub> to be the best in the school.*

regarding the categorial status of the relevant elements made here and in Franks (1994): SC quirky subjects and Russian non-agreeing numeral subjects structurally do count as potential binders of subject-oriented anaphors (assuming that any of the subject positions in (31), all of which can satisfy the EPP, can do the job). However, they cannot do it because of their categorial status (i.e. because they are not nominal): the former because they are PPs (as argued here), and the latter because they are QPs (as argued in Franks 1994 and discussed below). In the following section, I will discuss a possible treatment of numeral phrases in Russian and SC (the latter present an interesting puzzle, since they behave differently from their Russian counterparts) from this perspective in more detail. The most important point of the discussion below when it comes to binding subject-oriented anaphors is that we need to assume that only nominal elements can do that because of Russian non-agreeing numeral phrases, which clearly occupy a position from which subject-oriented anaphors can be bound, but which have independently been argued to be non-nominal. What needs to be said about Russian non-agreeing numeral phrases then immediately takes care of the SC quirky subjects' inability to bind subject-oriented anaphors, given the current proposal that they are actually PPs.

#### 4. Numeral constructions in Slavic<sup>11</sup>

Given the above discussion, let us examine subject-oriented anaphor binding and the contrast in Russian (9b) in more detail. As noted above, previous literature has argued that the relevant difference here is height, the agreeing subject being located in SpecIP and the non-agreeing subject in SpecvP (Franks 1994). This, however, cannot be right, since we have seen that the element in SpecvP can bind subject-oriented anaphors. Rather, we are dealing here with a categorial difference (see Bošković 2013; as noted above, Franks 1994 actually posits both a height and a categorial difference; the categorial difference approach goes back to Pesetsky 1982).

To see how this can be implemented, consider Franks's (1994) account of Russian agreeing (*five planes arrived<sub>PL</sub>*) vs non-agreeing numerals (*five planes arrived<sub>SG</sub>*) in more detail. Franks suggests that a null head, Q, assigns genitive, rather than the numeral itself (see also Bailyn 2012, Bošković 2006a, 2013), the numeral being the Spec of this null head on the sg option. (A strong argument for the Spec treatment of the numeral, not noted in these works, concerns the fact that these numerals can undergo left-branch extraction, which is a phrasal, not head movement, which can take place out of multiple CPs;<sup>12</sup> see also fn 17). On the sg option, the numeral phrase is then a QP. On the plural option, there is an additional functional projection above the QP that is nominal in nature (I will simply refer to it as XP, see below for more discussion), with the numeral being the Spec of this higher projection (the nominal/non-nominal distinction approach goes back to Pesetsky 1982). Under Franks' analysis, XP moves to SpecIP, QP doesn't (it stays in SpecvP); and only XP undergoes agreement (Spec-head agreement being needed for morphological agreement).

- (41) a. plural: [<sub>XP</sub> Numeral [<sub>QP</sub> Q books(gen)]  
 b. singular: [<sub>QP</sub> Q books(gen)]

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<sup>11</sup>There are numerous works on numeral constructions in Slavic. The goal of this section is not to provide a comprehensive account of all the complexities of Slavic numeral constructions or to review all relevant literature. I will examine only a few aspects of these constructions and discuss only a couple of works that are most relevant to our concerns.

<sup>12</sup>A relevant SC example is given in (i).

(i) *Pet misliš da je upoznao žena.*  
 five think.2sg that is met women  
 'You think that he met five women.'

An alternative analysis is proposed in Bošković (2006a). Taking advantage of the fact that morphologically, *pjat'* in (9) can be either nominative or caseless (or accusative), Bošković (2006a) argues that the subject numeral is indeed ambiguous between a nominative and a caseless form; cased (nominative) numeral occurs in agreeing *five planes arrived<sub>PL</sub>* and non-cased numeral in *five planes arrived<sub>SG</sub>*, where only the nominative numeral agrees (following standard assumptions regarding the nominative/agreement connection).

Consider now SC. SC only fully allows the sg option (so Bošković 2006a suggests SC numerals are caseless—they in fact do not decline at all, while the Russian ones do—see below), the pl option being dispreferred (it is not completely ruled out, possibly as a result of semantic agreement, see Franks 1994 and Bošković 2013 for relevant discussion). Importantly, Franks (1994) observes that in SC, the numeral phrase can bind a subject-oriented anaphor and control the gerund PRO in spite of agreement being singular, SC differing from Russian in the relevant respects.

- (42) *Pet žena je kupilo ovu knjigu za sebe.*  
 five women aux.3SG bought.N.SG this book.ACC for themselves  
 (43) *Pet žena je to diskutovalo, idući kući.*  
 five women aux.3SG that-ACC discussed.N.SG going home

How can we account for the full SC/Russian paradigm? What is important here is that numerals that occur in the genitive-of-quantification environment used to be nouns diachronically (and some still are, see Franks 1994), and that nouns assign genitive in Russian and SC. In light of this, I suggest the following alternative account:

- (44) Rus agreeing [<sub>NP</sub> Numeral  $\emptyset_N$  books(gen)] NP cased and agrees, binds SOA/controls  
 (45) Rus non-agreeing [<sub>QP</sub> Numeral Q books(gen)] QP not cased, doesn't agree, doesn't bind SOA/control  
 (46) SC [<sub>NP</sub> Numeral  $\emptyset_N$  books(gen)] NP not cased and does not agree, binds SOA/controls

(44) gives the pl (i.e. agreeing) option for Russian. There is a null noun that assigns genitive (a remnant of the diachronic change noted above). Numeral is the Spec of this null noun. The NP in question needs case (so the subject is nominative on the agreeing option, as in Bošković 2006a). This NP agrees and binds subject-oriented anaphors and controls PRO. The sg option, on the other hand, is analyzed as in (45): the subject is a QP, with Q assigning genitive and the numeral being in the Spec of QP. QP itself is caseless, hence it does not agree (as in Bošković (2006a). It also does not bind subject-oriented anaphors: this requires NP subjects, QP subjects cannot do the job (I return to control below).

Turning to SC, the sg in SC must be treated differently from the Russian sg, since the two simply behave differently regarding subject-oriented anaphors and control. The suggestion is that what we have in SC is (46), which is in a sense a mixture of Russian (44) and (45). There is a null noun which assigns genitive (with the numeral being its Spec), as in (44), but the NP projected by this noun is caseless, like the QP in (45) (we are dealing here with a diachronic change in progress, where 'anomalous' situations of this sort are often possible as intermediate stages; the discussion below, where we will see that Russian numerals do decline, while SC numerals don't—they are invariant, will actually reveal that the status of the numeral regarding Case affects the status of the null noun regarding Case—when the numeral in the Spec of the null noun is cased (as in Russian), the null noun is not caseless; when the numeral is caseless (as in SC), so is the null noun). Since the relevant element is an NP, it can bind subject-oriented anaphors and control PRO. However, since it's caseless, it does not agree.

Under this analysis, a categorial difference is what matters for Russian (9b) and SC (42)–(43): only NPs

can bind subject-oriented anaphors, QPs cannot.<sup>13</sup> What matters for agreement, on the other hand, is whether the relevant element is nominative or not.<sup>14</sup>

What about control? We know independently that PPs can be porous for control as well as binding, cf. (14) and (40); it is then not surprising that SC quirky subjects, which are PPs, can control and bind, as in (11)/(12)/(13) and (39). The suggestion is then that QPs contrast with PPs in this respect—there is no control with QPs. One possibility here, which I will tentatively adopt, is that an Agree relation is required for control (Landau 2000). QPs simply don't have phi-features (or the phi-features of the relevant elements cannot propagate to the QP level), so QPs cannot serve as controllers. On the other hand, phi-features can propagate to the PP/null NP level, so these elements can control.<sup>15 16</sup>

There is a remaining issue that should be noted. There is evidence that genitive of quantification is not quite the same as regular adnominal genitive, see e.g. (47a–b). The noun in (47a) assigns genitive plural. Higher numerals, 5 and above, in this context assign genitive plural, but numerals 2–4 assign genitive singular (numeral one is adjectival—it agrees with the noun in phi/case features). Apparently, the numeral in Spec $\emptyset$ NP in (46) has an effect on the kind of genitive the null noun assigns (possibly as an intermediate stage on the way to the numeral itself becoming the genitive case assigner here;<sup>17</sup> as noted above, the numeral independently affects the Case status of the noun).

- (47) a. *opis knjiga*  
description book<sub>GEN.PL</sub>  
b. *opis tri knjige*  
description three book<sub>GEN.SG</sub> (SC)

<sup>13</sup>Following Bošković (2008, 2012), I assume there is no DP in languages without articles like SC and Russian. In languages with articles, DPs would be the relevant binders. At any rate, the NP/DP debate does not affect the point made here.

<sup>14</sup>Given the above discussion of Bošković (2024a), this could be correlated with whether the relevant elements move to SpecAgrsP or not (see (34)–(36)). (The discussion here introduces a type of a subject not discussed in Bošković 2024a—a caseless nominal subject; given the classification in (34)–(36), when they move to satisfy the EPP such elements would satisfy it in SpecTP).

<sup>15</sup>I don't have in mind here morphological agreement with the verb. E.g., quirky nominal subjects do not agree with the verb, but they very clearly have phi-features. In this respect, it is worth noting that a number of authors have made a distinction between morphological and semantic phi-features, where a nominal has two sets of phi-features which can be different (e.g. Smith 2015, Messick 2016). What may be involved in control is the latter, such phi-features do not necessarily get reflected in morphological verbal agreement.

<sup>16</sup>It should be noted that Franks (1994) claims that binding of non-subject-oriented anaphors is also impossible with QPs/Russian non-agreeing numerals based in (i). Ksenia Zanon, however, informs me that she finds (ii) only slightly degraded.

(i) *Pjat' studentov pomogali/\*pomogalo drug drugu na èksamene.*  
five students-GEN PL helped-PL/N SG each other-DAT on exam (Franks 1994)

(ii) *?Pjat' ženščin smotrelo drug na druga.*  
five women looked.sg each at other

If such binding is not possible, this can be accounted for it also requires an Agree relation (for relevant discussion, see e.g. Reuland 2005, Heinat 2006, Hicks 2009, Kratzer 2009). At any rate, more than that would need to be said when it comes to binding of subject-oriented anaphors, which is clearly not possible (i.e. worse) with QPs (cf. (9b) on the singular option).

<sup>17</sup>The numeral must be involved in Case assignment so that we get the 2–4 vs 5-and-higher difference, but it must be a Spec, so that it can undergo left-branch extraction (see fn 12; for another reason for the Spec treatment concerning *po*-constructions in Russian, where the numeral can receive dative while the following noun still gets genitive of quantification, see Franks 1994).

Franks (1994) makes an interesting proposal that genitive of quantification is structural in Russian, and inherent in SC, evidence for which is provided by the contrast between (48) and (49). Verbs in Russian and SC normally assign accusative case to their object. Some verbs, however, are lexically specified as requiring particular inherent cases on their objects; since they are lexically specified such cases must be assigned. The verbs in (48) and (49) are lexically specified as requiring instrumental Case marked objects. This instrumental in (49) overrides genitive of quantification, which means that the latter does not have to be assigned, hence it cannot be an inherent case. In SC, on the other hand, (49) is ungrammatical. The reason for this, according to Franks (1994), is that in SC, genitive of quantification is an inherent case. On the genitive option, the inherent instrumental case fails to be assigned, and on the instrumental option, the inherent genitive fails to be assigned (note that in SC the numeral *five* is invariant, it does not have different case forms so it is not possible to use an instrumental form of the numeral, in contrast to Russian (49)).

(48) \**Ona rukovodi pet fabrika/fabrikama.*  
 she manages five factories<sub>GEN/INSTR</sub> (SC)

(49) *Ivan vladeet pjat'ju fabrikami.*  
 Ivan owns five<sub>INSTR</sub> factories<sub>INSTR</sub> (Russian)

To account for this, I suggest that a non-cased noun cannot assign structural genitive (cf. (46) vs (44)–(45)).<sup>18</sup> Since in SC, the only case assigner in the genitive-of-quantification context is the non-cased noun, the only option is then inherent genitive, which raises a problem discussed above with respect to (48). Under this analysis, Russian and SC do not differ in that genitive of quantification is a structural case in Russian and inherent in SC, as in Franks's analysis, the issue is that the relevant case assigners are different, the genitive assigned by a non-cased noun is always inherent.<sup>19</sup>

## 5. Conclusion

<sup>18</sup>This may be tied to the numeral in the Spec of the null noun affecting the Case status of the noun (the caselessness of the noun itself, i.e. the NP headed by this noun not needing a case) and the Case that the noun assigns. All these are essentially lexical quirks, i.e. idiosyncratic lexical properties. Inherent case assignment is also a lexical property, in contrast to structural case assignment. The former (i.e. the idiosyncratic lexical properties noted in the beginning of this footnote, may then force the latter—i.e. Case assignment here being a lexical, not a structural property. The intuition here is then clear, though not easy to implement: everything about this case assignment is lexical.

<sup>19</sup>There is an alternative account on which (45) is the source of Russian (49) so that the unavailability of (45) results in (49) not being possible in SC. What is relevant here is that in (49) we are dealing with an adjectival numeral—when genitive of quantification is not assigned even with higher numerals, numerals are morphologically adjectives, agreeing with the noun in case/phi-features. Bošković (2006a) argues that adjectival and non-adjectival numerals occur in different structures, shown below. The suggestion is that the availability of (45) enables adjectival numerals, i.e. the  $[_{QP} [_{Q'} Q NP]]/[_{NP} AP [_{N'} N]]$  alternation; what is important here is that Bošković (2006a) argues that Q is present in both, above NP, but assigns genitive only if it has a Spec (i.e. when the numeral is in its Spec, compare (ia) vs (ib)), extending Burzio's generalization from V to Q. Under Bošković's (2006a) analysis, Case-licensing is more economical on the Q-licensing-Case/(ia) option (compare the distance between the Case-licensors, Q/V and the NP in  $[_{QP} Numeral [_{Q'} Q NP]]$  and V  $[_{QP} Q [_{NP} AP [_{N'} N]]]$ ), but this option results in a failure of theta-assignment with inherent case-licensing verbs (since such verbs cannot assign a theta-role to the object unless the object bears the specified Case), so V-as-the-Case-assigner/(ib) option is realized in this (and only in this) context. Since the prerequisite for this is the availability of (45) (since QP present in both (ia) vs (ib)), which is available in Russian but not SC, only Russian then allows (49), with an adjectival numeral.

(i) a.  $[_{QP} Numeral [_{Q'} Q NP]]$  non-adjectival numerals  
 b.  $[_{QP} Q [_{NP} AP(Numeral) [_{N'} N]]]$  adjectival numerals

To conclude, the paper has made a proposal how to treat partially quirky subjects, i.e. quirky subjects that pass some, but not all subjecthood tests. In particular, it was argued that such quirky subjects are PPs with a null P. Such quirky subjects have also been argued to be in a higher subject position than fully quirky subjects, as well as regular agreeing subjects, in line with Bošković's (2024a) proposal that non-nominal subjects satisfy the EPP in a higher position than nominal subjects.

Regarding what counts as the binder of subject-oriented anaphors, it was argued that in principle, the element in any of the three derived subject positions where the EPP is satisfied in Bošković (2024a), as well as the element in the external argument theta-position, can bind subject-oriented anaphors, with the closest (i.e. the lowest) subject being the binder when more than one subject (in the relevant sense) is present. However, the binder crucially must be nominal—non-nominal subjects cannot bind subject-oriented anaphors regardless of their position. This requirement is not present with regular anaphors that are not subject-oriented—what distinguishes the two is then that non-subject-oriented anaphors can be bound by non-subjects as well as by non-nominal (e.g. PP) subjects. One argument regarding the nominal binder requirement on subject-oriented anaphors came from Russian non-agreeing numeral phrases: they fail to bind subject-oriented anaphors although they clearly occupy a position from which subject-oriented anaphors in principle can be bound, the reason being that they are non-nominal (i.e. they are not NPs). This is also the reason why quirky subjects which have been argued in this paper to be PPs with a null P cannot bind subject-oriented anaphors. Such quirky subjects can control PRO, in contrast to non-agreeing numeral phrases because of the way phi-features propagate with various non-nominal subjects.

The paper has also made a number of proposals regarding how to treat numeral subjects in Slavic (where the noun following the numeral bears genitive Case), which show a very complex behavior with respect to agreement, case, binding of subject-oriented anaphors and control, with rather interesting differences between Serbo-Croatian and Russian, the main difference being that non-agreeing numeral subjects behave differently in these two languages. It was argued that with some numeral phrases, in particular, agreeing numeral phrases in Russian and non-agreeing numeral phrases in SC, a null noun is present, with that null noun assigning genitive (nouns in these languages quite generally assign genitive). This is the reason why the numeral subjects in question (agreeing ones in Russian and non-agreeing ones in SC) can bind subject-oriented anaphors, in contrast to non-agreeing numerals in Russian, where there is no null noun (hence they are not nominal). The reason for the agreement difference between numeral phrases in Russian and SC that bind subject-oriented anaphors is that in SC, the null noun is actually caseless, hence it does not agree. With all numeral subjects in Russian and SC, the numeral is the specifier of the phrase in question, not its head. Throughout the discussion, special attention was paid to whether various non-canonical subjects are nominal or non-nominal in nature (superficially, they all seem to be nominal, but it was shown that despite appearances, this is not always the case). The discussion in the paper thus has a number of consequences for what is and what is not nominal when it comes to various subjects.

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