Concealed Pied-Piping in Russian: On Left Branch Extraction, Parasitic Gaps, and Beyond

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Abstract: We use parasitic gaps to examine left branch extraction (LBE) from nominal 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 nominal phrase is moved. Thus we argue that Russian LBE involves concealed pied-piping of an entire nominal phrase, rather than extraction of a left branch. We go on to explore the consequences of this analysis for several other topics.

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.[1] LBE is displacement of an element originating at the left edge of a nominal phrase, as the Russian example (1) below illustrates. LBE is found in many languages of the Slavic family, and beyond (Ross 1967, Corver 1990, 2007, a.o.). In Russian, LBE 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, numeral, possessor, quantifier, demonstrative, etc.) is possible.[2]

[1]Authors listed alphabetically. This paper uses the following glossing conventions: ACC = accusative, ADJ = adjective, CNV = converb, DAT = dative, GEN = genitive, NEG = negation, NOM = nominative, PL = plural, SG = singular, SUBJ = subjunctive, PTCL = particle.

[2]For some Russian speakers LBE is not highly productive. 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 contrasts reported here are sharper for some speakers than others, but the distribution of these contrasts is consistently as we describe.

(1) LBE in Russian

Miluju$_1$ / **ètu**$_1$ / **každuju**$_1$ ty uvidel [$_{NP}$ t_1 košku].
cute / this / every you saw cat

'You saw a cute cat / this cat / every cat.'

It is a puzzle for linguistic theory that while some languages like Russian permit LBE, many others 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 LBE, as (2) shows:

(2) Pied-piping rather than LBE required in English

a. * **Which**$_1$ did you see [t_1 cats]?

b. [**Which cats**]$_1$ did you see t_1?

c. * **Those**$_1$ I've seen [t_1 cats] before.

d. [**Those cats**]$_1$ I've seen t_1 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, Gavruseva 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 nominal phrase that LBE has appeared to exit. In other words, we argue that the structure of Russian examples like (1) above is fundamentally the same as that of the English (2b/d) above, where the pied-piping is overt.

Our main evidence for this proposal about Russian LBE comes from parasitic gaps (PGs: Engdahl 1983, Nissenbaum 2000, Culicover & Postal 2001, a.o.). As we discuss below, a PG is a gap (usually in an island) that is co-referent with a phrase that A′-moves structurally across the constituent that contains that gap. For Russian, our key finding is that LBE and A′-movement of

a full nominal phrase have the same result for PG interpretation, as previewed in (3) below. Here we see PGs in adjunct islands, which presumably attach to a clause-medial position (the VP/vP edge). The interpretation for such PGs is the same whether the entire direct object undergoes *wh*-movement (3a), or whether LBE from it occurs, moving only its *wh*-determiner (3b). In both contexts, the PG is co-referent with the entire object nominal phrase, as the indices in (3) show:[3]

(3) a. PG becomes co-referent with overtly moved nominal phrase[4]

[**Kakoj podarok**]$_1$ Vasja [voznenavidel t_1, [ne obnaruživ PG$_1$ pod ëlkoj]]?
what present Vasya came.to.hate not discover.CNV under pine.tree

'What present did Vasya come to hate, not finding (it) under the New Year tree?'

b. PG becomes co-referent with nominal phrase seemingly exited by LBE

Kakoj$_2$ Vasja [voznenavidel [t_2 **podarok**]$_1$, [ne obnaruživ PG$_1$ pod ëlkoj]]?
what Vasya came.to.hate present not discover.CNV under pine.tree

'What present did Vasya come to hate, not finding (it) under the New Year tree?'

Based on this and several related lines of evidence, we argue that Russian LBE in fact involves pied-piping of the entire nominal phrase in the underlying syntactic structure.

1.1 Background on theories of LBE

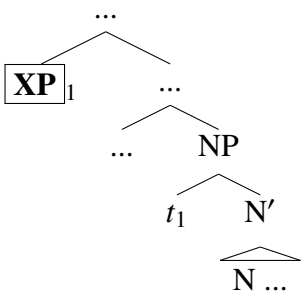
Previous studies on LBE, using data from a variety of languages, have proposed several different analyses for it. For one analysis, which we will term *true extraction*, LBE involves straightforward extraction of a left branch constituent from the containing NP (Ross 1967, Uriagereka 1988, Borsley & Jaworska 1998, Corver 1990, 1992, Wiland 2010, Stjepanović 2010, Bošković 2005, 2016, a.o.).[5] This analysis is illustrated in (4) below, where XP represents the extracted left branch:

[3]Throughout this paper we mark true gaps as '*t*' and parasitic gaps as 'PG'.

[4]Many of our Russian examples mention the 'New Year tree'. This is the secular equivalent of the Christmas tree that is traditional in many nations that were members of the Soviet Union.

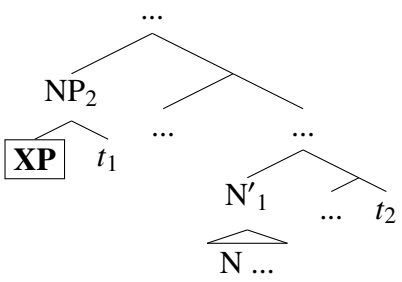
[5]In what follows, for convenience we refer to and diagram Russian nominal phrases as NPs. However, unlike works such as Bošković (2005, 2016), Despić (2013, 2015) and references therein,

(4) True extraction analysis of LBE



Another variety of analysis, 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 previous literature. One is the *remnant movement* approach (Franks & Progovac 1994, Starke 2001, Kayne 2002, Bašic 2008, 2009, Abels 2003, 2012, a.o.), for which LBE is derived by movement of a remnant phrase that has been 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 analysis is *distributed deletion* (Faneslow & Ćavar 2002, Pereltsvaig 2008, Fanselow & Féry 2013, Bošković 2001, 2015, a.o.). For this approach, LBE involves no extraction. Rather, the NP dominating the left branch moves, and 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 pronounced in the head of the movement chain. This is shown in (6), in which the deleted nodes are crossed-out. This analysis is most intuitive given a theory in which movement leaves fully-fledged copies rather than traces (Chomsky 1993, 1995, a.o.).

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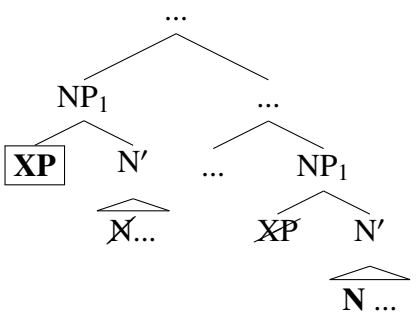
we do not commit to the absence of D in article-less Slavic languages like Russian. In section 5 we suggest that the facts analyzed here may actually indicate that D is present in Russian.

(6) Distributed deletion analysis of LBE



While languages that allow LBE may differ in how they derive it, in this paper we argue that for Russian a concealed pied-piping analysis is correct. Specifically, we will argue in favor of the distributed deletion analysis for Russian, following Pereltsvaig (2008) and Fanselow & Féry (2013).

1.2 PGs as a diagnostic for what moves

As mentioned above, PGs are gaps which are licensed by A′-movement that structurally crosses the constituent containing that gap. For diagnostic purposes, that a given gap is a PG (rather than a true gap formed by movement in the usual way) is clearest when it is in an island. The phrase that A′-moves across the PG-hosting constituent binds the PG, thus making that moved phrase and the PG co-referent. This is exemplified in (7) below. Here an object A′-moves from the complement of V, structurally crossing over a sentential adjunct, and licensing a co-referent PG within that adjunct:

(7) PGs in sentential adjuncts in English

a. [What movies]$_1$ did Mary [claim she liked t_1 [in order to get you to see PG$_1$]]?

b. John's the guy $\varnothing_1$ that they said they'll [hire t_1 [if I criticize PG$_1$ publicly]].
(Nissenbaum 2000, p. 30, ex. 3a)

Such sentential adjuncts are indeed generally islands for movement, as (8) shows:

(8) Adjunct island condition

a. ?? [What movies]$_1$ did Mary [claim she liked The Godfather [in order to get you to see t_1]]]?

b. * John's the guy $\varnothing_1$ that they said they'll [hire me [if I criticize t_1 publicly]].

(Nissenbaum 2000, p. 30, ex. 3a)

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

The works on PGs cited above show that a licensed PG is co-referent with the phrase whose A′-movement crossed over the constituent containing that PG, as we saw in (7). This fact makes salient two predictions about the interaction between Russian LBE and PGs, given our proposal that Russian LBE involves concealed pied-piping of the NP that appears to have been exited by LBE. First, under this proposal we expect LBE in a context with a PG to result in that PG becoming co-referent with the NP that the seemingly displaced left branch has exited, since it is the whole NP that actually moves. In other words, we expect LBE from a given NP, and fully overt movement of that NP, 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 bind a PG. Rather, we should find that the NP that originally contained the seemingly displaced left branch is always the only available PG licenser, since under our analysis LBE does not involve extraction of a left branch. We will show these and more predictions of the concealed pied-piping analysis of Russian LBE are correct. The core data of this paper is compatible with either a remnant movement or distributed deletion analysis of LBE. However, we will argue that the latter analysis is better equipped to explain facts about the types of material that Russian LBE can displace, as well as its scopal properties, as we discuss later on.

1.3 Contents of the paper

Next, section 2 examines Russian PGs in detail and analyzes their interaction with LBE. This section also provides supporting evidence from the interaction of LBE with weak crossover, and

discusses some relevant previous research. Section 3 provides further evidence for our proposals from late merge effects (Lebeaux 1988, a.o.) involving principle C. Section 4 argues in favor of a distributed deletion analysis of Russian LBE. Section 5 connects this paper's results to the debate about the relationship between LBE and the presence/absence of D. Section 6 relates our findings to additional facts about constraints on multiple LBE. Section 7 situates our proposals in the context of an explicit syntactic/semantic theory of PGs, building on Nissenbaum (2000). Section 8 concludes.

2 The facts about the interaction between PGs and LBE in Russian

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 & 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 dropped NP.

(9) Russian object drop (most natural for NPs salient in the discourse)

A: Ty kupila tort?
you bought cake

'Did you buy a cake?'

B: Da, ja kupila **(tort)**.
yes I bought **(cake)**

'Yes, I bought (a cake).'

Since here we will pay special attention to PGs in object positions, we must establish what distinguishes PGs from dropped objects before we can safely use PGs to examine Russian LBE.

Ivlieva (2007) notes that Russian PGs are most natural in perfective contexts. We observe that both perfectivity and negation (seen in many of Ivlieva's PG examples) degrade object drop, as do certain verbs like *obnaružit'* ('discover') or *vzyat'* ('take'). These factors are combined in (10) to create sentential adjuncts that require overt objects. (We mark attempted object drop with '__'.)

(10) Adjunct clauses with undroppable objects in Russian

a. Vasja voznenavidel [ètot podarok]$_1$, [ne obnaruživ **ego$_1$/*__$_1$** pod ëlkoj].
Vasya came.to.hate this present, not discover.CNV him under pine.tree

'Vasya came to hate this present, not finding it under the New Year tree.'

b. Lena zabyla prinesti [rovno odin dogovor]$_1$, [ne vzyav ego$_1$/*__$_1$ u buxgaltera].
Lena forgot to.bring exactly one contract NEG take.CNV him from accountant

'Lena forgot to bring exactly one contract, not having taken it from the accountant.'

c. Vera ne nadela [mamino plat'e]$_1$, [ne obnaruživ [ego$_1$/*__$_1$] v škafu].
Vera NEG put.on mother's dress NEG discover.CNV him in wardrobe

'Vera didn't put on her mother's dress, not having found it in the wardrobe.'

Since object drop in such sentences is unavailable, and since movement from the sentential adjuncts in question is degraded as (11) below shows, we have therefore identified an appropriate environment in which to diagnose the possibility of Russian PGs.

(11) Adjunct island in Russian

a. * **[Kakoj podarok]**$_1$ Vasja voznenavidel Mašu, [ne obnaruživ t_1 pod ëlkoj]?
what present Vasya came.to.hate Masha, not discover.CNV under pine.tree

'What present did Vasya come to hate Masha, not finding under the New Year tree?'

b. * [**Č'ë plat'e**]$_1$ Vera nadela svojë plat'je, [ne obnaruživ t_1 v škafu]?
whose dress Vera put.on self's dress NEG discover.CNV 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 an extra gap in the adjunct, in precisely the fashion that is characteristic of a PG. This

PG-licensing is achieved by interrogative *wh*-movement in (12a-b), scrambling in (12c),[6] and relativization in (12d). Since PG-licensing is a general trait of A′-movements (Culicover & Postal 2001, a.o.), the possibility of PG-licensing in all of these contexts is precisely what we expect.

(12) Successful PG-licensing in Russian

a. **[Kakoj podarok]**$_1$ Vasja voznenavidel t_1, [ne obnaruživ PG$_1$ pod ëlkoj]?
what present Vasya came.to.hate not discover.CNV under pine.tree
'What present did Vasya come to hate, not finding under the New Year tree?'

b. [**Č'ë plat'e**]$_1$ Vera ne nadela t_1, [ne obnaruživ PG$_1$ v škafu]?
whose dress Vera NEG put.on NEG discover.CNV in wardrobe
'Whose dress did Vera not put on, not having found in the wardrobe?'

c. [**Rovno odin dogovor**]$_1$ Lena zabyla prinesti t_1, [ne vzyav PG$_1$ u buxgaltera].
exactly one contract Lena forgot to.bring NEG take.CNV from accountant
'Lena forgot to bring exactly one contract, not having taken from the accountant.'

[6] 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′-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′-movement.

We have not had the opportunity to test whether more local movements can license PGs in Russian. Given the generalization in the literature that only A′-movement 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-movement can sometimes license PGs, such as Pylkkänen (2008) and Ershova (2019, 2021). Additionally, Nissenbaum (2000, p. 31) reports examples of local scrambling licensing PGs in German, Hindi, and Icelandic. Whether a given PG-licensing movement is A or A′ is not fundamental to this paper's arguments, since our core concern is the constituency of what moves when LBE occurs.

d. Vasja našël podarok, [**kotoryj**$_1$ ja voznenavidel t_1, [ne obnaruživ PG$_1$ pod
Vasya found present, which I came.to.hate not discover.CNV under
ëlkoj]]
pine.tree

'Vasya found the present that I came to hate, not having found under the New Year tree.'

We have thus established the existence of PGs in Russian. Next, we examine the interaction between PGs and LBE, which we argue reveals that Russian LBE involves concealed pied-piping.[7]

[7]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 (as usual for ellipsis), though this is not so for PG configurations (i):

(i) Context: The speaker comes in and sighs, saying out-of-the-blue...

[**Rovno odin dogovor**]$_1$ Lena zabyla prinesti t_1, [ne vzyav PG$_1$ u buxgaltera].
exactly one contract Lena forgot to.bring NEG take.CNV 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 (11), 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 a PG configuration, which allows, for instance, a direct object PG along with an overt indirect object (ii):

(ii) [**Č'ë plat'e**]$_1$ Vera nadela t_1, [ne otdav PG$_1$ **Maše** na večerinke]?
whose dress Vera put.on NEG give.CNV 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 direct objects occurs rather than overt movement of entire object NPs. In (13), we see the same result for PG interpretation as we saw 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 object licenses PG with same interpretation as full object movement

a. **Kakoj**$_2$ Vasja voznenavidel [t_2 **podarok**]$_1$, [ne obnaruživ PG$_1$ pod jolkoj]?
what Vasya came.to.hate [present], not discover.CNV under pine.tree

'What present did Vasya come to hate, not finding (it) under the New Year tree?'

b. **Č'ë**$_2$ Vera ne nadela [t_2 **plat'e**]$_1$, [ne obnaruživ PG$_1$ v škafu]?
whose Vera NEG put.on dress NEG discover.CNV in wardrobe

'Whose dress did Vera not put on, not having found (it) in the wardrobe?'

c. [**Rovno odin**]$_2$ Lena zabyla prinesti [t_2 **dogovor**]$_1$, [ne vzyav PG$_1$ u buxgaltera].
exactly one Lena forgot to.bring contract NEG take.CNV from accountant

'Lena forgot to bring exactly one contract, not having taken (it) from the accountant.'

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

(14) a. PG with adjective LBE

Doroguščij$_2$ Vasja voznenavidel [t_2 **podarok**]$_1$, [ne obnaruživ PG$_1$ pod ëlkoj].
very.expensive Vasya came.to.hate [present], not discover.CNV under pine.tree

'Vasya came to hate the expensive present, not finding (it) under the New Year tree.'

b. PG with 'how many' LBE

Skol'ko$_2$ Vasja voznenavidel [t_2 podarkov]$_1$, [ne obnaruživ PG$_1$ pod ëlkoj]?
how.many Vasya came.to.hate [presents], not discover.CNV under pine.tree

'How many presents did Vasya come to hate, not finding (them) under the New Year tree?'

c. PG with quantifier LBE

? **Každyj**$_2$ Vasja voznenavidel [t_2 podarok]$_1$, [ne obnaruživ PG$_1$ pod ëlkoj].
each Vasya came.to.hate [present], not discover.CNV under pine.tree

'Vasya came to hate every present, not finding (it) under the New Year tree.'

d. PG with demonstrative LBE

? **Ètot**$_2$ Vasja voznenavidel [t_2 podarok]$_1$, [ne obnaruživ PG$_1$ pod ëlkoj].
this Vasya came.to.hate [present], not discover.CNV under pine.tree

'Vasya came to hate this present, not finding (it) under the New Year tree.'

Recall that a licensed PG is normally co-referent with the phrase whose A′-movement crossed over the constituent containing that 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.

One 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.[8] However, this analysis does not explain the fact that in examples like (10) above, we see PGs that are unlicensed in the absence of A′-movement, as (15) below shows again. If string-vacuous movement of an object were generally available to license a PG, such movement should be available to license the PG in examples like (15):[9]

[8]Short movement of the object to license the PG, followed by LBE, would have the form in (i):

(i) [$_{CP}$ XP$_2$ S T [$_{vP}$ v-V [$_{NP}$ t_2 N]$_1$ [t_1 [$_{AdjunctP}$ ... PG$_1$]]]]

[9]A reviewer suggests that it is possible that such movement is disallowed unless LBE will later occur, analogous to the *smuggling* analysis of the passive (Collins 2005) in which the sub-part of

(15) Adjunct clause with undroppable object in Russian

Vasja voznenavidel [ètot podarok]$_1$, [ne obnaruživ **ego$_1$/*PG$_1$** pod ëlkoj].
Vasya came.to.hate this present, not discover.CNV him under pine.tree

'Vasya came to hate this present, not finding it under the New Year tree.'

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:[10]

(16) Scenario: Vasya thinks that Masha took the present from under the New Year tree

a. * Vasja [xotel, [ne obnaruživ PG$_1$ pod ëlkoj], [čtoby Maša vernula
Vasya wanted not discover.CNV under pine.tree that.SUBJ Masha returned
[ètot/Petin podarok]$_1$]].
this/Peter's present

'Vasya wanted that Masha would return this present, not having found (it) under the New Year tree.'

b. **Kakoj$_2$/čej$_2$** Vasja [xotel, [ne obnaruživ PG$_1$ pod ëlkoj], [čtoby Maša
what/whose Vasya wanted not discover.CNV under pine.tree that.SUBJ Masha
vernula [t_2 **podarok**]$_1$]]?
returned present

'What/whose present did Vasya want that Masha would return, not having found (it) under the New Year tree?'

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the vP that contains the theme DP only moves in situations where that DP will later be moved out of it to reach the surface subject position. However, as the reviewer notes, our concealed pied-piping analysis offers a simpler account of the PG facts.

[10]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.

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

2.2 Convergent evidence from weak crossover

Here we provide additional evidence for concealed pied-piping in Russian from the interaction between LBE and *weak crossover*—an effect whereby movement of a phrase across a co-indexed pronoun to its left results in degradation (Postal 1971, Lasnik & Stowell 1991, Safir 2017, a.o.).[11] Weak crossover is relevant to our analysis because it is interestingly in complementary distribution with PGs, as previous literature has observed. That is, when a pronoun that triggers a weak crossover violation is replaced with a PG, the result is acceptable, as (17) below shows for English:

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

a. That's the book which$_1$, [before returning PG$_1$/*it$_1$ to the library], I scribbled profanities in t_1.

b. Tell me [which girl]$_1$ you sent [every relative of PG$_1$/*her$_1$] [a cool picture of t_1].

In order to examine weak crossover in the Russian PG contexts shown 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.[12] The adjunct in (18) did not tolerate object drop when linearized rightward as in (10a), but does here:

[11] 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.

[12] 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. We will not analyze this fact here,

(18) Dropped object in left-adjoined sentential adjunct

Vasja [ne obnaruživ __$_1$ pod ëlkoj] voznenavidel [etot podarok]$_1$.
Vasya not discover.CNV under pine.tree came.to.hate this present

'Vasya came to hate this present, not having found it under the New Year tree.'

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

[Kakuju knigu]$_1$ ty, [ne čitaja __$_1$/*eë$_1$], vybrosil t_1?
which book you not read it threw.away

'Which book did you throw away without reading (*it)?'

(Ivlieva 2007, p. 2, ex. 5)

Ivlieva argues that the acceptable variant of (19) contains a PG and not a null pronoun, for the following reason. As we can see in this example, an overt pronoun in object position is degraded due to weak crossover. If the variant of this example with no overt material in object position involved a null pronoun, we would expect that pronoun to be subject to weak crossover as well, despite its covertness. 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 (17).

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 (20a) and (20b) form a minimal pair. Example (20a) 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 (20b) differs from (20a) only in performing LBE rather than overt movement of the full NP, but in (20b) as well, the pronoun is unacceptable.

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however, since for the purposes of this paper we only require a descriptive level of understanding of object drop, in order to prevent it from confounding our investigation of Russian PGs.

(20) Movement of full NP versus LBE: Same results for PGs and weak crossover

a. [**Kakuju knigu**]$_1$ ty, ne pročitav PG$_1$/*eë$_1$, vybrosila t_1?
which book you NEG read.CNV her threw.out
'Which book did you throw out, without having read (*it)?'

b. **Kakuju**$_2$ ty, ne pročitav PG$_1$/*eë$_1$, vybrosila [t_2 **knigu**]$_1$?
which you NEG read.CNV her threw.out book
'Which book did you throw out, without having read (*it)?'

This is precisely what we expect under the concealed pied-piping analysis: when LBE occurs, the entire NP that LBE has appeared to exit moves in the corresponding syntactic structure, and if that NP's movement crosses over a co-indexed pronoun, a weak crossover violation occurs. Examples (21-23) provide additional evidence that Russian LBE triggers weak crossover in the predicted way:

(21) a. [**Novuju knigu**]$_1$ on, ne pročitav PG$_1$/*eë$_1$, vybrosil t_1.
new book he NEG read.CNV her threw.out
'He threw out a new book, without having read (*it).'

b. **Novuju**$_2$ on, ne pročitav PG$_1$/*eë$_1$, vybrosil [t_2 **knigu**]$_1$.
new he NEG read.CNV her threw.out book
'He threw out a new book, without having read (*it).'

(22) a. [**Kotoruju kružku**]$_1$ Mitja, ne otodvinuv PG$_1$/??eë$_1$ ot kraja,
which cup Mitya NEG move.away.CNV her from edge
oprokinul t_1?
knocked.down
'Which cup did Mitya knock down, not having moved (??it) away from the edge?'

b. **Kotoruju**$_2$ Mitja, ne otodvinuv PG$_1$/??eë$_1$ ot kraja, oprokinul [t_2
which Mitya NEG move.away.CNV her from edge knocked.down
kružku]$_1$?
cup
'Which cup did Mitya knock down, not having moved (??it) away from the edge?'

(23) a. [**Č'ë plat'e**]$_1$ Vera, ne obnaruživ PG$_1$/*ego$_1$ v škafu, ne nadela t_1?
whose dress Vera NEG discover.CNV him in wardrobe NEG put.on
'Whose dress did Vera not put on, not having found (*it) in the wardrobe?'

b. **Č'ë**$_2$ Vera, ne obnaruživ PG$_1$/*ego$_1$ v **škafu**, ne nadela [t_2 plat'e]$_1$?
whose Vera NEG discover.CNV him 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. We argued that this fact reveals evidence for a concealed pied-piping derivation for 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 extraction. A view of this sort is taken by Bošković (2001, 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 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. The fact that the weak crossover effect does arise in these examples indicates that concealed pied-piping is the only option for Russian LBE.[13]

[13]A reviewer asks whether there are cases of true extraction from NP which do not cause a weak crossover violation, unlike what we have shown for LBE. We suspect that 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 extraction, unlike LBE, which must involve concealed pied-piping:

(i) [Kakoj teorii]$_1$ ty, [ne produmav **eë**$_2$], obsudil [gipotezu t_1]$_2$.
what.kind theory you NEG think.through.CNV she discussed hypothesis
'What kind of theory did you discuss a hypothesis$_2$ of without thinking it$_2$ through?'

2.3 Left branches cannot license PGs

If LBE as true extraction were indeed an option in Russian, we would expect to find configurations where an element displaced by LBE serves as the licenser of a PG that is co-indexed with it. In this section, 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 an element 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.

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 the majority of left branches in Russian) 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 singular NP with numeral 'three': No movement or PG

Ja dostal [**tri** **pončika**]$_1$ s verxnej polki, [ne obnaruživ ix$_1$/*PG$_1$ na nižnej].
I got three doughnut.GEN.SG from higher shelf NEG discover.CNV them on lower.

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

Example (25) below is a minimal pair with (24), in which LBE of the numeral occurs. Here the PG in the object position of the adjunct becomes co-referent with the NP that LBE appears to exit, in the manner characteristic of concealed pied-piping.

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

Tri$_2$ ja dostal [t_2 **pončika**]$_1$ s verxnej polki, [ne obnaruživ PG$_1$ na nižnej].
three I got doughnut.GEN.SG from higher shelf NEG discover.CNV on 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 for the fact that (26) attempts a numeral PG in a left branch position of the object NP *keksa* ('muffin') in the adjunct. In (26) the presence of the intended PG is unambiguous, because the NP *keksa* in the adjunct here bears the same genitive singular marking that the numeral *tri* would typically assign to it. Nevertheless, (26) cannot have a reading indicative of numeral LBE licensing a corresponding numeral left branch PG.

(26) Numeral LBE cannot license a numeral PG

Tri$_2$ ja dostal [t_2 **pončika**]$_1$ s verxnej polki, [ne obnaruživ [*PG$_2$ keksa] na nižnej.
three I got doughnut.GEN.SG from higher shelf NEG discover.CNV muffin.GEN.SG on lower

* Reading with 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.'

Notice that example (26) is acceptable under an interpretation where there is no PG. In this situation, genitive marking on the object NP in the adjunct is licensed by the presence of negation via the Slavic phenomenon known as *genitive of negation*. This term refers to 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 it has some semantic correlates. See Harves (2013) and citations therein for more information. Importantly for our

purposes, 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 totally unacceptable, as (27) shows.[14]

[14]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$_1$ Sabina zagruzila [t_1 fajlov], ne obnaruživ [PG$_1$ statej pro
how.many Sabine uploaded files NEG discover.CNV paper.GEN.PL about
svjazyvanie]?
binding

'What number of files did Sabina upload, after not having found that number of papers on binding?' (Grammatical under an interpretation with no PG)

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

(ii) Skol'ko$_1$ Sabina zagruzila [t_1 fajlov]$_2$, ne obnaruživ PG$_2$ na sajte?
how.many Sabine uploaded files NEG discover.CNV on website

'What number of files did Sabine upload, after not having found them 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 devuški] čitajut knigi, **skol'ko$_1$** ja xoču, štoby [PG$_1$ mal'čikov] smotreli
as.many PTCL girls read books as.many I want that boys watch
[t_1 fil'mov].
films

'As many girls read books as I want boys to watch films.'

(27) Numeral LBE cannot license a numeral PG in an NP (Genitive of negation unavailable)

* Tri$_2$ ja dostal [t_2 pončika]$_1$ s verxnej polki, [obnaruživ [PG$_2$
three I got doughnut.GEN.SG from higher shelf discover.CNV
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 extraction from NP. Under this analysis, since left branches do not in fact move in isolation in Russian, we accurately predict that they will be unable to serve as PG licensers.

2.3.2 PGs and possessor LBE

Previous literature has argued that PGs must occur in NP positions (Culicover & Postal 2001), though exceptions to this tendency are reported.[15] If Russian is also a language in which PGs occur only in NP positions, then even if it allows true extraction of numerals, licensing of a numeral PG will always fail. If numeral PGs are thus always banned due to an independent constraint, then numeral PGs cannot be used as a test for the nature of LBE. However, we can avoid this confound by instead examining possessor LBE: Since possessors are NPs, if true extraction of left branches is possible, then when LBE applies to a possessor it should be capable of licensing a PG either in a possessor position, or in a usual argument position. As we will see next, this is not possible: The PG facts for possessor LBE are instead precisely what the concealed pied-piping analysis predicts.

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 just as typical NPs do, as we see in

[15]For instance, Engdahl (1983) reports that Scandinavian languages allow PP and adjective PGs.

(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 čital **moju**$_1$ stat'ju pro **sebja**$_1$
he read my article about self.ACC
'He read my$_1$ article about myself$_1$'

(Rappaport To appear, p. 12, ex. 14b)

b. On$_1$ kupil **avtorskij**$_2$ èkzempljar u **sebja**$_{1/*2}$
he bought author.ADJ copy from self.ACC
'He$_1$ bought an author$_2$'s copy at his$_{1/*2}$ own place'

(Rappaport To appear, p. 12, ex. 14d)

Rappaport also argues that such possessors bear genitive case, which is expected for possessor NPs, though not adjectives. One piece of evidence he provides for this proposal is that such possessors can be coordinated with clearly 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'ët kak **muxu**
He **me.ACC** will.kill like **fly.ACC**
'He will kill me like a fly'

b. **Vaša** pervaja zadača, kak **Evropejcev**, budet...
you.**GEN.PL** first task.NOM as European.**GEN.PL** will.be...
'Your first task, as Europeans, will be...'

(Rappaport To appear, p. 12, ex. 15)

If we accept Rappaport's arguments that Russian pre-nominal possessors are typical referential case-assigned NPs, then we expect such elements to potentially act as PG-licensers when extracted.

Before examining the intreraction 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 considerations 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 matrix object is scrambled, which licenses the PG in the adjunct. The matrix object is not genitive, but since genitive of negation is merely optional, case matching between the matrix object and the PG succeeds here.

(30) Movement of full NP licensing PG

[Eë/ego otkrytku]$_1$ Lena ne vzjala s soboj t_1, [ne obnaruživ PG$_1$ v komnate].
her/his card Lena NEG took with self NEG discover.CNV in room
'Lena didn't take [her/his card]$_1$ with her, not having found (it$_1$) in the room.'

Example (31) below is a minimal pair with (30). Here instead of movement of the object NP, LBE of its possessor occurs. We see here that the possessor cannot bind the object PG. Rather, the PG is interpreted with a reading indicative of concealed pied-piping. That is, (30) and (31) have the same PG interpretation. Since the verb in the adjunct of (31) is negated, this PG is in a position compatible with genitive case, and thus can match the possessor's case. Thus it should be possible for a genitive possessor to license the PG in (31), if that possessor had truly been extracted.

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

Eë$_2$/ego$_2$ Lena ne vzjala s soboj [t_2 otkrytku]$_1$, [ne obnaruživ PG$_1$/$_{*2}$ v komnate].
her/his Lena NEG took with self card NEG discover.CNV in room

'Lena didn't take [her$_2$/his$_2$ card]$_1$ with her, not having found it$_1$/*her$_2$/*him$_2$ 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 from the matrix object occurs as in (31), but this process fails to result in a sentence where the displaced possessor is co-indexed with the possessor PG. The resulting string is acceptable under a reading in which there is no PG, however.

(32) Possessor LBE cannot license possessor PG

Eë$_2$/ego$_2$ Lena otrugala [t_2 sestru], [ne obnaruživ [*PG$_2$ otkrytku] v komnate]
her/his Lena scolded sister NEG discover.CNV card in room

* 'Lena scolded her$_2$/his$_2$ sister, not having found her$_2$/his$_2$ card in the room'

✓ 'Lena scolded her/his sister, not having found the card in the room.'

Importantly, the fact that the displaced possessor cannot serve as the licenser of 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 inside the NP where it originates, and thus will never be able to license a PG. Note that the pronouns used as possessors in (31-32) have precisely the same case morphology when used either as possessors or as objects of negated verbs, as we see in (33) below. For this reason, it is clear that the failure of PG-licensing by a displaced possessor in (31-32) is not due to a case matching violation, or something like a morphological mismatch.

(33) a. Lena obnaružila [**eë/ego** sestru] tam.
Lena discover her.GEN/his.GEN sister there
'Lena found her/his sister there.'

b. Lena ne obnaružila **eë/ego** tam.
Lena NEG find her/him there
'Lena didn't find her/him there.'

Franks (1992) observes that a PG and its licensing phrase must be parallel in their theta roles in Russian. While a configuration like (31) that attempts PG-licensing in an object position by LBE of a possessor could 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.

2.4 Other research combining PGs and extraction from NP

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 extraction from NP in the context of PGs. Corver (1990), for instance, examines LBE of *wat* ('what') in the Dutch *wat-voor* construction (34a), which he shows cannot license a left branch PG in another DP (34b), in contrast to movement of *wat* from argument position, which can license an argument PG (34c).

(34) a. Wat$_1$ heeft Jo [$_{DP}$ t_1 voor boeken] gekockt?
what has Joe for books bought?
'What sort of books has Joe bought?'

(Dutch: Corver 1990, p. 138, ex. 34a)

b. * Wat$_1$ heeft Jo [zonder [$_{DP}$ PG$_1$ voor tijdschriften] te lezen] [t_1 voor boeken]
what has Joe without for magazines to read for books
weggegooid?
thrown.away?

(Dutch: Corver 1990, p. 139, ex. 36)

c. Wat$_1$ heeft Jo [zonder [PG$_1$ te lezen]] t_1 weggegooid?
what has Joe without to read thrown.away?
'What did Joe throw away without reading?'

(Dutch: Corver 1990, p. 139, ex. 37)

The only other work we know to have examined LBE and PGs together is Davis (2019, 2020, 2021), who studies a form of possessor extraction in colloquial English. English is typically regarded as an example of a non-LBE language. Bošković (2005, 2016) and related work argues that LBE in English and in comparable languages is blocked by the presence of D (for reasons described in section 5 below). Davis points out that if English possessors are generated in the specifier of the possessive D [*'s*] (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 some English speakers permit. 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 (35):

(35) PG-licensing by possessor LBE in colloquial English

a. Who$_1$ do you think [t_1's research] is good, [despite not thinking PG$_1$'s paintings are nice]?

b. This is the guy [who$_1$ I said [t_1's shoes] I liked [after talking to PG$_1$ today]].
(Davis 2019, p. 7, ex. 22)

Importantly, (35) 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 (35), by contrast, the extracted possessor itself licenses a possessor PG (35a) and a direct object PG (35b), neither of which is possible for Russian LBE (31-32).

2.4.1 Typological predictions

We will leave the exploration of PGs and LBE in other languages to future work. However, before moving on, we note that the core proposal of this paper makes straightforward typological predictions about how LBE and PGs should interact cross-linguistically, as stated in (36):

(36) 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 2 and 3, for which some instances of LBE are true extraction, and others involve concealed pied-piping (each with its characteristic PG interaction).

Standard English, like all languages that wholly lack LBE, is type 1. The colloquial English variety studied by Davis 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.[16] 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 the above typology sets the stage for further cross-linguistic work.

3 Convergent evidence from late merge and principle C circumvention

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

[16]If in a hypothetical type 4 language we find a given instance of LBE that is capable of licensing either left branch PGs or full argument PGs, the proposals of this paper predict that the first sort of PG licensing occurs when that LBE is formed by true extraction, whereas the second sort of PG licensing occurs when that LBE is only apparent due to concealed pied-piping. However, a reviewer points out that in such a context where both sorts of PGs are possible, it is conceivable (unless independent diagnostics show otherwise) that the language in question is simply more flexible about PG licensing, but does not actually have two separate LBE derivations. For this reason, if such a language is identified it would be necessary to carefully examine both its independent prerequisites for PG licensing, and the traits of its LBE constructions, before drawing a concrete conclusion about its LBE + PG interactions. Since for the moment such a language remains hypothetical, we will leave further discussion of this possibility to future research.

1988, Stepanov 2001, Takahashi & Hulsey 2009, a.o.). These facts will show us yet another way in which Russian 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 (37) below hold. Notice that in the unacceptable (37a), 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 (37b) shows, a comparable sentence where the relevant R-expression is in a relative clause of the moved *wh*-phrase is acceptable:

(37) Principle C in complement versus adjunct of A′-moved phrase

a. Principle C applies in complement of moved phrase

* [Which rumor [that John$_2$ ate all the cakes]]$_1$ did he$_2$ deny t_1?

b. No principle C violation in adjunct of moved phrase

[Which cakes [that John$_2$ ate]]$_1$ did he$_2$ find t_1 very tasty?

For Lebeaux, in (37a) 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 R-expression it contains incurs a principle C violation. In contrast, because relative clauses are adjuncts, the relative clause in (37b) can be externally merged after its host DP moves over the subject. In this situation the R-expression in the relative clause was never c-commanded by the co-referential matrix subject, and thus there is no principle C violation.

In Russian, like English, principle C normally applies, as we see in (38) below:

(38) Principle C in Russian

a. **Nadja**$_1$ privezla mne škatulku, kotoruju **ona**$_1$ sdelala sama.
Nadya brought me jewelry.box which she made herself
'Nadya$_1$ brought me a jewelry box which she$_1$ made herself.'

b. * **Ona**$_1$ privezla mne škatulku, kotoruju **Nadja**$_1$ sdelala sama.
she brought me jewelry.box which Nadya made herself
'She$_1$ brought me a jewelry box which Nadya$_1$ 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 (39):

(39) No principle C avoidance for complement of A′-moved phrase in Russian

* [Kotoruju fotografiju **Vasi**$_1$]$_2$ **on**$_1$ kupil t_2 ?
which photo.ACC Vasya.GEN he bought

'Which photo [of Vasya$_1$] did he$_1$ buy?'

In contrast, an R-expression in a relative clause of the moved phrase doesn't incur a principle C violation, as we see in (40) 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. This indicates that in Russian as well, adjuncts can merge late:[17]

(40) Principle C avoided by relative clause of A′-moved phrase in Russian

a. ? [Škatulku, [kotoruju **Nadja**$_1$ sdelala sama]]$_2$, **ona**$_1$ privezla mne t_2.
jewelry.box which Nadya made herself she brought me

'A jewelry box, which Nadya$_1$ made herself, she$_1$ brought me.'

[17]Lebeaux's asymmetry for principle C avoidance with adjuncts versus arguments/complements has been independently observed in Russian by Bailyn (2001, 2012). A reviewer points out that Lebeaux's asymmetry has been challenged by works such as Adger et al. (2017), Bruening & Al Khalaf (2019), and Wierzba et al. (To appear). 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 is inapplicable to the grammar of some Russian speakers.

b. ? [Č'ju kartinu [kotoruju **Vasja**$_1$ kupil]]$_2$ **on**$_1$ voznenavidel t_2?
whose picture that Vasya bought he came.to.hate
'Whose picture that Vasya$_1$ bought did he$_1$ come to hate?'

Following Lebeaux and related work, this pattern of principle C avoidance depends on movement creating a high position to which late 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 (41) below, this is indeed possible. LBE in (41) facilitates the inclusion of a relative clause containing an NP co-indexed with the matrix subject, for which no principle C violation occurs:

(41) LBE with principle C avoiding relative clause in Russian

a. ? Kakuju$_2$, [kotoruju **Nadja**$_1$ sdelala sama], **ona**$_1$ privezla mne [t_2 škatulku]?
what.kind which Nadya made herself she brought me jewelry.box
'What jewelry box, which Nadya$_1$ made herself, did she$_1$ bring me?'

b. ? Doroguščuju$_2$, [kotoruju **Nadja**$_1$ sdelala sama], **ona**$_1$ privezla mne [t_2 škatulku]?
very.expensive which Nadya made herself she brought me jewelry.box
'The very expensive jewelry box, which Nadya$_1$ made herself, she$_1$ brought me.'

c. ? Ètu$_2$ [kotoruju **Vasja**$_1$ kupil] **on**$_1$ voznenavidel [t_2 kartinu].
this that Vasya bought he came.to.hate picture
'This picture, that Vasya$_1$ bought, he$_1$ came to hate.'

d. ? Č'ju$_2$ [kotoruju **Vasja**$_1$ kupil] **on**$_1$ voznenavidel [t_2 kartinu]?
whose that Vasya bought he came.to.hate picture
'Whose picture [that Vasya$_1$ bought] did he$_1$ come to hate?'

As expected, such configurations can include a PG-bearing adjunct clause, as in (42). The PG here is interpreted in the way we predict given the concealed pied-piping analysis of LBE:

(42) LBE + late merge + PG

? Kakuju$_2$, [kotoruju Nadja$_1$ sdelala sama], ona$_1$ privezla mne [t_2 škatulku]$_3$, [ne
what.kind which Nadya made herself she brought me jewelry.box NEG
poterjav PG$_3$ v doroge]?
lose.CNV in road

'What jewelry box, which Nadya$_1$ made herself, did she$_1$ bring me without losing (it) on the way?'

The fact that overt movement of an NP (40) and LBE (41-42) both allow late merge of a relative clause is predicted, given our proposal that the syntax of these scenarios is in essence the same.

We do not expect such patterns to emerge from true extraction of a left branch along with extraction of a relative clause from the same NP: if the relative clauses in (41-42) 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.[18]

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 (43) shows:

[18]Given that the relative clauses in (41-42) 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 an NP: relative clauses are adjuncts interpreted by Predicate Modification with NP (both being of type <e,t>, Heim & Kratzer 1998), but this interpretive rule could not apply if the relative clauses in (41-42) were not in fact attached to an NP.

(43) Principle C avoiding relative clause displacement with PG

? [Kotoruju Nadja$_3$ sdelala sama]$_2$, ona$_3$ privezla mne [škatulku t_2]$_1$ (ne poterjav
which Nadya made herself she brought me jewelry.box NEG lose.CNV
PG$_1$ v doroge).
in road

'Nadya$_3$ brought me a jewelry box which she$_3$ made herself, without losing (it) on her way.'

This fact is a challenge for our proposal. If principle C avoidance stems from late merger, then we must ask what the relative clause in (43) late merges to. Based on the fact that the object NP in (43) 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.

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. However, we have seen in section 2 that typically PG-licensing fails unless an overt A′-movement occurs. While there is precedent for PG-licensing by covert movement in Russian (Ivlieva 2007) and other languages,[19] we do not have a concrete proposal about what is responsible for restricting it. 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 (43) has been covertly topicalized, but further work is necessary to test this hypothesis. It is also conceivable that covert movement applies in (43) 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.

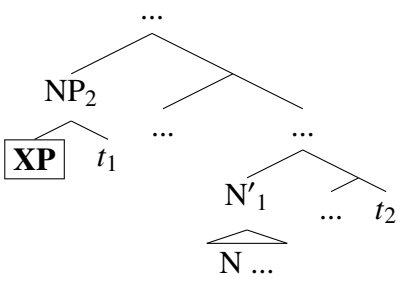
[19]Beyond Ivlieva (2007), Nissenbaum (2000) shows that covert *wh*-movement in English can license PGs in specific circumstances, and Branan & Sulemana (2018) argue for the existence of PG-licensing by covert *wh*-movement in Bùlì.

This concludes our arguments for the proposal that LBE in Russian is derived by concealed pied-piping. In the next section, we discuss the mechanism by which concealed pied-piping is achieved. The remainder of the paper explores some additional consequences and related topics.

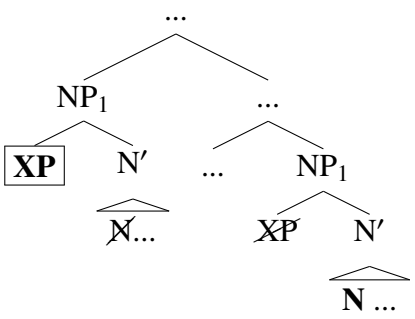
4 Distributed deletion rather than remnant movement

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

(44) a. LBE as remnant movement



b. LBE as distributed deletion



The facts shown so far in this paper 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 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 & Féry (2013). Fanselow and Féry argue that the prosodic character of LBE and its interaction with intervention effects 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 is that it can displace material that is not obviously a constituent, such as a preposition and adjective (45):

(45) Non-constituent LBE

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

'It is against the Soviet regime that he demonstrated.'

(Pereltsvaig 2008, p. 9, ex. 4a)

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 (46):

(46) LBE stranding non-constituent material in Russian

a. **Nezlobivyj** u nego **soveršenno xarakter**.
kindhearted to him absolutely disposition
'He has an [[absolutely kindhearted] disposition].'

b. **Odna očen'** est' **èlegantnaja rubaška** u Peti.
one very there-is elegant shirt to Petja
'Petya has [one [very elegant] shirt].'

(Pereltsvaig 2008, p. 13, ex. 12)

This is a challenge for the remnant movement approach, but not for the distributed deletion analysis. A reviewer points out that sentences like (45) above can be captured under a true extraction analysis by the proposal of Talić (2019) that the preposition cliticizes to the left branch before LBE occurs, but as far as we can see, this proposal cannot extend to an account for the examples in (46).

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 (47a). This example 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 (47b):

(47) Non-ATB LBE in Russian

a. 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

(Adapted from Pereltsvaig 2008, p. 10, ex. 6)

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 & Lohndal, 2017). Such facts all fit an analysis for which LBE is not extraction, but rather movement of a larger constituent followed by distributed deletion.[20]

4.2 Scope

Under the distributed deletion analysis, we expect it to be possible for LBE from a quantifier phrase (QP) to result in that QP taking high scope. For instance, since overt scrambling of an entire QP over negation results in scope ambiguity in Russian, as in (48) below, we expect LBE of a quantifier from QP over negation to yield the same possible readings. This is because, for our analysis, overt scrambling of a full QP and quantifier LBE should be syntactically identical.

[20]A further fact of interest is that LBE from a PP can pied-pipe P, while simultaneously leaving it pronounced in-situ as well, as in (i) below. See Pereltsvaig (2008), Goncharov (2015), and Gouskova (2019) for further discussion of P-doubling in Slavic. This possibility sits well with either a distributed deletion or remnant movement analysis of LBE, but does not clearly 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** ja pila [**iz** **čaški**].
from red I drank from cup
'I drank from a red cup.'

A reviewer observes 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 (assuming that such cliticization involves syntactic movement). We note, however, that some Russian prepositions, like *protiv* ('against') in (45) above, can be pied-piped under LBE despite being independent phonological words, not clitics. Thus the account in Talić (2019) may not capture the full range of Russian facts.

(48) QP scrambling over negation

[Dvux kommentatorov]$_1$ Maša ne ljubit t_1.
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.

As expected, quantifier LBE over negation allows the QP to take scope over negation, as (49) shows:

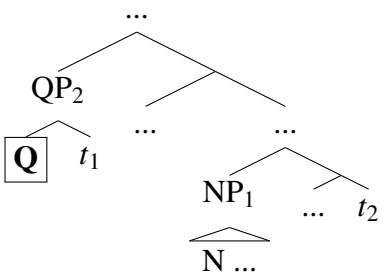
(49) LBE of quantifier over negation facilitates high scope of QP

Dvux$_1$ Maša ne ljubit [t_1 kommentatorov].
two Masha NEG loves commentators

Same readings as (48): ✓ *two commentators* > ¬, ✓ ¬ > *two commentators*

Notice that under the remnant movement analysis, LBE of a quantifier would involve extraction of the NP restrictor of the quantifier prior to later movement of the resulting remnant QP (50):

(50) LBE of quantifier as remnant movement



For this structure to be interpreted, it is necessary for Q (type <<et>,<<et>,t>>) to be reunited with its NP restrictor (type <e,t>) either at or before LF, in order for a type mismatch to be avoided.[21] In this situation, in order for the QP to take scope in its moved position, it would be necessary

[21] The reconstruction required here would also violate *Barss' Generalization* (Barss 1986, Sauerland & Elbourne 2002), which prevents reconstruction of an element into a position that it does not c-command in the surface string. This is because the NP in (50) ultimately needs to be reconstructed into QP, but QP c-commands NP in the surface structure.

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.[22]

[22]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:

(i) [Každuju fotografiju]$_2$ dva mal'čika pokazali Lene i Maše t_2.
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]$_1$]$_2$ dva mal'čika pokazali [Lene i Maše]$_1$ t_2.
every photo each.other two boys showed Lena and Masha
'Two boys showed [Lena and Masha]$_1$ every picture of [each other]$_1$.'

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

2. $\checkmark$ *two* $> \forall$: There exist two boys, such that they showed [Lena and Masha] every picture of [each other]$_1$.

Evidently 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, this argument relies on an assumption that principle A only has to hold at some point during LF.

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, as we see in (51) below. Despić (2015) has observed similar facts in Sebro-Croatian, and takes them to be an argument against distributed deletion. In (51a), we see that scrambling of a full QP over another yields scope ambiguity, while (51b) shows that LBE from the lower QP across the higher one cannot yield a high scope reading for the lower QP:

(51) a. Lower QP scrambled over higher QP: Scope ambiguity

[Dva podarka]$_1$ [každyj mal'čik] uvidel t_1.
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. Quantifier LBE across higher QP: Rigid scope

Dva$_1$ [každyj mal'čik] uvidel [t_1 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 different scope possibilities in (51a) versus (51b) are a challenge for our account: if concealed pied-piping is the right analysis of Russian LBE, we must explain what forces it to generally reconstruct.

We propose that the answer to this question has to do with LBE signalling constrastive 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 & 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 (52) below:

(52) Lower QP with contrastively focused numeral scrambled over higher QP

a. [DVA podarka]$_1$ [každyj mal'čik] uvidel t_1, 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]$_1$ [každyj mal'čik] uvidel t_1, 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 (49) 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 (49) is consistent with the distributed deletion approach.

4.3 Formalizing distributed deletion

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 permitted by the copy theory, for which this would 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 (53a) below. The schema in (53b)

illustrates the rule graphically. We have seen that distributed deletion can apply to both NPs and PPs as stated in (53a), though for convenience (53b) shows only distributed deletion of an NP.

(53) PF rule for Distributed Deletion

a. When a moved NP/PP contains an element bearing a feature F that encodes contrastive topic/focus, realize only the element bearing F in the highest copy of the movement chain, and all other nodes in the lowest copy of the movement chain.

b. $[_{NP}\ \text{XP}_F\ \sout{\text{YP}}\ \sout{\text{N}}]_1\ \ldots\ [_{NP}\ \sout{\text{XP}_F}\ \text{YP}\ \text{N}]_1$

It is also possible to overtly move an entire NP and contrastively focus a sub-part of it, as in the sentences in (52) 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 (53) 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 (54) below:

(54) An NP split multiple times

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.'

(Pereltsvaig 2008: p. 13, ex. 12d)

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 (53) 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 On the relationship between LBE and the presence/absence of D

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 generally evident in the surface word orders that can be created by movement (setting aside colloquial English possessor extraction), 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 essentially a descriptive generalization about the fact that some languages do not permit LBE. This generalization should, ideally, be reducible to independent syntactic principles. This expectation is explored by numerous works (Szabolcsi 1984, Corver 1990, 1992, Rappaport 2001, Bošković 2005, a.o.). Bošković (2005, 2016), for instance, building on 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 D blocks LBE because of the phasehood of DP. If DP is a phase, movement from DP must pass through spec-DP. Bošković argues that while movement to spec-DP and then onward is possible from the complement of NP, movement of an adjunct or specifier of NP to spec-DP is banned due to being too short, given the principle of *anti-locality* (Bošković 1997, Ishii 1999, Grohmann 2003, Abels 2003, a.o.). The schema in (55) below illustrates this hypothesis. Bošković (2005) also offers a labeling-based account for why the presence of D interferes with LBE, though his more recent works like Bošković (2016) focus on the anti-locality analysis.

(55) LBE from adjunct / specifier of NP through spec-DP violates anti-locality

* [$_{CP}$ XP ... S V [$_{DP}$ *t* D [$_{NP}$ *t* N ...]]]

In the context of such a theory, this paper's conclusion that Russian lacks true LBE can be attributed to the presence of D, though there is debate about the existence of D in article-less Slavic languages like Russian (see Franks 1995, Engelhardt & Trugman 1998, Progovac 1998, Franks

& Pereltsvaig 2004, Pereltsvaig 2006, Pereltsvaig 2007, Pesetsky 2013, Bošković 2005, 2016, Despić 2011, 2013, 2015, a.o.). This debate deals with topics such as case morphology, agreement, referentiality, binding, adjective position, and other details about nominal syntax. 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.[23] [24] From this position, their movement from DP is impossible, following Bošković. Thus when such constituents are targeted for A′-movement, pied-piping (concealed or otherwise) of the entire containing DP must apply.[25]

[23]As described in section 2.4 above, Davis (2019, 2020, 2021) 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 a 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.

[24]It is also conceivable that some left branches are adjoined above D, but are immobile due to being heads rather than phrases.

[25]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 & Féry (2013) note that Bulgarian may have LBE, and Pankau (To appear) 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. We must leave this issue for future study.

6 Accounting for restrictions on multiple LBE

Many Slavic languages like Russian allow multiple A′-movements to target the same clause edge, as we see, for instance, in multiple *wh*-questions (56):

(56) Russian multiple *wh*-movement

[Kakoj aktër]$_1$ [kakuju mašinu]$_2$ t_1 kupil t_2?
what actor what car bought

'What actor bought what car?'

Under the distributed deletion analysis of LBE, we predict the possibility of moving two NPs into the clause edge, and then applying distributed deletion to them, thus deriving two instances of (apparent) LBE. In reality, multiple instances of LBE cannot generally co-occur (57), as previous works have observed (Fernández-Salgueiro 2006, Grebenyova 2006, 2012, Murphy 2018).

(57) Ban on multiple LBE

* [Naskol'ko bogatyj]$_1$ [naskol'ko doroguju]$_2$ [t_1 aktër] kupil [t_2 mašinu]?
how-much rich how-much expensive actor bought car

'How rich an actor bought how expensive a car?'

(Grebyenova 2006, p. 4, ex. 4b)

In this section, we summarize some previous accounts of this ban, and suggest that the account in Murphy (2018) can be productively united with the distributed deletion analysis of LBE.

Grebenyova analyzes the ungrammaticality of sentences like (57) 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 of LBE creates a configuration in which the head targeted by LBE first blocks movement of the second. 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. 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 clause. 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 unification of his own account and the distributed deletion analysis of LBE.

Murphy (2018) proposes an account of the ban on multiple LBE using Optimality Theoreitc syntax, for which syntactic derivations are governed by (violable) constraints. His account relies on two constraints: LEFTBRANCHCONDITION, a constraint that penalizes LBE (which he assumes to be true extraction), 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'. Specifically, for Murphy it is the second of the two steps of LBE in a configuration like (57) above that causes the problem. 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 (57). Murphy's account also correctly rules in sentences like in (58) 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:

(58) Multiple LBE to separate positions is permitted

a. Znamenityj$_1$ segodnja [t_1 aktër] moju$_2$ kupil [t_2 mašinu].
famous today actor my bought car
'Today a famous actor bought my car.'

b. Ivan umnomu$_1$ včera [t_1 mal'čiku] novuju$_2$ podaril [t_2 igrušku].
Ivan smart yesterday boy.DAT new gifted toy
'Yesterday Ivan gifted a smart boy a new toy.'

We suggest that Murphy's account is not dependent on assuming that LBE is true extraction. Rather, it simply relies on the hypothesis that LBE (whatever it happens to be syntactically) is

marked, and thus incurs a penalty. For instance, it may be that discontinuous noun phrases are marked in general, following the arguments of Sekerina (1997) that split scrambling constructions like LBE involve an extra processing load.[26] By re-framing Murphy's LEFTBRANCHCONDITION as a constraint that penalizes noun phrases rendered discontinuous by whatever means (such as distributed deletion), his account can be straightforwardly incorporated into our proposal that Russian LBE is formed by concealed pied-piping rather than true extraction.[27]

[26]This hypothesis raises the issue of distinguishing between unacceptability due to syntactic ungrammaticality and accumulation of processing cost. See also discussion in Pereltsvaig (2008).

[27]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**$_2$ segodnja **znamenityj**$_1$ na vystavke [t_1 aktër] kupil [t_2 mašinu].
my today famous on exhibition actor bought car
'Today at the exhibition a famous actor bought my car.'

b. ?? **Znamenityj**$_1$ segodnja **moju**$_2$ na vystavke [t_1 aktër] kupil [t_2 mašinu].
famous today my on exhibition actor bought car
'Today at the exhibition a famous actor bought my car.'

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

(ii) Segodnja **moju**$_1$ na vystavke [znamenityj aktër] kupil [t_1 mašinu].
today my on exhibition famous actor bought car
'Today at the exhibition a famous actor bought my car.'

If *segodnja* 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) and they are predicted to be grammatical, contrary to fact.

7 On the semantics of the interaction between LBE and PGs

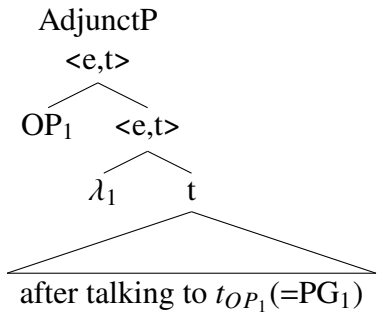
Before concluding the paper, here we relate our analysis of Russian LBE to a more explicit syntactic/semantic theory of PGs. We adopt from previous work the proposal that PGs are traces of semantically vacuous null operators, which move within (but not from) the containing island (Chomsky 1986, Browning 1987, Nissenbaum 2000, Nissenbaum & Schwarz 2011, a.o.).[28]

Nissenbaum argues that operator movement to the edge of the containing island triggers Predicate Abstraction (Heim & Kratzer, 1998). For a PG-bearing sentential adjunct like those focused on in this paper, this process changes the adjunct from type t to a derived predicate of type <e,t>, as in (59a) below. Nissenbaum also argues that forming a successful PG is dependent upon the PG-licensing phrase undergoing successive-cyclic movement through the vP. Following Chomsky (2000, 2001), vP is a phase, which movement must successive-cyclically pass through the edge of. Nissenbaum argues that this intermediate step of A′-movement through the vP triggers an application of Predicate Abstraction there as well, creating an <e,t> node in the vP edge, as we see

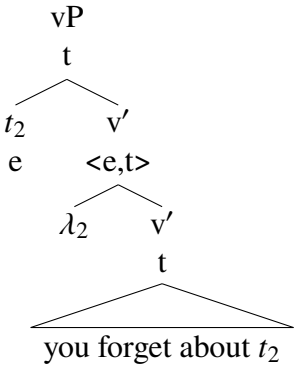
[28]As mentioned in section 2, Franks (1992) observed that in Russian the case of the licensing phrase and of the PG must match, though distinct cases can be used as long as they are morphologically syncretic. A reviewer asks why case matching should hold under the null operator approach to PGs taken 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) and Citko & 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 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.

in the partial structure in (59b) below.[29] Importantly, since the operator-containing adjunct in (59a) is type <e,t> as well, it can be merged to the type <e,t> node in this vP and semantically united with it by Predicate Modification (Heim & Kratzer, 1998):

(59) a. Null operator movement



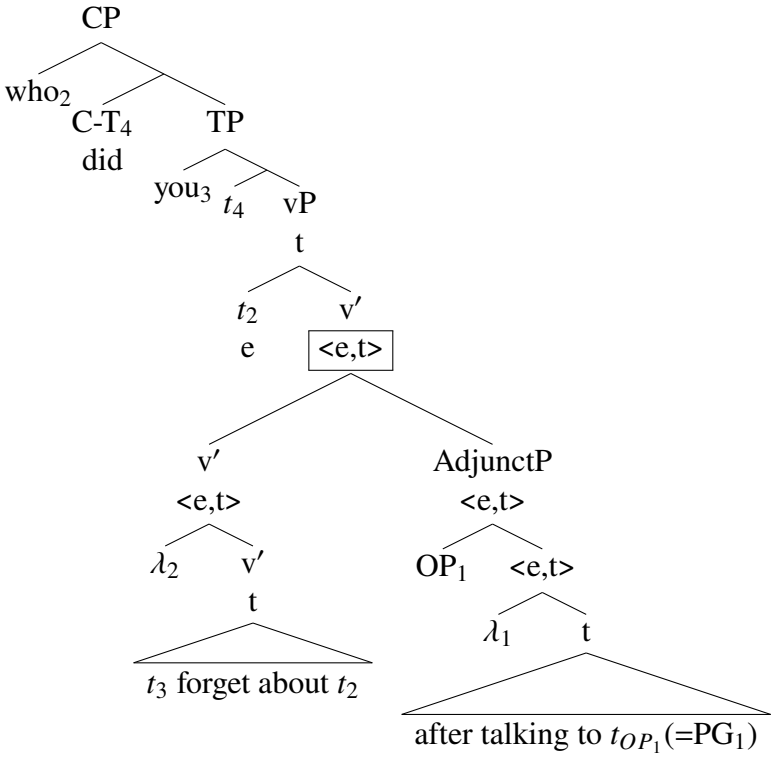
b. Successive-cyclic movement in vP



The result of merging these two together is illustrated in (60) below. Here the (boxed) intermediate vP node created by merge of the adjunct to the site of successive-cyclic *wh*-movement is a function of type <e,t>. 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. A PG is thus successfully derived.

[29]We adopt from Nissenbaum the simplifying assumption that vPs and vP modifiers (like sentential adjuncts) are type t, modulo Predicate Abstraction. Heim & Kratzer implement Predicate Abstraction by inserting a node bearing an index co-referent with the variable that corresponds to the traces(s) of movement, and converting this into a λ-term at LF. For simplicity, we diagram the nodes inserted by Predicate Abstraction as bearing a λ with the relevant index.

(60) The derivation of a PG in an adjunct of vP



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 as in (60): 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. This is precisely what the Russian facts that this paper has examined show.

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: p. 212) show, a type e trace left behind by LBE will combine with the <e,t> 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).[30] This problem is avoided if the extracted left branch

[30]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

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 (<e,t> for adjectives, <<e,t>,e> for demonstratives, and <<e,t>,<<e,t>,t>> 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 <τ,t>, where τ 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 <<e,t>,t>. We illustrate this in (61) below, which shows the hypothetical derivation for an adjectival PG. We place English words in this tree for presentational clarity. As we see in (61), an adjective PG would also require movement of an operator from adjective position in the adjunct, changing the adjunct's type to <<e,t>,t> as well. Provided that we grant Predicate Modification the ability to combine not only <e,t> constituents, but instead any two constituents of the same semantic type (Partee & Rooth 1983, Nissenbaum 2000, Nissenbaum & Schwarz 2011), the hypothetical structure in (61) can be interpreted.

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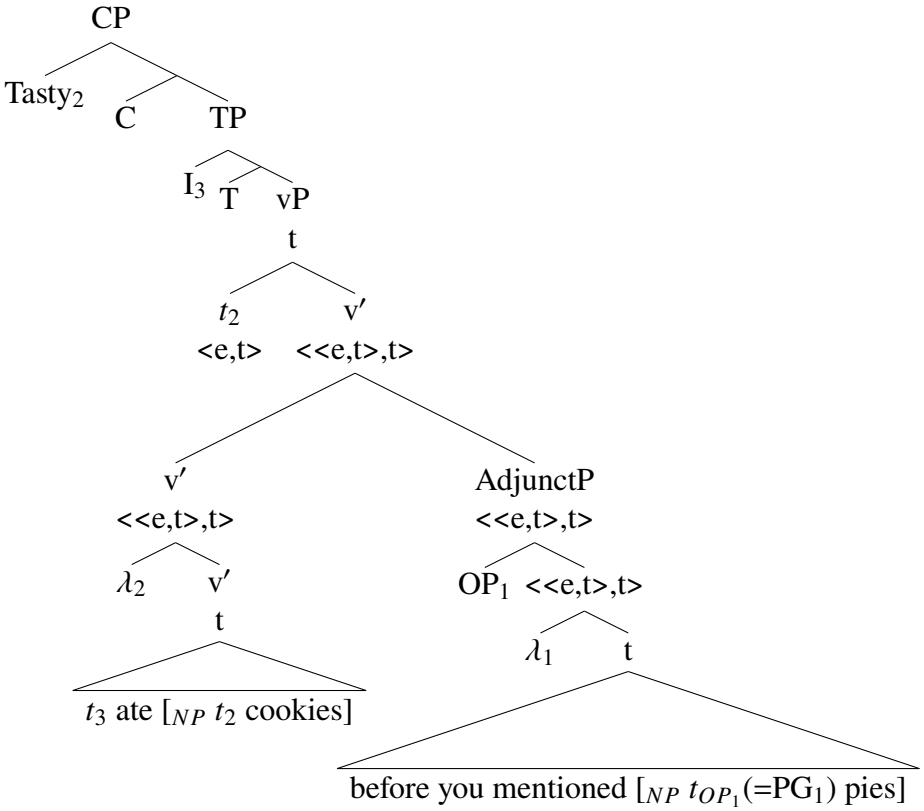
type-shifting is responsible for turning NPs of type <e,t> into ones of type e, though this proposal does not address the issue under discussion. The type-shifter that would be needed in this case would be one that turns truth-values into individuals or properties of individuals. Adding such a type-shifter 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 or property of individuals.

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



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 <<<e,t>,<<e,t>,t>>,t> for the former, and <<<e,t>,e>,t> for the latter.[31]

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.

[31] A derivation similar to (61) involving possessor LBE with usual abstraction over individuals would correspond to the examples of colloquial English possessor extraction in section 2.4 above.

8 Conclusion

Using PGs as our main diagnostic, we have argued that LBE in Russian is not extraction from NP, but rather involves concealed pied-piping of the entire NP that extraction appears to exit. We provided additional evidence for this finding from facts about weak crossover and late merge effects with principle C. 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. We also addressed some consequences of this analysis for theories about the relationship between NP/DP structure and LBE, for the ban on multiple LBE, and for a more explicit syntactic/semantic theory of PG-licensing. While this paper has focused on Russian, what we have learned from this language clarifies what is at stake for theories about the formation of discontinuous nominal phrases, and thus will serve as a useful basis for further cross-linguistic research on this complex topic.

Data availability statement

The full original data generated by this study are available from the corresponding author upon reasonable request.

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