Parasitic gaps diagnose concealed pied-piping in Russian[*]

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1.   Introduction

In this paper, we use parasitic gaps (PGs) to diagnose the nature of Russian left branch extraction (LBE), which we argue involves a different syntax than its surface appearance suggests. As (1) exemplifies, LBE involves A'-extraction of constituents originating at the left edge of the nominal phrase, namely: adjectives, quantifiers, possessors, and demonstratives.[1] Some degree of LBE is productive in most Slavic languages.

(1)   *LBE in Russian*
        [**Kakuju / ètu / miluju**]$_k$ ty   uvidel [$_{DP}$ t_k košku]
        what   / this / cute   you saw   cat
        'What cat did you see? / I saw this cat / I saw a cute cat.'

The fact that some languages permit LBE is a puzzle, given that many other languages like English don't allow it, as (2) shows.[2] For English, the only possibility is to pied-pipe the entire DP dominating the relevant element, rather than sub-extracting from DP:

(2)   *No LBE in English: Pied-piping of containing DP required*

        a.   * **Which**$_k$ did you see [t_k cats]?
        b.   ✓ [**Which cats**]$_k$ did you see t_k?
        c.   * **Those / cute**$_k$ I saw [t_k cats]
        d.   ✓ [**Those cats / cute cats**]$_k$ I saw t_k

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    [1]Though not all speakers equally accept LBE for all of these elements.
    [2]We generally refer to nominal phrases as DPs, though we do not commit here to specific stance on whether or not Russian has D^0.

Among the first to consider the distribution of LBE was Ross (1967), who hypothesized that a syntactic constraint, the Left Branch Condition (LBC), is responsible for banning LBE in some languages. Many subsequent works have explored how the syntactic properties of a given language derive LBC effects (Corver (1990), Bošković (2005), a.o.). In this work, we present evidence from PGs that the difference between Russian and a non-LBE language like English does not necessarily stem from a difference in their syntax, but rather from a difference in how the relevant structures are pronounced. That is, we argue that LBE in Russian actually involves concealed pied-piping of the entire DP, rather than extraction from it. If this is correct, the structure of Russian examples like (1) is fundamentally the same as that of the English (2b/d) above, where the entire DP is pied-piped overtly.

PGs (Engdahl (1983), Nissenbaum (2000) a.o.) are gaps inside of islands which take on the interpretation of an A′-moved element outside of that island. Though identifying PGs in Russian takes some work, they become evident when conditions are right, as we'll see in the next section. Our key observation is that LBE and full DP movement in Russian have the same results for PG interpretation. This is previewed in (3), where we see that the interpretation assigned to the PG when the entire direct object undergoes *wh*-movement is identical to the interpretation assigned when LBE occurs, moving only the *wh*-determiner:

(3)　　*LBE and full DP movement license a PG with the same interpretation*
　　　　[**Kakoj**$_j$ ⟨**podarok**⟩]$_k$ Vasja voznenavidel [t_j ⟨**podarok**⟩]$_k$, [ne obnaruživ　　PG$_k$
　　　　what　　present　　　　Vasja came.to.hate　　present　　　　not discover.CNV
　　　　pod　ëlkoj]?
　　　　under pine.tree
　　　　'What present did V. come to hate, not finding (it) under the New Year tree?'

We argue from this fact that when LBE occurs, the entire nominal phrase moves, despite the fact that part of it continues to be pronounced in its base position on the surface. If this analysis is correct, the appearance of LBE in Russian must be, or at least can be, derived by something like distributed deletion (Faneslow and Ćavar (2002)), a conclusion corroborated by previous works on the nature of split nominal phrases in Russian (Pereltsvaig (2008), Fanselow and Féry (2013)).

2.　　Establishing PGs in Russian

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, as in (4):

(4)　　*PG in an adjunct island in English*
　　　　[Which person]$_k$ did you [forget about t_k [after talking to __$_k$]]?

The gap in the adjunct clause here cannot obviously have been created by movement, because such adjuncts are typically islands:

(5)   *Adjunct island in English*
        * [Which person]$_k$ did you forget about the cakes [after talking to t_k?]

Thus this gap in (4) must be truly somehow 'parasitic' on the movement chain in the matrix clause. While PGs can be easily identified in a language like English by using gaps in contexts that are typically obligatorily transitive, the fact that object drop is sometimes possible in Russian means that more work must be done to ensure that a given gap is in fact 'parasitic', rather than simply being derived by dropping the object.

Ivlieva (2007) shows that perfective aspect makes object drop more difficult in Russian. We observe that negation strengthens this effect, as does using a right-adjoined adjunct.[3] Some Russian verbs also resist object drop, like *obnaružit'* ('discover') in (6). We combine all these factors in (6) to create an adjunct clause whose object cannot readily be dropped:

(6)   *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
        'V. came to hate this present, not finding it under the New Year tree.'

Example (7) below shows that A$'$-movement in the matrix clause licenses the otherwise bad gap identified in (6), thus presenting a PG. As a result, here the real gap and the PG are co-referent, both taking the moved phrase *kakoj podarok* ('what present') as their antecedent:[4]

(7)   *Bad gap in the adjunct saved by matrix movement*
        [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?'

We can see that this gap really is 'parasitic', and cannot have been formed by movement out of the adjunct, since this adjunct is an island:

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[3]That is, we have observed that when the relevant adjunct is linearly internal to the matrix clause, object drop occurs more freely. Since our goal today is to determine empirically when object drop is impossible in order to establish the existence of PGs, we leave this and similar puzzles aside for now.

[4]Note that PG licensing is not just a property of *wh*-movement in questions, but is found in other A$'$ movement contexts, such as relative clauses (i.) and scrambling (ii.), as we see below:

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

ii.   [Ètot podarok]$_k$ Vasja voznenavidel t_k, [ne obnaruživ   __$_k$ pod   ëlkoj]
        this present   Vasja came.to.hate   not discover.CNV   under pine.tree
   'Vasja came to hate this present, not having found (it) under the New Year tree.'

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

With PGs in Russian identified, next we use them to diagnose the nature of LBE derivations.

3.   A theory of PGs and predictions for LBE

We've seen that a PG takes on the interpretation of an A′-moved phrase outside of the containing island. We follow works arguing that this interpretive result is facilitated by movement of a null operator within the island (Chomsky (1986), Browning (1987), Nissenbaum (2000)). What we call a PG is in fact the trace of this operator's movement. Following Nissenbaum, the operator moves to the edge of the island, and this movement triggers the rule of λ-abstraction (Heim and Kratzer (1998)).[5] Thus the adjunct island containing a PG becomes a derived predicate of type ⟨e,t⟩:

(9)   *Null operator movement inside adjunct*
           AdjunctP⟨e,t⟩

      OP   ⟨t⟩

           after PRO talking to t_{OP}(=PG)

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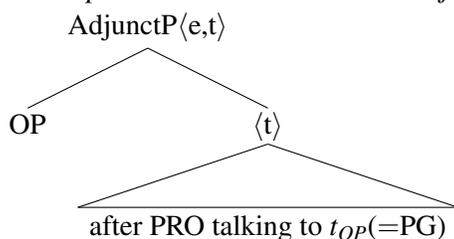
[5]That PGs are indeed traces of moved operators is indicated by the fact that placing an island inside of the adjunct containing the PG causes ungrammaticality (Kayne 1983, Chomsky 1986). We show this below with a relative clause island in English, which the operator required for a PG configuration cannot cross:

iii.   * Who$_k$ did John visit t_k [OP$_k$ without consulting the person [$_{RC}$ who'd talked to t_k?]] (Nissenbaum 2000, pg. 24)

We observe that the same holds for Russian, indicating that for this language as well, PGs are formed by operator movement. The following shows this with a relative clause island again:

iv.   * Kogo$_k$ Vasja uznal t_k [OP$_k$ ne smotrev   reportaž, [$_{RC}$ v kotorom Maša obvinjaet ___$_k$
        who.ACC who.ACC Vasja recognized   not watch.CNV report   in which   Masha accuses
      v kraže   kartiny]]?
      in stealing picture
      'Who is x s.t. Vasja recognized x, without having watched the report in which Masha accuses x of stealing a picture?'
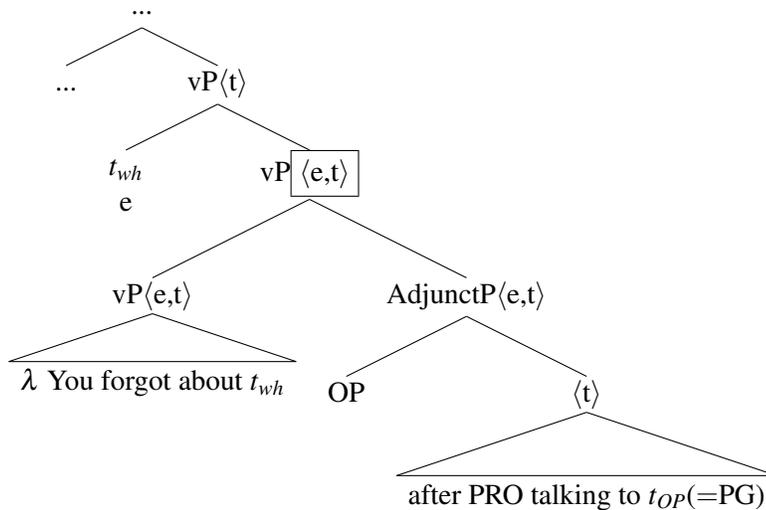
If there is a clause-medial position like vP which is a phase, and if movement from a phase must successive-cyclically pass through its edge (Chomsky (2000, 2001), a.o.), then A$'$-movement from vP (and the resulting λ-abstraction) creates an $\langle$e,t$\rangle$ node in the vP edge:

(10)   *Successive-cyclic movement leaves an $\langle$e,t$\rangle$ node in vP*

...
...   vP$\langle$t$\rangle$
    t_{wh} vP$\langle$e,t$\rangle$
    e
        λ You forgot about t_{wh}
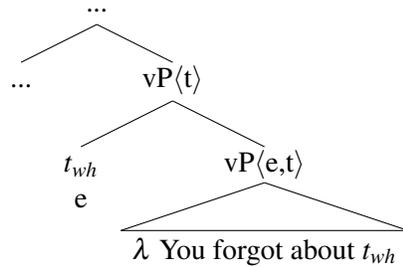
The PG-containing adjunct in (9) can adjoin to this $\langle$e,t$\rangle$ node in vP and be interpreted via Predicate Modification (Heim and Kratzer (1998)), as we see in (11), which models (4). Here the vP node created by adjunction (boxed below) denotes a function of type $\langle$e,t$\rangle$, which is true of individuals that the addressee both talked to and forgot about. The A'-moved constituent saturates the individual argument of this function, "filling in" both the variable that corresponds to its trace, and the trace of the null operator (which is the PG).

(11)   *How A$'$-movement allows a PG to be interpreted*

...
...   vP$\langle$t$\rangle$
    t_{wh} vP $\boxed{\langle$e,t$\rangle}$
    e
        vP$\langle$e,t$\rangle$ AdjunctP$\langle$e,t$\rangle$
        λ You forgot about t_{wh} OP $\langle$t$\rangle$
                                        after PRO talking to t_{OP}(=PG)

3.1   Predictions for LBE and PGs

With a theory of PGs in mind, we now consider what we expect for the interaction between PGs and LBE. We focus on LBE in the context of object PGs, for which there are two obvious possibilities. On one hand, If LBE involves extraction out of DP, we predict that LBE of a nominal modifier (adjective, demonstrative, quantifier, etc.) should result in an

uninterpretable structure for a configuration with an object PG, due to a type mismatch.[6] On the other hand, if LBE is in fact movement of the entire DP despite not obviously being pronounced as such on the surface, we expect an object PG to simply be interpreted as that moved DP, though the movement happens to be partially covert.

4.   LBE is interpreted like movement of the full DP

Consider (12) below, repeating (7) above, which shows that full DP movement in Russian can license a PG in an adjunct island. Here the moved nominal phrase *kakoj podarok* serves as the antecedent for both the real gap, and the 'parasitic' one:

(12)   *A′-bar movement of DP licenses PG*
[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?'

Example (13) below is the same as (12), except that (13) left-branch extracts the minimal *wh*-element *kakoj* rather than moving the entire DP. Here we see that the interpretation of the PG is the same as in (12), where the whole DP moved. The only difference is a change in information structure—LBE in Russian signals focus on the element to which it applies, but there is no truth conditional difference between (12) and (13).

(13)   *LBE licenses a PG as if it were movement of the entire DP*
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?'

We get the same result for LBE of other elements, as (14-18) below show:[7]

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[6]If all traces are of type e, then as shown in Heim & Kratzer (1998: 212), LBE results in an uninterpretable structure. Notice that the elements that can be subject to LBE (adjectives, quantifiers, demonstratives, etc.) will not be simply of type e (except perhaps possessors, see section 6), but something higher (like $\langle e,t\rangle$, or $\langle et,\langle et,t\rangle\rangle$, etc.). If traces can only be type *e*, extraction of those elements will always result in uninterpretability due to a type mismatch: The trace's type e denotation combines with the $\langle e,t\rangle$ denotation of NP, resulting in a type $\langle t\rangle$ for the NP/DP, which cannot be interpreted with the verb.

If higher type traces are possible, this problem for the interpretability of LBE is avoided, and LBE could in principle license PGs (in the right contexts, e.g., adjective movement could license adjective PGs). But licensing a direct object PG will fail: In such cases, the vP would then be of type$\langle \tau,t\rangle$, where τ stands for a higher type trace like $\langle e,t\rangle$. Such a vP cannot combine with an adjunct clause containing an argument gap, which will be a predicate of type $\langle e,t\rangle$. But if LBE actually covertly pied-pipes DP, this movement of DP will avoid the type mismatch, as it will leave an interpretable trace of type e.

[7]While some of these examples in (14-18) are more marked than others, we believe that this is attributable to the fact that not all elements undergo LBE with equivalent ease. For the most part, speakers who do not allow a particular example from this set do not readily permit LBE of the relevant element in the basic case.

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

(15)   *PG with possessor LBE*
Čej$_k$ Vasja voznenavidel [t_k podarok]$_j$, [ne obnaruživ   ___$_j$ pod   ëlkoj]?
whose Vasja came.to.hate [present],   not discover.CNV   under pine.tree
'Whose present did V. come to hate, not finding (it) under the New Year tree?'

(16)   *PG with skol'ko ('how many') LBE*
Skolko$_k$ Vasja voznenavidel [t_k podarkov]$_j$, [ne obnaruživ   ___$_j$ pod
how.many Vasja came.to.hate [presents],   not discover.CNV   under
ëlkoj]?
pine.tree
'How many presents did V. come to hate, not finding (them) under the New Year
tree?'

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

(18)   *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.

We take the fact that the PG in all these LBE contexts is interpreted as if the entire
nominal phrase moved to be evidence that this is indeed precisely what has happened, de-
spite surface appearances. This conclusion suggests that LBE is only apparent—when LBE
seems to have occurred, the entire nominal phrase has been pied-piped, but a mechanism
like distributed deletion (Faneslow and Ćavar (2002), Pereltsvaig (2008)) causes part of the
moved phrase to be pronounced in the tail of the movement chain:

(19)   *LBE as full DP movement + distributed deletion*
       [$_{DP}$ **X(P)** ~~**N**~~]$_j$ .... [$_{DP}$ ~~**X(P)**~~ **N**]$_j$

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We've just seen that (apparent) displacement of various modifiers from DP licenses PGs. We might not have expected this to be so, as some of these displaced elements are plausibly adjuncts, and adjuncts don't seem to license PGs under normal circumstances, perhaps due to a type mismatch (see footnote 6 above):[8]

(20)   *Adjuncts don't license PGs: English* (Browning 1987, p. 252)

   a.   * How$_k$ did you fix the car t_k [after repairing the bicycle __$_k$]?
        What is the way x such that you fixed the car in way x, after repairing the bike in way x?
   b.   * When$_k$ did you leave Boston t_k [in order to visit Mary __$_k$]?
        What is the time x such that you left Boston at time x, in order to visit Mary at time x?

(21)   *Adjuncts don't license PGs: Russian*

   a.   * Kak$_k$ Vasja t_k počinil mašinu, [__$_k$ ne otremontirovav velosiped?]
        how Vasja fixed   car   not repair.CNV   bicycle
        'What is the way x such that Vasja fixed the car in way x, not having fixed the bike in way x?'
   b.   * [V kakom mesjace]$_k$ on priexal v Moskvu t_k, [ne najdja   rabotu v
        in what   month   he came to Moscow   not find.CNV job   in
        Omske __$_k$]?
        Omsk
        'What month x is such that he came to Moscow in x, not having found job in Omsk in x?'

But as we've seen, LBE of adjuncts from the nominal phrase does result in PG licensing in Russian. This is unsurprising given our conclusion that such movement is really movement of a full DP, an argument, rather than extraction of an adjunct from DP.

4.1   Alternative hypothesis: PG licensing by movement of the DP remnant

It is conceivable that in the examples we've claimed to involve concealed pied-piping in strings instantiating apparent LBE (13-18), there actually is no pied-piping of DP, but instead the PG is licensed by the DP remnant undergoing either covert movement, or a short step of string-vacuous overt movement. We showed in section 2 that it is possible to construct Russian sentences with an illicit gap in an adjunct, as repeated in (22) below, which were our basis for diagnosing the existence of PGs in this language. If some covert or otherwise sting-vacuous DP movement is generally available to license PGs, it is not obvious why such movement cannot license the PG in examples of this sort:

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

That a short string-vacuous movement is not responsible for PG licensing in our crucial examples is especially clear in cases where (apparent) LBE strands DP in an embedded clause, but licenses a PG interpreted in a higher clause (23-24). Here, the (a) examples show a bad unlicensed gap, which in the (b) examples is licensed by long distance LBE:

(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
Vasja wanted not discover.CNV under pine.tree that.SUBJ Masha
vernula [ètot podarok]$_j$]].
returned this present
'Vasja wanted that Masha would return this present, not having found (it) under the New Year tree.'

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

(24) (Scenario: Vasja thinks that Masha took someone's present that was supposed to be under the New Year tree)

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

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

5. Concealed pied-piping of DP feeds late merge

If Russian LBE involves concealed DP pied-piping, the high covert DP position created by that movement should provide a site for late merge of an adjunct (Lebeaux (1991), a.o.). Lebeaux diagnosed late merge of adjuncts using principle C in English, and the same diagnostics are applicable to Russian, as we'll show.

First, Lebeaux shows that if the complement of N in a moved DP contains an R-expression that is co-referential with the subject, the result is ungrammatical. We find the same for Russian, as (25) shows:

(25)　　*No principle C avoidance for complement of moved NP*
　　　　* [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, Lebeaux shows that such configurations are grammatical when the relevant R-expression is inside of a relative clause of the moved DP. This is also true for Russian:

(26)　　*Principle C avoided by relative clause of moved NP*
　　　　[[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?'

Lebeaux argues that this difference emerges because complements/arguments must be merged as early as possible, but adjuncts can be merged late, post-movement of their host DP. Thus the complement *Vasja*.GEN in (25) is merged before the containing DP moves, meaning that there is a stage of the derivation where this complement is c-commanded by the co-referential subject. As such, there is a principle C violation. In contrast, the relative clause in (26) is not externally merged until 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.

Relative clauses can also avoid principle C in Russian LBE configurations like (27). The fact that overt pied-piping (26) and LBE (27) pattern together in allowing late merge of a relative clause is expected, if the underlying syntax of these two scenarios is the same—both involve movement of the full DP, to which an adjunct can be late merged. The only difference is that the moved DP is fully overt in (26), but partially covert in (27). In all these LBE + late merge configurations, PGs can be licensed as we've seen in previous examples.

(27)　　*LBE with principle C avoiding relative clause*

　　　　a.　*Possessor LBE*

　　　　　　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?'

b. *Adjective LBE*

Doroguščuju$_j$ [kotoruju **Vasja**$_k$ kupil] **on**$_k$ voznenavidel t_j kartinu
very.expensive that   Vasja   bought he   came.to.hate   picture

'The VERY EXPENSIVE picture, that Vasja$_k$ bought, he$_k$ came to hate.'

c. *Demonstrative LBE*

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.'

6.   On the obligatoriness of concealed pied-piping

We've argued that LBE can pied-pipe DP, but we have not shown that it must.[9] It is conceivable that concealed pied-piping under LBE is simply an option, though forced for the purposes of PG licensing in (13-18) and for achieving late merge in (27). If pied-piping under LBE is in fact optional, the left-branch extracted element should be able to truly leave DP behind and therefore license a PG on its own, in principle.[10]

In section 3.1 (particularly footnote 6) we discussed how most elements that can undergo LBE should not be able to license object PGs (but they do, in a way that we argued reveals concealed pied-piping). But possessors, which are conceivably DPs rather than adjectives, quantifiers, etc., might conceivably be able to license PGs by themselves, if they are nominal expressions denoting individuals (and thus type e). Davis (2019) demonstrates the existence of possessor LBE in colloquial English, which can license parasitic gaps:

(28)   *PG licensing by possessor extraction in colloquial English*
     [%] That's the guy [who$_k$ I said [t_k's work] is good, [despite thinking [PG$_k$'s art] is disturbing]]

Fox and Nissenbaum (2018) provide evidence for a related derivation in English based on examples with multiple PGs, that cannot be efficiently discussed here. If pre-nominal possessors are DPs in Russian, as in English, we expect to find comparable facts.

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[9]Kotek and Erlewine (2016) argue that covert movement pied-pipes as much as possible. They analyze movement that is entirely covert, while we are concerned with covert pied-piping that is driven by overt movement, though Kotek & Erlewine's claim could conceivably apply to this sort of movement also.

[10]As mentioned in footnote 6, if higher type traces are possible, we would expect LBE of adjectives, quantifiers, and other modifiers of DP to be able to license DP-internal PGs. As far as we can tell, such PG licensing fails, however. For instance, LBE of an adjective does not obviously license an adjective gap. This may be evidence for a theory where traces can only be type e, which would also provide an account for the fact that adjuncts don't seem capable of PG licensing, as in (20-21) above.

We are about to show that an extracted possessor cannot license a PG on its own—concealed pied-piping appears to apply. While this could be the case because concealed pied-piping is obligatory, if the denotation of possessors is more complex than e, then it may be that concealed pied-piping of the containing DP is required to avoid a type mismatch. Thus at this stage we do not know whether concealed pied-piping is truly obligatory in the syntax or not.

Prenominal possessors that participate in LBE have adjectival agreement morphology in Russian, and therefore it is not obvious that they are DPs. Rappaport (To appear) shows a range of data that points to the conclusion that they are typical DPs. For example, he shows that Russian pre-nominal possessors (unlike de-nominal adjectives, for example) participate in binding just as typical DPs do. He also argues, based on data from coordination with genitive lexical possessors and the case-matching property of the *kak* ('like, as')-construction, that Russian pre-nominal possessors bear genitive case. We accept Rappaport's argumentation, and thus assume that Russian pre-nominal possessors are true genitive case-assigned DPs, which as such, could be type e. If this is so, we expect that movement of such a DP should be able to license an object PG.

At this point, we must note that Russian PGs have a case matching requirement, though space constraints prevent us from demonstrating this in detail. In short, the case of the phrase that licenses a given PG must match the case that is normally assigned in the position where the PG is interpreted. If possessors bear genitive case as just mentioned, we must ensure that a PG potentially licensed by LBE of the possessor is also a position for genitive case. We can ensure that this is so by including negation, which can trigger genitive marking on objects in Russian. As (29) shows, movement of a DP with genitive case (assigned by the matrix V) indeed licenses a PG in the object position of a negated verb:

(29)   *Genitive DP licenses PG in a genitive object position*
[Č'ego   zvuka]$_k$ Lena ispugalas' t_k, [ne raspoznav   __$_k$
whose.GEN.SG sound.GEN.SG Lena was.afraid.of   not recognize.CNV
sproson'a]?
after.waking
'Whose sound was Lena afraid of, not having recognized (it) after waking up?'

The genitive DP that moved to license the PG in (29) contains a possessor. If we modify (29) to move only the possessor as in (30), the PG is again interpreted as if the entire containing DP moved. That is, the PGs in (29) and (30) have the same interpretation:

(30)   *PG with possessor LBE is interpreted as if the entire possessum moves*
Č'ego$_k$ Lena ispugalas'   [t_k zvuka]$_j$,   [ne raspoznav __$_j$
whose.GEN.SG Lena was.afraid.of   sound.GEN.SG not recognize
sprosonja]?
after.waking
'Whose sound was Lena afraid of, not having recognized (it) after waking up?'

Next consider a pronoun *eë* 'she', which is ambiguous between accusative and genitive case. This pronoun is independently fine as the object of a negated verb, or as a possessor. In (31) below, we extract a possessor *eë* in a configuration with a PG in the object position of a negated verb. The PG is interpreted as the entire possessed DP, not the extracted *eë*:

(31)   *"eë" as a possessor does not license an object PG by LBE*

Eë$_k$ Lena voznenavidela [t_k otkrytku]$_j$,   [ne obnaruživ __$_{j/*k}$ v komnate]
her Lena came.to.hate   card.fem.ACC not find.CNV   in room
a. Lit: 'Hers Lena came to hate card, not having found (it) in the room'
b. Lit: *'Hers Lena came to hate card, not having found (her) in the room.'

Overall, the above examples indicate that extracted possessors cannot license an object PG—concealed pied-piping of the containing DP appears to apply, as we found for other instances of LBE in section 4. All examples of this sort involving possessor extraction that we have so far tested yield the same result. While this could be evidence that concealed pied-piping is obligatory, we have not conclusively ruled out possessors failing to license PGs due to being adjectives (see footnotes 6 and 10). Decisively establishing the obligatoriness or not of concealed pied-piping will have wait for future research.

7.   Conclusion

In this paper, we have shown that LBE in Russian licenses PGs with a semantic result that is identical to PG licensing by full DP movement. From this, we argued that LBE in Russian involves concealed pied-piping of the full DP. This result corroborates previous research on LBE in Russian (Pereltsvaig (2008), Fanselow and Féry (2013)) and provides further evidence for a mechanism like distributed deletion (Faneslow and Ćavar (2002)).[11]

(32)   *LBE as full DP movement + distributed deletion*
[$_{DP}$ **X(P) N̶**]$_j$ .... [$_{DP}$ **X̶(P̶) N**]$_j$

Whether or not distributed deletion in particular is the best way to explain these facts, the necessary conclusion is that the difference between laguages with and without LBE is not necessarily a syntactic one, but may sometimes be a PF issue.

A central topic of further work should be to establish diagnostics for whether the concealed pied-piping we have argued for here is optional or not. Such findings will be informative for our understanding of the structure of Russian nominal phrases. For instance, if concealed pied-piping is obligatory, and if Bošković (2005) is right that the presence of D correlates with a ban on LBE, the conclusion may be that Russian in fact has D.

The sort of facts we have shown here should also be tested with LBE in other languages, and for other sorts of sub-extraction. This PG diagnostic has the potential to reveal other instances of extraction that are interestingly not quite what they appear to be on the surface, as we have argued is the case for Russian LBE.[12]

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[11]Danny Fox (p.c.) suggests that we could avoid positing distributed deletion by assuming that LBE is derived by covert movement followed by late merge of the apparently extracted constituent. However, this idea is challenged by the fact that LBE can displace non-constituents, like P + Adj (Pereltsvaig (2008)). The way to allow a non-constituent to be targeted by late merge is not straightforward.

[12]Bartosz Wiland reports that these Russian facts cannot be replicated in Polish, for instance, and hopefully this difference can be understood in a principled way. This may simply indicate that Polish has true LBE in its syntax, as opposed to Russian, in which LBE is a PF effect.

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