

# Concealed Pied-Piping in Russian: On Left Branch Extraction, Parasitic Gaps, and Beyond<sup>1</sup>

**Abstract:** We use parasitic gaps to examine left branch extraction (LBE) from noun phrases in Russian. We observe that the interpretation for a parasitic gap in a context with LBE is the same as the interpretation assigned when an entire noun phrase is moved, rather than extracted from. Thus we argue that Russian LBE involves concealed pied-piping of an entire noun phrase, rather than extraction. We go on to explore the consequences of this analysis for several other topics.

*Keywords:* left branch extraction, pied-piping, parasitic gaps, Russian

## 1 Introduction

In this paper, we examine left branch extraction (LBE) in Russian, which we argue involves a different syntactic derivation than one might expect at first glance. As we see in (1) below, LBE involves displacement of an element originating at the left edge of a nominal phrase. LBE is productive for many languages in the Slavic family, and beyond (Ross 1967; Corver 1990, 2007, a.o.). In Russian, LBE generally signals contrastive topic or focus on the displaced element (Pereltsvaig 2008), and provided that an appropriate context is salient, LBE of any left branch constituent (adjective, quantifier, demonstrative, possessor, and so on) is in principle possible.<sup>2</sup>

### (1) *LBE in Russian*

**Miluju** / ètu / **každuju**<sub>k</sub> ty uvidel [<sub>NP</sub> t<sub>k</sub> košku].  
cute / this / every you saw cat

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<sup>1</sup>Acknowledgments to be inserted here.

<sup>2</sup>For some Russian speakers LBE is not highly productive, and such speakers have been excluded from this study. The Russian sentences reported here are the aggregate of interviews with 8 native Russian speakers, mostly from the Moscow area, during 2018-2020. These interviews consisted of both in-person and online meetings, in which consultants were asked to rate the acceptability of a set of prepared diagnostic sentences. The relevant contrasts reported here are sharper for some speakers than others, but the direction of the contrasts is consistently as we describe here.

‘You saw a cute cat / this cat / every cat.’

The fact that some languages permit LBE is a puzzle, given that many other languages do not. In English, for instance, targeting a left branch element for extraction forces pied-piping of the entire containing DP, which precludes the possibility of sub-extraction, as (2) shows:

- (2)    a.    \* **Which**<sub>k</sub> did you see [*t*<sub>k</sub> cats]?                      c.    \* **Those**<sub>k</sub> I’ve seen [*t*<sub>k</sub> cats] before.  
      b.    ✓ [**Which cats**]<sub>k</sub> did you see *t*<sub>k</sub>?                      d.    ✓ [**Those cats**]<sub>k</sub> I’ve seen *t*<sub>k</sub> before.

Among the first to examine LBE was Ross (1967), who hypothesized that a syntactic constraint, the Left Branch Condition, is responsible for banning LBE in some languages. Many subsequent works have explored how the presence or absence of LBE might be derived from the independent syntactic properties of a given language (Szabolcsi 1984; Corver 1990, 1992; Gavrusseva 2000; Rappaport 2001; Bošković 2005, a.o.) In this paper, we argue that the difference between Russian and languages without LBE does not stem from a constraint like the Left Branch Condition because Russian LBE does not, in fact, involve extraction of a left branch. Rather, we argue that LBE in Russian actually involves concealed pied-piping of the entire NP that LBE has appeared to exit. Under this analysis, the structure of Russian examples like (1) above is fundamentally the same as that of the English (2b/d) above, where as the surface string shows, pied-piping must apply.

Our central diagnostic for the nature of Russian LBE is the licensing of parasitic gaps (PGs; Engdahl 1983; Nissenbaum 2000; Culicover and Postal 2001, among others). Our key observation is that LBE and pied-piping A’-movement of a full NP in Russian have the same result for PG interpretation. This is previewed in (3) below, which shows a PG in an adjunct island.<sup>3</sup> The interpretation for the PG here is the same whether the entire direct object NP undergoes pied-piping *wh*-movement (3a), or whether LBE from that object occurs, moving only its *wh*-determiner (3b). In both contexts, the PG is interpreted as if the entire object moved, as the indices show:

- (3)    a.    *Full overt NP movement and PG licensing*

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<sup>3</sup>Throughout this paper we mark true gaps as ‘*t*’ and parasitic gaps as ‘PG’.

[**Kakoj podarok**]<sub>k</sub> Vasja voznenavidel *t<sub>k</sub>*, [ne obnaruživ PG<sub>k</sub> pod ělkoj]?  
 what present Vasja came.to.hate not discover.CNV under pine.tree  
 ‘What present did V. come to hate, not finding (it) under the New Year tree?’

- b. *LBE and PG licensing, no difference in PG interpretation*

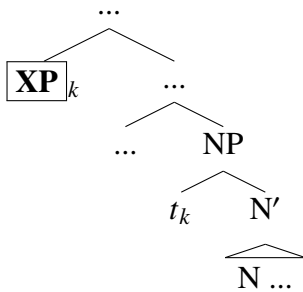
**Kakoj**<sub>j</sub> Vasja voznenavidel [*t<sub>j</sub>* **podarok**]<sub>k</sub>, [ne obnaruživ PG<sub>k</sub> pod ělkoj]?  
 what Vasja came.to.hate present not discover.CNV under pine.tree  
 ‘What present did V. come to hate, not finding (it) under the New Year tree?’

Based on this and related facts, we argue that when LBE occurs in Russian, the apparently stranded NP is pied-piped with the seemingly displaced element in the underlying syntactic structure.

## 1.1 Background on theories of LBE

Previous studies on LBE, using data from a variety of languages, have proposed several different analyses for it. For one analysis, which we will term *true extraction*, LBE involves straightforward extraction of a left branch constituent from the containing NP (Ross 1967; Borsley and Jaworska 1998; Uriagereka 1988; Corver 1990, 1992; Wiland 2010; Stjepanović 2010; Bošković 2005, 2016, a.o.). This analysis is illustrated in (4) below, where XP represents the extracted left branch:<sup>4</sup>

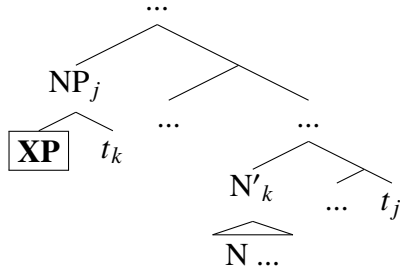
- (4) *True extraction analysis of LBE*



<sup>4</sup>Throughout the majority of this paper, for simplicity of presentation we refer to and diagram Russian nominal phrases as NPs. However, unlike works such as Bošković (2005, 2016); Despić (2013, 2015) and references therein, we do not commit to the absence of D in article-less Slavic languages like Russian. Furthermore, in section 5 below we suggest that the patterns analyzed here may be taken to support the view that D is in fact present in Russian.

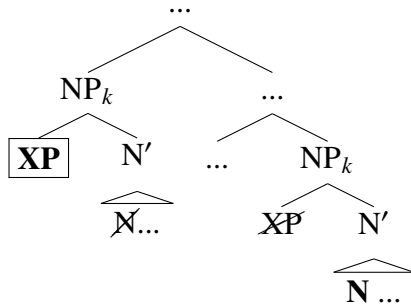
Another variety of proposal, which we term *concealed pied-piping*, argues that LBE does not involve extraction of a left branch. Two versions of this analysis have been proposed in the literature. One is the *remnant movement* approach (Franks and Progovac 1994; Starke 2001; Kayne 2002; Bašić 2008, 2009; Abels 2003, 2012, a.o.), for which LBE is derived by movement of a remnant phrase that has been previously evacuated by everything but the relevant left branch, as in (5):

(5) *Remnant movement analysis of LBE*



The other variant of the concealed pied-piping approach is the *distributed deletion* analysis (Faneslow and Ćavar 2002; Pereltsvaig 2008; Fanselow and Féry 2013; Bošković 2001; Bošković 2015, a.o.). For this approach, LBE involves no sub-extraction. Rather, the entire NP dominating the left branch moves. Afterward, a PF mechanism causes all material in that NP to be pronounced in the tail of its movement chain, except for the relevant left branch, which is realized in the head of the movement chain. This is illustrated in (6), in which the nodes subject to deletion are crossed-out:

(6) *Distributed deletion analysis of LBE*



While it is plausible that in some languages LBE might indeed be derived by true extraction or by remnant movement, in this paper, we argue based on facts like (3) above that for Russian the

concealed pied-piping analysis is correct. In particular, we will argue that the distributed deletion approach is most appropriate for Russian, as argued in Pereltsvaig (2008) and a few other works.

## 1.2 PGs as a diagnostic for what moves

A defining property of PGs is that they are gaps which are licensed by A'-movement that crosses over the structural position of the containing constituent (Engdahl 1983; Nissenbaum 2000, a.o.). For diagnostic purposes, that a given gap is a PG is clearest when it is in an island. The phrase that A'-moves across the PG-hosting island binds the PG, thus providing it with an interpretation. This is exemplified in (7) below, in which A'-movement from the complement of V structurally crosses over a sentential adjunct island adjoined within the clause, thus licensing a PG within it:

(7) *PGs in adjunct islands in English* (Nissenbaum 2000, p. 30)

- a. [What movies]<sub>k</sub> did Mary [claim she liked *t<sub>k</sub>* [in order to get you to see PG<sub>k</sub>]]?
- b. John's the guy  $\emptyset_k$  that they said they'll [hire *t<sub>k</sub>* [if I criticize PG<sub>k</sub> publicly]].

The PG bearing constituents here are indeed islands for movement, as (8) shows:

(8) *Adjunct island condition* (Nissenbaum 2000, p. 30)

- a. ?? [What movies]<sub>k</sub> did Mary [claim she liked The Godfather [in order to get you to see *t<sub>k</sub>*]]?
- b. \* John's the guy  $\emptyset_k$  that they said they'll [hire me [if I criticize *t<sub>k</sub>* publicly]].

Thus in (7), the gaps in the adjuncts must be truly 'parasitic' on movement in the matrix clause, rather than derived by some form of typical extraction from the adjuncts.

The above preliminary demonstration of PGs serves to make explicit the important point that a successfully licensed PG is co-referent with the phrase whose A'-movement crossed over the containing constituent. This fact about PGs leads us to two salient predictions about the interaction between Russian LBE and PGs, given our proposal that Russian LBE involves concealed pied-piping of the containing nominal phrase that appears to have been exited by extraction. First, under

this proposal we expect LBE in a context with a PG to result in that PG becoming co-referent with the nominal phrase that the seemingly displaced left branch has exited. We predict this since under this analysis, it is the entire nominal phrase in question that actually moves. In other words, we expect LBE from a given nominal phrase, and fully overt movement of that nominal phrase, to yield identical interpretations for a PG. We will see that this is true, as previewed in (3) above. Second, we also predict that it should not be possible for a left branch that seems to have been displaced by LBE to serve as the antecedent for a PG. Rather, we should find that the nominal phrase that originally contained the seemingly displaced left branch should always be the only available PG licenser, since under our analysis no extraction in fact occurs. In this paper, we will show these and more predictions of the concealed pied-piping analysis of Russian LBE are correct. In principle, this result is compatible with either a remnant movement or distributed deletion analysis of LBE, though as mentioned above, we will argue that the latter is superior.

### **1.3 Road map of the paper**

Above, we have outlined the diagnostic role of PGs for our analysis and previewed the core proposal. Next, section 2 examines Russian PGs in detail and analyzes their interaction with LBE. This will involve evidence from argument PGs, left branch PGs, as well as weak crossover. Section 3 provides further convergent evidence from ‘late merge’ effects with principle C. Section 4 discusses our reasons for favoring a distributed deletion analysis of Russian LBE. Section 5 considers some consequences of this analysis for theories of sub-extraction more generally. Section 6 discusses how certain constraints on multiple LBE relate to this account. Section 7 shows how our findings relate to an explicit semantic account of PG-licensing. Section 8 concludes.

## **2 The facts about Russian PGs and LBE**

In this section, we first establish the existence of PGs in Russian, before going on to show how LBE and PGs interact in this language. PGs in Russian have been reported by at least Franks (1992), Ivlieva (2007), and Polinsky and Potsdam (2014). While in English diagnosing the presence of a

PG is relatively straightforward, the fact that argument drop is sometimes available in Russian, as (9) shows, makes it less obvious whether a given gap is indeed a PG rather than a null pronoun.

- (9) a. A: Ty kupila tort?  
           you bought cake  
           ‘Did you buy cake?’  
       b. B: Da, ja kupila (**tort**).  
               yes I bought (**cake**)  
               ‘Yes, I bought (cake).’

Since in this section we will pay special attention to PGs in object positions, we must establish what conditions that distinguish PGs from dropped objects before we can examine PGs and LBE.

Ivlieva (2007) notes that PGs are most natural in perfective contexts. We have observed that perfective negated verbs (used throughout Ivlieva’s study) resist object drop, as do certain verbs, such as *obnaružit’* (‘discover’) or *vzyat’* (‘take’) in (10) below. These factors are combined in (10) to create sentential adjuncts that require overt objects. (Attempted object drop is marked by ‘\_\_’.)

- (10) *Adjunct clauses with undroppable objects in Russian*  
 a. Vasja voznenavidel [ètot podarok]<sub>k</sub>, [ne obnaruživ **ego<sub>k</sub>/\*\_\_<sub>k</sub>** pod ëlkoj].  
     Vasja came.to.hate this present, not discover.CNV him under pine.tree  
     ‘Vasja came to hate this present, not finding it under the New Year tree.’  
 b. Lena zabyła prinesti [rovno odin dogovor]<sub>k</sub>, [ne vzyav **ego<sub>k</sub>/\*\_\_<sub>k</sub>** u  
     Lena forgot to.bring exactly one contract NEG take.CONV him from  
     buxgaltera].  
     accountant  
     ‘Lena forgot to bring exactly one contract, not having taking it from the accountant.’  
 c. Vera ne nadela [mamino plat’e]<sub>k</sub>, [ne obnaruživ [**ego<sub>k</sub>/\*\_\_<sub>k</sub>**] v škafu].  
     Vera NEG put.on mother’s dress NEG discover.CONV him in wardrobe  
     ‘Vera didn’t put on the mother’s dress, not having found it in the wardrobe.’

Since extraction from sentential adjuncts of this variety is degraded, as (11) below shows, these are an appropriate environment to attempt PG-formation in.

- (11) *Adjunct island in Russian*  
 a. \***[Kakoj podarok]<sub>k</sub>** Vasja voznenavidel Mašu, [ne obnaruživ *t<sub>k</sub>* pod ëlkoj]?  
     what present<sub>k</sub> Vasja came.to.hate Masha, not discover.CNV under pine.tree  
     ‘What present did V. came to hate M., not finding (it) under the New Year tree?’

- b. \***[Č’ě plat’e]<sub>k</sub>** Vera nadela svojě plat’je, [ne obnaruživ *t<sub>k</sub>* v škafu]?  
 whose dress Vera put.on self’s dress NEG discover.CONV in wardrobe  
 ‘Whose dress did Vera not find in the wardrobe, and (thus) put on her own dress?’

Importantly, as we see in (12) below, A’-movement in the matrix clause of such examples licenses a gap in the adjunct, in precisely the fashion we expect of a PG. This PG-licensing is achieved by interrogative *wh*-movement in (12a-b), scrambling in (12c),<sup>5</sup> and relativization in (12d). Since PG licensing is a general trait of A’-movements (Culicover and Postal 2001, a.o.), the possibility of PG licensing in all of these contexts is precisely what we expect.

(12) *Potentially illicit gap in the adjunct rescued by matrix A’-movement*

- a. **[Kakoj podarok]<sub>k</sub>** Vasja voznenavidel *t<sub>k</sub>*, [ne obnaruživ PG<sub>k</sub> pod ělkoj]?  
 what present Vasja came.to.hate not discover.CNV under pine.tree  
 ‘What present did V. come to hate, not finding under the New Year tree?’
- b. **[Č’ě plat’e]<sub>k</sub>** Vera ne nadela *t<sub>k</sub>*, [ne obnaruživ PG<sub>k</sub> v škafu]?  
 whose dress Vera NEG put.on NEG discover.CONV in wardrobe  
 ‘Whose dress did Vera not put on, not having found in the wardrobe?’

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<sup>5</sup>A reviewer asks whether the scrambling in (12c) might be A-movement. In all the PG examples we have elicited, the PG-licensing movement targets a position preceding the subject—a position that Bailyn (2004, 2012) shows has A-bar properties in Russian. This contrasts with movement to a position below the subject, which Bailyn shows has A-properties. This suggests that in our examples, including the scrambling one in (12c), the movement in question is A-bar movement.

We have not had the opportunity to test whether more local movements can license PGs in Russian. Given the known generalization that only A-bar movements can license PGs, we would not expect this to be possible. If it turns out that it is, however, this would not be an unprecedented finding: a few works have argued that A-movements can sometimes license PGs, such as Pylkkänen (2008), and Ershova (2019, 2021) on West Circassian. Similarly, Nissenbaum (2000, pp. 31) also reports examples of local scrambling licensing PGs in German, Hindi, and Icelandic. Whether a given PG-licensing movement is A or A-bar is not fundamental to this paper’s arguments, since our core concern is the constituency of what moves when LBE occurs.



- c. [**Ravno odin dogovor**]<sub>k</sub> Lena zabyla prinesti *t<sub>k</sub>*, [ne vzyav PG<sub>k</sub> u exactly one contract Lena forgot to.bring NEG take.CONV from buxgaltera].  
accountant  
'Lena forgot to bring exactly one contract, not having taken from the accountant.'
- d. Vasja našel podarok, [**kotoryj**]<sub>k</sub> ja voznenavidel *t<sub>k</sub>*, [ne obnaruživ PG<sub>k</sub> pod Vasja found present, which I came.to.hate not discover.CNV under ělkoj]]  
pine.tree  
'V. found the present that I came to hate, not having found under the New Year tree.'

We have thus clarified the existence of PGs in Russian.<sup>6</sup> Next, we examine the interaction between PGs and LBE, which we argue reveals that Russian LBE involves concealed pied-piping.

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<sup>6</sup>A reviewer asks whether we can tell if the PGs we are concerned with are not in fact gaps formed by V-stranding VP ellipsis (VVPE; Gribanova 2013; Bailyn 2011, 2017). We argue that Russian VVPE and PGs are indeed distinct. First, Gribanova shows that Russian VVPE requires a linguistic antecedent, though this is not so for the PG configuration (i):

- (i) *Context: The speaker comes in and sighs, saying out-of-the-blue...*  
[**Ravno odin dogovor**]<sub>k</sub> Lena zabyla prinesti *t<sub>k</sub>*, [ne vzyav PG<sub>k</sub> u buxgaltera].  
exactly one contract Lena forgot to.bring NEG take.CONV from accountant  
'Lena forgot to bring exactly one contract, not having taken from the accountant.'

Second, Gribanova shows that Russian VVPE can occur in islands. We saw above that the gaps we are concerned with here are not possible in islands (10), unless an A'-movement crosses over the island (12). This is precisely the configuration that is characteristic of PGs. Third, Gribanova shows that VVPE in a ditransitive must elide both internal arguments. This is not so for the PG configuration, which allows, for instance, a direct object PG along with an overt indirect object (ii):

- (ii) [**Č'ë plat'e**]<sub>k</sub> Vera nadela *t<sub>k</sub>*, [ne otдав PG<sub>k</sub> Maše na večerinke]?  
whose dress Vera put.on NEG give.CONV Masha.DAT at party  
'Whose dress did Vera put on, after not giving to Masha at the party?'

## 2.1 Russian LBE interacts with PGs like movement of a full NP

Next, consider the examples in (13) below. These are the same as those in (12a-c) above, except that in (13), LBE from the direct objects occurs rather than overt movement of entire object NPs. In (13), we see that LBE results in interpretations for the PGs which are the same as in (12): in both (12) and (13), the object NP is co-referent with the licensed PG. The only interpretive difference between these two sets of examples is a change in information structure: LBE in Russian signals contrastive focus or topic on the element to which it applies (Pereltsvaig 2008), but there is no truth conditional difference between the configurations in (12) and (13).

(13) *LBE from an object licenses a PG like full object movement*

- a. **Kakoj<sub>k</sub>** Vasja voznenavidel [*t<sub>k</sub> podarok*]<sub>j</sub>, [ne obnaruživ PG<sub>j</sub> pod jolkoj]?  
 what Vasja came.to.hate [ present], not discover.CNV under pine.tree  
 ‘What present did V. come to hate, not finding (it) under the New Year tree?’
- b. [**Č’ë**]<sub>j</sub> Vera ne nadel [i<sub>j</sub> **plat’e**]<sub>k</sub>, [ne obnaruživ PG<sub>k</sub> v škafu]?  
 whose Vera NEG put.on dress NEG discover.CONV in wardrobe  
 ‘Whose dress did Vera not put on, not having found it in the wardrobe?’
- c. [**Ravno odin**]<sub>j</sub> Lena zabyla prinesti [*t<sub>j</sub> dogovor*]<sub>k</sub>, [ne vzyav PG<sub>k</sub> u  
 exactly one Lena forgot to.bring contract NEG take.CONV from  
 buxgaltera].  
 accountant  
 ‘Lena forgot to bring exactly one contract, not having taking it from the accountant.’

The examples in (14) below provide additional illustrations of this pattern:

(14) a. *PG with adjective LBE*

**Doroguščij<sub>k</sub>** Vasja voznenavidel [*t<sub>k</sub> podarok*]<sub>j</sub>, [ne obnaruživ PG<sub>j</sub> pod  
 very.expensive Vasja came.to.hate [ present], not discover.CNV under  
 ělkoj].  
 pine.tree  
 ‘V. came to hate the EXPENSIVE present, not finding (it) under the New Year tree.’

b. *PG with ‘how many’ LBE*

**Skol’ko<sub>k</sub>** Vasja voznenavidel [*t<sub>k</sub> podarkov*]<sub>j</sub>, [ne obnaruživ PG<sub>j</sub> pod ělkoj]?  
 how.many Vasja came.to.hate [ presents], not discover.CNV under pine.tree

‘How many presents did V. come to hate, not finding under the New Year tree?’

c. *PG with quantifier LBE*

? **Každyj<sub>k</sub>** Vasja voznenavidel [*t<sub>k</sub>* podarok]<sub>j</sub>, [ne obnaruživ PG<sub>j</sub> pod ělkoj].  
 each Vasja came.to.hate [ present], not discover.CNV under pine.tree  
 ‘V. came to hate EVERY present, not finding (it) under the New Year tree.’

d. *PG with demonstrative LBE*

? **Ètot<sub>k</sub>** Vasja voznenavidel [*t<sub>k</sub>* podarok]<sub>j</sub>, [ne obnaruživ PG<sub>j</sub> pod ělkoj].  
 this Vasja came.to.hate [ present], not discover.CNV under pine.tree  
 ‘V. came to hate THIS present, not finding (it) under the New Year tree.’

Recall that a successfully licensed PG is co-referent with the phrase whose A'-movement crossed over the constituent containing the PG. Further, notice that the PGs in (13-14) are all co-referent with the object NP that LBE has exited. We argue that this indicates that Russian LBE in fact involves pied-piping of the entire NP that LBE seems to exit, contrary to its surface appearance.

An alternative hypothesis about these examples would be that there is no concealed pied-piping, but rather, the PG is licensed by string-vacuous movement of the object NP either before or after it is exited by LBE as true extraction.<sup>7</sup> However, this analysis does not explain the fact that in examples like (10) above, we see PGs that are unlicensed due to the absence of A'-movement. One such example is repeated below. If string-vacuous movement of an object were generally available to license a PG, such movement should be able to apply in such examples, and license the gap:

(15) *Adjunct clause with undroppable object in Russian*

Vasja voznenavidel [ètot podarok]<sub>k</sub>, [ne obnaruživ **ego<sub>k</sub>/\*PG<sub>k</sub>** pod ělkoj].  
 Vasja came.to.hate this present, not discover.CNV him under pine.tree  
 ‘Vasja came to hate this present, not finding it under the New Year tree.’

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<sup>7</sup>Short movement of the object to license the PG, followed by LBE, would have the form in (i):

(i) [<sub>CP</sub> XP<sub>j</sub> S T [<sub>VP</sub> v-V [<sub>NP</sub> *t<sub>j</sub>* N]<sub>k</sub> [*t<sub>k</sub>* [<sub>AdjunctP</sub> ... PG<sub>k</sub>]]]

Furthermore, the fact that string-vacuous movement of the NP is not responsible for PG licensing when LBE occurs is clearer in cases where (apparent) LBE strands the object NP in an embedded clause, but licenses a PG interpreted in a higher clause, as in (16) below. Example (16a) shows an unlicensed PG, which in (16b) is licensed by long distance LBE:<sup>8</sup>

- (16) *Scenario: Vasja thinks that Masha took the present that was supposed to be under the New Year tree*
- a. \* Vasja [xotel, [ne obnaruživ  $PG_j$  pod ělkoj], [čtoby Maša vernula  
Vasja wanted not discover.CNV under pine.tree that.SUBJ Masha returned  
[ètot/Petin podarok]<sub>j</sub>]].  
this/Peter's present  
'Vasja wanted that Masha would return this present, not having found (it) under the  
New Year tree.'
- b. **Kakoj**<sub>k</sub>/**čej**<sub>k</sub> Vasja [xotel, [ne obnaruživ  $PG_j$  pod ělkoj], [čtoby Maša  
what/whose Vasja wanted not discover.CNV under pine.tree that.SUBJ Masha  
vernula [<sub>t<sub>k</sub></sub> **podarok**]<sub>j</sub>]].?  
returned present  
'What/whose present did Vasja want that Masha would return, not having found (it)  
under the New Year tree?'

We thus conclude that the movement step responsible for deriving LBE (involving concealed pied-piping) is what is responsible for PG licensing in the above examples.

## 2.2 Convergent evidence from weak crossover

Here we provide convergent evidence for concealed pied-piping from the interaction between LBE and *weak crossover* (Postal 1971; Lasnik and Stowell 1991; Safir 2017, a.o.). Weak crossover is a phenomenon whereby movement of a phrase across a co-indexed pronoun to its left results in

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<sup>8</sup>Example (16) uses a subjunctive embedded clause because these are most transparent for extraction in Russian (Bailyn 2012). We can tell that the PG-bearing adjunct is interpreted in the matrix clause rather than the embedded one in the acceptable sentence (16b), since the adjunct contains a PRO (not glossed here) controlled by the matrix subject.

degradation.<sup>9</sup> Weak crossover is relevant to the discussion of PGs because, as is known in the literature, weak crossover violations and PGs are in complementary distribution. That is, when a PG stands in for a pronoun, the weak crossover effect disappears, as we see below for English:

(17) *Complementary distribution of PGs and pronouns subject to weak crossover*

- a. Tell me [which girl]<sub>k</sub> you sent [every relative of PG<sub>k</sub>/\*her<sub>k</sub>] [a cool picture of *t<sub>k</sub>*].
- b. This is the book which<sub>k</sub>, [before returning PG<sub>k</sub>/\*it<sub>k</sub> to the library], I scribbled profanities in *t<sub>k</sub>*.

In order to examine weak crossover in the Russian PG contexts examined above, it is necessary for the PG-bearing sentential adjunct to be linearly leftward of the origination position of the relevant moving element. We have observed that left-linearized adjuncts of this variety are more tolerant of dropped objects than their right-linearized counterparts used above, as we see in (18) below.<sup>10</sup> The adjunct in (18) did not tolerate object drop when linearized rightward as in (11a), but does here:

(18) *Dropped object in left-adjoined sentential adjunct (contrast with (17a) above)*

Vasja [ne obnaruživ \_\_\_<sub>k</sub> pod jolkoi] voznenavidel [etot podarok]<sub>k</sub>.  
 Vasja not discover.CNV under pine.tree came.to.hate this present

‘Vasja came to hate this present, not having found it under the New Year tree.’

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<sup>9</sup>More precisely, weak crossover describes a scenario where the pronoun does not c-command the base position of the moved phrase. If the pronoun does c-command the base position of the moved phrase, this is classified as *strong crossover*, a phenomenon we do not examine here.

<sup>10</sup>A reviewer notes that this left/right difference in object drop is reminiscent of patterns in Kwa languages (see for instance Saah 2003 on Akan). Another reviewer notes that this is reminiscent of binding asymmetries for null versus overt pronouns observed in Despić (2011). This parallel is interesting for theories about when object drop is possible or not. However, we do not believe that this fact has a direct relationship to this paper’s proposals. Our paper simply seeks to control for the presence of object drop in order to prevent it from confounding the examination of PGs. We would like to leave a deeper study of object drop to further work.

Ivlieva (2007) points out that in such configurations in Russian, movement yields a weak crossover effect when an overt pronoun is present, unlike when a gap is used instead, as (19) shows:

(19) *Gap versus pronoun in left-adjoined sentential adjunct* (Ivlieva 2007, ex. 5)

[Kakuju knigu]<sub>k</sub> ty, [ne čitaja \_\_<sub>k</sub>/\*ječ<sub>k</sub>], vybrosil t<sub>k</sub>?  
 which book you not read it threw.away

‘Which book did you throw away without reading?’

Ivlieva argues that the acceptable variant of (19) contains a PG and not a null pronoun, for the following reason. In this example, an overt pronoun in object position is degraded due to weak crossover as just mentioned. If the variant of this example with no overt material in object position involved a null pronoun, we would expect it to be subject to weak crossover as well. The fact that (19) is acceptable with no overt object suggests that in this case, it contains a PG, which is independently known to be immune to weak crossover.

Importantly, if Russian LBE in fact involves concealed pied-piping rather than true extraction, then LBE from an NP that is co-indexed with a pronoun to its left should result in unacceptability due to weak crossover. As we see in (20) below, this is indeed so. Examples (20-a) and (20-b) form a minimal pair. Example (20-a) shows a configuration analogous to (19) in which movement of a full NP across a co-indexed pronoun results in degradation, though use of a PG instead is acceptable here. Example (20-b) differs from (20-a) only in performing LBE rather than overt movement of the full NP, but in (20-b) as well, the pronoun is unacceptable.

(20) *Both movement of full NP and LBE license a PG and trigger weak crossover*

a. [Kakuju knigu]<sub>k</sub> ty, ne pročítav PG<sub>k</sub>/\*eč<sub>k</sub>, vybrosila t<sub>k</sub>?  
 which book you NEG read.CONV throw.out.PST .

‘Which book did you throw out, without having read?’

b. [Kakuju]<sub>j</sub> ty, ne pročítav PG<sub>k</sub>/\*eč<sub>k</sub>, vybrosila [t<sub>j</sub> knigu]<sub>k</sub>?  
 which you NEG read.CONV throw.out.PST book.

‘Which book did you throw out, without having read?’

This is precisely what we expect under the concealed pied-piping analysis, for which LBE involves movement of the entire NP that LBE has appeared to exit. Examples (21)-(23) below show further cases of LBE triggering weak crossover—respectively with adjective extraction, *which*-extraction and possessor extraction:

- (21) a. [Novuju knigu]<sub>k</sub> on, ne pročítav PG<sub>k</sub>/\*eë<sub>k</sub>, vybrosil t<sub>k</sub>.  
 new book he NEG read.CONV throw.out.PST .  
 ‘He threw out a NEW BOOK, without having read it.’
- b. [Novuju]<sub>j</sub> on, ne pročítav PG<sub>k</sub>/\*eë<sub>k</sub>, vybrosil [t<sub>j</sub> knigu]<sub>k</sub>.  
 new he NEG read.CONV throw.out.PST book.  
 ‘He threw out a NEW book, without having read it.’
- (22) a. [Kotoruju kružku]<sub>k</sub> Mitja, ne otodvinuv PG<sub>k</sub>/??eë<sub>k</sub> ot kraja,  
 which cup Mitya NEG move.away.CONV from edge  
 oprokinul t<sub>k</sub>?  
 knock.down.PST  
 ‘Which cup did Mitya knock down, not having moved away from the edge?’
- b. [Kotoruju]<sub>j</sub> Mitja, ne otodvinuv PG<sub>k</sub>/??eë<sub>k</sub> ot kraja, oprokinul  
 which Mitya NEG move.away.CONV from edge knock.down.PST  
 [t<sub>j</sub> kružku]<sub>k</sub>?  
 cup  
 ‘Which cup did Mitya knock down, not having moved away from the edge?’
- (23) a. [Č’ë plat’e]<sub>k</sub> Vera, ne obnaruživ PG<sub>k</sub>/\*ego<sub>k</sub> v škafu, ne nadela t<sub>k</sub>?  
 whose dress Vera NEG discover.CONV in wardrobe NEG put.on  
 ‘Whose dress did Vera not put on, not having found in the wardrobe?’
- b. [Č’ë]<sub>j</sub> Vera, ne obnaruživ PG<sub>k</sub>/\*ego<sub>k</sub> v škafu, ne nadela [t<sub>j</sub> plat’e]<sub>k</sub>?  
 whose Vera NEG discover.CONV in wardrobe NEG put.on dress  
 ‘Whose dress did Vera not put on, not having found it in the wardrobe?’

We have seen that Russian LBE yields a reading for a co-occurring object PG that is the same as when the relevant NP overtly moves in its entirety, revealing, we argued, evidence for a concealed pied-piping derivation of LBE in this language. By itself, this evidence is compatible with a theory in which Russian grammar permits both “apparent” LBE via concealed pied-piping, as well as true LBE via actual sub-extraction. A view of this sort is taken by Bošković (2001);

Bošković (2015), for instance, who argues that concealed pied-piping, specifically as distributed deletion, is available but legal only as a repair strategy at PF (though he does not focus on Russian). Analogously, one might claim that Russian LBE is typically true sub-extraction, but that a concealed pied-piping derivation can be selected when PG licensing requires it. Importantly, however, the proposal that concealed pied-piping is a marked, non-default way of accomplishing LBE in Russian is incompatible with the evidence from weak crossover just shown: if LBE as true extraction were an option, the weak crossover violations in (20-23) above should be avoidable by selecting that option rather than concealed pied-piping.<sup>11</sup> The fact that the weak crossover effect does arise in these examples indicates that concealed pied-piping is the only option for Russian LBE.

### 2.3 Extracted left branches cannot be antecedents for PGs

If LBE as true extraction were indeed an option in Russian, we would also in principle expect to find configurations where an element that has undergone LBE by itself serves as the antecedent for a PG. Here we will see that this is impossible. We will focus on PGs in left branch positions, but we will also see that a displaced left branch cannot license a PG in an argument position. The inability of elements displaced by LBE to serve as the antecedent for a PG is what we expect, if such elements are not in fact extracted, but remain within NP due to concealed pied-piping.

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<sup>11</sup>A reviewer asks whether there are cases of true sub-extraction which do not cause a weak crossover violation, unlike what we have shown for LBE. We suspect that sub-extraction from the complement of NP is such a case. Such extraction does not cause a weak crossover violation for the NP that the complement was extracted from, as (i) shows. This is what we expect if complement extraction involves actual sub-extraction, unlike LBE, which must involve concealed pied-piping:

- (i) [Kakoj teorii]<sub>1</sub> ty, [ne produmav eë]<sub>2</sub>, obsudil [gipotezu t<sub>1</sub>]<sub>2</sub>.  
 what.kind theory you NEG think.through.CONV she discussed hypothesis  
 ‘What kind of theory did you discuss a hypothesis of without thinking that hypothesis through?’



### 2.3.1 PGs and numeral LBE

Here we will use numerals to test for the possibility of PGs in left branch positions. Numerals are convenient for this, since they (unlike most left branches) affect the form of the NP they merge to. For this reason an intended numeral PG can be clearly inferred due to the form of the NP containing the intended gap. As we see in the object in (24) below, for instance, the numeral *tri* ‘three’ triggers genitive singular marking on the NP to which it merges. This is a baseline example in which a PG in the object position of the sentential adjunct is impossible due to the absence of A’-movement.

(24) *Genitive object with numeral ‘three’, no movement, no PG-licensing*

Ja dostal [**tri pončika**]<sub>k</sub> s verxnej polki, [ne obnaruživ \*PG<sub>k</sub> /ix<sub>k</sub> na  
I got three doughnut.GEN.SG from higher shelf NEG discover.CONV /them on  
nižnej].  
lower.

‘I got three doughnuts from a higher shelf, not having found them on the lower shelf.’

In contrast, in (25), we see that LBE of this numeral triggers a reading for the PG indicative of concealed pied-piping, in the same way that we’ve already seen for many LBE examples above.

(25) *Numeral LBE can license an object PG via concealed pied-piping*

[**Tri**]<sub>j</sub> ja dostal [<sub>t<sub>j</sub></sub> **pončika**]<sub>k</sub> s verxnej polki, [ne obnaruživ PG<sub>k</sub> na  
three I got doughnut.GEN.SG from higher shelf NEG discover.CONV on  
nižnej].  
lower.

‘I got three doughnuts from a higher shelf, not having found them on the lower shelf.’

Example (26) below is the same as (25), except that the intended PG is not in an object position, but rather is a numeral PG in left branch position. In (26) the presence of the intended PG is unambiguous, because the relevant NP *keksa* (‘muffin’) in the adjunct here bears the same genitive marking that the numeral *tri* would typically assign to it. Nevertheless, (26) cannot have a reading indicative of numeral LBE licensing a corresponding numeral PG.

(26) *Numeral LBE cannot license a numeral PG*

[Tri]<sub>j</sub> ja dostal [t<sub>j</sub> **pončika**]<sub>k</sub> s verxnej polki, [ne obnaruživ [\*PG]<sub>j</sub>  
 three I got doughnut.GEN.SG from higher shelf NEG discover.CONV  
 keksa] na nižnej.  
 muffin.GEN.SG on lower.

\* Reading with intended PG: ‘I got three doughnuts from a higher shelf, not having found three muffins on the lower shelf.’

✓ Reading with no PG: ‘I got three doughnuts from a higher shelf, not having found a muffin on the lower shelf.’

As shown above, example (26) is acceptable under a parse where there is no PG. In this situation, the genitive marking on the relevant NP in the adjunct is licensed by the presence of negation via the well-known Slavic phenomenon of *genitive of negation*—genitive case marking that can be assigned to an object rather than the expected accusative case when sentential negation is present. Use of the genitive of negation is superficially optional, though its use has some semantic correlates. See Harves (2013) and citations therein for more information. Importantly for our purposes here, the absence of negation in an example like (26) removes the possibility of genitive case marking on the object of the adjunct, rendering the sentence unacceptable, as (27) shows.<sup>12</sup>

(27) *Numeral LBE cannot license a numeral PG within an object, no NEG in the adjunct*

<sup>12</sup>Similarly, the *wh*-numeral *skol’ko* (‘how many’) is incapable of licensing a numeral PG, as we see in (i). The intended PG is clear here due to the fact that *skol’ko* assigns genitive plural morphology to its associated NP:

- (i) \* [Skol’ko]<sub>k</sub> Sabina zagruzila [t<sub>k</sub> fajlov], ne obnaruživ [PG<sub>k</sub> statej pro  
 how.many Sabine uploaded files NEG discover.CONV paper.GEN.PL about  
 svjazyvanije]?  
 binding  
 ‘What number of files did Sabina upload, after not having found that number of papers on binding?’

But such LBE is acceptable with an object PG under a reading indicative of concealed pied-piping:

\* [Tri]<sub>j</sub> ja dostal [t<sub>j</sub> pončika]<sub>k</sub> s verxnej polki, [obnaruživ [PG<sub>j</sub> three I got doughnut.GEN.SG from higher shelf discover.CONV keksa] na nižnej].  
muffin.GEN.SG on lower.

‘I got three doughnuts from a higher shelf, having found three muffins on the lower shelf.’

If it were possible for numeral LBE to license a numeral PG, this example ought to be acceptable. The fact that it is not supports our argument that Russian LBE involves concealed pied-piping, not sub-extraction. Under this analysis, since left branches do not in fact move in isolation in Russian, we expect that they will be unable to serve as PG licensors.

### 2.3.2 PGs and possessor LBE

Previous literature on PGs has argued that they must generally be NPs, though exceptions to this tendency are reported (Culicover and Postal 2001).<sup>13</sup> If Russian is a language in which PGs can only be NPs, then it could be that numeral PGs are unacceptable simply because adjectives are not NPs, not due to the impossibility of (numeral) LBE as true sub-extraction. This explanation makes the prediction that LBE of a nominal element should succeed in licensing an NP-internal PG. This

- 
- (ii) [Skol’ko]<sub>k</sub> Sabina zagruzila [t<sub>k</sub> fajlov]<sub>j</sub>, ne obnaruživ [PG<sub>j</sub> na saite]?  
how.many Sabine uploaded files NEG discover.CONV on website  
‘What number of files did Sabina upload, after not having found those files on the website?’

Pesetsky (1982, p.405, ex 54b), however, notes an example resembling an NP-internal PG licensed by *skol’ko* itself, though this example (which is in a very different structure) is quite degraded:

- (iii) ?? [Stol’ko že devužki] čitayut knigi, **skol’ko**<sub>k</sub> ja xoču, što by [PG<sub>k</sub> mal’čikov] smotreli  
as.many girls read books as.many I want that boys watch  
[t<sub>k</sub> fil’mov].  
films  
‘As many girls read books as I want boys to watch films.’

<sup>13</sup>For instance, Engdahl (1983) reports that Scandinavian languages allow adjective and PP PGs.

prediction can be tested with possessor LBE, which we will see does not license NP-internal PGs or PGs in argument positions. This is what we expect under the concealed pied-piping analysis.

Russian pre-nominal possessors capable of LBE for the most part bear agreement morphology resembling that seen on adjectives, suggesting that they may in fact be adjectives, as Lyutikova (2012) claims. Rappaport (To appear) provides evidence that these pre-nominal possessors are in fact typical referential case-bearing NPs, unlike similar looking de-nominal adjectives. Rappaport shows, for instance, that such possessors participate in binding relations just as typical noun phrases do, as we see in (28) below. Here the first person possessor in (28a) is able to bind an anaphor, whereas the same is not possible for the de-nominal adjective of ‘author’ shown in (28b):

(28) *Unlike de-nominal adjectives, pre-nominal possessors can bind anaphors*

- a. ✓ On cital **moju**<sub>k</sub> stat’ju pro **sebja**<sub>k</sub>  
           he read my       article about self.ACC  
           ‘He read my<sub>k</sub> article about myself<sub>k</sub>’  
           (Rappaport To appear, ex. 14b)
- b. On<sub>k</sub> kupil **avtorskij**<sub>j</sub> ekzempljar u **sebja**<sub>k/\*j</sub>  
           he bought author.ADJ copy       from self.ACC  
           ‘He<sub>k</sub> bought an author<sub>j</sub>’s copy at his<sub>k/\*j</sub> own place  
           (Rappaport To appear, ex. 14d)

Rappaport also argues that such possessors bear genitive case, which is expected for a possessor NP, though not for an adjective. One piece of evidence he provides is that such possessors can be coordinated with straightforwardly genitive lexical possessors. A more direct piece of evidence comes from expressions introducing an NP with *kak* (‘like, as’), which require that NP to match the case of the standard of comparison. In (29a) below we see the *kak*-construction exemplified in an accusative context, while (29b) shows a genitive one, in which the NP *Evropejcev* introduced by *kak* bears genitive case due to its standard of comparison being a pronominal possessor:

(29) *Case matching in kak-comparisons*

- a. On **menja** ub''jot kak **muxu**  
 He **me.ACC** will.kill like **fly.ACC**  
 'He will kill me like a fly'
- b. **Vaša** pervaja zadaca, kak **Evropejcev**, budet...  
 you.**GEN.PL.NOM.FEM.SG** first task.NOM.FEM.SG as European.**GEN.PL** will.be...  
 'Your first task, as Europeans, will be...'
- (Rappaport To appear, ex. 15)

If we accept Rappaport's argument that Russian pre-nominal possessors are typical referential case-assigned nominal phrases, then we expect LBE of such elements to potentially license PGs.

Before examining the interaction of possessor LBE and PGs we must note that, as first observed by Franks (1992), Russian PGs require the case of the licensing phrase to match the case that would be assigned in the position of the PG (though Franks shows that the two cases may be syntactically distinct as long as they are morphologically syncretic). If possessors bear genitive case, as Rappaport argues, then we must ensure that a PG potentially licensed by LBE of a possessor is in a position for genitive case assignment. We can guarantee that this is so by including negation with the predicate whose object is the PG, since as previously mentioned the presence of negation allows the genitive of negation to be assigned to the object.

With these concerns in mind, first examine (30) below. This is a baseline sentence showing an object PG in an adjunct with a negated verb. Here the object of the matrix clause contains a genitive third person pronominal possessor. The entire object (including the possessor it contains) is scrambled, which licenses the PG in the adjunct:

(30) *Overtly pied-piping possessor movement and PG licensing*

[Èë/ego otrkytku]<sub>k</sub> Lena ne vzjala s soboj *t<sub>k</sub>*, [ne obnaruživ PG<sub>k</sub> v komnate].  
 her/his card Lena NEG took with self NEG discover.CONV in room  
 'Lena<sub>k</sub> didn't take [her/his<sub>j</sub> card]<sub>k</sub> with her<sub>k</sub>, not having found it<sub>k</sub> in the room.'

Example (31) below is a minimal pair with the previous. Here instead of full movement of the object NP, LBE of the possessor occurs. We see here that the possessor itself is unable to serve as an antecedent for the PG, but rather the PG is interpreted with a reading indicative of concealed

pied-piping. Importantly, note that since the verb in the adjunct is negated, it should in principle be compatible with a genitive object. Thus, it should be possible for a genitive possessor to license the object PG here, if that possessor had indeed truly been extracted.

(31) *Possessor LBE does not license an argument PG unless via concealed pied-piping*

[Èë/ego]<sub>j</sub> Lena ne vzjala s soboj [<sub>t<sub>j</sub></sub> otrkytku]<sub>k</sub>, [ne obnaruživ PG<sub>k/\*j</sub> v  
her/his Lena NEG took with self card NEG discover.CONV in  
komnate].  
room

‘Lena<sub>k</sub> didn’t take [her/his<sub>j</sub> card]<sub>k</sub> with her<sub>k</sub>, not having found it<sub>k</sub>/\*her/him<sub>j</sub> in the room.’

Finally, example (32) modifies the structure to place the PG in the possessor position of the adjunct’s object. Here LBE of the possessor occurs as in (31), but this process fails to result in a sentence where the displaced possessor licenses the possessor PG. The relevant string is acceptable under a reading in which there is no PG, however.

(32) *Possessor LBE cannot license possessor PG*

[Èë/ego]<sub>j</sub> Lena otrugala [<sub>t<sub>j</sub></sub> sestru], [ne obnaruživ [\*PG<sub>j</sub> otkrytku] v komnate]  
her/his Lena scolded sister NEG discover.CONV card in room

\* ‘Lena scolded her/his sister, not having found her/his card in the room’

OK: ‘Lena scolded her/his sister, not having found a card in the room.’

Importantly, the fact that the displaced possessor cannot serve as the antecedent for a PG in a potential genitive object position (31) or in possessor position (32) is what the concealed pied-piping analysis of Russian LBE predicts. If concealed pied-piping is the only option, a possessor (or any other left branch) always remains embedded in the NP where it originates, and thus will never be able to license a PG.<sup>14</sup>

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<sup>14</sup>Note that the pronouns used as possessors in (31-32) indeed have the same morphology when used either as possessors or as objects of a negated verb, as we see in (i):

## 2.4 Other work combining PGs and sub-extraction

We argue that the above facts indicate that Russian LBE is formed by concealed-piped-piping. Shortly we will elaborate on this analysis and consider it in the context of several other topics. Before that, though, we note that we are not the first to examine sub-extraction in the context of PGs. Corver (1990), for instance, examines LBE of *wat* ('what') in the Dutch *wat-voor* construction (33a), which he shows cannot license a left branch PG in another DP (33b), in contrast to movement of *wat* from argument position, which can license an argument PG (33c). The inability of the LBE in (33b) to license a left branch PG is parallel to what we have found for Russian LBE.

- (33) a. Wat<sub>k</sub> heeft Jo [<sub>DP</sub> t<sub>k</sub> voor boeken] gekocht?  
 what has Joe for books bought?  
 'What sort of books has Joe bought?' (Corver 1990, p. 138, ex. 34a)
- b. \* Wat<sub>k</sub> heeft Jo [zonder [<sub>DP</sub> PG<sub>k</sub> voor tijdschriften] te lezen] [ t<sub>k</sub> voor boeken]  
 what has Joe without for magazines to read for books  
 weggegooid?  
 thrown.away?  
 (Corver 1990, p. 139, ex. 36)
- c. Wat<sub>k</sub> heeft Jo [zonder [PG<sub>k</sub> te lezen]] t<sub>k</sub> weggegooid?  
 what has Joe without to read thrown.away?  
 'What did Joe throw away without reading?' (Corver 1990, p. 139, ex. 37)

- 
- |     |    |  |    |  |
|-----|----|--|----|--|
| (i) | a. | Lena obnaružila [èë/ego sestru]<br>Lena discover her/his sister<br>tam.<br>there<br>'Lena found her/his sister there.' | b. | Lena ne obnaružila èë/ego<br>Lena NEG find her/him<br>tam.<br>there<br>'Lena didn't find her/him there.' |
|-----|----|--|----|--|

This fact guarantees that the failure of PG-licensing by a displaced possessor in (31)-(32) is not due to a case matching violation. Beyond case matching, Franks (1992) observes that a PG and its licensing phrase must be parallel in their theta roles. While a configuration like (31) that attempts PG-licensing in an object position by LBE of a possessor could plausibly be unacceptable for this reason, the example attempting to license a possessor PG by possessor LBE (32) is not subject to this confound, and is nevertheless unacceptable.

The only other work we know to have examined LBE and PGs together is Davis (2019a, 2020), who studies a form of possessor extraction in colloquial English. English is typically regarded as a classic example of a non-LBE language. Bošković (2005, 2016) and related work argues that LBE in English and in comparable languages is blocked because D intervenes (as described further in section 5 below.) Davis (2019b, 2020) points out that if English possessors are generated in the specifier of the possessive D [*'s*] (as argued by Corver (1992); Chomsky (1995); Munn (1995)), in principle nothing should block their extraction, provided that the need for [*'s*] to cliticize to the possessor can be circumvented. Davis argues that this is indeed what happens in certain English varieties. He proposes that this English possessor extraction is a genuine case of sub-extraction, not a case of concealed pied-piping, and reports that this extraction can license PGs as in (34):

(34) *PG licensing by possessor LBE in colloquial English* (Davis 2019a, ex. 22)

- a. Who<sub>k</sub> do you think [PG<sub>k</sub>'s research] is good, [despite not thinking PG<sub>k</sub>'s paintings are nice]?
- b. This is the guy [who<sub>k</sub> I said [PG<sub>k</sub>'s shoes] I liked [after talking to PG<sub>k</sub> today]].

Importantly, (34) instantiates precisely what Russian cannot do. In Russian we have seen that an element displaced by LBE fails to license a PG on its own, as expected if Russian LBE is not true extraction. In the sentences in (34), by contrast, the extracted possessor itself licenses a possessor PG (34a) and a direct object PG (34b), neither of which is possible for Russian LBE (31)-(32).

### 2.4.1 Typological predictions

Since the examination of Russian LBE is a complex task that by itself fills an entire article, we would like to leave the exploration of PGs and LBE in other languages to future work. However, before moving on, we note that the proposal of this paper makes some straightforward typological predictions about how LBE and PGs can interact cross-linguistically, as stated in (35):

(35) *Predicted cross-linguistic typology of LBE and PGs*

- a. **Type 1:** No LBE whatsoever, and thus no interaction with PGs.



- b. **Type 2:** The LBE available in the language is genuine extraction from NP/DP, thus an element displaced by LBE should be able to license a PG on its own.
- c. **Type 3:** The LBE available in the language always involves concealed pied-piping, thus only the NP/DP that LBE appears to exit should be able to license a PG.
- d. **Type 4:** A hybrid of types 2 and 3, for which there are instances of LBE that are genuine sub-extraction, and others derived by concealed pied-piping.

Standard English, like all languages that wholly lack LBE, is type 1. The colloquial English variety studied by Davis (2019a, 2020) fits into type 2. Russian, as we have analyzed it, is type 3. Given the existence of types 2 and 3, hybrid languages of type 4 are also likely expected, though we are not currently aware of one. The type that any given language should be classified as must be decided on a case-by-case basis. This topic has received little attention in the literature, but we hope that we have set the stage for further productive cross-linguistic work.

### 3 Convergent evidence from principle C in relative clauses

In this section, we provide additional evidence for the concealed pied-piping analysis of Russian LBE from certain principle C avoidance effects, which have been attributed to *late merge* (Lebeaux 1988; Takahashi and Hulsey 2009, a.o.). These facts will show us yet another way in which LBE behaves like full pied-piping movement of a nominal phrase.

Lebeaux (1988) originally argued that adjuncts (but not arguments or complements) can be externally merged late, to a phrase that has already been constructed and moved. Some of Lebeaux's evidence for this proposal comes from the interaction of A'-movement and principle C, for which contrasts like that in (36) below hold. Notice that in the unacceptable (36-a), the *wh*-moved phrase contains a complement CP, which in turn contains an R-expression that is co-referential with the matrix subject. In contrast, as (36-b) shows, a comparable sentence where the relevant R-expression is in a relative clause of the moved *wh*-phrase is acceptable:

(36) *Principle C in complement versus adjunct of A'-moved phrase*

- a. *Principle C applies in complement of moved phrase*  
 \*/?? [Which rumor [that John<sub>j</sub> ate all the cakes]]<sub>k</sub> did he<sub>j</sub> deny t<sub>k</sub>?
- b. *No principle C in adjunct of moved phrase*  
 ✓ [Which cakes [that John<sub>j</sub> ate]]<sub>k</sub> did he<sub>j</sub> find t<sub>k</sub> very tasty?

For Lebeaux, in (36-a), the CP in the complement of N is merged before the containing DP moves. Consequently, there is a stage of the derivation where this complement is c-commanded by the matrix subject, and therefore the subject it contains incurs a principle C violation. In contrast, because relative clauses are adjuncts, the relative clause in (36-b) can be externally merged after its host DP moves over the subject. Thus there is no level of the derivation at which the R-expression in the relative clause was c-commanded by the co-referential subject, and no principle C violation.

In Russian, like English, principle C normally applies, as we see in (37) below:

(37) *Principle C in Russian*

- a. **Nadja<sub>k</sub>** privezla mne škatulku,      kotoruju **ona<sub>k</sub>** sdělala sama.  
 Nadya brought me jewellery.box which she made herself  
 ‘Nadya<sub>k</sub> brought me a jewellery box which she<sub>k</sub> made herself.’
- b. \***Ona** privezla mne škatulku,      kotoruju **Nadja<sub>k</sub>** sdělala sama.  
 she brought me jewellery.box which Nadya made herself  
 ‘Nadya<sub>k</sub> brought me a jewellery box which she<sub>k</sub> made herself.’

Furthermore, a complement of NP containing an R-expression co-indexed with the subject does not avoid a principle C violation if the containing NP moves over the subject:

(38) *No principle C avoidance for complement of A'-moved phrase in Russian*

- \* [Kotoruju fotografiju **Vasi<sub>k</sub>**]<sub>j</sub>      **on<sub>k</sub>** kupil      t<sub>j</sub> ?  
 which photo.ACC Vasja.GEN he bought  
 ‘Which photo [of Vasja<sub>k</sub>] did he<sub>k</sub> buy?’

In contrast, an R-expression in a relative clause of the moved phrase doesn’t end up with a principle C violation, as we see in (39) below. Here the R-expression which is the subject of the relative

clause is co-referential with the matrix subject, and yet, there is no violation in these sentences. This indicates that in Russian too, adjuncts can merge late:<sup>15</sup>

(39) *Principle C avoided by relative clause of A'-moved phrase in Russian*

- a. <sup>?</sup>[[Škatulku]<sub>j</sub>, [kotoruju **Nadja**<sub>k</sub> sdelala sama]]<sub>j</sub>, **ona**<sub>k</sub> privezla mne *t<sub>j</sub>*.  
jewellery.box which Nadya made herself she brought me  
'A jewellery box, which Nadya<sub>k</sub> made herself, she<sub>k</sub> brought me.'
- b. <sup>?</sup>[[Čju kartinu] [kotoruju **Vasja**<sub>k</sub> kupil]]<sub>j</sub> **on**<sub>k</sub> voznenavidel *t<sub>j</sub>*?  
Whose picture that Vasja bought he came.to.hate  
'Whose picture [that Vasja<sub>k</sub> bought] did he<sub>k</sub> come to hate?'

Following Lebeaux and related work, this pattern of principle C avoidance depends on internal merge creating a high position to which later external merge of an adjunct can apply. Thus if Russian LBE in fact involves concealed pied-piping of the entire relevant NP, it should produce a position to which a relative clause can be late merged, and thus escape principle C. As we see in (40) below, this is indeed possible. LBE in (40) facilitates the inclusion of a relative clause containing an NP co-indexed with the matrix subject, for which no principle C violation occurs:

(40) *LBE with principle C avoiding relative clause in Russian*

- a. <sup>?</sup>Kakuju<sub>j</sub>, [kotoruju **Nadja**<sub>k</sub> sdelala sama], **ona**<sub>k</sub> privezla mne [*t<sub>j</sub>* škatulku]?  
what.kind which Nadya made herself she brought me jewellery.box  
'What jewelry box, which Nadya<sub>k</sub> made herself, did she<sub>k</sub> bring me?'

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<sup>15</sup>The argument / adjunct asymmetry for principle C avoidance shown here has been independently observed in Russian by Bailyn (2001, 2012). A reviewer points out that Lebeaux's asymmetry has been challenged in recent work, for instance in Adger et al. 2017; Bruening and Al Khalaf 2019, as well as Wierzba et al. (To appear) on German. As the reviewer notes, if a larger scale study were to reveal that this asymmetry does not hold universally across Russian speakers, it would not falsify the results of this paper: it would simply show that the diagnostic applied in this section will be inapplicable to the grammar of some Russian speakers.

- b. <sup>?</sup>Doroguščuju<sub>j</sub>, [kotoruju **Nadja**<sub>k</sub> sdelala sama], **ona**<sub>k</sub> privezla mne [<sub>t<sub>j</sub></sub> very.expensive which Nadya made herself she brought me škatulku]?  
jewellery.box  
'The VERY EXPENSIVE jewelry box, which Nadya<sub>k</sub> made herself, she<sub>k</sub> brought me.'
- c. <sup>?</sup>Ètu<sub>j</sub> [kotoruju **Vasja**<sub>k</sub> kupil] **on**<sub>k</sub> voznenavidel [<sub>t<sub>j</sub></sub> kartinu].  
this that Vasja bought he came.to.hate picture  
'THIS picture, that Vasja<sub>k</sub> bought, he<sub>k</sub> came to hate.'
- d. <sup>?</sup>Čju<sub>j</sub> [kotoruju **Vasja**<sub>k</sub> kupil] **on**<sub>k</sub> voznenavidel [<sub>t<sub>j</sub></sub> kartinu]?  
Whose that Vasja bought he came.to.hate picture  
'Whose picture [that Vasja<sub>k</sub> bought] did he<sub>k</sub> come to hate?'

As expected, such configurations can co-occur with a PG-bearing adjunct clause, with the PG being interpreted in the way we predict given the concealed pied-piping analysis of LBE:

(41) *LBE + late merge + PG*

<sup>?</sup>Kakuju<sub>j</sub>, [kotoruju Nadja<sub>k</sub> sdelala sama], ona<sub>k</sub> privezla mne [<sub>t<sub>j</sub></sub> škatulku]<sub>i</sub>, [ne what.kind which Nadya made herself she brought me jewellery.box NEG poterjav PG<sub>i</sub> v doroge]?  
lose.CONV in road

'What jewelry box, which Nadya<sub>k</sub> made herself, did she<sub>k</sub> bring me without losing on her way?'

The fact that overt movement of an NP (39) and LBE (40)-(41) both allow late merge of a relative clause is predicted, given our proposal that the syntax of these scenarios is in essence the same.

Note that we do not expect the same pattern of judgments to emerge from true sub-extraction of a left branch along with extraction of a relative clause from the same NP: if the relative clauses in (40)-(41) reached the high position they inhabit by simply moving there, they should be subject to principle C. For principle C to be avoided, it is vital that the relative clauses be externally merged to a position above the matrix subject. Late external merge would be impossible here if there were not an NP there to merge to.<sup>16</sup>

<sup>16</sup>Given that the relative clauses in (40)-(41) must not have undergone movement, it would also be unclear how these examples could be interpreted if the relative clauses were not late merged to

A reviewer points out that a relative clause can be displaced on its own and still avoid principle C. An additional survey with our consultants confirmed that many speakers do indeed have this judgement. Furthermore, we have observed that such relative clause fronting also facilitates PG licensing, with the PG being interpreted as co-referent with the NP that the displaced relative clause is construed as modifying, as (42) shows:

(42) *Principle C avoiding relative clause displacement with PG*

?[Kotoruju Nadja<sub>i</sub> sdelala sama]<sub>j</sub>, ona<sub>i</sub> privezla mne [škatulku t<sub>j</sub>]<sub>k</sub> (ne poterjav  
 which Nadya made herself she brought me jewellery.box NEG lose.CONV  
 PG<sub>k</sub> v doroge).  
 in road

‘Nadya<sub>i</sub> brought me a jewellery box which she<sub>i</sub> made herself, without losing (it) on her way.’

This fact poses a challenge for our proposal. If principle C avoidance stems from late merge of adjuncts, then we must ask what the relative clause in (42) late merges to. Based on the fact that the object NP in (42) which the relative clause is construed as modifying also licenses a PG, we suggest that late merge of the relative clause applies after covert movement of the object NP. Such covert movement both licenses the PG, and creates a position to which the relative clause can be late merged and escape principle C.

Of course, such PG-licensing via covert movement must somehow be restricted. If covert movement could generally license PGs in Russian, then such a process should be able to license PGs in many environments, though we have seen in section 2 that usually, PG-licensing fails unless an overt A'-movement occurs. While there is precedent for PG-licensing by covert movement in

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an NP: relative clauses are adjuncts interpreted by Predicate Modification with NP (both being of type  $\langle e, t \rangle$ , Heim and Kratzer 1998), but this interpretive rule could not apply if the relative clauses in (40)-(41) were not in fact attached to an NP.

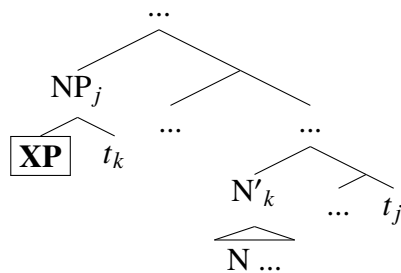
Russian (Ivlieva 2007) and other languages,<sup>17</sup> we do not have a concrete proposal about what is responsible for restricting this. Ivlieva (2007) argues that NPs construed as topics covertly move in Russian, and thus can license PGs. This proposal raises the possibility that the relevant NP in (42) has been covertly topicalized, but further work is necessary to test this hypothesis. It is also conceivable that covert movement applies in (42) as a last resort mechanism to achieve PG-licensing, but this proposal would still need to be appropriately restricted to prevent over-generation. Further research on this puzzle will be necessary.

This concludes our discussion of the evidence for the proposal that LBE in Russian is derived by concealed pied-piping. In the next section, we address in greater detail the mechanism by which concealed pied-piping is achieved. In the rest of the paper, we relate our core proposal to some additional topics and consequences.

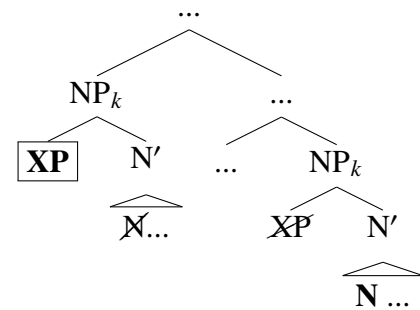
## 4 Distributed deletion over remnant movement

In the introduction, we described two variants of the concealed pied-piping analysis argued for in the literature—remnant movement and distributed deletion, shown once more below:

(43) a. *LBE as remnant movement*



b. *LBE as distributed deletion*



The facts shown in this paper so far are compatible with either theory, since both result a configuration where a seemingly displaced left branch continues to be covertly contained by the NP it

<sup>17</sup>Beyond Ivlieva (2007), Nissenbaum (2000) shows that covert *wh*-movement in English can license PGs under very specific circumstances, and Branen and Sulemana (2018) argue for the existence of PG-licensing by covert *wh*-movement in Bùlì.

originated in. In this section, we will consider additional facts in order to distinguish between these proposals, ultimately favoring the distributed deletion approach.

## 4.1 Syntactic evidence for distributed deletion

The distributed deletion analysis of split phrases in Russian has precedent in at least Pereltsvaig (2008) and Fanselow and Féry (2013). Fanselow and Féry argue that the prosodic character and interaction with intervention effects of LBE in certain Slavic languages, including Russian, suggests the possibility of distributed deletion. Pereltsvaig argues that LBE and split phrases in general in Russian should be analyzed as the result of distributed deletion, and not remnant movement, based on a variety of syntactic diagnostics. We will mention a few of these here.

One well-known fact about LBE in Slavic generally is that it can displace material that is not obviously a constituent, for instance, a preposition and adjective:

(44) *Non-constituent LBE* (Pereltsvaig 2008, ex. 4a)

**Protiv sovetskoi** on vystupal **vlasti**.  
against Soviet he demonstrated regime

‘It is against the Soviet regime that he demonstrated.’

This fact is directly predicted by either distributed deletion or remnant movement. Since the first analysis relies on a PF operation, sensitivity to syntactic constituency is not expected. Since the latter analysis does not involve extraction of the seemingly displaced material, we do not expect the pronounced material in the moved remnant NP to necessarily be a constituent either, since that material occupies what is itself a well-formed constituent (containing a trace of prior extraction). However, we do expect the “in situ” material in an LBE scenario to necessarily be a constituent under the remnant movement analysis. This is because, for this analysis, such material is extracted by typical syntactic movement prior to later movement of the resulting remnant. As Pereltsvaig points out, this “stranded” material need not be a constituent at all, as exemplified in (45):

(45) *LBE stranding non-constituent material* (Pereltsvaig 2008, ex. 12)

- a. **Nezlobivj** u nego **soveršenno** **xarakter**.  
kindhearted to him absolutely disposition  
'He has an [[absolutely kindhearted] disposition].'
- b. **Odna očēn'** est' **èlegantnaja rubaška** u Peti.  
one very there-is elegant shirt to Petja  
'Petya has [one [VERY elegant] shirt].'

This is a challenge for the remnant movement approach, but not for the distributed deletion analysis. A reviewer points out that the fact about prepositions in (44) can be captured under a true extraction analysis by the proposal in Talić (2019) that the preposition cliticizes to the left branch before LBE occurs, but as far as we know, this proposal does not account for the examples in (45).

Since under the remnant movement analysis LBE is derived by interleaved applications of typical movement, we expect LBE derived in this way to be sensitive to usual island constraints. Pereltsvaig shows that Russian LBE is, however, possible in some contexts where extraction is not usually permitted. For instance, LBE from coordinations in non-ATB ("across the board") fashion is allowed, as in (46a), which shows LBE from only the first of two conjuncts. This result can be derived under the distributed deletion analysis via movement of the entire coordinated NP followed by realization of only the relevant left branch in the head of this movement chain (46b):

- (46) a. *Non-ATB LBE* (Pereltsvaig 2008, ex. 6)  
Ja **tvoi** vystirala [čulki i rubašku].  
I your washed stockings and shirt  
Can mean: 'I washed your stockings and a shirt'
- b. Ja [**tvoi čulki i rubašku**] vystirala [~~tvoi~~ čulki i rubašku].  
I your washed stockings and shirt

Pereltsvaig also shows that Russian LBE can break apart lexical compounds, and is insensitive to weak islands, which block non-argument movement and thus also LBE in many languages (Szabolcsi and Lohndal, 2017). Such facts are all amenable to the same analysis, in which there is no sub-extraction, but rather movement of a larger constituent followed by distributed deletion.<sup>18</sup>

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<sup>18</sup>A further fact of interest is that LBE from a PP can pied-pipe P, while simultaneously leaving it pronounced in its in-situ position as well, as in (i) below. See Pereltsvaig (2008); Goncharov (2015); Gouskova (2019) for further discussion of P-doubling in Slavic. This possibility sits well



## 4.2 Scope

Under the distributed deletion analysis, we expect it to be possible in principle for LBE of a quantifier to result in the QP in question taking high scope. For instance, since overt scrambling of an entire QP over negation results in scope ambiguity in Russian, as in (47) below, we expect LBE of a quantifier over negation to result in the same possible readings. This is because, for our analysis, overt scrambling of a full QP and quantifier LBE should be syntactically identical.

(47) *QP scrambling over negation*

[Dvux kommentatorov]<sub>k</sub> Maša ne ljubit *t<sub>k</sub>*.  
two commentators Masha NEG loves

✓ *two commentators* > ¬: There are two commentators that Masha doesn't like.

✓ ¬ > *two commentators*: It's not the case that Masha likes two commentators (for example, when she watches a show she prefers that there would be only one commentator).

As expected, quantifier LBE over negation allows the QP to take scope over negation, as (48) shows:  
with either a distributed deletion or remnant movement analysis of LBE (but does not adjudicate between the two). Under a copy theory of movement (Chomsky 1993, 1995, a.o.), both of these analyses involve formation of two full copies of the phrase containing the relevant left branch, in which case it is conceivable that some material might be able to be realized in both copies.

- (i) **Iz** krasnoj<sub>k</sub> ja pila [iz *t<sub>k</sub>* čaški].  
from red.F.SG.GEN I drank from cup.F.GEN  
'I drank from a red cup.'

A reviewer makes the important observation that this fact is also compatible with a true extraction analysis of LBE if Talić (2019) is correct that P cliticizes to the left branch before it extracts, in which case (i) could be derived by realizing both copies of P.

We note, however, that some Russian prepositions (like *protiv* ('against') in (44) above) can be pied-piped under LBE despite being independent phonological words, not clitics. Thus the insights of Talić (2019) may not capture the full range of Russian LBE facts. We leave this for future study.

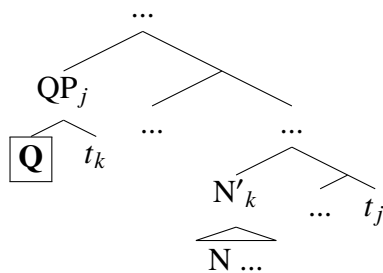
(48) *LBE of quantifier over negation*

Dvux<sub>k</sub> Maša ne ljubit [*t<sub>k</sub>* komentatorov].  
two Masha NEG loves commentators

Same readings as (48):  $\checkmark$  *two commentators*  $> \neg, \checkmark \neg > \textit{two commentators}$

Notice that under the remnant movement analysis, LBE of a quantifier would involve extraction of the restrictor of the quantifier prior to later movement of the resulting remnant (49):

(49) *LBE of quantifier as remnant movement*



For this structure to ultimately be interpretable, it is necessary for the quantifier (type  $\langle\langle\text{et},\langle\text{et},\text{t}\rangle\rangle\rangle$ ) to be reunited with its restrictor (type  $\langle\text{e},\text{t}\rangle$ ) either at or before LF, in order for a type mismatch to be avoided.<sup>19</sup> In this situation, in order for the QP to take scope in its moved position, it would be necessary to reconstruct both the remnant movement and the initial extraction of the restrictor, prior to then subjecting that reconstructed constituent to Quantifier Raising (QR). A grammar that can achieve such a result would have to be able to interleave reconstruction with QR. Under the distributed deletion analysis, however, these additional proposals are not necessary.<sup>20</sup>

<sup>19</sup>The reconstruction required here would also violate *Barss' Generalization*, which prevents reconstruction of an element into a position that it does not c-command in the surface string, as Murphy (2020) discusses. Murphy uses this point as one piece of evidence against remnant movement theories of LBE.

<sup>20</sup>There is evidence suggesting that such interleaving is impossible. Consider (i) below. Here a scrambled QP may have either surface scope or inverse scope with respect to the subject QP:

While LBE can result in a QP taking scope over negation, we must note that there are circumstances where LBE cannot result in wide scope in Russian. Despić (2015) has observed this for Sebro-Croatian, a fact he takes to be an argument against distributed deletion in this language. When examining the relative scope for two QPs, we see that in Russian as well, LBE does not permit wide scope for a lower QP exited by LBE, as (50) below shows:

(50) a. *Lower QP scrambled over higher QP*

- 
- (i) [Každuju fotografiju]<sub>j</sub> dva mal'čika pokazali Lene i Maše *t<sub>j</sub>*.  
 every photo two boys showed Lena and Masha  
 'Two boys showed Lena and Masha every picture.'

1.  $\forall > two$ : For every photo there were two (different) boys that showed Lena and Masha that photo.

2.  $two > \forall$ : There exist two boys, such that they showed Lena and Masha every picture.

When a reciprocal is added to the scrambled object QP here, then only one reading is available—one where the subject takes wide scope with respect to the object (ii):

- (ii) [Každuju fotografiju [drug druga]<sub>k</sub>]<sub>j</sub> dva mal'čika pokazali [Lene i Maše]<sub>k</sub> *t<sub>j</sub>*.  
 every photo each.other two boys showed Lena and Masha  
 'Two boys showed Lena and Masha every picture.'

1.  $*\forall > two$ : For every photo of Lena and Masha there were two potentially different boys that showed Lena or Masha that photo.

2.  $two > \forall$ : There exist two boys, such that they showed Lena and Masha every picture of themselves.

The reciprocal forces reconstruction of the object to a position below the subject QP. If following this reconstruction QR were available, then surface scope should have been possible in (ii). We have to note, though, that post-reconstruction QR might be unavailable in (ii) due to a need for principle A to be evaluated at the final output of LF. In other words, the argument above relies on an assumption that principle A only has to hold at some point during LF.

[Dva podarka]<sub>k</sub> [každyj mal'čik] uvidel *t<sub>k</sub>*.  
 two gifts every boy saw

✓ *two gift > every boy*: There are two gifts that were seen by every boy.

✓ *every boy > two gifts*: For every boy, there were two gifts that he saw.

b. *Q extracted over higher QP*

Dva<sub>k</sub> [každyj mal'čik] uvidel [*t<sub>k</sub>* podarka].  
 two every boy saw gifts

\* *two gift > every boy*: There are two gifts that were seen by every boy.

✓ *every boy > two gifts*: For every boy, there were two gifts that he saw.

The difference in the scope possibilities between (50a) and (50b) is a challenge for our account: if concealed pied-piping movement is the right analysis of LBE, it is not clear what should force that movement to reconstruct.

We suggest that the answer to this question has to do with LBE signalling contrastive topic/focus on the displaced element. Previous literature has argued that there is a connection between contrastive focus and reconstruction in Russian (Ionin 2003; Ionin and Luchkina 2018). If this is the case, reconstruction effects in LBE contexts could be unrelated to LBE per se, but rather, stem from contrast. This understanding accurately predicts the fact that we also see obligatory reconstruction for a scrambled NP containing a contrastively focused numeral, as in (51) below:

(51) *Lower NP scrambled over higher QP with contrastive focused numeral*

a. [DVA podarka]<sub>k</sub> [každyj mal'čik] uvidel *t<sub>k</sub>*, ne TRI!  
 two gifts every boy saw not three

?? *two gift > every boy*: There are two gifts that were seen by every boy, not three.

✓ *every boy > two gifts*: For every boy, there were two gifts that he saw, not three.

b. [ROVNO ODIN podarok]<sub>k</sub> [každyj mal'čik] uvidel *t<sub>k</sub>*, ne DVA!  
 exactly one present every boy saw not two

\* *exactly one gift > every boy*: There is exactly one gift that was seen by every boy, not two.

✓ *every boy > exactly one gift*: For every boy, there is exactly one gift that he saw, not two.

A problem with this analysis is that it does not explain the fact that reconstruction beneath negation was not required after assumed concealed pied-piping in the LBE context in (48) above. Thus if it is correct that topic/focus tends to trigger reconstruction in LBE contexts, the goal for further research will be to understand what factors allow such reconstruction to be circumvented. We would like to propose, however, that the possibility of wide scope under LBE in at least some circumstances like (48) is consistent with the distributed deletion approach.

### 4.3 Formalizing the distributed deletion rule

The distributed deletion hypothesis sits well with the copy theory of movement (Chomsky 1993, 1995, a.o.). For this theory, overt movement is the result of PF silencing all but the highest in a chain of copies produced by internal merge (perhaps via *Chain Reduction*, Nunes 2004), whereas covert movement results from all but the lowest copy in a chain being silenced. Nunes (2004) argues that distributed deletion is correctly permitted by the copy theory, for which this would in essence be a hybrid process that applies the covert movement rule to some nodes in a chain, and the overt movement rule to others. Since Russian LBE involves contrastive topic/focus on the displaced element (Pereltsvaig 2008), we can state the PF rule for distributed deletion in Russian as in (52a) below. The schema in (52b) illustrates the rule graphically. As the facts have shown us, distributed deletion can apply to both NPs and PPs as stated in (53a), though for convenience (53b) shows distributed deletion of an NP only.

(52) *PF rule for Distributed Deletion*

- a. When a moved NP/PP contains an element bearing a feature  $F_{CTF}$  encoding contrastive topic/focus, realize only the element bearing  $F_{CTF}$  in the highest copy of the movement chain, and all other nodes in the lowest copy of the movement chain of that NP/PP.
- b.  $[_{NP} XP_{F_{CTF}} \cancel{YP} N]_k \dots [_{NP} \cancel{XP}_{F_{CTF}} YP N]_k$

It is also possible to overtly move an entire NP and contrastively focus a sub-part of it, as in the sentences in (51) above, for instance. This fact indicates that distributed deletion is, in principle, in

free variation with overt movement. That is, focusing on a sub-part of NP/PP creates the conditions for the rule in (52a) to apply, but it is not obligatory for this PF process to be triggered in such contexts. The proposal that distributed deletion applies optionally when the conditions for it are met facilitates an understanding of configurations in Russian where a given noun phrase is split more than once. Pereltsvaig (2008) shows several examples of this kind, such as (53) below:

(53) *An NP split multiple times* (Pereltsvaig 2008: 3, ex. 12d)

Ox **kakix** ja sebe **blinov** segodnja nadelala **vkusnyx**.  
 oh what I to.self pancakes today made tasty  
 ‘Oh, what tasty pancakes I made for myself today.’

Such an example can be derived by multiple applications of distributed deletion triggered at different points in the derivation. If distributed deletion applied obligatory when the conditions in (52a) were met, presumably it would apply as soon as possible and thus not allow the possibility of splitting some material first, while not splitting other material until later on in the derivation.

## 5 Implications for the theory of sub-extraction

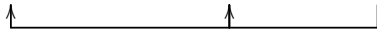
We have now seen several sources of evidence for the proposal that LBE in Russian is derived by concealed pied-piping of the entire NP that the displaced left branch constituent has appeared to exit. If correct, this finding indicates that in Russian, something like the Left Branch Condition holds in the underlying syntax. While in languages like English the influence of the Left Branch Condition is evident in the surface word orders that can be created by movement (aside from the colloquial possessor extraction cited above), this is not so in Russian, which is why more intricate diagnostics have been required to detect the fact that Russian LBE is not true extraction.

The Left Branch Condition is in essence a descriptive generalization of the fact that some languages do not (generally) permit LBE. This generalization should, ideally, be reducible to independent mechanisms of syntax. This expectation is explored by numerous works (Szabolcsi, 1984; Corver, 1990, 1992; Rappaport, 2001; Bošković, 2005, a.o.). Bošković (2005, 2016), for

instance, building from previous proposals from Corver (1990, 1992), argues that LBE is limited by the presence of D in languages that have it (an idea with precedent in Uriagereka (1988) as well). Bošković argues that this is so because D introduces a phase boundary, and that therefore any extraction from the nominal phrase must successive-cyclically pass through spec-DP. While such movement through spec-DP is possible in principle from the complement of N, Bošković argues that the necessary movement to spec-DP is impossible for adjuncts or specifiers of NP because such movement would be too short, and thus in violation of *anti-locality* (Bošković, 1997; Ishii, 1999; Grohmann, 2003; Abels, 2003, a.o.). The schema in (54) illustrates this hypothesis:

(54) *Anti-local LBE from adjunct / specifier of NP through spec-DP*

\* [<sub>CP</sub> ... S V [<sub>DP</sub> D [<sub>NP</sub> XP N ... ]]]



If a theory along these lines is correct, then the present paper's conclusion that Russian lacks true LBE can be attributed to the presence of D, though there is debate about the presence of D in article-less Slavic languages like Russian (see Franks 1995; Engelhardt and Trugman 1986; Progovac 1998; Franks and Pereltsvaig 2004; Pereltsvaig 2006, 2007; Pesetsky 2013, a.o.). For the purposes of the present paper, it would be necessary to hypothesize that D is always present in Russian, and that the elements which undergo (apparent) LBE are all base-generated as adjuncts or specifiers of NP.<sup>21</sup> <sup>22</sup> From this position, their movement from DP is impossible, following

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<sup>21</sup>As described in section 2.4 above, Davis (2019a,b, 2020) reports an instance of possessor extraction in colloquial English, which has characteristics of genuine LBE. As mentioned, assuming that English possessors originate in the specifier of D, Bošković's account of the constraints on LBE rules this in as an in-principle possibility. In contrast, in the context of the proposals at issue in this section the Russian facts analyzed here suggest that the Russian possessor originates below D and thus cannot undergo true LBE. If Russian pre-nominal possessors are fundamentally adjuncts of NP, as argued by Lyutikova, 2012, this is what we expect.

<sup>22</sup>It is also conceivable that some left branches are adjoined above D, but are immobile due to being heads rather than phrases.

Bošković. Thus when such constituents are targeted for A'-movement, pied-piping (concealed or otherwise) of the entire containing DP must apply.<sup>23</sup>

## 6 Accounting for restrictions on multiple LBE

A reviewer correctly points out that the distributed deletion analysis of LBE does not predict the fact that multiple instance of LBE cannot co-occur (Grebenyova 2006, 2012; Fernández-Salgueiro 2006; Murphy 2018), as illustrated in (55) below:

(55) *Ban on multiple LBE* (Grebyenova 2006, ex. 4b)

\*[Naskol'ko bogatyj]<sub>k</sub> [naskol'ko doroguju]<sub>j</sub> [*t<sub>k</sub>* aktër] kupil [*t<sub>j</sub>* mašinu]?  
 how-much rich how-much expensive actor bought car  
 'How rich an actor bought how expensive a car?'

We do not have a decisive account of why this fact should emerge under the distributed deletion analysis. Here we will discuss the relevant literature and some empirical details, and suggest that the account in Murphy (2018) can be productively incorporated into the distributed deletion analysis.

Grebenyova analyzes the ungrammaticality of sentences like (55) as a violation of the Head Movement Constraint (Travis 1984), which bans head movement from skipping across a higher head. In particular, Grebenyova proposes that LBE is head movement, and that the first instance

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<sup>23</sup>A reviewer asks why there should be a correlation between LBE and the absence of articles if LBE is (at least in some languages) a matter of distributed deletion rather than extraction. This is a pertinent question which would also be applicable to remnant movement analyses of LBE, since it is unclear why the presence of articles would matter in that case either. While we cannot answer this question here, there is evidence that this correlation is not absolute. For instance, Fanselow and Féry (2013) note that Bulgarian may have LBE, and Pankau (2019) shows that LBE in Lower Sorbian is productive, though both languages have overt articles. Nevertheless, it appears to frequently be the case that the presence of articles correlates with the absence of LBE, which remains unexplained under a distributed deletion theory. We must leave this issue open.



of LBE creates a configuration in which the head targeted by LBE first blocks movement of the second, due to the head movement constraint. Fernández-Salgueiro (2006) proposes that LBE is driven by a [WH] feature on a C head, and that after one left branch is attracted by that feature, that feature cannot probe again and hence cannot attract a second left branch. The distributed deletion analysis that we have proposed in this paper is not compatible with Grebenyova's analysis, since for us it is important that LBE is phrasal movement. The account in Fernández-Salgueiro (2006) is more likely to be compatible. Murphy (2018) notes problems for both of these accounts, however.

Murphy points out that Grebenyova's account is not sufficient since any instance of LBE will need to cross over some number of intervening heads even in the basic case in order to reach the left periphery of the sentence. Additionally, Murphy notes that LBE is not only applicable to *wh*-elements, meaning that the account in Fernández-Salgueiro (2006) that relies on a [WH] feature does not provide a complete solution. We agree with Murphy's criticisms of these accounts, and will suggest a potential unification of his own account and the distributed deletion analysis of LBE.

Murphy (2018) proposes an account of the ban on multiple LBE in a framework of Optimality Theoretic Syntax, in which syntactic derivations are governed by (violable) constraints. His account relies on two constraints: *LEFTBRANCHCONDITION*, a constraint that penalizes LBE, and *\*MULTIPLE-SPECIFIER*, which penalizes multiple specifier configurations. Using the framework of Serial Harmonic Grammar, Murphy assigns weights to these constraints such that they can be violated in isolation, but incur too high a penalty when violated at the same time, blocking multiple LBE due to a "gang effect". In specific, for Murphy it is the second of the two steps of LBE in a configuration like (55) above that causes the issue. The first instance of LBE does not create a multiple specifier configuration, and thus is tolerable, but the second instance of LBE creates a multiple specifier configuration and thus violates both of the constraints mentioned above at the same time, yielding ungrammaticality. In this way Murphy's account correctly rules out configurations like (55). Murphy's account also correctly rules in sentences like in (56) below, which our research has found are acceptable to many speakers, where two instances of LBE land in separate positions and thus do not form a multiple specifier configuration:

(56) *LBE to separate positions is permitted*

- a. [Znamenityj]<sub>k</sub> segodnja [<sub>t<sub>k</sub></sub> aktër] [moju]<sub>j</sub> kupil [<sub>t<sub>j</sub></sub> mašinu].  
famous today actor my bought car  
'Today a famous actor bought my car.'
- b. Ivan [umnomu]<sub>k</sub> včera [<sub>t<sub>k</sub></sub> mal'čiku] [novuju]<sub>j</sub> podaril [<sub>t<sub>j</sub></sub> igrušku].  
Ivan smart yesterday boy.DAT new presented toy.ACC  
'Yesterday Ivan presented a smart boy a new toy.'

As far as we can tell, the intuition behind Murphy's account does not specifically rely on an analysis of LBE as sub-extraction: it simply relies on the hypothesis that LBE (whatever it happens to be syntactically) is marked, and thus incurs a penalty when it occurs. For instance, it may be that discontinuous noun phrases are in general marked, following the arguments of Sekerina (1997) that split scrambling constructions like LBE involve an extra processing load.<sup>24</sup> By re-framing Murphy's LEFTBRANCHCONDITION as constraint that penalizes noun phrases rendered discontinuous by whatever means (such as distributed deletion), his account can be incorporated into our proposal that LBE in Russian is not derived by sub-extraction.<sup>25</sup>

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<sup>24</sup>This line of reasoning raises the issue of distinguishing between unacceptability due to syntactic ungrammaticality (i.e., the syntax bans a certain derivation) and unacceptability due to accumulation of processing costs (i.e., a syntactically grammatical structure is banned by processing. See also discussion in Pereltsvaig (2008)).

<sup>25</sup>There are however some additional ungrammatical cases of multiple LBE that might be problematic for Murphy's account. Consider (i), where an adverb separates two extracted left branches:

- (i) a. \***Moju**<sub>2</sub> segodnya **znamenityj**<sub>1</sub> na vystavke [<sub>t<sub>1</sub></sub> aktër] kupil [<sub>t<sub>2</sub></sub> mašinu].  
my today famous on exhibition actor bought car  
'Today on the exhibition a famous actor bought my car.'
- b. ??**Znamenityj**<sub>1</sub> segodnya **moju**<sub>2</sub> na vystavke [<sub>t<sub>1</sub></sub> aktër] kupil [<sub>t<sub>2</sub></sub> mašinu].  
famous today my on exhibition actor bought car  
'Today on the exhibition a famous actor bought my car.'

## 7 On the semantics of the interaction between LBE and PGs

Before concluding the paper, we would like to address how an explicit semantic account of PGs relates to our proposal that Russian LBE is derived by concealed pied-piping. Here we adopt from previous work the proposal that PGs are traces of null operators, which move within (but not from) the containing island (Chomsky 1986; Browning 1987; Nissenbaum 2000; Nissenbaum and Schwarz 2011, a.o.).<sup>26</sup> Following Nissenbaum (2000), we assume that operator movement to the edge of the containing island triggers Predicate Abstraction (Heim and Kratzer, 1998), changing

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We are unaware of any reason to think that the adverb *segodnya* in (i) has moved: it occupies a position in the left periphery as it usually does (ii), and there is no special information structure status associated with it. In (ii) we also see that this adverb can normally co-occur with LBE:

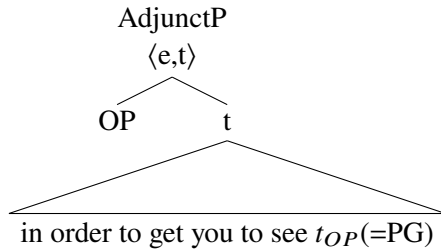
- (ii) Segodnya **moju**<sub>2</sub> na vystavke [znamenityj aktër] kupil [<sub>t<sub>2</sub></sub> mašinu].  
today my on exhibition famous actor bought car  
‘Today at the exhibition a famous actor bought my car.’

If *segodnya* is in its base-generation position in (i)-(ii), then the two instances of LBE in (i) likely target specifiers of different phrases. If so, then the \*MULTIPLE-SPECIFIER constraint is not violated in the examples in (i), thus they are predicted to be grammatical, contrary to fact.

<sup>26</sup>As mentioned in section 2, Franks (1992) observed that in Russian the case of the licensing phrase and of the PG must match, though distinct cases can be used as long as they are morphologically syncretic. A reviewer asks why case matching should hold under the null operator approach to PGs taken here. This is a general issue for the null operator analysis, which we have adopted here primarily to provide an explicit theory in which to frame our proposals, rather than to argue for the null operator theory in specific. We suggest that case matching is an independent morpho-syntactic constraint on multi-gap configurations that does not stem directly from the properties of PGs in particular. As discussed by at least Franks (1992, 1993, 1995); Asarina (2011); Citko and Gračanin-Yuksek (2021), case matching effects in Slavic occur with a variety of multi-gap configurations which are not necessarily syntactically homogeneous, such as right node raising and

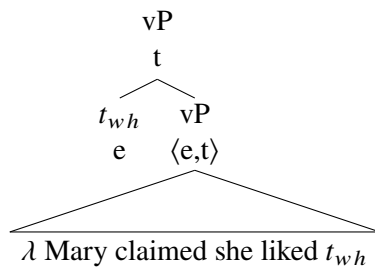
the island into a predicate. For a PG-bearing sentential adjunct like those focused on in this paper, this operator movement changes the adjunct into a derived predicate of type  $\langle e, t \rangle$ , as in (57):<sup>27</sup>

- (57) *Null operator movement inside adjunct forms a derived predicate*



Nissenbaum argues that the interpretation of a PG-bearing constituent is dependent upon the semantic effect of successive cyclic A'-movement, and therefore must merge to a position within an A'-movement path. In particular, Nissenbaum follows Chomsky (2000, 2001) in positing that A'-movement must successive-cyclically pause in the edge of vP, since vP is a phase. This intermediate step of A'-movement through the vP edge triggers an application of Predicate Abstraction there as well, creating an  $\langle e, t \rangle$  node in the vP edge, as we see in the partial structure in (58) below:

- (58) *Successive-cyclic A'-movement creates an  $\langle e, t \rangle$  node in vP*



The PG-containing adjunct island in (57) above is a constituent of type  $\langle e, t \rangle$ , and as we've just seen in (58), a node of the same type exists in the vP edge after successive-cyclic A'-movement through

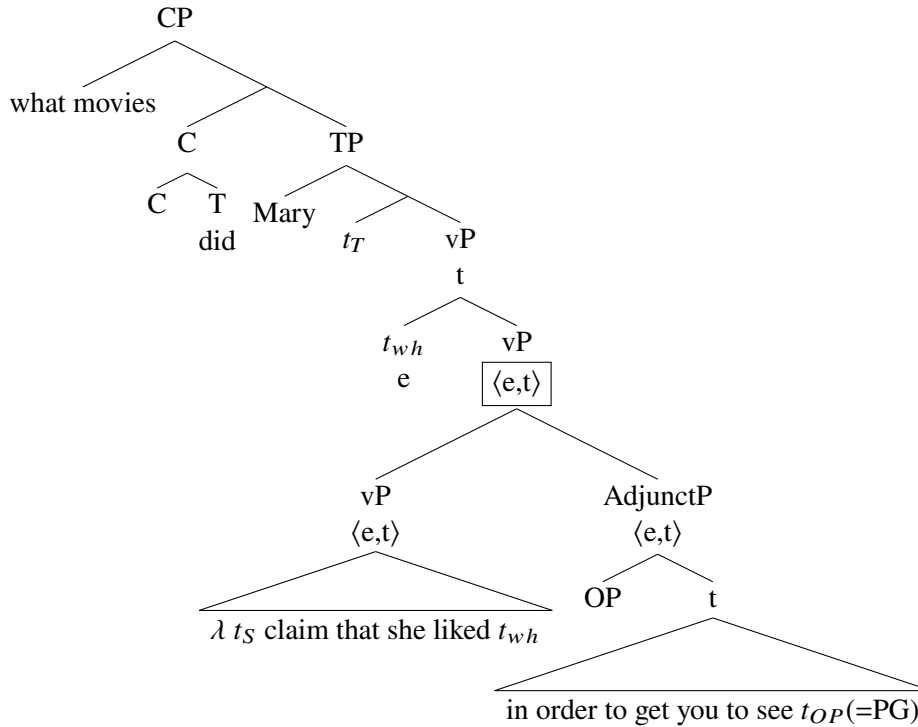
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ATB movement, in addition to PGs. This does not solve the problem, however, since we have not explained why multi-gap structures should require case matching. We leave this puzzle open.

<sup>27</sup>We follow Nissenbaum in assuming that vPs and vP modifiers (such as sentential adjuncts) are type t, modulo A'-movement within them triggering Predicate Abstraction.

it. Thus these two constituents can be merged together and successfully interpreted via Predicate Modification (Heim and Kratzer, 1998), as we see in (59) below.

(59) *Predicate Modification of vP and adjunct island allows a PG to be interpreted*



Here the (boxed) intermediate vP node created by merge of the adjunct to the site of successive-cyclic *wh*-movement is function of type  $\langle e, t \rangle$ . The intermediate type  $e$  trace of the A'-moved nominal phrase saturates the individual argument of this function, 'filling in' both the variable corresponding to its trace in the matrix VP, and the trace of the null operator, which is the PG.

If Russian LBE involves concealed pied-piping of the noun phrase that appears to have been exited by LBE, then such movement should license an argument PG in the same way as completely overt movement of a nominal phrase: in both cases, the moved nominal phrase will serve as the antecedent for the variable corresponding to its original trace, and the trace of the PG-forming null operator's movement within the adjunct. We have seen that this is true.

If Russian LBE involves true extraction from a nominal phrase, our expectations differ. If traces must be type  $e$  (Fox, 1999 fn. 37, Poole, 2017, a.o.) then LBE of an adjective, demonstrative, quantifier, and semantically comparable elements, should cause a type mismatch: as Heim &

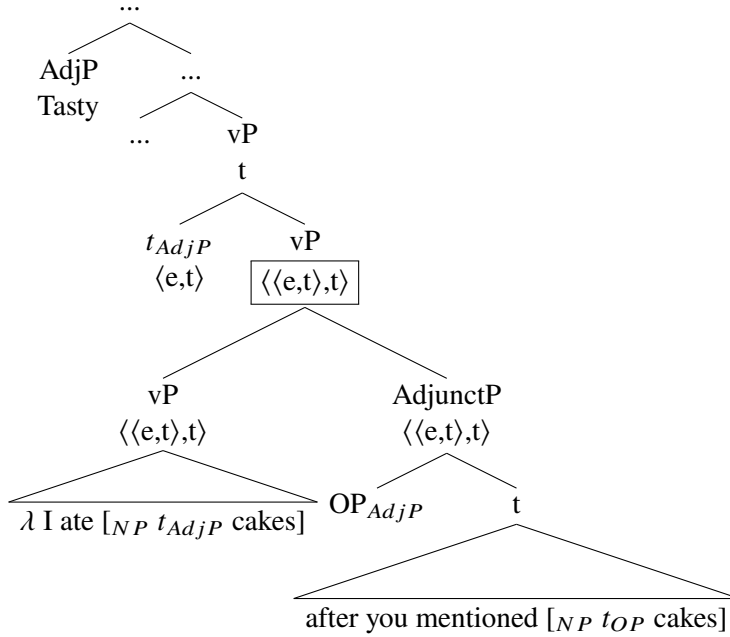
Kratzer (1998: 212) show, a type  $e$  trace left behind by LBE will combine with the  $\langle e, t \rangle$  denotation of NP, yielding the type  $t$  for that NP, which thus cannot be interpreted with the verb (or with a determiner/demonstrative, if present).<sup>28</sup> This semantic problem is avoided if the extracted left branch undergoes syntactic reconstruction to its base position in NP and is thus treated by LF as if it had not moved. However, in this situation we do not expect LBE to be able to license a PG, since that movement will not have an effect on interpretation. We have seen that this is not true, since LBE does license PGs, though with an interpretation that we argue reveals concealed pied-piping.

However, it is not a foregone conclusion that traces must only be type  $e$ . See for instance Lechner (1998, 2019) for arguments for reconstruction via higher-type traces. If LBE could leave a trace of an appropriately high type within NP ( $\langle e, t \rangle$  for adjectives,  $\langle \langle e, t \rangle, e \rangle$  for demonstratives, and  $\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle$  for quantifiers, etc.), then LBE would not result in the type mismatch just described. Further, in this case LBE could license PGs of the right sort: for instance, adjective movement could license an adjective PG. In such a scenario involving high type traces, successive-cyclic movement of the extracted left branch through  $vP$ , and the co-occurring Predicate Abstraction that this movement triggers, must create a  $vP$  node of type  $\langle \tau, t \rangle$ , where  $\tau$  matches the denotation of (the trace of) the extracting element in question. For instance, adjective extraction would need to create a  $vP$  node of type  $\langle \langle e, t \rangle, t \rangle$ . We see this in (60) below, which shows the hypothetical derivation for an adjectival PG. We place English words in this tree for presentational clarity.

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<sup>28</sup>A reviewer asks whether this issue could be resolved by type shifting. As far as we can tell, no standardly assumed type shifter (e.g., see Partee 1986) can make a type  $t$  NP into something interpretable in this context. Chierchia (1998), for instance, has argued that in article-less languages, type-shifting is responsible for turning NPs of type  $\langle e, t \rangle$  into ones of type  $e$ , though this proposal does not address the issue under discussion. The type-shifter that would be needed in this case would be one that turns truth-values into individuals or properties of individuals. Adding such a type-shifter would create an overgeneration problem, since any constituent whose meaning is a truth value could then be shiftable to the meaning of some particular individual/ property of individuals.

(60) *Interpretation of adjective LBE and an adjective PG assuming high-type traces*



As we see in (60), an adjective PG would also require movement of an operator from adjective position in the adjunct, changing the adjunct's type to  $\langle\langle e,t\rangle,t\rangle$  as well. Provided that we grant Predicate Modification the ability to combine not only  $\langle e,t\rangle$  constituents, but instead any two constituents of the same semantic type (Partee and Rooth 1983; Nissenbaum 2000; Nissenbaum and Schwarz 2011), the hypothetical structure in (60) can be interpreted. Such a derivation allows the interpretation of PGs not only by adjective extraction, but also by extraction of elements like quantifiers and demonstratives, though in these cases Predicate Modification will apply respectively to two nodes of type  $\langle\langle\langle e,t\rangle,\langle\langle e,t\rangle,t\rangle\rangle,t\rangle$  for the former, and  $\langle\langle\langle e,t\rangle,e\rangle,t\rangle$  for the latter.

If such a derivation were possible, and if Russian LBE were true extraction, we would expect to find scenarios where an extracted left branch serves as the antecedent for a left branch PG. We have seen that in Russian, this is not possible. Rather, the only context where LBE and PGs successfully interact is when the NP that appears to have been exited by LBE serves as the antecedent for a PG in an argument position. A related fact revealed by our examination of possessor LBE is that an extracted possessor noun phrase cannot license a PG in an argument position either. The fact that left branches never license PGs, but only ever trigger PG-licensing by the noun phrase that they have appeared to exit, is precisely what we expect if Russian LBE involves concealed pied-piping.

## 8 Conclusion

Using PGs as our main diagnostic, we have argued that LBE in Russian is not a product of sub-extraction, but rather involves concealed pied-piping of the entire NP that extraction appears to exit. This result was corroborated by convergent facts about weak crossover and late merge effects involving principle C circumvention. We went on to argue that a distributed deletion account rather than a remnant movement one best fits the Russian facts (though either is in principle compatible with our core observations) and addressed implications for several other related topics.

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