Concealed Pied-Piping in Russian: Evidence from Left Branch Extraction, Parasitic Gaps, and Beyond[1]

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Abstract: We use parasitic gaps as a basis for examining the nature of left branch extraction (LBE) from nominal phrases in Russian. We observe that the interpretation for a parasitic gap in a context with LBE is identical to the interpretation assigned when a noun phrase is moved in its entirety, rather than extracted from. We therefore argue that Russian LBE actually involves concealed pied-piping of the entire nominal phrase that the seemingly extracted constituent originates in. 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 its surface appearance suggests. As we see in (1) below, LBE involves displacement of an element originating at the left edge of a nominal phrase. LBE is productive for many languages in the Slavic family, and beyond (Ross 1967; Corver 1990, 2007, a.o.). In Russian, LBE generally signals contrastive topic or focus on the displaced element (Pereltsvaig 2008), and provided that an appropriate context is salient, LBE of any left branch constituent (adjective, quantifier, demonstrative, possessor, and so on) is in principle possible.[2]

(1) *LBE in Russian*

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

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

[1]Authors listed alphabetically. Thanks to comments from Željko Bošković, Kenyon Branan, Miloje Despić, Danny Fox, Naomi Francis, Vera Gribanova, Natasha Ivlieva, Ivona Kučerová, Anton Kukhto, Jason Overfelt, David Pesetsky, Phillip Shushurin, Mitya Privozov, Norvin Richards, Bartosz Wiland, and audiences at MIT, FASL 27, NELS 49, and the 93rd annual LSA meeting, as well as to our Russian informants.

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

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

(2) a. * **Which**$_k$ did you see [t_k cats]?
b. ✓ [**Which cats**]$_k$ did you see t_k?
c. * **Those**$_k$ I've seen [t_k cats] before.
d. ✓ [**Those cats**]$_k$ I've seen t_k 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 NP that LBE has appeared to exit. Under this analysis, the structure of Russian examples like (1) above is fundamentally the same as that of the English (2b/d) above, where as the surface string shows, pied-piping must apply.

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

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

[**Kakoj podarok**]$_k$ Vasja voznenavidel t_k, [ne obnaruživ __$_k$ pod ëlkoj]?
what present Vasja came.to.hate not discover.CNV under pine.tree
'What present did V. come to hate, not finding (it) under the New Year tree?'

[3]Throughout this paper we mark true gaps with 't' and parasitic gaps with '__'.

b. *LBE and PG licensing*

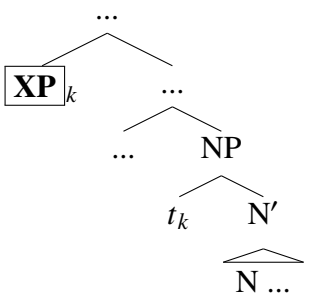
Kakoj$_j$ Vasja voznenavidel [t_j **podarok**]$_k$, [ne obnaruživ $\_\__k$ pod ëlkoj]?
what Vasja came.to.hate present not discover.CNV under pine.tree
'What present did V. come to hate, not finding (it) under the New Year tree?'

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

1.1 Background on theories of LBE

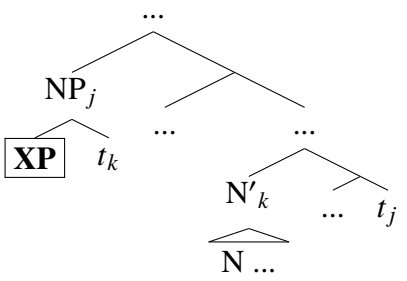
Previous studies on LBE, using data from a variety of languages, have proposed several distinct analyses of this phenomenon. One analysis is what we will term *true extraction*, for which LBE involves straightforward extraction of a left branch constituent from the containing NP, precisely as its surface appearance suggests (Ross 1967; Borsley and Jaworska 1998; Uriagereka 1988; Corver 1990, 1992; Wiland 2010; Stjepanović 2010; Bošković 2005, 2016, a.o.). This analysis is illustrated in (4) below, where XP represents the extracted left branch:

(4) *True extraction analysis of LBE*



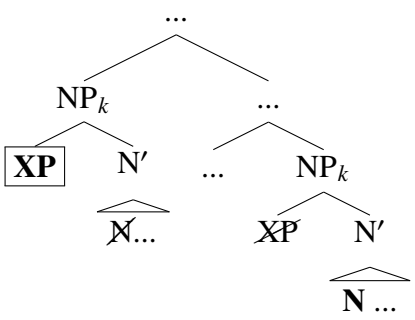
Another variety of proposal, which we term *concealed pied-piping*, argues that LBE does not involve extraction of a left branch. Two versions of this analysis are attested in the literature. One is the *remnant movement* approach (Franks and Progovac 1994; Starke 2001; Kayne 2002; Bašic 2008, 2009;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

(5) *Remnant movement analysis of LBE*



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

(6) *Distributed deletion analysis of LBE*



While it is plausible that different languages might derive LBE in a variety of different ways, in this paper, we argue that for Russian the concealed pied-piping analysis is correct. In particular, we will argue that the distributed deletion approach is most appropriate for Russian, as argued in Pereltsvaig (2008) and a few other works.[4]

[4]Throughout this paper we refer to and diagram Russian nominal phrases as NPs. However, unlike works such as Bošković (2005, 2016); Despić (2013, 2015) and references therein, we do not commit to the absence of D in article-less Slavic languages like Russian. For us, this choice is a useful simplification that is not in contradiction with the basic properties of the language (though see section 3.4 for discussion of the potential significance of D to this paper's results).

1.2 Contents of the paper

In section 2, we outline our approach to PGs, and their significance as a diagnostic for what moves in LBE derivations. In section 3 we provide the relevant evidence from LBE and PGs in Russian, involving argument PGs, NP-internal PGs, as well as supporting facts about weak crossover, which reveal that the concealed pied-piping analysis is correct for this language. In section 4, we provide further convergent facts from 'late merge' effects with principle C. In section 5, we discuss reasons for favoring distributed deletion over the remnant movement analysis. Section 6 considers further facts about LBE from coordinations, prior to the conclusion in section 7.

2 Parasitic gaps as a diagnostic for what moves

A defining property of PGs is that they are gaps inside of islands which are licensed by A′-movement that crosses over the structural position of the island. This is exemplified in (7) below, in which A′-movement from the complement of V structurally crosses over a sentential adjunct island adjoined within the clause, thus licensing a PG within it:

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

a. [What movies]$_k$ did Mary [claim she liked t_k [in order to get you to see $\_\__k$]]?

b. John's the guy $\varnothing_k$ that they said they'll [hire t_k [if I criticize $\_\__k$ publicly]].

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

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

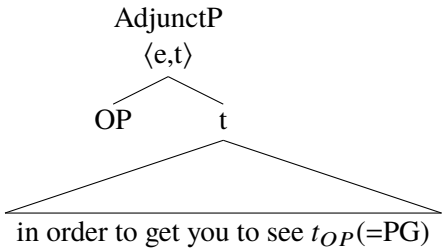
a. ?? [What movies]$_k$ did Mary [claim she liked The Godfather [in order to get you to see t_k]]?

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

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

We adopt from previous work the proposal that PGs are traces of null operators, which move within (but not from) the containing island (Chomsky 1986; Browning 1987; Nissenbaum 2000; Nissenbaum and Schwarz 2011, a.o.). Following Nissenbaum (2000), we assume that operator movement to the edge of the containing island triggers Predicate Abstraction (Heim and Kratzer, 1998), changing the island into a predicate.[5] For a PG-bearing sentential adjunct like those in (7) above, this movement changes the adjunct into a derived predicate of type ⟨e,t⟩, as in (9):[6]

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



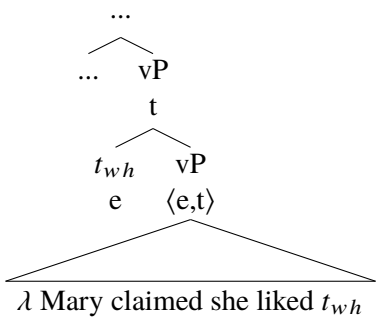
Recall that a PG must be licensed by A′-movement that structurally crosses the containing island. Nissenbaum argues that this is so because a PG-bearing constituent is dependent upon the semantic effect of successive cyclic A′-movement, and therefore must merge to a position within an A′-movement path. In particular, Nissenbaum follows Chomsky (2000, 2001) in positing that A′-movement must successive-cyclically pause in the edge of vP, since vP is a phase. This intermediate step of A′-movement through the vP edge triggers an application of Predicate Abstraction there as well, creating an ⟨e,t⟩ node in the vP edge, as we see in the partial structure in (10) below:

[5]That PGs are formed by null operator movement is indicated by the fact that placing a second island inside of a larger island containing a PG causes unacceptability (Chomsky, 1986; Kayne, 1993, a.o.), as shown below with a relative clause island (Nissenbaum 2000, pg. 24):

(i) * Who$_k$ did John visit t_k [OP$_k$ without consulting the person [$_{RC}$ who'd talked to $\_\_{}_k$?]]

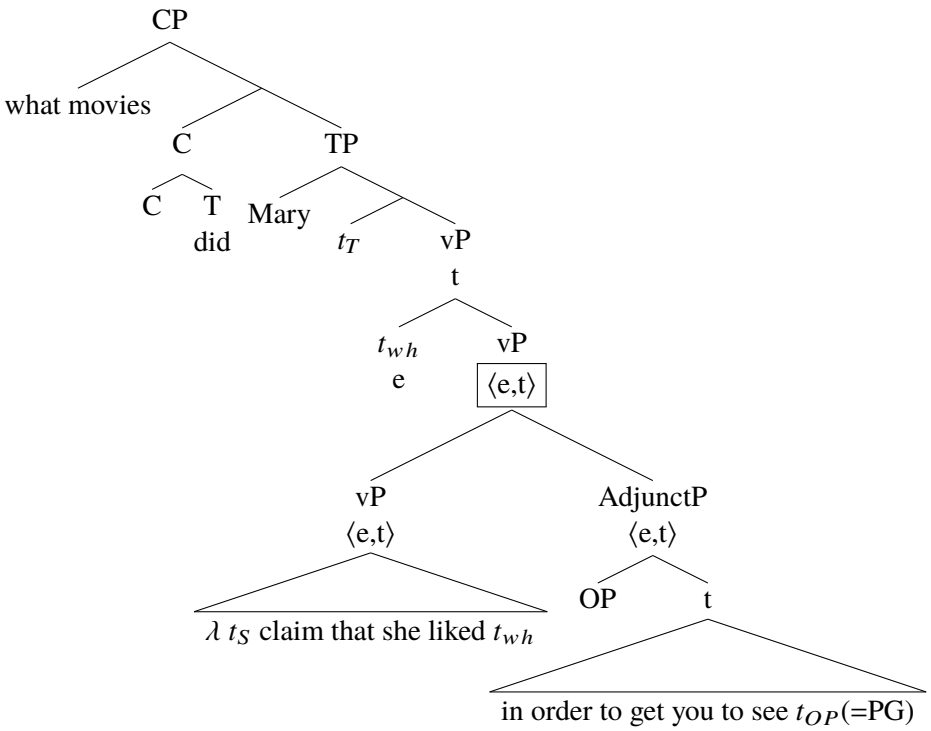
[6]We follow Nissenbaum in assuming that vPs and vP modifiers (such as sentential adjuncts) are type t, modulo A′-movement within them triggering Predicate Abstraction.

(10) *Successive-cyclic A′-movement creates an ⟨e,t⟩ node in vP*



The PG-containing adjunct island in (9) above is a constituent of type ⟨e,t⟩, and as we've just seen in (10), a node of the same type exists in the vP edge after successive-cyclic A′-movement through it. Thus the adjunct in (9) can be externally merged as the sister of the ⟨e,t⟩ position in the vP in (10), and the resulting structure will be successfully interpreted via Predicate Modification (Heim and Kratzer, 1998), as we see in (11) below.

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



The tree in (11) models the English sentence in (7a) above. In this structure, the (boxed) intermediate vP node created by merge of the adjunct to the site of successive-cyclic *wh*-movement denotes a

function of type ⟨e,t⟩. The intermediate type e trace of the A′-moved nominal phrase will saturate the individual argument of this function, 'filling in' both the variable that corresponds to its trace in the matrix VP, and the trace of the null operator in the adjunct, which is the PG.

This independently supported syntax/semantics for PGs allows us to make a number of concrete predictions about how PG licensing should behave in LBE contexts, which we will argue lead us to several lines of evidence for the concealed pied-piping analysis of LBE in Russian.

2.1 Predictions for the interaction of LBE and PGs

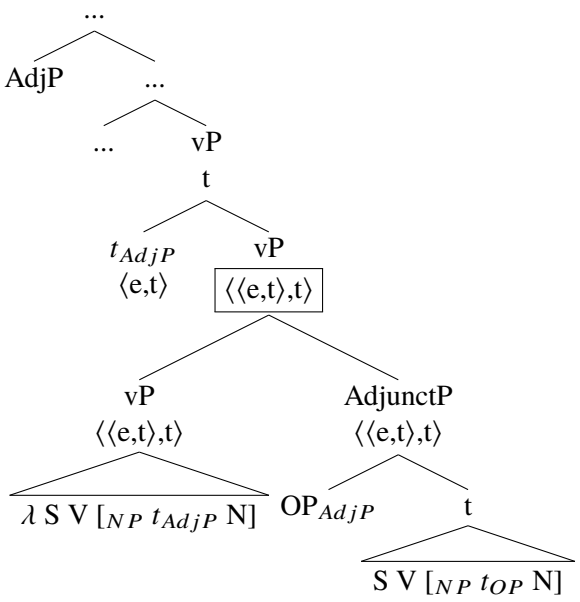
Here we state the predictions for the interaction of LBE and PGs, before proceeding to the actual Russian facts in the next section. If Russian LBE involves concealed pied-piping of the containing nominal phrase that appears to have been exited by extraction, then such movement should, in principle, license an argument PG in precisely the same way as completely overt movement of a nominal phrase: in both cases, the moved phrase will serve as the antecedent for the variable corresponding to its original trace, as well as the trace of the PG-forming null operator's movement from an argument position within the adjunct.

Alternatively, if Russian LBE involves direct 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 generally cause a type mismatch: as Heim & Kratzer (1998: 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).[7] This semantic problem is avoided if the extracted left branch undergoes syntactic reconstruction to its base position in NP and is thus treated by LF as if it had not moved. However, in this situation we do not expect LBE to be able to license a PG, since that movement will not have an effect on interpretation.

[7]A reviewer asks whether this issue could be resolved by type shifting. As far as we can tell, no standardly assumed type shifter (see Partee 1986) can make a type t NP into something interpretable in the context discussed here. Chierchia (1998), for instance, has argued that in article-less languages, type-shifting is responsible for turning NPs of type <e,t> into ones of type e, though this concept does not address the issue under discussion.

However, it is not a foregone conclusion that traces must only be type e.[8] 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. Additionally, in this case LBE could in principle license PGs of the right sort: for instance, adjective movement could license an adjective PG in this situation. 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 see this in (12) below, which shows the hypothetical derivation for an adjectival PG:

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



As we see in (12), an adjective PG would also require corresponding movement of an operator from adjective position inside 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 and Rooth 1983; Nissenbaum 2000; Nissenbaum and Schwarz 2011), this hypothetical structure in (12) can be successfully interpreted: here the

[8]See, e.g., Lechner (1998, 2019) for arguments for reconstruction via higher-type traces.

two ⟨⟨e,t⟩,t⟩ nodes can be combined, resulting in the boxed node in (12), which is saturated by the intermediate trace of the adjective's movement.

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. Importantly, if Russian LBE involves true extraction interpreted via high type traces in the way just described, then we do not expect LBE in this language to be able to license PGs in argument positions: the higher type of the vP formed when LBE occurs in such contexts cannot undergo Predicate Modification with an adjunct island containing an object PG, for instance, since this adjunct will be type ⟨e,t⟩ as we saw in the tree in (11) above.[9] For this reason, if we find that a PG in object position can be licensed by LBE, we will have reason to suspect that such a configuration does not actually involve sub-extraction of the left branch, despite appearances.

In short, if Russian LBE is true extraction of a left branch from NP, we expect it to be incompatible with the licensing of a PG in an argument position. However, if Russian LBE is derived by concealed pied-piping, we expect LBE in this language to be fully capable of licensing argument PGs, with the result that the PG takes as its antecedent the NP that LBE appears to exit.

Importantly, note that the semantic concerns mentioned here do not by themselves predict that true LBE should be impossible in human language. If a language has true LBE, then these concepts predict that extracted modifiers should either syntactically reconstruct into NP (thus no PG would be licensed) or leave higher-type traces, allowing licensing of modifier-type PGs (but not argument PGs). On the other hand, these concepts predict that if apparent LBE in a given language is in fact a case of concealed pied-piping of a full NP, then such movement will leave traces of type e, permitting licensing of argument PGs (but not modifier-type PGs). These predictions thus allow us to diagnose what actually undergoes movement when LBE occurs.

[9]While Predicate Modification would be inapplicable in such circumstances, basic Functional Application could actually apply in the case of adjective LBE with an argument PG. In this case we would have a vP segment of type ⟨⟨et⟩,t⟩, which could be saturated by the type ⟨e,t⟩ adjunct containing the argument PG. However, if this occurs, the resulting node of type t cannot be combined with the ⟨e,t⟩ trace left behind by successive-cyclic movement of the adjective. Thus adjective extraction licensing an argument PG is still not possible in this case, though the reason for this failure is somewhat more complicated than for other instances of LBE.

2.2 Previous work combining PGs and sub-extraction

Before moving on to Russian, we note that we are not the first to examine sub-extraction in the context of PGs. Corver (1990), for instance, examines LBE of *wat* ('what') in the Dutch *wat-voor* construction (13a), which he shows cannot license a left branch PG in another DP (13b), in contrast to movement of *wat* from argument position, which can license an argument PG (13c):

(13) a. Wat$_k$ heeft Jo [$_{DP}$ t_k voor boeken] gekockt?
what has Joe for books bought?
'What sort of books has Joe bought?' (Corver 1990, p. 138, ex. 34a)

b. * Wat$_k$ heeft Jo [zonder [$_{DP}$ PG$_k$ voor tijdschriften] te lezen] [t_k voor boeken]
what has Joe without for magazines to read for books
weggegooid?
thrown.away?
(Corver 1990, p. 139, ex. 36)

c. Wat$_k$ heeft Jo [zonder [PG$_k$ te lezen]] t_k weggegooid?
what has Joe without to read thrown.away?
'What did Joe throw away without reading?' (Corver 1990, p. 139, ex. 37)

The impossibility of licensing a left branch PG via LBE as in the Dutch (13a) is something we will also see in Russian. We will argue that this is one among several pieces of evidence consistent with the concealed pied-piping analysis of LBE in this language. Another work that has recently considered LBE and PGs is Davis (2019a,b), who argues that colloquial English allows possessor LBE under certain constrained circumstances. Davis shows that such extraction can license both NP-internal PGs as well as argument PGs, as in (14):

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

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

b. This is the guy [who$_k$ I said [__$_k$'s shoes] I liked [after talking to PG$_k$ today]].

This fact reveals the in-principle possibility of a phrase that has undergone LBE licensing a PG.

Further evidence that sub-extraction can in principle license NP-internal PGs comes from extraction from complements of NP in English. In (15a) below, we see that the element *who* extracted from an indefinite DP can license a PG in the complement of a quantifier phrase (which is an island) crossed by that movement. However, it is not possible for extraction from a DP to allow that remnant DP to serve as the licenser of a PG, as we see in (15b):

(15) *PGs and extraction from complement of NP in English (authors' judgments)*

a. Who$_k$ did you send [every picture of PG$_k$] to [a friend of t_k]?

b. *[Which dentist]$_k$ did you show us [a picture of t_k]$_j$ [in order to get us to buy PG$_j$]?

Next, we will see that Russian LBE cannot license NP-internal PGs like those in (14) or (15a), but can yield examples in which, unlike (15b), the remnant of sub-extraction serves as a PG licenser.

3 The facts about Russian PGs and LBE

In this section, we first establish the existence of PGs in Russian, before going on to explore how LBE and PGs interact in this language. PGs in Russian have been reported by at least Franks (1992), Ivlieva (2007), and Polinsky and Potsdam (2014). While in English diagnosing the presence of a PG is relatively straightforward, the fact that argument drop is sometimes available in Russian, as (16) shows, makes it less obvious whether a given gap is indeed a PG, rather than a null pronoun.

(16) a. A: Ty kupila tort?
you bought cake
'Did you buy cake?'

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

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

Ivlieva (2007) notes that PGs are most natural in perfective contexts. We have observed that perfective negated verbs (used throughought Ivlieva's study) resist object drop, as do certain verbs, such as *obnaružit'* ('discover') or *vzyat'* ('take') in (17) below. These factors are combined in (17) to create sentential adjuncts that require overt objects:

(17) *Adjunct clauses with undroppable objects in Russian*

a. Vasja voznenavidel [ètot podarok]$_k$, [ne obnaruživ **ego**$_k$**/*__**$_k$ pod ëlkoj].
Vasja came.to.hate this present, not discover.CNV him under pine.tree
'Vasja came to hate this present, not finding it under the New Year tree.'

b. Lena zabyla prinesti [rovno odin dogovor]$_k$, [ne vzyav ego$_k$/*__$_k$ u buxgaltera].
Lena forgot to.bring exactly one contract NEG take.CONV him from accountant
'Lena forgot to bring exactly one contract, not having taking it from the accountant.'

c. Vera ne nadela [mamino plat'e]$_k$, [ne obnaruživ [ego$_k$/*__$_k$] v škafu].
Vera NEG put.on mother's dress NEG discover.CONV him in wardrobe
'Vera didn't put on the mother's dress, not having found it in the wardrobe.'

Since extraction from sentential adjuncts of this variety is degraded, as (18) below shows, such contexts provide an appropriate context for the testing of PGs in Russian.

(18) *Adjunct island in Russian*

a. ***[Kakoj podarok]**$_k$ Vasja voznenavidel Mašu, [ne obnaruživ t_k pod ëlkoj]?
what present$_k$ Vasja came.to.hate Masha, not discover.CNV under pine.tree
'What present did V. came to hate M., not finding (it) under the New Year tree?'

b. *[**Č'ë plat'e**]$_k$ Vera nadela svojë plat'je, [ne obnaruživ t_k v škafu]?
whose dress Vera put.on self's dress NEG discover.CONV in wardrobe
'Whose dress did Vera not find in the wardrobe, and (thus) put on her own dress?'

As we see in (19) below, A′-movement in the matrix clause of such examples licenses the gap in the adjunct, in precisely the fashion we expect for a PG:

(19) *Potentially illicit gap in the adjunct rescued by matrix A′-movement*

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

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

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

d. Vasja našël podarok, [**kotoryj**$_k$ ja voznenavidel t_k, [ne obnaruživ __$_k$ pod
Vasja found present, which I came.to.hate not discover.CNV under
ëlkoj]]
pine.tree
'V. found the present that I came to hate, not having found under the New Year tree.'

PG licensing is achieved by interrogative *wh*-movement in (19a-b), scrambling in (19c),[10] and relativization in (19d). Since PG licensing is a general trait of A′-movements (Culicover and Postal 2001, a.o.), the possibility of PG licensing in all of these contexts is precisely what we expect.

3.1 LBE interacts with PGs like movement of a full NP

Next, consider the examples in (20) below. These are the same as those in (19a-c) above, except that in (20), LBE from the direct objects occurs rather than overt movement of entire object NPs. In (20), we see that LBE results in interpretations for the PGs which are the same as in (19): in both (19) and (20), 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 (19) and (20).

[10]The fact that local scrambling in Russian is A′-movement is supported by the fact that it cannot feed principle A. Boneh and Nash (2017) argue that in Russian ditransitives like (i) below the dative NP is externally merged above the accusative one. This is consistent with the fact that the former can serve as the binder for the latter (ia), though scrambling of the accusative NP cannot license an anaphor in the position of the dative NP (ib), as expected of A′-scrambling:

(i) a. Šaman zakoldoval oxotnikam drug druga
shaman jinxed hunters.DAT each other.ACC
b. * Šaman zakoldoval oxotnikov$_1$ drug drugu t_1
shaman jinxed hunters.ACC each other.DAT
'The shaman jinxed the hunters for each other.'
(From Boneh and Nash 2017, ex. 23)

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

a. **Kakoj**$_k$ Vasja voznenavidel [t_k **podarok**]$_j$, [ne obnaruživ __$_j$ pod jolkoj]?
what Vasja came.to.hate [present], not discover.CNV under pine.tree
'What present did V. come to hate, not finding (it) under the New Year tree?'

b. [**Č'ë**]$_j$ Vera ne nadela [t_j **plat'e**]$_k$, [ne obnaruživ __$_k$ v škafu]?
whose Vera NEG put.on dress NEG discover.CONV in wardrobe
'Whose dress did Vera not put on, not having found it in the wardrobe?'

c. [**Rovno odin**]$_j$ Lena zabyla prinesti [t_j **dogovor**]$_k$, [ne vzyav __$_k$ u buxgaltera].
exactly one Lena forgot to.bring contract NEG take.CONV from accountant
'Lena forgot to bring exactly one contract, not having taking it from the accountant.'

The examples in (21) below provide additional illustrations of this pattern:

(21) a. *PG with adjective LBE*

Doroguščij$_k$ Vasja voznenavidel [t_k **podarok**]$_j$, [ne obnaruživ __$_j$ pod ëlkoj].
very.expensive Vasja came.to.hate [present], not discover.CNV under pine.tree
'V. came to hate the EXPENSIVE present, not finding (it) under the New Year tree.'

b. *PG with ('how many') LBE*

Skol'ko$_k$ Vasja voznenavidel [t_k podarkov]$_j$, [ne obnaruživ __$_j$ pod ëlkoj]?
how.many Vasja came.to.hate [presents], not discover.CNV under pine.tree
'How many presents did V. come to hate, not finding under the New Year tree?'

c. *PG with quantifier LBE*

? **Každyj**$_k$ Vasja voznenavidel [t_k podarok]$_j$, [ne obnaruživ __$_j$ pod ëlkoj].
each Vasja came.to.hate [present], not discover.CNV under pine.tree
'V. came to hate EVERY present, not finding (it) under the New Year tree.'

d. *PG with demonstrative LBE*

? **Ètot**$_k$ Vasja voznenavidel [t_k podarok]$_j$, [ne obnaruživ __$_j$ pod ëlkoj].
this Vasja came.to.hate [present], not discover.CNV under pine.tree
'V. came to hate THIS present, not finding (it) under the New Year tree.'

The PGs in (20-21) are all co-referent with the object NP that LBE has exited. Given that a PG can only be licensed by moved material, this result suggests that Russian LBE in fact involves pied-piping of the entire NP that LBE seems to exit, despite surface appearances.

An alternative hypothesis about the above 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 true LBE.[11] However, this analysis does not make sense of the fact that in examples like (17) above, we see PGs that are unlicensed due to the absence of A′-movement. One such example is repeated below. If string-vacuous movement of an object were generally available to license a PG, such movement should be able to apply in such examples, and license the PG:

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

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

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

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 (23) below. Example (23a) shows an unlicensed PG, which in (23b) is licensed by long distance LBE:[12]

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

(i) $[_{CP}$ XP$_j$ S T $[_{vP}$ v-V $[_{NP}$ t_j N$]_k$ $[t_k$ $[_{AdjunctP}$ ... PG$_k$]]]

[12] Example (23) 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 (23b), since the adjunct contains a PRO (not glossed here) controlled by the matrix subject.

(23) *Scenario: Vasja thinks that Masha took the present that was supposed to be under the New Year tree*

a. * Vasja [xotel, [ne obnaruživ $\_\__j$ pod ëlkoj], [čtoby Maša vernula
Vasja wanted not discover.CNV under pine.tree that.SUBJ Masha returned
[ètot/Petin podarok]$_j$]].
this/Peter's present
'Vasja wanted that Masha would return this present, not having found (it) under the New Year tree.'

b. **Kakoj**$_k$**/čej**$_k$ Vasja [xotel, [ne obnaruživ $\_\__j$ pod ëlkoj], [čtoby Maša
what/whose Vasja wanted not discover.CNV under pine.tree that.SUBJ Masha
vernula [t_k **podarok**]$_j$]]?
returned present
'What/whose present did Vasja want that Masha would return, not having found (it) under the New Year tree?'

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

3.2 Convergent evidence from weak crossover

Here we provide convergent evidence for concealed pied-piping from the interaction between LBE and *weak crossover* (Postal 1971; Lasnik and Stowell 1991; Safir 2017, a.o.). Weak crossover is a phenomenon whereby movement of a phrase across a co-indexed pronoun to its left results in degradation.[13] Weak crossover is relevant to the discussion of PGs because, as is known in the literature, weak crossover violations and PGs are in complementary distribution. That is, when a PG stands in for a pronoun, the weak crossover effect disappears, as we see below for English:

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

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

b. This is the book which$_k$, [before returning PG$_k$/*it$_k$ to the library], I scribbled profanities in t_k.

[13] 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.

In order to examine weak crossover in the Russian PG contexts examined above, it is necessary for the PG-bearing sentential adjunct to be linearly leftward of the origination position of the relevant moving element. We have observed that left-linearized adjuncts of this variety are more tolerant of dropped objects than their right-linearized counterparts used above, as we see in (25) below.[14] The adjunct in (25) did not tolerate object drop when linearized rightward as in (17a), but does here:

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

Vasja [ne obnaruživ $\_\__k$ pod jolkoj] voznenavidel [etot podarok]$_k$.
Vasja not discover.CNV under pine.tree came.to.hate this present

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

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 (26) shows:

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

[Kakuju knigu]$_k$ ty, [ne čitaja $\_\__k$/*jeë$_k$], vybrosil t_k?
which book you not read it threw.away

'Which book did you throw away without reading?'

Ivlieva argues that the acceptable variant of (26) contains a PG and not a null pronoun, for the following reason. In this example, an overt pronoun in object position is degraded due to weak crossover as just mentioned. If the variant of this example with no overt material in object position involved a null pronoun, we would expect it to be subject to weak crossover as well. The fact that (26) is acceptable with no overt object suggests that in this case, it contains a PG, which is independently known to be immune to weak crossover.

Importantly, if Russian LBE in fact involves concealed pied-piping rather than true extraction, then LBE from an NP that is co-indexed with a pronoun to its left should result in unacceptability due to weak crossover. As we see in (27) below, this is indeed so. Examples (27-a) and (27-b) form

[14] 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).

a minimal pair. Example (27-a) shows a configuration analogous to (26) 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 (27-b) differs from (27-a) only in performing LBE rather than overt movement of the full NP, but in (27-b) as well, the pronoun is unacceptable.

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

a. [**Kakuju knigu**]$_k$ ty, ne pročitav $\_\__k$/*eë$_k$, vybrosila t_k?
which book you NEG read.CONV throw.out.PST .
'Which book did you throw out, without having read?'

b. [**Kakuju**]$_j$ ty, ne pročitav $\_\__k$/*eë$_k$, vybrosila [t_j **knigu**]$_k$?
which you NEG read.CONV throw.out.PST book.
'Which book did you throw out, without having read?'

This is precisely what we expect under the concealed pied-piping analysis, for which LBE involves movement of the entire NP that LBE has appeared to exit. Examples (28)-(30) below show further cases of LBE triggering weak crossover—respectively with adjective extraction, *which*-extraction and possessor extraction:

(28) a. [**Novuju knigu**]$_k$ on, ne pročitav $\_\__k$/*eë$_k$, vybrosil t_k.
new book he NEG read.CONV throw.out.PST .
'He threw out a NEW BOOK, without having read it.'

b. [**Novuju**]$_j$ on, ne pročitav $\_\__k$/*eë$_k$, vybrosil [t_j **knigu**]$_k$.
new he NEG read.CONV throw.out.PST book.
'He threw out a NEW book, without having read it.'

(29) a. [**Kotoruju kružku**]$_k$ Mitja, ne otodvinuv $\_\__k$/??eë$_k$ ot kraja,
which cup Mitya NEG move.away.CONV from edge
oprokinul t_k?
knock.down.PST
'Which cup did Mitya knock down, not having moved away from the edge?'

b. [**Kotoruju**]$_j$ Mitja, ne otodvinuv $\_\__k$/??eë$_k$ ot kraja, oprokinul [t_j
which Mitya NEG move.away.CONV from edge knock.down.PST
kružku]$_k$?
cup
'Which cup did Mitya knock down, not having moved away from the edge?'

(30) a. [**Č'ë plat'e**]$_k$ Vera, ne obnaruživ $\_\__k$/*ego$_k$ v škafu, ne nadela t_k?
whose dress Vera NEG discover.CONV in wardrobe NEG put.on
'Whose dress did Vera not put on, not having found in the wardrobe?'

b. [**Č'ë**]$_j$ Vera, ne obnaruživ $\_\__k$/*ego$_k$ v **škafu**, ne nadela [t_j plat'e]$_k$?
whose Vera NEG discover.CONV in wardrobe NEG put.on dress
'Whose dress did Vera not put on, not having found it in the wardrobe?'

We have seen that Russian LBE yields a reading for a co-occurring object PG that is the same as when the relevant NP overtly moves in its entirety, revealing, we argued, evidence for a concealed pied-piping derivation of LBE in this language. By itself, this evidence is compatible with a theory in which Russian grammar permits both "apparent" LBE via concealed pied-piping, as well as true LBE via direct 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, unlike this paper). Analogously, one might claim that Russian LBE is typically true sub-extraction, but that a concealed pied-piping derivation can be selected when PG licensing requires it.

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 (27-30) 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.

3.3 LBE cannot license left branch PGs

If LBE as true extraction were indeed an option in Russian, we would also in principle expect to find configurations where an element that has undergone LBE licenses a corresponding NP-internal PG (assuming that appropriately high type traces are available, as mentioned in section 2). Here we will see next that such licensing of NP-internal PGs is not possible.

3.3.1 PGs and numeral LBE

Numerals are convenient for testing the possibility of NP-internal PGs in Russian, since they (unlike most other left branches) affect the form of the NP they merge to. This means that 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 (31) below, for instance, the numeral *tri* 'three' triggers genitive plural marking on the NP to which it merges. This is a baseline example in which, due to the absence of any A′-movement, a PG in the object position of a sentential adjunct is impossible (while a pronoun is acceptable). In (31-b), we see that LBE of this numeral triggers a reading for the PG indicative of concealed pied-piping, in the same way as other examples we've examined earlier. Example (31-c) importantly differs from (31-b) in that the intended gap is not of an entire NP, but rather only of a numeral. Here the presence of the intended gap is unambiguous, because the relevant NP *keksa* ('muffin') in the adjunct here bears the same genitive marking that the numeral *tri* would typically assign to it. Nevertheless, (31-c) cannot have a reading indicative of numeral LBE licensing a corresponding numeral PG:

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

a. *Baseline*

Ja dostal [tri ponč ika]$_k$ s verxnej polki, ne obnaruživ *__$_k$ /ix$_k$
I got three doughnut.GEN.SG from higher shelf NEG discover.CONV
na nižnej.
on lower.

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

b. *Numeral LBE can license an object PG (presumably via concealed pied-piping)*

[Tri]$_j$ ja dostal [t_j ponč ika]$_k$ s verxnej polki, ne obnaruživ __$_k$ na
three I got doughnut.GEN.SG from higher shelf NEG discover.CONV on
nižnej.
lower.

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

c. *Numeral LBE cannot license a numeral PG within an object*

[Tri]$_j$ ja dostal [t_j pončika]$_k$ s verxnej polki, ne obnaruživ [*__$_j$ keksa] na nižnej.
three I got doughnut.GEN.SG from higher shelf NEG discover.CONV muffin.GEN.SG on lower.

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

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

d. *Numeral LBE cannot license a numeral PG within an object, no NEG in the adjunct*

* [Tri]$_j$ ja dostal [t_j pončika]$_k$ s verxnej polki, obnaruživ [__$_j$ keksa] na nižnej.
three I got doughnut.GEN.SG from higher shelf discover.CONV muffin.GEN.SG on lower.

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

Example (31-c) is acceptable on a reading with no PG, however. In this situation, the genitive marking on the object NP is licensed by the presence of negation in the containing adjunct, via the well-known Slavic phenomenon of *genitive of negation*, which allows optional accusative marking on objects. As (31-d) shows, the absence of negation removes the possibility of a genitive object, rendering the sentence unacceptable.[15]

[15]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]$_k$ Sabina zagruzila [t_k fajlov], ne obnaruživ [__$_k$ statej pro svjazyvanije]?
how.many Sabine uploaded files NEG discover.CONV paper.GEN.PL about binding
'What number of files did Sabina upload, after not having found that number of papers on binding?'

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

(ii) [Skol'ko]$_k$ Sabina zagruzila [t_k fajlov]$_j$, ne obnaruživ [__$_j$ na saite]?
how.many Sabine uploaded files NEG discover.CONV on website
'What number of files did Sabina upload, after not having found those files on the website?'

This impossibility of licensing a numeral PG via numeral LBE supports our proposal that Russian LBE is a product of concealed pied-piping, and not sub-extraction.

3.3.2 PGs and possessor LBE

Previous literature on PGs has argued that they must generally be NPs, though exceptions to this tendency are reported (Culicover and Postal 2001).[16] If Russian is a language in which PGs can only be NPs, then it could be that numeral PGs are unacceptable simply because adjectives are not NPs, not due to the impossibility of (numeral) LBE as true sub-extraction. This explanation makes the prediction that LBE of a nominal element should succeed in licensing an NP-internal PG. This prediction can be tested with possessors, which we will see do not license NP-internal PGs, consistent with the concealed pied-piping analysis of Russian LBE.

Russian pre-nominal possessors capable of LBE for the most part bear agreement morphology resembling that seen on adjectives, suggesting that they may in fact be adjectives, as Lyutikova (2012) claims. Rappaport (To appear) provides evidence that these pre-nominal possessors are in fact typical referential case-bearing NPs, unlike similar looking de-nominal adjectives. Rappaport shows, for instance, that such possessors participate in binding relations just as typical noun phrases do, as we see in (32) below. Here the first person possessor in (32a) is able to bind an anaphor, whereas the same is not possible for the de-nominal adjective of 'author' shown in (32b):

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 highly degraded:

(iii) ?? [Stol'ko že devužke] čitayut knigi, **skol'ko**$_k$ ja xoču, štoby [PG$_k$ mal'čikov] smotreli [t_k fil'mov].
as.many girls read books as.many I want that boys watch films
'As many girls read books as I want boys to watch films.'

[16]For instance, Engdahl (1983) reports that Scandinavian languages allow adjective PGs as well as prepositional phrase PGs.

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

a. ✓ On cital **moju**$_k$ stat'ju pro **sebja**$_k$
he read my article about self.ACC
'He read my$_k$ article about myself$_k$'

(Rappaport To appear, ex. 14b)

b. On$_k$ kupil **avtorskij**$_j$ ekzempljar u **sebja**$_{k/*j}$
he bought author.ADJ copy from self.ACC
'He$_k$ bought an author$_j$'s copy at his$_{k/*j}$ own place

(Rappaport To appear, ex. 14d)

Rappaport also argues that such possessors bear genitive case, which is expected for a possessor NP, though not for an adjective. One piece of evidence he provides is that such possessors can be coordinated with straightforwardly genitive lexical possessors. A more direct piece of evidence comes from expressions introducing an NP with *kak* ('like, as'), which require that NP to match the case of the standard of comparison. In (33a) below we see the *kak*-construction exemplified in an accusative context, while (33b) 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:

(33) *Case matching in kak-comparisons*

a. On **menja** ub"jot kak **muxu**
He **me.ACC** will.kill like **fly.ACC**
'He will kill me like a fly'

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

(Rappaport To appear, ex. 15)

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

Before testing 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).[17] 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 verb whose object is the PG, since as previously mentioned negation optionally triggers genitive marking on objects in Russian, as in many other Slavic languages.

With these concerns in mind, examine (34) below. Example (34a) is a baseline sentence showing an object PG in an adjunct with a negated verb. Here the PG is licensed by movement of the matrix object NP (containing a genitive third person pronominal possessor). Example (34b) is a minimal pair with the previous, in which instead of full movement of the object NP, LBE of the possessor occurs. Here the possessor itself is unable to license the object PG, though that PG can be interpreted with a reading indicative of concealed pied-piping. Importantly, note that since the verb in the adjunct is negated, it should in principle be compatible with a genitive object, and thus it should be possible for a genitive possessor to license the object PG here, if that possessor had indeed truly extracted. Example (34c) differs from the previous example in attempting to license a possessor PG in the object's adjunct by LBE of the possessor in the matrix clause. The reading corresponding to an NP-internal possessor PG is judged as unavailable here, though the relevant string is acceptable on a reading in which there is no PG.

[17] A reviewer asks why case matching should hold under the approach to PGs taken here. We have built on the approach to PGs in Nissenbaum (2000), who provides a syntactic and semantic theory of PGs as formed by null operator movement. While it is indeed reasonable to ask how case matching effects arise under the null operator analysis, this is a potential issue for the null operator analysis in general, rather than for this paper in particular. Furthermore, it is entirely possible that case matching is an independent morpho-syntactic constraint that does not stem directly from the properties of PGs in particular. In fact, as discussed by at least Franks (1992, 1993, 1995); Asarina (2011); Citko and Gračanin-Yuksek (2020), 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 movement from coordinations), and furthermore observe that morphologically syncretic cases are sufficient for matching, as mentioned above.

(34) *PGs and possessor LBE*

a. *Baseline*

[Ѐё/ego otrkytku]$_k$ Lena ne vzjala s soboj t_k, ne obnaruživ $\_\__k$ v
her/his card Lena NEG took with self NEG discover.CONV in
komnate.
room

'Lena$_k$ didn't take [her/his$_j$ card]$_k$ with her$_k$, not having found it$_k$ in the room.'

b. *Possessor LBE licensing PG (reading indicative of concealed pied-piping)*

[Ѐё/ego]$_j$ Lena ne vzjala s soboj [t_j otrkytku]$_k$, ne obnaruživ $\_\__k$/$_{*j}$ v
her/his Lena NEG took with self card NEG discover.CONV in
komnate.
room

'Lena$_k$ didn't take [her/his$_j$ card]$_k$ with her$_k$, not having found it$_k$/*her/him$_j$ in the room.'

c. *Possessor LBE cannot license possessor PG*

[Ѐё/ego]$_j$ Lena otrugala [t_j sestru], ne obnaruživ [*$\_\__j$ otkrytku] v komnate
her/his Lena scolded sister NEG discover.CONV card in room

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

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

The fact that the extracted possessor cannot license a co-referent PG in a (potential) genitive object position (34b), or in possessor position (34c), is consistent with an analysis under which concealed pied-piping is the only derivation available for LBE in Russian.[18]

[18]Note that the pronouns used as possessors in (34) indeed have the same morphology when used either as possessors or as objects of a negated verb, as we see in (i):

(i) a. Lena obnaružila [**èё/ego** sestru] tam.
Lena discover her/his sister there
'Lena found her/his sister there.'
b. Lena ne obnaružila **èё/ego** tam.
Lena NEG find her/him there
'Lena didn't find her/him there.'

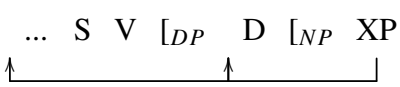
This fact guarantees that the patterns of unacceptability in (34) are not due to a violation of case matching, which is fully satisfied here. Beyond case matching, Franks (1992) observes that a PG and its licensing phrase must be parallel in their theta roles. While a configuration attempting PG-licensing in an object position by LBE of a possessor like

3.4 Implications for the theory of sub-extraction

We have now seen several sources of evidence for the proposal that LBE in Russian is derived not by true extraction, but rather by concealed pied-piping of the entire NP that the displaced left branch constituent has appeared to exit. This result is supported by the reading achieved for object PGs in the context of LBE, by the impossibility of licensing NP-internal PGs by LBE, and by the arising of weak crossover effects in contexts with LBE, just as for overt movement of a full NP. If correct, this finding indicates that in Russian, something like the Left Branch Condition holds in the underlying syntax. While in languages like English the influence of the Left Branch Condition is evident in the surface word orders that can be created by movement, this is not so in Russian, which is why more intricate diagnostics have been required to detect the presence of this constraint.

The Left Branch Condition is in essence a descriptive generalization of the fact that some languages do not (generally) permit LBE. This generalization should, ideally, be reducible to independent mechanisms of syntax. This expectation is explored by numerous works (Szabolcsi, 1984; Corver, 1990, 1992; Rappaport, 2001; Bošković, 2005, a.o.). Bošković (2005, 2016), for instance, building from previous insights of 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). In particular, Bošković argues that this is so because D introduces a phase boundary, and that therefore any extraction from the nominal phrase must successive-cyclically pass through spec-DP. While such movement through spec-DP is possible in principle for complements of N, Bošković argues that the necessary movement to spec-DP is impossible for adjuncts / specifiers of NP. This is because such movement would be too short and thus in violation of anti-locality (Bošković, 1997; Ishii, 1999; Grohmann, 2003; Abels, 2003, a.o.).

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



(34b) could plausibly be unacceptable for this reason, examples attempting to license a possessor PG by possessor LBE (34c) are not subject to this confound, and are nevertheless unacceptable.

If a theory along these lines is correct, then the present paper's conclusion that Russian lacks true LBE can be attributed to the presence of D in this language. This proposal has independent support, though there is debate about whether article-less Slavic languages like Russian should be analyzed as always, or sometimes, having the D layer (see Franks 1995; Engelhardt and Trugman 1986; Progovac 1998; Franks and Pereltsvaig 2004; Pereltsvaig 2006, 2007; Pesetsky 2013, a.o.). For the purposes of the present paper, it would be necessary to hypothesize that D is always present in Russian, and that the elements which undergo (apparent) LBE are all base-generated as adjuncts / specifiers of NP.[19] [20] From this position, their movement from DP is impossible, following Bošković. Thus when such constituents are targeted for A′-movement, pied-piping of the entire containing DP must apply (though as we've seen, this can be covert).

4 Convergent evidence from principle C in relative clauses

In this section, we provide additional evidence that Russian LBE involves concealed pied-piping, based on principle C avoidance effects which have been attributed to late merge (Lebeaux 1991; Takahashi and Hulsey 2009, a.o.). Here we will see once again a way in which LBE behaves like full pied-piping movement of a nominal phrase, indicating that the former is reducible to the latter.

Lebeaux (1991) originally argued that adjuncts (but not arguments / complements) can be externally merged late, to a phrase that has already been constructed and moved. Some of Lebeaux's evidence for this conclusion comes from the interaction of A′-movement and principle C, for which contrasts like that in (36) below hold. Notice that in the unacceptable (36-a), the *wh*-moved phrase contains a complement CP, which in turn contains an R-expression that is co-referential with the matrix subject. In contrast, as (36-b) shows, a comparable sentence where the relevant R-expression is in a relative clause of the moved *wh*-phrase is acceptable:

[19]Since the English possessor is standardly assumed to be generated in spec-DP (Corver 1992; Chomsky 1995), the possibility of this phrase undergoing true LBE is predicted, as the facts from colloquial English in (14) above show. A language with a similar extraction profile is Hungarian, which as Bošković (2005) points out, allows possessor LBE via spec-DP but not adjective LBE (which English also bans). In contrast, the Russian facts analyzed here suggest that the Russian possessor originates below D and thus cannot undergo LBE. If Russian pre-nominal possessors are fundamentally adjuncts (Lyutikova, 2012) of NP, this is what we expect.

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

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

a. *Principle C applies in complement of moved phrase*

*/?? [Which rumor [that John$_j$ ate all the cakes]]$_k$ did he$_j$ deny t_k?

b. *No principle C in adjunct of moved phrase*

✓ [Which cakes [that John$_j$ ate]]$_k$ did he$_j$ find t_k very tasty?

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

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

(37) *Principle C in Russian*

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

b. ***Ona** privezla mne škatulku, kotoruju **Nadja**$_k$ sdelala sama.
she brought me jewellery.box which Nadya made herself
'Nadya$_k$ brought me a jewellery box which she$_k$ made herself.'

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

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

* [Kotoruju fotografiju **Vasi**$_k$]$_j$ **on**$_k$ kupil t_j ?
which photo.ACC Vasja.GEN he bought

'Which photo [of Vasja$_k$] did he$_k$ buy?'

In contrast, an R-expression in a relative clause of the moved phrase doesn't violate principle C, as we see in (39) below. Here the R-expression which is the subject of the relative clause is co-referential with the matrix subject, and yet, there is no violation in these sentences. This indicates that in Russian too, adjuncts can merge late:[21]

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

a. ?[[Škatulku], [kotoruju **Nadja**$_k$ sdelala sama]]$_j$, **ona**$_k$ privezla mne t_j.
jewellery.box which Nadya made herself she brought me
'A jewellery box, which Nadya$_k$ made herself, she$_k$ brought me.'

b. ?[[Čju kartinu] [kotoruju **Vasja**$_k$ kupil]]$_j$ **on**$_k$ voznenavidel t_j?
Whose picture that Vasja bought he came.to.hate
'Whose picture [that Vasja$_k$ bought] did he$_k$ come to hate?'

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

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

a. ?Kakuju$_j$, [kotoruju **Nadja**$_k$ sdelala sama], **ona**$_k$ privezla mne [t_j škatulku]?
what.kind which Nadya made herself she brought me jewellery.box
'What jewellery box, which Nadya$_k$ made herself, did she$_k$ bring me?'

b. ?Doroguščuju$_j$, [kotoruju **Nadja**$_k$ sdelala sama], **ona**$_k$ privezla mne [t_j
very.expensive which Nadya made herself she brought me
škatulku]?
jewellery.box
'The VERY EXPENSIVE jewellery box, which Nadya$_k$ made herself, she$_k$ brought me. '

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

c. ?Ètu$_j$ [kotoruju **Vasja**$_k$ kupil] **on**$_k$ voznenavidel [t_j kartinu].
this that Vasja bought he came.to.hate picture
'THIS picture, that Vasja$_k$ bought, he$_k$ came to hate.'

d. ?Čju$_j$ [kotoruju **Vasja**$_k$ kupil] **on**$_k$ voznenavidel [t_j kartinu]?
Whose that Vasja bought he came.to.hate picture
'Whose picture [that Vasja$_k$ bought] did he$_k$ come to hate?'

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

(41) *LBE + late merge + PG*

?Kakuju$_j$, [kotoruju Nadja$_k$ sdelala sama], ona$_k$ privezla mne [t_j škatulku]$_i$, [ne
what.kind which Nadya made herself she brought me jewellery.box NEG
poterjav $\_\__i$ v doroge]?
lose.CONV in road

'What jewellery box, which Nadya$_k$ made herself, did she$_k$ bring me without losing on her way?'

The fact that overt movement of an NP (39) and LBE (40/41) pattern together in allowing late merge of a relative clause is predicted, given our argument that the syntax of these two scenarios is fundamentally the same.

Note that we do not expect the same pattern of judgments to emerge from true sub-extraction of a left branch along with extraction of a relative clause from the same NP: if the relative clauses in (40/41) reached the high position they inhabit by simply moving there, they should be subject to principle C. For principle C to be avoided, it is vital that the relative clauses be externally merged to a position above the matrix subject. Late external merge would be impossible here if there were not an NP there to merge to.[22]

A reviewer points out that a relative clause can be displaced on its own and still avoid principle C. Our research has found that this is indeed possible for many Russian speakers. Furthermore,

[22]Given that the relative clauses in (40/41) must not have undergone movement, it would also be unclear how these examples could be interpreted if the relative clauses were not late merged to an NP: relative clauses are adjuncts interpreted by Predicate Modification with NP (both being of type ⟨e,t⟩, Heim and Kratzer 1998), but this interpretive rule could not apply if the relative clauses in (40/41) were not in fact attached to an NP.

we have observed that such relative clause fronting also facilitates PG licensing, with the PG being interpreted as co-referent with the NP that the displaced relative clause is construed as modifying, as (42) shows:

(42) ?[Kotoruju Nadja$_i$ sdelala sama]$_j$, ona$_i$ privezla mne [škatulku t_j]$_k$ (ne poterjav
which Nadya made herself she brought me jewellery.box NEG lose.CONV
__$_k$ v doroge).
in road
'Nadya$_i$ brought me a jewellery box which she$_i$ made herself, without losing (it) on her way.'

We hypothesize that in examples like (42), late merge of the relative clause applies after covert movement of the object NP. Such covert movement both licenses the PG in the adjunct, and creates a position to which the relative clause can be late merged and escape principle C.

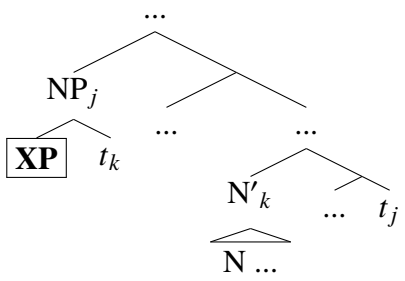
The possibility of covert movement licensing PGs in Russian has independent precedent in Ivlieva (2007), who argues that NPs construed as topics covertly move and, in doing so, can license PGs. Importantly, covert movement cannot be a default, cost-free strategy for licensing a PG in Russian. If it were, such movement should be able to apply and license the illicit PGs in the baseline sentences in (17) above. When such covert movement is indicated by an appropriate signal, however, such as information structure in Ivlieva (2007), or the presence of a late merged relative clause as in (42) above, such movement can license PGs.[23]

5 Distributed deletion over remnant movement

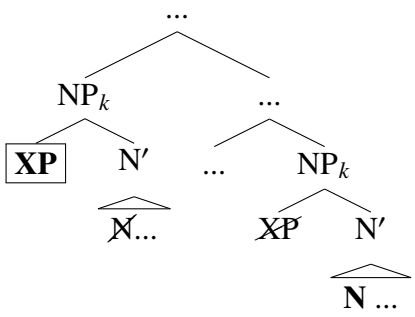
In the introduction, we described two attested variants of the concealed pied-piping analysis—remnant movement and distributed deletion, diagrammed once more below:

[23]Beyond Ivlieva (2007), there is precedent for the concept that PG licensing by covert movement is possible. Engdahl (1983) originally observed that *wh* in situ in English cannot license PGs, a fact that is unexpected if such phrases undergo covert movement. However, Nissenbaum (2000) shows that covert *wh*-movement does in fact license PGs in English, but under relatively specific circumstances, due to the semantics of the configurations in English where it applies, and the timing of movement operations in this language. Further recent evidence for PG licensing by covert movement comes from Branan and Sulemana (2018) on Bùlì.

(43) a. *LBE as remnant movement*



b. *LBE as distributed deletion*



The facts shown in this paper so far are compatible with either theory, since both result in configurations 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.[24]

5.1 Syntactic evidence for distributed deletion

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

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

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

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

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

[24]See also Murphy (2020a,b) for recent arguments against the remnant movement approach.

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

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

a. **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].’

This is a challenge for the remnant movement approach, but not for the distributed deletion analysis.

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

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

b. Ja [**tvoi** ~~čulki~~ **i** ~~rubašku~~] vystirala [~~tvoi~~ čulki i rubašku].
I your washed stockings and shirt

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

An additional informative fact is that in some examples like (47) where a preposition participates in LBE, the preposition can be simultaneously pronounced in its in-situ position as well:

(47) *Doubled prepositions under LBE in Russian*

a. U nego lebed' **na kladbišče** tam **na Novodevičjem** byl.
to him swan on cemetery there on Novodevichie was
'He had a swan there at the Novodevichie cemetery.' (Pereltsvaig 2008, ex. 34g)

b. **Iz čaški** ja pila **iz krasnoj**.
from cup.F.GEN I drank from red.F.SG.GEN
'As for cups, I drank from a red one.' (Goncharov 2015: p. 734)

This possibility is known for Russian as well as for other languages with LBE (see discussion of Croatian and German in Faneslow and Ćavar 2002, and Ukranian in Féry et al. 2007). This fact receives a straightforward analysis only under the distributed deletion analysis of LBE. For this analysis, LBE involves two fully formed 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. Goncharov (2015) shows that for Russian, this doubling is unique to topicalizing LBE. Gouskova (2019) further argues that doubling is only possible for prepositions that do not form an independent phonological word. Such doubling is thus not a completely free process. While nothing precludes this doubling from having its own limitations, the possibility of this phenomenon is most at home in the distributed deletion analysis of LBE.

5.2 Scope

Under the distributed deletion analysis, we expect it to be possible in principle for LBE of a quantifier to result in the QP in question taking high scope. For instance, since overt scrambling of an entire QP over negation results in scope ambiguity in Russian, as in (49) below, we expect LBE of a quantifier over negation to result in the same possible readings. This is because, for our analysis, overt scrambling of a full QP and quantifier LBE should be syntactically identical.

(48) *QP scrambling over negation*

[Dvux kommentatorov]$_k$ Maša ne ljubit t_k.
two commentators Masha NEG loves

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

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

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

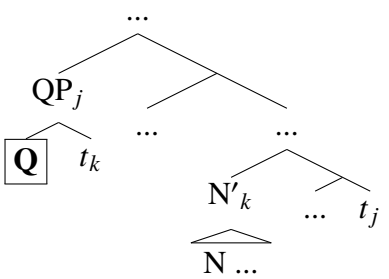
(49) *LBE of quantifier over negation*

Dvux$_k$ Maša ne ljubit [t_k kommentatorov].
two Masha NEG loves commentators

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

In contrast, notice that under the remnant movement analysis, LBE of a quantifier would involve extraction of the restrictor of the quantifier prior to later movement of the resulting remnant:

(50) *LBE of quantifier as remnant movement*



For this structure to ultimately be interpretable, it is necessary for the quantifier (type <<et,<et,t>>) to be reunited with its restrictor (type <e,t>) either at or before LF, in order for a type mismatch to be avoided.[25] In this situation, in order for the QP to take scope in its moved position, it would be necessary to reconstruct both the remnant movement and the initial extraction of the restrictor, prior to then subjecting that reconstructed constituent to Quantifier Raising (QR). A grammar that can achieve such a result would have to be able to interleave reconstruction with QR. Under the distributed deletion analysis, however, it is not necessary to make these complex assumptions.[26]

While LBE can result in a QP taking scope over negation, we must note that there are circumstances where LBE cannot result in wide scope in Russian. Despić (2015) has observed this for Sebro-Croatian, a fact he takes to be an argument against distributed deletion in this language. When examining the relative scope for two QPs, we see that in Russian as well, LBE does not permit wide scope for a lower QP exited by LBE, as (51) below shows:

[25]The reconstruction required here would also violate the independently motivated Barss' Generalization, which prevents reconstruction of an element into a position that it does not c-command in the surface string, as Murphy (2020b) discusses.

[26]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]$_j$ dva mal'čika pokazali Lene i Maše t_j.
every photo two boys showed Lena and Masha
'Two boys showed Lena and Masha every picture.'
1. ∀ > ∃: For every photo there were two (different) boys that showed Lena and Masha that photo.
2. ∃ > ∀: 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]$_k$]$_j$ dva mal'čika pokazali [Lene i Maše]$_k$ t_j.
every photo each.other two boys showed Lena and Masha
'Two boys showed Lena and Masha every picture.'
1. *∀ > ∃: For every photo of Lena and Masha there were two potentially different boys that showed Lena or Masha that photo.
2. ∃ > ∀: There exist two boys, such that they showed Lena and Masha every picture of themselves.

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

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

[Dva podarka]$_k$ [každyj mal'čik] uvidel t_k.
two gifts every boy saw

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

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

b. *Q extracted over higher QP*

Dva$_k$ [každyj mal'čik] uvidel [t_k 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.

We argue that this fact is not evidence against distributed deletion, because it is attributable to an independent consideration. Recall that LBE signals contrastive topic/focus on the displaced element. Previous literature has argued that there is a connection between contrastive focus and reconstruction in Russian (Ionin 2003; Ionin and Luchkina 2018). If this is the case, reconstruction effects in LBE contexts could be unrelated to LBE per se, but rather, stem from contrast. This understanding accurately predicts the fact that we also see obligatory reconstruction for a scrambled NP containing a contrastively focused numeral, as in (52) below:

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

a. [DVA podarka]$_k$ [každyj mal'čik] uvidel t_k, 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]$_k$ [každyj mal'čik] uvidel t_k, 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.

In sum, we argue that obligatory reconstruction with LBE, when evident, does not constitute evidence against distributed deletion: reconstruction here is independently motivated by contrast. Further, the possibility of wide scope under LBE in at least some circumstances, such as with negation, is consistent with the distributed deletion approach.

5.3 Formalizing the distributed deletion rule

Distributed deletion is most at home in 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 in principle, and cites a variety of evidence for it from previous literature. Distributed deletion is in essence 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 a PF rule for distributed deletion in Russian as in (53a) below. The schema in (53b) demonstrates this rule graphically.[27]

(53) *PF rule for Distributed Deletion*

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

b. $[_{NP}\ \text{XP}_{F_{CTF}}\ \sout{\text{YP N}}]_k$ ... $[_{NP}\ \sout{\text{XP}_{F_{CTF}}}\ \text{YP N}]_k$

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

[27] As the facts have shown us, distributed deletion can apply to both NPs and PPs, as stated in (53a), though for convenience (53b) shows distributed deletion of an NP only.

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:[28]

(54) 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: 3, 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 (53a) 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.[29]

[28] Additionally, as Pereltsvaig (2008) points out, it is quite unclear how examples like (54) can be derived under the remnant movement approach to LBE.

[29] A reviewer correctly notes that the distributed deletion analysis does not by itself make sense of the fact, observed by Grebenyova (2006), that multiple instances of LBE are not possible within one derivation in Russian, as we see below in (i):

(i) *[Naskol'ko bogatyj]$_k$ [naskol'ko doroguju]$_j$ [t_k aktër] kupil [t_j mašinu]?
how-much rich how-much expensive actor bought car
'How rich an actor bought how expensive a car?'
(Grebyenova 2006, ex. 4b)

Our Russian informants have indeed found examples of this form largely unacceptable. There are two remarks to make about this fact. First, as far as we can tell, this ban is equally challenging for all theories of LBE. Whether LBE is distributed deletion, remnant movement, or true extraction, there is no obvious independent reason why it should not be able to occur more than once. Thus we argue that this issue is not a problem particular to the analysis of LBE proposed here. Second, we argue that Grebenyova's constraint is not quite correct. Example (i) above, like analogous ones from Grebenyova's study, involves the elements undergoing LBE forming crossing paths. We have observed that multiple instances of LBE within one derivation can occur when the two movement paths do not cross (ii):

(ii) a. [Znamenityj]$_k$ segodnja [t_k aktër] [moju]$_j$ kupil [t_j mašinu].
famous today actor my bought car
'Today a famous actor bought my car.'
b. Ivan [umnomu]$_k$ včera [t_k mal'čiku] [novuju]$_j$ podaril [t_j igrušku].
Ivan smart yesterday boy.DAT new presented toy.ACC
'Yesterday Ivan presented a smart boy a new toy.'

Thus there is no ban on multiple instances of LBE in one derivation per se, a fact further supported by the possibility of multiple splits like (54) above. We argue that the contrast between (i) and (ii) is expected if what constrains multiple LBE is not a syntactic constraint, but rather concerns of processing, as argued by Pereltsvaig (2008) following Sekerina (1997).

6 LBE in coordinate structures

In this section, we consider how the above analysis relates to across-the-board (ATB) LBE from coordinate structures. ATB LBE has been previously investigated by Citko (2006), who does not examine any single language in great detail, but rather collects LBE facts from several Slavic languages, and makes a generalization about them. In particular, Citko argues that ATB LBE is permitted, provided that the remnants of the two conjuncts exited by LBE are distinct (a requirement that can also be met by ellipsis of one of two identical verbs, for instance).[30]

This distinctness requirement bans, among other things, structures with ATB LBE where the remnants of LBE involve identical stranded N heads, a fact we have also found to hold in Russian:

(55) *No ATB LBE from identical direct objects*

* Kakoj$_k$ / kotoryj$_k$ / čej$_k$ /
what.kind.MASC.SG.ACC which.MASC.SG.ACC whose.MASC.SG.ACC
čjornyj$_k$ / ‘etot$_k$ Maša ljubit [t_k **čaj**], a
black.MASC.SG.ACC this.MASC.SG.ACC Masha.NOM loves tea.MASC.SG.ACC &
Vasja (nenavidit) [t_k **čaj**]
Vasja.NOM hates tea.MASC.SG.ACC

‘What kind$_k$ / which$_k$ / whose$_k$ does Masha like t_k tea and Vasja (hate) t_k tea?’, ‘Masha likes black / this tea and Vasja hates this / black tea.’

Contrary to Citko’s conclusions, we have found that in Russian, even when the non-extracted material in each conjunct is distinct, ATB LBE is still unacceptable in many cases. Of non-interrogative left branches, adjective extraction is likely the most acceptable:

(56) *No non-wh ATB LBE even with different remnants*

a. *Possessor LBE*

* Mamin$_k$ Vitja s’jel [t_k pirog], a Petja vypil [t_k kompot].
mother’s Vitya ate pie CONJ Petya drank kompot

Intended: ‘Vitya ate mother’s pie, and Petya drank mother’s kompot.’

[30] See Citko and Gračanin-Yuksek (2020) for further discussion of this distinctness condition, which is not unique to LBE configurations, but actually applies to ATB movement quite generally.

b. *Quantifier LBE*

* Každuju$_k$ Olja posetila [t_k galereju], a Asja navestila [t_k znakomuju].
every Olya visited gallery CONJ Asya paid.a.visit.to acquaintance

Intended: 'Olya visited every gallery, and Asya paid a visit to every acquaintance.'

c. *Demonstrative LBE*

* Ètot$_k$ Lena ne ljubit [t_k kefir], a Katja obožaet [t_k jogurt].
this Lena NEG loves kefir CONJ Katya is.fond.of yoghurt

Intended: 'Lena doesn't like this kefir, and/but Katya is fond of this yoghurt.'

d. *Numeral LBE*

* Tri$_k$ Maša ljubit [t_k p'esy Šekspira], a
three.ACC Masha.NOM loves play.FEM.SG.GEN Shakespeare.GEN CONJ
Vasja nenavidit [t_k simfoniji Baxa]
Vasja.NOM hates symphony.FEM.SG.GEN Bach.GEN

'Masha likes three plays of Shakespeare and Vasja hates three symphonies of Bach.'

e. *Adjective LBE*

?? Čërnyj$_k$ Maša ljubit [t_k čaj], a Vasja nenavidit [t_k kofe].
black Masha loves tea CONJ Vasya hates coffee

Intended: 'Masha loves black tea, and Vasja hates black coffee.'

The examples in (55-56) show TP coordinations, but we have found that the same holds in VP coordinations (though we have omitted these facts due to space constraints). Importantly, in contrast to the above, ATB LBE of interrogative elements is relatively acceptable:

(57) a. *ATB of "what" with TP coordination*

? Kakoj$_k$ Maša ljubit [t_k čaj], a Vasja nenavidit [t_k kofe]?
what.kind Masha loves tea CONJ Vasja hates coffee

'What is the quality such that Masha loves tea of that quality, and Vasja hates coffee of that quality?'

b. *ATB of "skol'ko" with TP coordination*

Skol'ko$_k$ Maša napisala [t_k knig], a Ivan pročital [t_k statej]?
how.many Masha wrote books CONJ Ivan read articles

'What is the number x such that Masha wrote x books, and Ivan read x articles?'

Overall, it appears that ATB LBE is often unacceptable, but is permitted some of the time. This finding is problematic for any theory of LBE. If LBE as true sub-extraction of a left branch element from a nominal phrase were available in Russian syntax, there is no obvious reason why ATB LBE should ever be unacceptable. On the other hand, if LBE actually involves obligatory (concealed) pied-piping in syntax of the NP in which the seemingly extracted constituent originates, then we would expect ATB LBE to never be acceptable in Russian: Citko's distinctness condition will require ATB LBE to always involve displacement from distinct instances of N, but if those Ns are indeed distinct, then the two NPs involved in the formation of the ATB dependency will lack the syntactic identity that generally holds for ATB constructions, and thus the derivation should fail if LBE requires concealed pied-piping. Compared to distributed deletion, the possibility of ATB LBE is potentially more compatible with the remnant movement analysis: for two NPs with identical left branches but different instances of N, extraction of the N from each NP will produce two remnant NPs that are conceivably syntactically identical enough to undergo LBE, given that their only distinct material has been evacuated. This possibility does not resolve the fundamental puzzle we have identified that ATB LBE is possible only for some elements, however.

Given that these Russian facts are a challenge for all analyses of LBE, we cannot draw a decisive conclusion about them here. Since Citko's study does not examine any single language in great detail, we suspect that further empirical research is necessary before a concrete solution is possible. We would like to leave this as a topic for future work. In the rest of this section, we discuss a few further interesting phenomena in this domain.

Citko (2006) reports that gapping of the second of two non-distinct verbs is sufficient to permit ATB LBE, as expected due to the distinctness requirement mentioned above. Citko reports the following example of this effect for Russian:

(58) *Verb gapping repairing ATB LBE* (Citko 2006, ex. 8b)

Kakuju Džon pročital knigu a Meri ~~pročitala~~ gazetu?
which John read book and Mary read magazine

'What kind of book did Jhon read and what kind of magazine did Mary read?'

Our study has found limited evidence for this method of achieving ATB LBE. Overall, our speakers rated such examples as either simply unacceptable, or slightly improved relative to their un-gapped counterparts. However, a reviewer notes another interaction with ellipsis which we have found to be much more productive—omitting the object from the second conjunct, as in (59):

(59) *LBE in (what looks like) TP coordination with no object in the second conjunct*

Kakoj$_k$ / kotoryj$_k$ / čej$_k$ / čjornyj$_k$
what.kind.MASC.SG.ACC which.MASC.SG.ACC whose.MASC.SG.ACC black.MASC.SG.ACC
/ 'etot$_k$ Maša ljubit [t_k **čaj**]$_j$, a Vasja nenavidit $\_\_{}_j$
this.MASC.SG.ACC Masha.NOM loves tea.MASC.SG.ACC & Vasja.NOM hates

'What kind$_k$ / which$_k$ / whose$_k$ does Masha like t_k tea and Vasja hate?', 'Masha likes black / this tea and Vasja hates it.'

LBE is fully productive in this context. An understanding of LBE as formed by concealed pied-piping does not sit well with the possibility of ATB LBE. However, we suggest that this configuration does not need to be analyzed in this way. We hypothesize that such configurations are not true coordinations, but rather configurations in which there is a typical instance of LBE in the main clause, whereas the apparent second conjunct is an adjunct containing a null operator which, in the fashion of a PG, is bound by the NP undergoing concealed pied-piping in the matrix clause. This pseudo-coordination analysis appropriately captures the fact that the gap in the "second conjunct" is co-referent with the argument participating in LBE in the main clause, as shown in (60) below.

(60) *Pseudo-coordination with PG licensed by concealed pied-piping*

[[$_{NP}$ XP ~~YP N~~]$_k$ S V [$_{NP}$ ~~XP~~ YP N]$_k$ [$_{\&P}$ S V PG$_k$]]

This analysis is evocative of a suggestion of Franks (1992), in the context of Russian, that ATB constructions are like PG ones in involving a null operator.[31]

We conclude by discussing another instance of presumed PG licensing via sub-extraction from previous literature on Russian. Polinsky and Potsdam (2014) show that inverted split phrases (in which the N head itself is displaced leftward) can license a PG (61a), and furthermore, can form ATB configurations (61b):

(61) a. Kostjuma$_k$ on otložil srazu [tri t_k] daže ne merjaja $\_\__k$.
suit he set.aside at.once three even NEG trying.on
'As for suits, he picked three right away without even trying them on.'

(Polinsky and Potsdam 2014, ex. 49a)

b. Dereva$_k$ Maša kupila [tri t_k], a posadila dva t_k.
tree.GEN.SG Masha bought three CONJ planted two
'Masha bought three trees, but planted two.'

(Polinsky and Potsdam 2014, ex. 29b)

Pereltsvaig (2008) argues that inverted split phrases of this sort are, just like LBE, derived via movement of a full NP followed by distributed deletion. If this is the case, the licensing of the PG in (61a) via this inversion process is unsurprising.

However, a reviewer brings to our attention that (61a) and the ATB inversion in (61b), if considered together, could open up a problem for our analysis of LBE. Notice that in (61b), the remnants of this inverted displacement are distinct, so it is not clear how this example could

[31] Alternatively, the fact that the overt NP in the main clause and the omitted one in the conjunct in (59) are necessarily co-referent opens up the possibility that this construction does involve ATB LBE via concealed pied-piping, but with the "remnant" NP linearized only in the base position of the main clause. Such a manner of linearizing the ATB construction would appropriately avoid a violation of the distinctness condition on coordinate structures that Citko observes. An analogous acceptable configuration is one in which there is one instance of the remnants of extraction, pronounced at the right edge of the clause. Such a sentence could be produced, for instance, by right node raising of two identical "remnants" of LBE:

(i) Kakoj$_k$ Maša ljubit $\_\__j$, a Vasja nenavidit $\_\__j$ [t_k **čaj**]$_j$?
what.kind.MASC.SG.ACC Masha.NOM loves & Vasja.NOM hates tea.MASC.SG.ACC
'What kind of tea does Masha like and Vasja hate?'

Since in this sentence only one instance of the two identical remnants is realized, this configuration does not violate the distinctness condition, and thus we indeed expect it to be licit at PF.

be derived by concealed pied-piping of both phrases in question, since ATB movement requires identity between the phrases involved. This suggests that only the N head moves in (61b). If such inversions are in fact derived by true extraction in this way, it is unclear what to make of the PG licensing under inversion that we see in (61a).

This issue dissolves if sentences like (61b) do not result from ATB movement. In fact, it is possible for a "stranded" modifier to appear in the second conjunct in such a context even if there is no movement in the main clause, as we see in (62) below. This could be derived by N ellipsis:

(62) a. Tri dereva Maša kupila, a posadila (tol'ko) [dva ~~dereva~~]
three tree.GEN.SG Masha bought CONJ planted (only) two ~~tree.GEN.SG~~
'Masha bought three trees, but planted (only) two trees.'

b. Maša kupila tri dereva, a posadila (tol'ko) [dva ~~dereva~~]
Masha bought three tree.GEN.SG CONJ planted (only) two ~~tree.GEN.SG~~
'Masha bought three trees, but planted (only) two trees.'

We thus argue that (61b) can be analyzed as inversion via distributed deletion within the first conjunct, with N ellipsis in the second conjunct, rather than ATB movement. This reanalysis allows us to maintain that split inversion via concealed pied-piping licenses the PG in (61a).[32]

7 Conclusion

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

This paper's results indicate that the difference between Russian and a language without LBE is not syntactic, but rather, a matter of how PF can process the relevant movement chains. While

[32]This analysis entails that the second conjunct in (61b) has a null subject co-referent with that of the first conjunct. Since Russian allows null subjects in embedded contexts, this is plausible.

the appearance of LBE can be derived by distributed deletion in Russian, it is evidently the case that this mechanism is unavailable for a language like English. Since distributed deletion is the result of a PF rule, and the PF component of the grammar is known to be the locus of considerable cross-linguistic variation, this difference need not be a troubling one.

The results of this paper do not rule out true LBE from being possible in other languages, though we have argued that for Russian, this is not the case. The PG diagnostic used here has the potential to diagnose the nature of sub-extractions of other varieties, and in other languages. Since establishing the possibility of concealed pied-piping for Russian alone has taken the entirety of this paper, we must leave this extension to future work.

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