

# The Constraints and Consequences of Possessor Extraction in English\*

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**Abstract** I analyze possessor extraction in English, a restricted possibility for some speakers. I argue that the complexities of this corner of English provide evidence for the Cyclic Linearization theory of spellout (Fox & Pesetsky 2005), which restricts PE in English via its interaction with a PF condition on genitive morphology (Gavruseva 2010) that possessor-extracting speakers are able to satisfy at the local phase level. By extension, these results reveal some ways that Cyclic Linearization constrains stranding, as well as the non-phasehood of DP, the non-uniformity of left-branch extractions, and the generation of expletive *there* in vP.

## 1 Introduction

I examine a case of *possessor extraction* (PE), the A'-movement of a possessor out of the possessed nominal phrase. A well-known PE language is Hungarian, shown in (1). Here *wh*-movement extracts the possessor out of the object DP:<sup>1</sup>

- (1) **Hungarian PE** (Szabolcsi 1984)

**ki-nek<sub>k</sub>** ismer-té-tek [ a \_\_\_<sub>k</sub> vendég-é-∅-t ]  
**who-DAT** know-PST-2PL [ the guest-POSS-3SG-ACC ]

'Whose guest did you know?' [Lit: 'Whose did you know guest?']

PE contrasts with pied-piping A'-movement of possessors, as in (2), where movement of the *wh*-possessor pied-pipes the possessum DP.

- (2) **Standard English possessum pied-piping**

Mary is the author [<sub>CP</sub> **whose new book**]<sub>k</sub> they said[\_\_\_<sub>k</sub> is good]]

Such pied-piping is standardly thought to be the only possibility for English. This view is challenged by examples like (3) below. In (3) we see an equivalent of (2) available in the spoken language of some speakers, in which the possessor has extracted, stranding the possessum in an embedded clause. This first English PE example is appropriately marked with '%', as PE is not available to all speakers, but I omit this in subsequent examples.

- (3) **PE in English**

% Mary is the author [<sub>CP</sub> **who**]<sub>k</sub> they said[[\_\_\_<sub>k</sub>'s new book] is good]]

In (3) the Saxon genitive becomes phonologically dependent on the verb *said* in the absence of the moved possessor. It is easy to see that this /s/ really must be a stranded Saxon genitive. The past tense and plural subject of the relative clause in (3) where PE is

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<sup>1</sup>In addition to the Finno-Ugric Hungarian, some other PE languages are Chamorro (Austronesian, Chung 1991), the Mayan languages Tzotzil (Aissen 1996) and Chol (Coon 2009), and much of Slavic (Bošković 2005, Ross 1967). Romance and Germanic have some PE of postnominal/PP possessors.

taking place eliminate the possibility of this /s/ being subject agreement, and the fact that the possessor is female removes any possibility of this being a reduced resumptive *his*. In section (3), I present several arguments that examples like (3) truly do involve syntactic movement of the possessor, which as we'll see is subject to some detailed restrictions.

While not all speakers accept such PE examples, many do as part of the spoken register. The construction is markedly informal. This may contribute to its rarity in written form, though it is attested.<sup>2</sup> The only literature I know to have reported the existence of PE in English is Gavruseva & Thornton (2001), discussed in the next subsection.

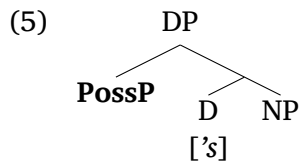
## 1.1 Background

The possibility of PE in English contrasts with the known impossibility of extracting *whose* (or any possessor phrase + ['s]) in English:<sup>3</sup>

### (4) Unextractability of PossP + ['s]

\* Mary is the author [<sub>CP</sub> **whose<sub>k</sub>** they said [<sub>\_\_<sub>k</sub></sub> **new book**] is good]]

If a possessor DP is the specifier of a possessive D whose exponent is ['s] in English (Corver 1992, Chomsky 1995), the immobility of *whose* and elements like it is unsurprising, as this would be movement of a non-constituent. However, the specifier of ['s] is surely a phrase in of itself, and so is in principle is movable:



As the annotation on (3) indicates, speakers disagree about the acceptability of such examples. For speakers who reject them, a number of works attribute the violation to a failure to satisfy PF conditions that reject movement which separates a possessor from the genitive marker (Chomsky 1995, Gavruseva 2000, Gavruseva & Thornton 2001). In this paper, I will accept this general line of explanation for these speakers' judgments. However, rather than arguing that speakers who find (3) acceptable lack these PF constraints, I argue that for these speakers the relevant PF conditions can be satisfied in weaker, local way. As we'll see, this account rules in PE, but only under certain conditions.

As mentioned, I am aware of one work that notices English PE. Gavruseva & Thornton's (2001) acquisition study found that English speaking children do PE in long-distance

<sup>2</sup>The following were found via Google, showing PE in both questions and relative clauses:

- (1) a. She raised her eyebrows while her other brunette friend, **who I heard's name** is Caroline...  
(<https://www.quotev.com/story/5110453/THE-GREAT-McCANN/23>)
- b. ...the rizinosaurus, **who you said's major downfall** would be it's size...  
(<http://www.topix.com/forum/science/dinosaurs/TAIDJ8LEBGL300D5I/p2>)
- c. So **who do you think's car** it is.  
(<https://www.wattpad.com/133087986-stranger-c-d-2>)
- d. Noelle has helped me in the past, along with another women **who I believe's name** is Rosie.  
([https://www.dbchocolate.com/Hazelnut-Truffles\\_p\\_835.html](https://www.dbchocolate.com/Hazelnut-Truffles_p_835.html))

<sup>3</sup>I assume that *whose* represents *who* plus ['s].

*whose*-questions, separating *who* and [*'s*]. Gavrusseva & Thornton argue that this is possible because these children do not yet have the PF constraints that motivate pied-piping and block PE. This perspective on the acquisition path leads us to expect a total lack of PE in adult grammar. However, in a control study on adults reported in the same work, Gavrusseva and Thornton (pg. 255) found PE in adult speech. 11% of their adult data comprises PE of the form shown in (3) above.

Gavrusseva & Thornton suggest that this 11% is the result of speech errors. However, a closer look at their data shows that all but two instances of PE gathered in this study are produced by two speakers, Cristy and Kath. Cristy produced PE about half as often as pied-piping, while Kath showed PE even more often than pied-piping. These speakers appear to have PE as a productive option, and indeed, in this work I claim that PE is a reality of the English of some speakers. A query of native English speakers of a variety of backgrounds and ages, mostly living in the Boston area, resulted in 18/29 speakers reporting PE to be grammatical.<sup>4</sup> Many note that PE feels like part of the informal register. PE is evidently part of the linguistic competence of these speakers. Under examination, this option of English grammar reveals some surprising contrasts and details. The analysis of these details and their consequences for linguistic theory are the topic of this paper.

## 1.2 Results in preview

An important fact we'll soon examine in detail is that PE out of an object possessum is ungrammatical if this possessum is stranded in its base position (6a). Rather, the possessum must be pied-piped to the edge of the local CP (6b).

### (6) Displacement of object DP under PE

- a. \***Who**<sub>k</sub> do they think [<sub>CP</sub> Mary read [<sub>\_\_k</sub>'s book]]?
- b. **Who**<sub>k</sub> do they think [<sub>CP</sub> [<sub>\_\_k</sub>'s book]<sub>j</sub> Mary read *t*<sub>j</sub>]?

Gavrusseva & Thornton noticed this fact about object possessums in their study as well. I show that the contrast in (6) is in fact an instantiation of a broader descriptive generalization about English PE:

### (7) Preview: CP edge generalization on English PE

Prior to extraction from DP, the possessor must sit at the left linear edge of the local CP

This generalization subsumes another mystery observed (but not explained) by Gavrusseva & Thornton which I discuss later on, that English PE isn't possible in monoclausal derivations. In a more typical PE language like Hungarian, PE can leave objects in their base position, and PE can occur in monoclausal configurations, as seen in (1). That English PE is restricted in this and more ways shows that there is something more complex happening in English, ruling out some instances of PE that, as far as pure syntax is concerned, should be grammatical.

I argue that this additional factor is the phase-bound adjacency condition on [*'s*] introduced above, and stated below:

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<sup>4</sup>My informants are mostly American/Canadian, including one British and one Australian speaker who accept PE. No generalization is apparent to me about the age/origin/dialect of PE speakers.

(8) **Genitive-Possessum Adjacency (Local version)**<sup>5</sup>

The Saxon genitive [’s] must be adjacent to the possessor it selects at the spellout of the minimal phase (vP, CP) containing [’s]

As mentioned, Gavruseva (2000) argues that PF conditions on genitive morphology restrict PE in some languages. I argue that highly restricted PE is permitted by the ability of English PE speakers to evaluate this condition in a phase-bound way, in combination with a more general property of syntax — The Cyclic Linearization (CL) theory of spell-out, which differs from Chomsky’s (2000, 2001) proposal in some important ways (Fox & Pesetsky 2005, Podobryaev 2007, Sabbagh 2007, Ko 2011, 2014).

I argue that the power of CL in predicting the complexities of this highly restricted and infrequently produced construction provides evidence for something like CL as an aspect of UG. I argue that this factor is a part of the grammar of both speakers who permit PE and those who don’t. Under my account, the difference between these two groups lies in how they enforce a PF condition. This understanding maintains a uniform syntax, with variation accounted for at the PF interface.<sup>6</sup>

I apply the insights and results of this analysis to a few related issues. My account of the puzzling intermediate stranding of the object possessum in (6) correctly predicts how CL should restrict stranding in intermediate phase edges generally. The possibility of PE in English, but not other left branch extractions, supports an understanding of left branch extraction and its restrictions as grammatically nonuniform (Grosu 1974, Corver 1990, 1992), contra Ross’s (1967) Left Branch Condition. The account of English PE provided here also suggests that DPs are not phases, a proposal supported by the distribution of *exactly*-stranding (Urban 1999, McCloskey 2000). Finally, I argue that patterns of possessum stranding in English PE lead to a novel argument that expletive *there* is externally merged in vP (Biberaur & Richards 2005, Deal 2009).

### 1.3 Roadmap

Section 2 describes facts about English PE, which section 3 argues is indeed true extraction. Section 4 explains the theoretic tools which I use in section 5 to build an account of English PE. Section 6 addresses this accounts general consequences for theory. Section 7 discusses how CL constrains stranding in phase edges, and consequences for expletive *there*. Section 8 concludes, and speculates about PE and acquisition.

## 2 The facts and the puzzle

Gavruseva & Thornton’s study of PE in children focused on questions, but English PE is possible in any A’-movement context, as shown in (9):

(9) **English PE is compatible with any A’-movement**

a. **Relative clause**

The student [**who**<sub>k</sub> you suspect[[   <sub>k</sub>’s answers] were copied]]

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<sup>5</sup>That DP is left out of the list of phases here is not an accident. More on this later.

<sup>6</sup>Fluent non-native speakers also often detect contrasts in English PE like (5) when the construction is brought to their attention (p.c. Sabine Iatridou, Martin Hackl, Tanya Bondarenko). This is unsurprising if the factors governing English PE are very general, as I claim.

- b. **Cleft**  
It's Michelle [**who**<sub>k</sub> we think[[  <sub>k</sub>'s cat] is the cutest]
- c. **Free relative**  
I'll speak to [**who**<sub>k</sub>ever you say[[  <sub>k</sub>'s idea] is the best]
- d. **Embedded question**  
I can't remember [**who**<sub>k</sub> I told you[[  <sub>k</sub>'s friend] is coming over]
- e. **Topicalization**  
Let me tell you about Jim. **This guy**<sub>k</sub>, I'm pretty sure   <sub>k</sub>'s story] will be news to you.

Most of the above examples show extraction of *who*. Other possessors can extract too, as in (10), though extraction of larger possessors tends to be judged as more difficult.<sup>7</sup> For clarity of judgments, many of the PE sentences that I use in this paper extract *who*.

(10) **More extracting possessors**

- a. [**Which person**]<sub>k</sub> did he claim[[  <sub>k</sub>'s idea] is the best]?
- b. [**How many people**]<sub>k</sub> do you think[[  <sub>k</sub>'s books] are on the table]?
- c. I went [**where**<sub>k</sub> he said[[  <sub>k</sub>'s food] is good]]

As (10) shows, English PE is restricted to long-distance *wh*-movement contexts:

(11) **No monoclausal PE**

- a. \***Who**<sub>k</sub> did you meet [  <sub>k</sub>'s friend]
- b. \***Who**<sub>k</sub> will [  <sub>k</sub>'s friend] arrive tomorrow?

All of the grammatical instances of English PE I've shown so far show PE out of a subject. In fact, as previewed in (5) above, non-subject<sup>8</sup> DPs exited by PE must be displaced to the edge of their local CP. Not doing so is entirely ungrammatical:

(12) **Displacement of possessed object DPs under PE** [= (6)]

- a. \***Who**<sub>k</sub> do they think [<sub>CP</sub> Mary read [  <sub>k</sub>'s book]]?
- b. **Who**<sub>k</sub> do they think [<sub>CP</sub> [  <sub>k</sub>'s book]<sub>j</sub> Mary read *t*<sub>j</sub>]?

The above demonstrates the necessity of this displacement with an object, but as (13-15) show, the same applies for non-subject arguments generally. Leaving the possessum in its base position is ungrammatical for all of these scenarios.

(13) **PE from direct object**

- a. **Who**<sub>j</sub> do they think [[  <sub>j</sub>'s cat]<sub>k</sub> we should give Mary *t*<sub>k</sub>]?
- b. **Who**<sub>j</sub> do they think [[  <sub>j</sub>'s cat]<sub>k</sub> we should give *t*<sub>k</sub> to Mary]?

(14) **PE from indirect object**<sup>9</sup>

<sup>7</sup>Gavruseva (2000) points out that the sort of *wh*-phrases capable of PE in a relevant language are subject to some idiosyncrasy. In English as well, there are plausibly independent factors beyond the scope of this paper complicating particular instances of PE.

<sup>8</sup>I use 'non-subject' to refer to all DPs whose base position prior to A'-movement is not spec-TP, but a lower, post-verbal position. Thus this set also includes, for instance, expletive associates.

<sup>9</sup>Though movement of the IO here is independently ruled out for some English speakers.

- a. **Who<sub>j</sub>** do they think [[\_\_<sub>j</sub>'s cat]<sub>k</sub> we should give *t<sub>k</sub>* the prize]?
- b. **Who<sub>j</sub>** do they think[[\_\_<sub>j</sub>'s cat]<sub>k</sub> we should give the prize [to *t<sub>k</sub>*]]?

This contrast also applies to expletive associates, which are post-verbal by default, though under PE they must end up at the edge of CP, as in (15c). Such examples are certainly marked, but they improve on alternatives like (15b) which lack pied-piping:

(15) **PE from expletive associate**

- a. Mary said [there was someone's book on the table]
- b. \* **Who<sub>j</sub>** did Mary say [there was[\_\_<sub>j</sub>'s book] on the table?]
- c. (?) **Who<sub>j</sub>** did Mary say[[\_\_<sub>j</sub>'s book]<sub>k</sub> there was *t<sub>k</sub>* on the table?]

Gavruseva & Thornton noticed this contrast for PE out of objects in their study of questions, in both children and adults. They suggest that this displacement is the result of partially pied-piping the possessed DP along with the moving possessor, stranding it in an embedded spec-CP. I adopt this view for the pied-piping we've seen for PE out of non-subjects generally. An alternative idea is that this displacement is the result of embedded topic/focus movement, something independently possible in English, which is required to license PE in these contexts. However, the displaced possessum in the above examples don't inherently have a topic/focus reading. Therefore I argue that what we have here is really intermediate stranding under successive-cyclic A'-movement.

If this hypothesis is accurate, the stranding of possessum DPs in this intermediate position provides overt evidence that movement out of CPs successive-cyclically stops in their edge, joining earlier arguments in previous literature on Afrikaans (Du Plessis 1977), West Ulster English (McCloskey 2000), and Polish (Wiland 2010). These works show elements that are strandable in an intermediate spec-CP, as well as in their base position. I have just shown, however, that a non-subject possessum DP in English cannot be stranded in its base position, presenting a puzzle which we turn to in the next section.

## 2.1 The possessor extracts via the linear edge of CP

So far, we've seen that while PE out of subjects doesn't require any further complexity, PE out of non-subjects requires pied-piping as far as the edge of the local CP, thereby moving across whatever is in subject position. At first glance, such facts suggest that PE is only possible from the structurally highest DP in the local CP. Ignoring A'-movements, the structurally highest and thus leftmost DP is whatever ends up in spec-TP. If the DP exited by PE is not in spec-TP, it consequently must pied-pipe to spec-CP with the moving possessor prior to PE. This is consistent with what has been shown so far.

If this were a sufficient description of the facts, PE of postnominal possessors out of a possessed subject would be grammatical. However, this is not the case:

(16) **No PE of postnominal possessors**<sup>10</sup>

- \***Who<sub>k</sub>** did you say [<sub>CP</sub> [a book of \_\_<sub>k</sub>'s] is getting popular]?

<sup>10</sup>We have already seen many examples of PE out of subjects, so it does not seem like there is any benefit to attributing the ungrammaticality of this example to the known difficulty of extracting out of subjects. On this note, however, the difficulty of extraction out of subjects may play a role in making some instances of English PE intolerable for many speakers. The difficulty of movement out of moved phrases could be a further source of the unacceptability of PE for many speakers, since English PE always exits a moved DP (either the subject or pied-piped non-subject).

Notice that in (16), *a book of* intervenes between the trace of PE and the left edge of CP. This additional fact suggests the following generalization, which I argue is correct:

- (17) **CP edge generalization on English PE** (=7)  
 Prior to extraction from DP, the possessor must sit at the left linear edge of the local CP

This generalization is graphically depicted below:

- (18)  $[_{CP2} \text{PossP} \dots [_{CP1} (*X/XP) [_{DP} \text{ } ]'s \text{ NP}] \dots ]]$
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Since the content of DP intervenes between the linear edge of CP and the trace of PE in (16), this PE of a postnominal possessor is predicted to be bad, given (17). Further facts which the following subsections show have essentially the same explanation. Notice that this generalization is consistent with the pied-piping of non-subject possessums under PE. If they did not pied-pipe to the CP edge prior to PE, (17) would not be met.

This generalization also makes sense of the lack of clear evidence for PE in monoclausal sentences. If (17) is required for PE in English, PE will never be evident unless there is more than one CP crossed by movement of the possessor. If the derivation contains only one CP, there is not enough space for PE to have a chance to become apparent, though my account predicts that PE in monoclausal derivations may occur string-vacuously. More on this in section 5.4.

### 2.1.1 Preposition stranding and PE

PE is not possible from a DP within a PP, unless the P is stranded in its base position:

- (19) **Pied-piped P blocks PE**
- a. Who<sub>j</sub> do they think[(**\*from**) [\_\_<sub>j</sub>'s house]<sub>k</sub>] we should leave [(**from**) t<sub>k</sub>]?
  - b. Who<sub>j</sub> do they think[(**\*to**) [\_\_<sub>j</sub>'s cat]<sub>k</sub>] we should give the prize [(**to**) t<sub>k</sub>]?

As with other non-subject DPs, the DPs in (19) must pied-pipe to the edge of the local CP in order to permit PE. These DPs are inside of PPs, and even though P is able to pied-pipe along with its DP complement generally in English, in this PE context, only stranding is permitted. This is predicted by the generalization in (17). If P had been pied-piped to spec-CP along with the possessum, this P would intervene between the left edge of the clause and the trace of PE, resulting in ungrammaticality as expected.<sup>11</sup>

### 2.1.2 Complementizers and PE

The distribution of complementizers and adverbs in PE derivations also fits with the linear generalization in (17). Recall that in English, long-distance *wh*-movement of non-subject DPs is compatible with an overt C (*that*) in the embedded clause:

<sup>11</sup>While the analysis in this paper will explain (19) and beyond in terms of CL and an adjacency requirement of [*'s*], in separate work (Davis, in prep) I show that CL plus a ban on phrase-bound specifier to specifier movement (Ko 2014) predicts the impossibility of stranding prepositions in intermediate positions. This addresses puzzle pointed out in Postal (1974), and predicts a cross-linguistic generalization about how word order constrains stranding in intermediate phase edges.

(20) **Overt C possible with non-subject extraction**

Who<sub>j</sub> do they think [<sub>CP</sub> (that) Mary likes \_\_\_<sub>j</sub>]?

Subject extraction, however, is not compatible with an overt C, a phenomenon well-known as the *that*-trace effect:

(21) **No overt C with subject extraction**

Who<sub>k</sub> do they think [<sub>CP</sub> (\*that) \_\_\_<sub>k</sub> likes Mary]?

PE out of a subject is also incompatible with an overt C. This fact is interesting because here we have extraction out of, but not movement of, the subject. Thus this fact does not obviously constitute an instance of the *that*-trace effect:<sup>12</sup>

(22) **No overt C with PE from subject**

Who<sub>k</sub> do they think [(that) [\_\_\_<sub>k</sub>'s name] is Mary]?

Notice that in (22), the presence of an overt C to the left of the possessum DP subject means that the trace of PE within DP is not adjacent to the left linear edge of CP. Thus (17) is not met here, and ungrammaticality is correctly predicted.

PE out of a non-subject DP and the pied-piping it requires is also incompatible with an overt C. If the possessum DP is stranded in spec-CP, we don't expect a C to be able to precede it in any case. An overt C to the right of the stranded DP is also not possible, which I attribute to whatever causes the Doubly-Filled Comp Filter (Chomsky & Lasnik 1977), triggered due to the stranded possessum in spec-CP.

(23) **No overt C with PE out of a pied-piped non-subject possessum**

Who<sub>j</sub> did you say [(that) [\_\_\_<sub>j</sub>'s cat]<sub>k</sub> (\*that) John saw *t<sub>k</sub>*]  
(cf. Whose cat did you say (that) John saw?)

### 2.1.3 Adverbs and PE

Adverb distribution in PE derivations also corroborates the linear generalization in (17). High adverbs are possible on either side of the English subject:

(24) **High adverb variability**

(Fortunately/frequently) John (fortunately/frequently) has money

PE out of a subject is incompatible with such an adverb to the left of the subject, but is fine with the adverb to the right:

(25) **No adverb preceding PE site: Subject**

Who<sub>k</sub> did you say [(usually) [\_\_\_<sub>k</sub>'s friend] (usually) has money]?

This too is predicted by (17) — The adverb to the left of the subject linearly intervenes between the trace of PE and the left edge of CP. PE out of a non-subject, necessarily involving pied-piping as already shown, behaves the same:

(26) **No adverb preceding PE site: Non-subject**

Who<sub>j</sub> did you say [(allegedly) [\_\_\_<sub>j</sub>'s cat]<sub>k</sub> (allegedly) John saw *t<sub>k</sub>*]?

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<sup>12</sup>This fact is compatible with accounts of the *that*-trace effect as a linear filter on C adjacent to a trace (Bresnan 1972, Chomsky & Lasnik 1977). I do not aim to say anything about complementizer-trace effects in this paper, as the account of English PE I provide ultimately predicts this fact along with a variety of other complexities of the construction.



## 2.2 The puzzle we've come to

I've shown that if any material intervenes between the point at which the PE movement chain begins and the left linear edge of the local CP, then the derivation fails. I hypothesize that this is the case because English PE interacts with constraints on *linearization*, the mapping of hierarchical syntactic structure to pronounceable linear strings at spellout.

The two concepts I use that engage with linear order have already been previewed. The first of these is a general claim about UG, the Cyclic Linearization (CL) theory of spellout. The second is an English-particular claim, that speakers capable of PE allow evaluation of an adjacency condition on the Saxon genitive [*'s*] at a local (phase-bound) level of the derivation, rather than at a global level. These factors interact to permit PE in English, with severe restrictions. In section 4, these concepts will be described in detail. But first, in section 3 I make the case English PE really is true extraction.

## 2.3 [*'s*] is not discriminating

Some of ungrammatical examples English PE look superficially like they might relate to cliticization requirements of [*'s*]. However, there turns out to be no clear way to state what exactly those requirements would need to be. Evidently [*'s*] can cliticize onto lexical nouns, as in the basic non-PE cases, and verbs (3, etc), but not adverbs (25, 26), or functional heads like C (22) or P (16, 19). Further, as (9d) has already shown, in ditransitive sentences it is possible for [*'s*] to end up cliticizing onto a pronoun, presumably non-lexical. A generalization is not obvious here. It is also not obvious why [*'s*] should be selective about its host in PE contexts, given that it is not picky generally (Zwicky 1987), and can cliticize to adverbs and functional heads:

- (27) a. [The person you're talking **to**]'s jacket  
b. [The man who left **yesterday**]'s book

It would also remain mysterious why [*'s*] can cliticize onto a verbs in some PE contexts like (3), but not in those PE sentences like (6a) where an object is stranded in its base position. In what follows, I offer an explanation for all of the above facts about English PE, without any reference to selectional restrictions on [*'s*].

## 3 English PE really is extraction

One might question whether English PE truly involves left branch extraction in the first place. Before proceeding to an account of (17) that relies on an analysis of PE as left branch extraction, I will present some arguments that this is indeed the correct analysis.

Recall the odd fact that English PE only occurs with long-distance A'-movement and is no good in monoclausal derivations, unlike standard PE languages like Hungarian. This fact might be thought to show that English PE is an illusion created by a DP-internal parenthetical, between the possessor and [*'s*].<sup>13</sup> The presence of this parenthetical makes the resulting construction always appear multi-clausal, since the DP-internal parenthetical ends us up with an additional verb in the surface string. For instance, my initial PE example in (3) above could be true extraction in bi-clausal context (28a), or a single clause with a parenthetical *they said* inside of the possessed DP (28b):

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<sup>13</sup>Thanks to Sabine Iatridou to bringing this point to my attention.

(28) **Mary is the author who they said's new book is good**

a. **PE analysis**

Mary is the author [<sub>CP</sub> who<sub>k</sub> they said [<sub>C1</sub> [<sub>DP</sub> \_\_\_<sub>k</sub>'s new book] is good]]

b. **Parenthetical analysis**

Mary is the author [<sub>CP</sub> [<sub>DP</sub> who (**they said**)'s new book] is good]

A few lines of evidence show that the parenthetical analysis is insufficient.

Independent of PE, parentheticals placed between the possessor and ['s] are not possible as shown in (29) with both verbal and non-verbal parentheticals:

(29) **Independent un grammaticality of DP-internal parentheticals**

a. I like [<sub>DP</sub> John (**\*I think/\*in fact**)'s idea]

b. [<sub>DP</sub> Who (**\*they said**)'s cat] is cutest?

c. [<sub>DP</sub> A friend of John (**\*Mary suspected**)'s] came over yesterday

d. I don't like John's puppy, but [<sub>DP</sub> Mary(**\*of course**)'s puppy] is cute

Even if we choose not to take this fact very seriously, a number of other diagnostics suggest that a parenthetical analysis is inferior to a movement analysis.

### 3.1 Parenthetical subtraction

Consider how parentheticals function generally. Parentheticals are optionally inserted into what are otherwise well-formed sentences. Therefore if PE constructions in fact involve parentheticals, we should get a well-formed sentence after subtracting the content that is supposedly parenthetical. This test reveals numerous PE derivations that cannot have been derived by parentheticals.

Consider the PE question in (30). Subtraction of the supposed parenthetical from such a sentence yields an impossible string, whether or not the auxiliary *do* is counted as part of the parenthetical:<sup>14</sup>

(30) a. Who **do they think**'s cat he saw? → \* Whose cat he saw?

b. Who do **they think**'s cat he saw? → \* Whose do's cat he saw?

The same effect is apparent with adjunct control. Example (31) below takes a PE sentence in which the subject of the supposed parenthetical controls into a *before* adjunct. Removal of the supposed parenthetical yields a bad result where PRO is left un-controlled:

(31) ✓ I know [which author **you<sub>k</sub> said**'s book looks good [before PRO<sub>k</sub> going out to buy it]]

→

\* I know [which author's book looks good [before PRO<sub>?</sub> going out to buy it]]

As such the removed material is obligatory, and cannot have been a parenthetical.

Similar facts can be observed when we consider the phenomenon of 'Free Deletion in Comp' (Chomsky & Lasnik 1977), which can derive facts like (32), where the *wh*-operator in a relative clause can be rendered silent:

<sup>14</sup>Thought it ought to be counted, as the auxiliary is required for a parenthetical in a question:

(1) Whose book, **\*(do) you think**, did Mary buy?

- (32) a. The person [(who/∅) I like]  
 b. The cat [(which/∅) I saw]

Comparable PE sentences with no overt *wh*-element are possible, as in (33). However, this example shows that removal of the supposed parenthetical material in these examples does not yield a grammatical result:<sup>15</sup>

- (33) a. The person I said[’s cat is cute] → \* The person[’s cat is cute]<sup>16</sup>  
 b. The person I said[’s cat you saw] → \* The person[’s cat you saw]

All these examples where parenthetical substitution yields impossible sentences indicate that there was never actually a parenthetical there in the first place.

### 3.2 PE is sensitive to (non)-bridge verbs

If English PE is an illusion caused by odd parenthetical placement, we should expect the same set of verbs that are good in parentheticals to be possible in forming these misleading sentences. This is not the case. Consider *whisper*, which is good in parentheticals:<sup>17</sup>

- (34) **Parenthetical ‘whisper’**  
 Mary (John **whispered**) wants (John **whispered**) a kitten (John **whispered**) for her birthday (John **whispered**)

This verb is among the manner of speech verbs (*mutter, stammer, mumble, groan*) that are ‘non-bridge verbs’, which extraction out of the complement of is degraded to impossible, though such verbs are perfectly good as parentheticals. PE constructions using such a verb as the embedding verb (35b) are no better than their pied-piping counterparts (35a), as expected if such sentences involve true multi-clausal embedding and extraction:

- (35) **No extraction from complement of non-bridge verbs**  
 a. **Pied-piping possessor movement**  
 The person [[whose cat]<sub>k</sub> I said/\***whispered**/\***groaned** [<sub>k</sub> is cute]]  
 b. **PE**  
 The person [who<sub>k</sub> I said/\***whispered**/\***groaned**[<sub>k</sub>’s cat] is cute]

<sup>15</sup>It is worth pointing out here that in the good examples (33a) and (33b), the presumably moving *wh*-possessor in these relative clauses is evidently silent. Notice that in (33b), the grammatical starting PE sentence involves the same pied-piping of the possessum to the edge of the local CP that we’ve seen in circumstances where the moving possessor is overt. As my account of English PE will rely on some constraints on adjacency and linearization, we might wonder how these examples with a null possessor should be thought about. This subject touches on a more general issue, that if CL provides some motivation for successive-cyclicity, null material must also be relevant to linearization if it moves successive-cyclically as well. Nissenbaum’s (2000) parasitic gap observations, for example, suggest that this is the case. I hypothesize that linearization precedes the insertion of phonological features, and therefore operates without reference to them. Whether the elements linearized eventually end up overt or covert is not at issue. See Ostrove (2018) for a recent argument that Vocabulary Insertion applies to the output of linearization, and not the reverse.

<sup>16</sup>This string of course does have a licit interpretation, but the point is that it does not have the relevant interpretation as a relativization structure.

<sup>17</sup>While we’re at it, note that the parenthetical cannot be placed inside of any of the DPs in this sentence: *a (\*John whispered) kitten, for (\*John whispered) her (\*John whispered) birthday*, showing once more that parantheticals are independently not licit inside of English DPs in the first place.

While non-bridge verbs are incompatible with PE, verbs with transparent complements (*think, say, claim, prove, suspect, tell, believe, hear, etc.*) generally are, as expected if PE is true syntactic extraction.

### 3.3 Negative quantifiers in parentheticals

An independent fact about parentheticals is that they generally can't contain negative quantifiers like *nobody*:<sup>18</sup>

- (36) **No negation inside parenthetical**  
John, (she/\***nobody** thinks,) is a silly fellow

In contrast, the supposed parenthetical part of PE sentences can host a negative quantifier *nobody* for many speakers, as in (37), where it even licenses an NPI *any*:<sup>19</sup>

- (37) **Negative quantifier in PE**  
That person is the author [who<sub>k</sub> **nobody** said[   <sub>k</sub>'s work] is any good]

The above facts are consistent with an analysis of English PE as true left-branch extraction. Having established this, the next section provides the background for my account of this phenomenon's complex properties.<sup>20</sup>

## 4 The factors that govern English PE

I argue that two factors converge to explain the complex distribution of English PE. One of these is a general claim about syntax, the CL theory of phase spellout. This general factor interacts with a second, more particular PF factor about ['s] in the grammar of PE speakers. These two things work together to permit PE in English only under very particular circumstances.

### 4.1 Cyclic Linearization

Chomsky (2000, 2001, inter alia) argues that phrases move out of phases via the specifier ('edge') of the phase because this position is an escape hatch, from which further movement is permitted. This position is an escape hatch for Chomsky because it is not subject to phase-level spellout, which targets the complements of phase heads, which are consequently impenetrable to further syntactic operations.

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<sup>18</sup>An exception is *nobody will doubt*. I suspect that this is an exceptional frozen form, as in my judgment no subject other than *nobody* is permitted (*John, \*Mary will doubt, has a nice car*).

<sup>19</sup>Thanks to David Pesetsky for this observation. Not all speakers agree with this judgment, but this is not surprising given that negation increases the difficulty of any given sentence. The sentences being manipulated here are a bit marked in the first place, being infrequent and register-specific.

<sup>20</sup>If possessors can (at least for some speakers) be extracted from the possessum DP by A'-movement, what about A-movement? A-movement of possessors (*possessor raising*) remains ungrammatical for PE speakers:

- (1) \* John<sub>k</sub> washed [   <sub>k</sub>'s hands]

I suggest that since possessors are Case-licensed in the functional domain of DP, A-movement out of DP is not an option. If English were a hyper-raising language, our expectations might differ.

In contrast, Fox & Pesetsky (2005) argue based on facts about object shift and quantifier movement in Scandinavian for a theory in which there is no dedicated syntactic position that guarantees phase escape. Instead, they argue that spellout applies to entire phasal constituents, edges included, and as such argue that spellout does not render syntactic elements impenetrable. Given these differences from Chomsky’s theory, how do Fox & Pesetsky derive successive-cyclicity? Fox & Pesetsky argue that it is the information-preserving nature of spellout that motivates successive-cyclic movement, via the linear edge of a phase being exited. This hypothesis about information preservation in linearization is termed *Order Preservation*:

- (38) **Order Preservation** (Fox & Pesetsky 2005a, pp. 6)  
*Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation.*

If Order Preservation holds, it is not possible to revise established linearization information in order to save derivations that end up with contradictory linearizations. Therefore the syntactic derivation must arrange for configurations that end up with linearization information that is consistent across all phases in that derivation, in order to avoid a crash at PF. Exiting a phase by stopping in its linear periphery is one way to keep linearizations consistent across all phases crossed by that movement:

- (39) **Phase exit via the linear edge**  
 a. ✓  $[ZP \alpha [PhaseP \alpha \beta [XP \alpha ]]]$   
 b. \*  $[ZP \alpha [PhaseP \beta [XP \alpha ]]]$

By moving to the edge of each phase crossed, phase-exiting elements are determined by PF to precede the content of each phase passed through, ultimately consistent with a final representation where the moved material precedes all phases in question.

If a movement out of a phase doesn’t pass through that phase’s linear edge, there is a way to salvage the derivation: Moving the material crossed over by that phase exit from the non-edge to a position that precedes what crossed it, hence restoring their original order, prevents a linearization problem. For instance, while the configuration in (40a) below is bad if it remains as-is, we predict the derivation in question to be saved if  $\beta$  later moves to precede  $\alpha$  within the second phase as it did within the first, as in (40b).

- (40) **Repairing a potential linearization problem**  
 a. \*  $[YP \alpha [PhaseP \beta [XP \alpha ]]]$   
 →  
 b. ✓  $[ZP \beta [YP \alpha [PhaseP \beta [XP t_\alpha ]]]]$

By moving  $\beta$  to precede  $\alpha$  which non-successive-cyclically crossed it in the previous phase, the linearization information of both phases in this sample derivation is kept consistent. This is the essence of Fox & Pesetsky’s account of Holmberg’s Generalization.

In what follows, we will see that pressure to move via the linear edge of a phase as in (39), as well as pressure to obey the scenario in (40), both play a role in determining the nature of English PE. The pressures of CL are also in tension with the previewed adjacency condition on [’s], which the next subsection discusses in detail. I argue that the tension between these factors accurately predicts the restrictions on English PE.

## 4.2 Phase-bound adjacency and the Saxon genitive

Gavruseva (2000) argues that PF conditions which mandate adjacency between genitive morphology and possessors partly determine whether a given language permits PE. Gavruseva & Thornton (2001) propose an English-particular instantiation of this general constraint, the essence of which I state as follows:

- (41) **Genitive-Possessum Adjacency (Global version)**<sup>21</sup>  
For any derivation containing [*'s*], the possessor must be linearly adjacent to [*'s*] in the final PF representation generated for that derivation.

This constraint is phrased in such a way that it must be met by the final PF representation generated by the derivation in question. Such a constraint predicts that PE should be impossible, as is indeed the case for many English speakers.

Of course, it is necessary to say something else about the grammar of those speakers who permit PE as an option. I argue that PE is an option for such speakers because they are able to satisfy the above condition in a more local way. In particular, I argue that such speakers can enforce this condition in phase-bound way, as described in (42):

- (42) **Genitive-Possessum Adjacency (Local version)**  
The Saxon genitive [*'s*] must be adjacent to the possessor it selects at the spellout of the minimal phase (vP, CP) containing [*'s*]

This locally-evaluated condition permits subsequent movement operations to break adjacency between the possessor and [*'s*]. Precisely because [*'s*] is not carried along into subsequent phases after successful PE, the adjacency condition is not applicable to those later phases, and the possessor can move freely.

## 4.3 The importance of spelling out edges

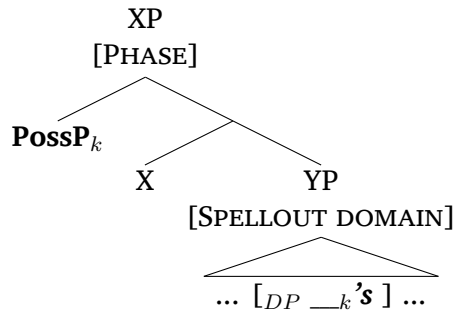
The fact that the CL theory includes phase edges in the spellout domain of a phase, effectively making phases isomorphic to their spellout domains, is crucial for my account. This system allows phase-level spellout and the PF adjacency requirement of [*'s*] to interact with successive-cyclic movement through phase edges. This interaction is not possible in Chomsky's theory, in which phase-level spellout is limited to phase complements.

To understand why, consider that in a PE derivation, successive-cyclic A'-movement will move the possessor to the edge of each phase being exited. In order for PE to actually occur, there will necessarily be a point in the derivation where the possessum DP is stranded in the spellout domain of a phase to whose edge the possessor has extracted. In such a configuration, as in (43), the extracted possessor and the possessum DP are separated by the spellout domain YP:

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<sup>21</sup>I define adjacency a relation between two elements  $\alpha$  and  $\beta$ , whereby  $\alpha$  and  $\beta$  are concatenated together into a linear string with no other material intervening between them. Note that this notion of adjacency is not a primitive of CL. CL is concerned with (relative) order/precedence, which is not sensitive to intervening material. For example, in a string [ $\alpha\beta\gamma$ ],  $\alpha$  and  $\gamma$  are not adjacent due to the intervening  $\beta$ . However the precedence relation  $\alpha > \gamma$  is true of this string whether or not  $\beta$  intervenes between  $\alpha$  and  $\gamma$ . I posit that while linearization by default operates over precedence and not adjacency, adjacency of the sort defined here is sometimes enforced by the idiosyncratic PF requirement of certain elements. Intuitively such elements are what we call 'bound morphemes'.

(43) **Possessum and moved possessor separated by a spellout domain**



When spellout applies to YP in (43), the adjacency requirement of [*'s*] will not be met. This is because the extracted possessor has moved outside of the spellout domain YP of this phase XP, before spellout applied. Thus spellout determines [*'s*] to be non-adjacent to the possessor, and this derivation fails. The derivation can be saved if instead of extracting the possessor, the possessum DP is pied-piped along with the possessor's movement, though in doing so PE fails to occur. This issue arises at any point where a spellout domain would separate the possessor and possessum. As PE does in fact eventually move the possessor into a separate phase, this theory incorrectly rules out PE entirely.

As we'll see in detail in the next section, the fact that CL spells out entire phasal phrases together, edge included, makes it possible for successive-cyclic movement of the possessor to interact with the PF adjacency requirement of [*'s*]. This interaction results in satisfaction of the requirements of [*'s*] only under particular circumstances, as desired.

This discussion has assumed that DPs are not phases. In fact, if DPs are taken to be phasal, the account here breaks down and wrongly predicts unrestricted PE. More on this in section 6.

## 5 Predicting the facts

Now I will show how the concepts explained above predict the details of PE in English. First I will discuss PE out of subjects. Next I consider the more complex and interesting case of PE from non-subject DPs. This section will culminate in an explanation of the puzzling fact that English PE is not possible in monoclausal derivations. In the end, all of these facts fall the descriptive generalization I made in section 2:

- (44) **CP edge generalization on English PE** (=7)  
Prior to extraction from DP, the possessor must sit at the left linear edge of the local CP

I take all vPs to be phasal following Legate (2003) and Ko (2014), a claim which will also be relevant to the discussion of expletives later on. While the exact syntactic status of [*'s*] is not of important to my account, it will suffice to claim that this is a form of possessor-selecting D as mentioned in the introduction.

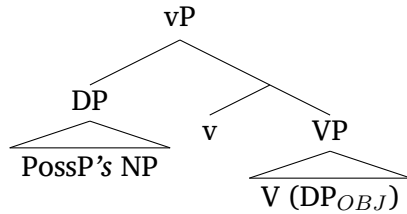
### 5.1 PE from subjects

Here I discuss PE from subjects, starting from the vP phase of the derivation. Under CL, subjects either originate in spec-vP, or stop off there in order to precede V. I consider external arguments first.

### 5.1.1 PE from subjects at the embedded vP

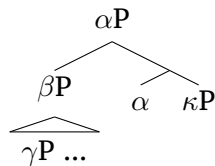
If external arguments are externally merged in spec-vP, as in unergatives and transitives, no successive-cyclic movement is necessary at this stage of the derivation. The subject and its possessor are already at the linear edge of vP, which they will soon exit.

(45) **Transitive/unergative vP**



Further, if movement of a phrase to the specifier of a head requires a probing feature on that head to find that phrase in its c-command domain (Chomsky 1995, 2001), then phrase-bound specifier to specifier movement is not possible (Ko 2014). This is because a head does not c-command, and therefore cannot move, anything already in one of its specifiers. This is illustrated in the schema in (46), where we see that the head  $\alpha$  c-commands its complement  $\kappa$ P, but not its specifier  $\beta$ P or anything inside of  $\beta$ P:

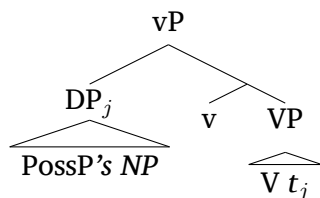
(46)  **$\alpha$  c-commands  $\kappa$ P, but not  $\beta$ P or  $\gamma$ P**



Thus for instance, movement of  $\beta$ P or  $\gamma$ P to a higher specifier of  $\alpha$ P isn't possible. In the same way, extraction of the possessor within a vP like (45) is not only unnecessary as far as CL is concerned, but impossible anyway.

If the subjects of passives/unaccusatives are externally merged as complements of V where they receive their theme  $\theta$ -role, they must move to spec-vP in order to precede V and maintain a coherent linearization under CL, given that English V moves to v (Larson 1988, Chomsky 1995, Kratzer 1996, and others).<sup>22</sup> Movement of the subject to spec-vP automatically also brings a possessor it contains to the linear edge of the phase:

(47) **Unaccusative/passive vP**

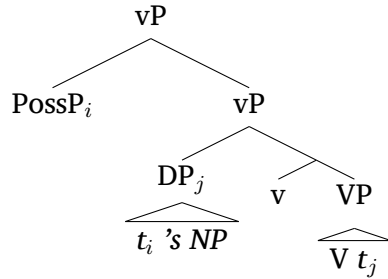


If we consider the possibility of tucking-in (Richards 1997, 1999, inter alia), it is in principle possible for the possessor to extract to spec-vP from the theme subject in-situ, which subsequently tucks-in below the extracted possessor, as in (48) below. This string-vacuous possessor extraction satisfies the adjacency requirements of [']s just as if the possessor had not moved at all.

<sup>22</sup>If Chomsky (2000) is in the end correct that non-agentive vPs are not phases, then movement of passive/unaccusative subjects isn't necessary here.



(48) PE out of unaccusative subject + subject movement



Because the derivation in (47) accomplishes the same thing as (48) but with less movement operations, we might expect concerns of economy to favor (47). However, nothing of substance for my account changes if the reality is (48).

5.1.2 PE from subjects at the embedded CP

After the completion of vP, I assume that upon external merge of T, the subject moves to spec-TP. Upon merge of C, the opportunity to A'-extract the possessor arrives. In section 2 I showed that at this stage of the derivation, the CP level of the embedded clause of a PE derivation, various restrictions hold. PE out of subjects, for instance, is subject to restrictions on the availability of complementizers and adverbs, as (49) shows again:

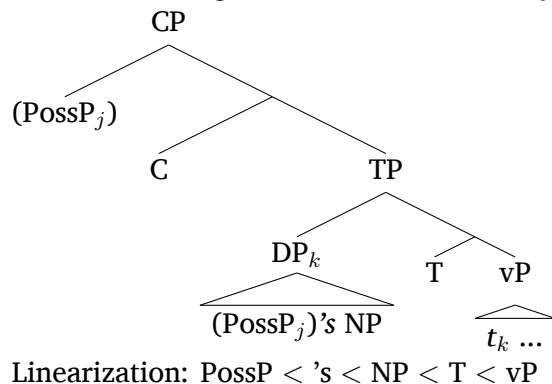
(49) Some restrictions on PE out of subjects

- a. No adverb preceding PE site: Subject  
Who<sub>k</sub> did you say [*\*frequently*] [<sub>k</sub>'s friend] (frequently) has money]?
- b. No overt C with PE from subject  
Who<sub>k</sub> do they think [*\*that*] [<sub>k</sub>'s name] (*\*that*) is Mary]?

The proposal so far predicts these restrictions. I argue that because A-movement of the possessum subject has carried ['s] into the CP phase, spellout of CP will be constrained by the adjacency requirement of ['s]. This results in restrictions on movement of the possessor out of this embedded CP, as we'll see.

First, let's see why PE succeeds when nothing is present in the edge of the embedded CP. In such a configuration, no movement operations are necessary at this point in the PE derivation. The possessor could string-vacuously extract to spec-CP, but seeing as the possessor inside of the subject is already on the linear edge of CP even without extracting, such movement is unnecessary though harmless as far as CL is concerned:

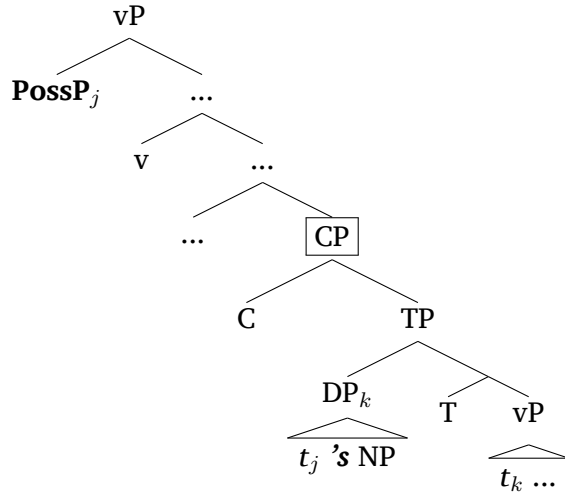
(50) Harmless string-vacuous PE out of subject in the embedded CP



The linear order established at the spellout of CP in this scenario also satisfies the adjacency requirement of [*'s*], which will be found to be adjacent to the possessor at PF whether or not the possessor string-vacuously extracts at this point.<sup>23</sup>

Next, the possessor can extract into the matrix vP, stranding the possessum DP and the [*'s*] it contains in the lower CP. When the matrix vP spells out, [*'s*] is not present within that vP to enforce its adjacency requirements. This is because [*'s*] has been stranded in a lower phase that has already undergone spellout, at which point the adjacency requirements of [*'s*] were satisfied. As such, extraction of the possessor has succeeded:

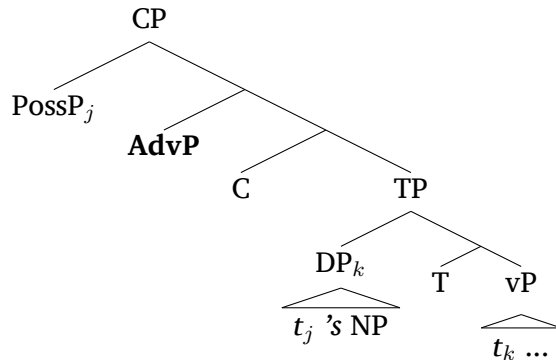
(51) **Successful PE into matrix vP - [*'s*] stranded in embedded CP**



Crucial to this logic is the fact that the adjacency requirement under discussion is a property of the bound morpheme [*'s*] only, not the possessor.

The derivation becomes more complicated when overt material is present in the left edge of CP. Consider a derivation like (52) where the embedded CP contains an adverb in the left periphery. CL motivates the possessor which will be extracted out of this CP to stop in its linear edge. Therefore the possessor must move to the left of a high adverb in CP. Notice that if this occurs, that adverb will intervene between the moved possessor, and the stranded possessum DP in spec-TP containing [*'s*]:

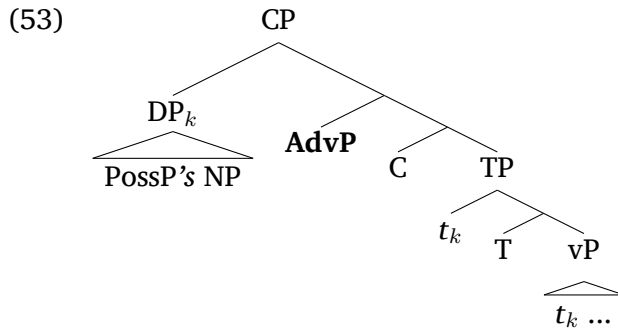
(52) **High adverb in the embedded CP**



<sup>23</sup>Implicit here is the hypothesis that unpronounced elements, such as the null C in (50), are irrelevant for linearization and therefore cannot interfere with the adjacency requirement of [*'s*]. If null elements are in fact linearized, then possessor movement in (50) will require pied-piping of the possessum DP to the edge of this CP before PE can occur, as we'll see with examples with intervening adverbs shortly.

While subsequent movement of the possessor out of this CP would be licit as far as CL is concerned, there is a problem. When this embedded CP undergoes spellout, PF will find the possessor and [’s] in this phase non-adjacent. Therefore this CP will be deviant at PF, because the adjacency requirement of [’s] is violated.

There is a way to keep this adverb and avoid the above problem: suspend PE at this stage of the derivation, pied-piping the possessum DP around the intervening adverb to the edge of CP, along with the possessor, as in (53):



This derivation has moved the possessor to the edge of the phase it is about to exit, as CL requires. Pied-piping of the possessum DP rather than extracting the possessor at this stage resulted in a configuration that, when spelled-out, will find the possessor adjacent to [’s] as needed. Having satisfied both CL and the requirements of [’s], the possessor can subsequently extract into the matrix vP phase as in, (51) above. In such derivations we end up with the high adverb to the right of the stranded possessum, which as we saw in (49a), is the only grammatical way to have such an adverb in a CP exited by PE. The result is ungrammatical if the stranded possessum is to the left of the adverb.<sup>24</sup>

Derivations in which instead of a high adverb there is an overt complementizer, as in (49b), will be nearly identical to what I have just shown for the adverb case. If CP contains an overt C, the possessor must move to its left, pied-piping the possessum DP with it in order to maintain adjacency with [’s]. The eventual stranding of the possessum DP in spec-CP will result in deletion of that complementizer due to the Doubly Filled Comp Filter, something we independently know to hold in English. Thus as (49b) above showed, we expect an overt C on either side of a subject that PE has exited to be impossible.

This concludes the analysis of PE out of subjects. Next I will show that the concepts under evaluation also make the right prediction for PE out of non-subject DPs, without any additional machinery.

## 5.2 PE out of non-subjects

### 5.2.1 The embedded vP and obligatory possessum pied-piping

Whereas for PE out of subjects nothing of great interest happened within vP, PE out of non-subject DPs immediately shows evidence for the concepts under discussion. Recall that PE out of non-subject DPs requires that DP to be pied-piped as far as the edge of the local CP. That is, in contrast to a PE language like Hungarian, English PE cannot strand a non-subject possessum in its base position:

<sup>24</sup>The same string could also simply have been produced by adjoining to the left rather than right of the subject, but the point here is that even if the adverb were above the subject, we expect the derivation to be able to converge with the result that the adverb is to the right of the stranded possessum.

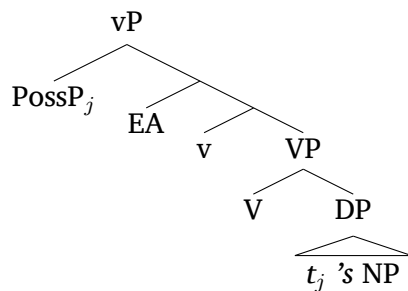
(54) **Pied-piping in PE out of non-subject**

- a. \* The person [**who<sub>j</sub>** you think [John ate    <sub>j</sub>'s food] is Mary]
- b. The person [**who<sub>j</sub>** you think [   <sub>j</sub>'s food<sub>k</sub> John ate *t<sub>k</sub>*] is Mary]

To see why this kind of stranding is ruled out under the present account, let's examine the configuration at the embedded vP in these contexts. Note that PE out of any non-subject DP will work in exactly the same way.

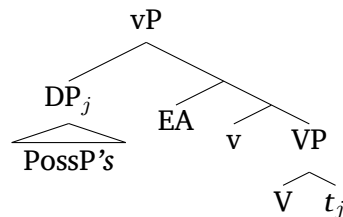
In (55) below we see a transitive vP, in which PE has exited the object, stranding it in its base position the complement of V. This derivation will be satisfactory for CL, as the extracting possessor has moved to the linear edge of this phase. However, spellout of this structure will not satisfy the adjacency requirements of ['s], which is not adjacent to the possessor due to the intervening subject in-situ, as well as V:

(55) **\*PE from in-situ object**



The way to satisfy CL as well as ['s] is to pied-pipe the possessum DP to the edge of vP along with the possessor. This derivation moves the extracting possessor to the edge of the phase to be exited, and keeps ['s] adjacent to it:

(56) **Object pied-piping at vP**



We have just seen why base position stranding of a non-subject exited by PE is expected to be ungrammatical. Such stranding would violate the requirements of ['s]. At this point in the derivation the possessum DP has been pied-piped to an outer spec-vP, but this is not where it remains:

(57) **\* Possessum stranding in spec-vP**

- \* **Who<sub>k</sub>** do they think [<sub>CP</sub> she [<sub>vP</sub>    <sub>k</sub>'s **book<sub>j</sub>** read *t<sub>j</sub>* ] ]?

As we've seen, this possessum will ultimately be pied-piped to the edge of CP:

(58) **Possessum stranding in spec-CP**

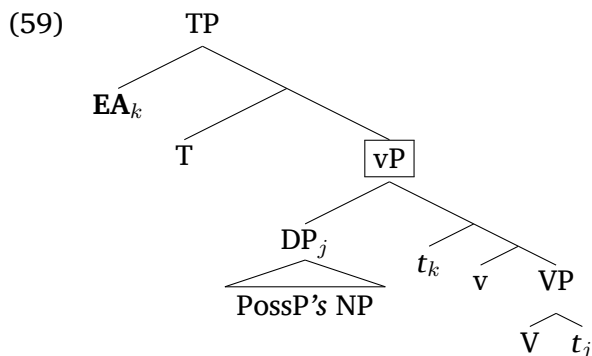
- Who<sub>k</sub>** do they think [<sub>CP</sub>    <sub>k</sub>'s **book<sub>j</sub>** she [<sub>vP</sub> *t<sub>j</sub>* read *t<sub>j</sub>* ] ]?

This fact is now puzzling, since the proposal so far provides no reason why the pied-piped possessum should not be able to remain in spec-vP, where the adjacency requirements of

[’s] were met. If the possessum were stranded here, PE should be able to go on freely. To see why this proposal in fact predicts that the possessum cannot remain in spec-vP, we need to consider what happens in the next phase of the derivation, keeping CL in mind.

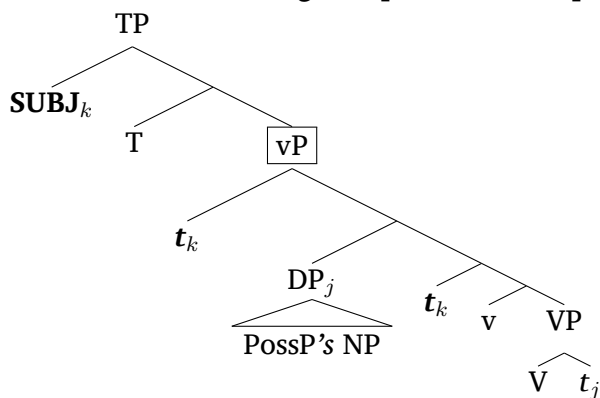
### 5.2.2 The embedded CP and crossing at vP

Upon the merge of T, the subject A-moves to spec-TP, as in (59). This movement carries the subject across the possessum DP which has been pied-piped to an outer spec-vP:



Recall that CL motivates elements moving out a phase to stop in that phase’s linear edge. We can imagine that for this reason, A-movement of the subject to spec-TP in (59) might actually stop through a higher spec-vP, above the moved possessor and possessum, as in (60) below. However, such a derivation requires movement of the subject from one specifier of vP to another, which as a phrase-bound spec-to-spec movement is not possible:

(60) \*A-movement to a higher spec-vP above possessum



Thus we expect the only possibility to be the derivation in (59), where the subject non-successive-cyclically moves across the moved possessum in spec-vP. The derivation in (60) would end up problematic from a linearization standpoint anyway — Here the subject’s derived position at the vP edge preceded the moved possessor within vP, but this possessor will later move to spec-CP post-extraction, where it precedes the subject. Thus the ordering of possessor and subject will end up inconsistent in (60). In contrast, the derivation in (59) avoids a linearization problem, as the possessor (and possessum) precede the subject within vP, just as they will after movement into the CP phase.

Recall once more the fact that non-subject possessums cannot be stranded in spec-vP. As mentioned in section 4.2, CL makes a prediction about how to repair non-successive-cyclic phase exits, that don’t pass through the linear edge of the phase. In these scenarios,

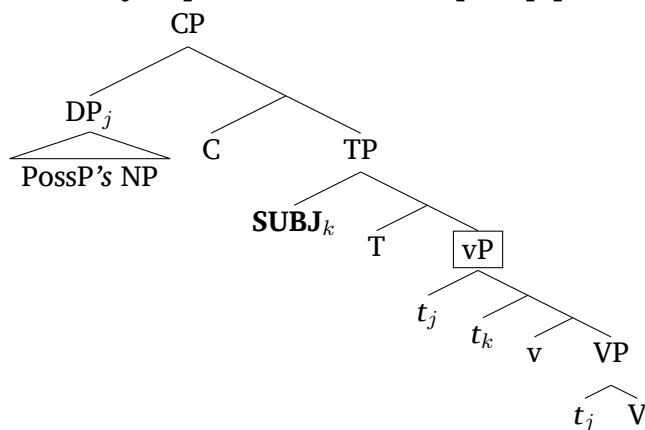
the material crossed over by a movement from the non-edge must move into the next phase as well, to a position that precedes what previously crossed it. Doing so keeps the linearization information of both phases consistent:

(61) **Repairing a potential linearization problem**

- a. \* [<sub>YP</sub> α [<sub>PhaseP</sub> β [<sub>XP</sub> α ]]]  
 →  
 b. ✓ [<sub>ZP</sub> β [<sub>YP</sub> α [<sub>PhaseP</sub> β [<sub>XP</sub> t<sub>α</sub> ]]]]

Given this hypothesis, if the A'-moved possessum DP in vP must be non-successive-cyclically crossed by A-movement of the subject as in (59), we expect that this possessum cannot remain in spec-vP — It must move to a position that precedes the subject within the next phase. This is precisely what is accomplished by continuing to pied-pipe the possessum along with successive-cyclic A'-movement of the possessor to spec-CP:

(62) **Non-subject possessum must be pied-piped to spec-CP**



Linearization of vP: PossP < NP < SUBJ < v ...  
 Linearization of CP: PossP < NP < C < SUBJ < T < vP ...

The present account thus correctly predicts that non-subject possessums must pied-pipe to the embedded spec-CP under PE. While in principle possessum stranding in spec-vP should be licit, the interaction with A-movement of the subject requires further pied-piping to spec-CP to maintain a consistent linearization across the embedded vP and CP.

After pied-piping with the moving possessor for the duration of the derivation of the embedded clause, PE should then be free to occur. There is nothing to force further pied-piping. We have seen that this is precisely what the facts about English PE show us. The possessor extracts on into the matrix clause, with [’s] remaining stranded below in the lower CP phase where it was spelled out, and its requirements met. While such PE succeeds simply when there is not.

The above shows a successful derivation of PE from a non-subject, but this is not quite the end of the story. Recall that, as for PE out of subjects, PE out of non-subjects involves restrictions on the content of the embedded CP, as repeated below:

(63) **CP-level restrictions: PE from non-subjects**

- a. **No overt C on either side of pied-piped non-subject**  
 Who<sub>k</sub> did you say [(that) [\_\_<sub>k</sub>’s cat] (that) John saw]  
 (cf. Whose cat did you say (that) John saw?)

b. **No adverb left of pied-piped non-subject**

**Who**<sub>k</sub> did you say[(**\*allegedly**)\_\_<sub>k</sub>'s cat (?allegedly) John stole]  
(cf. Whose cat did you say (allegedly) John stole?)

c. **No pied-piped P left of pied-piped non-subject**

**Who**<sub>k</sub> do you think[[(**\*from**) \_\_<sub>k</sub>'s house]<sub>k</sub> we should leave [(**from**) *t*<sub>k</sub>]?

The proposal so far yields some familiar explanations for these restrictions.

Given that the possessum DP has been pied-piped to spec-CP by this stage of the derivation, we certainly do not expect a complementizer to be able to precede it, as (63a) shows. This example also shows that an overt complementizer cannot follow the possessum, presumably because the stranded possessum in spec-CP triggers the Doubly Filled Comp Filter, ruling out an overt C here.

We see in (63b) that a high adverb in the embedded CP must be to the right of the pied-piped non-subject possessum. The result is ungrammatical if the adverb is to the left of the possessum. Consider that there are two possibilities for generating such a word order. The first is extracting the possessor to a higher spec-CP above the adverb. Beyond violating the ban on phrase-bound specifier to specifier movement, this option violates the adjacency requirements of [*'s*], since the adverb which the possessor moves around would intervene between the possessor and possessum at the spellout of CP:

(64) \* ... [<sub>CP</sub> **who**<sub>k</sub> allegedly [*t*<sub>k</sub>'s cat]<sub>j</sub> [<sub>TP</sub> John stole *t*<sub>j</sub>]]?

The second option is extracting the possessor across the adverb in a single movement later on. This amounts to extracting the possessor out of CP from a position that is not at the linear periphery of that phase, which CL rules out. In contrast, a high adverb to the right of the pied-piped possessum poses none of the above problems and is grammatical.

Similar concerns apply to a scenario where the possessum pied-pipes a PP as in (63c). Here the ban on phrase-bound specifier to specifier movement will prevent subsequent extraction of the possessor into a higher spec-CP above P. Thus eventual extraction of the possessor would have to non-successive-cyclically cross the P on its way out of CP, which CL rules out. Thus the restrictions in (63c) are derived, and consequently, all the restrictions in (63) are solved.

### 5.3 Why English PE requires multiclausality

We now have the tools to tackle the final puzzle about English PE, that it is impossible in monoclausal derivations:

(65) **No monoclausal PE derivations**

- a. \*Who<sub>k</sub> did you meet [\_\_<sub>k</sub>'s friend]?
- b. \*Who<sub>k</sub> will [\_\_<sub>k</sub>'s friend] arrive tomorrow?

If a possessed non-subject DP must be pied-piped as far as spec-CP as I've shown, there is simply no chance for the possessor to extract if the derivation contains only one clause. The non-subject possessum will be pied-piped to the edge of that CP, but if the derivation ends there, there is no opportunity for PE to occur.

Turning to PE out of subject possessums, nothing in my account bans string-vacuous PE to spec-CP out of the subject in spec-TP:

(66) **String-vacuous PE from a subject**

[<sub>CP</sub> **Who**<sub>k</sub> C [<sub>TP</sub> [<sub>DP</sub> *t*<sub>k</sub>'s cat] will win the contest]]?

However, this PE really has to be string-vacuous.<sup>25</sup> Placing an intervener between the possessum and the moved possessor, which would allow this movement to be detectable, will create a scenario where the possessor and [’s] are phase-mates of CP, but not adjacent. This violates the local adjacency requirements of [’s]. Thus an example like (67) below, which attempts to use T to C movement in order to test for PE, is expected to fail regardless of whether this PE was actually licit in of itself:

(67) **Diagnosing monoclausal PE out of subjects violates adjacency**

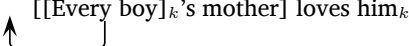
\* [<sub>CP</sub> **Who**<sub>k</sub> will(C-T<sub>j</sub>) [<sub>TP</sub> [<sub>DP</sub> \_\_<sub>k</sub>'s cat] *t*<sub>j</sub> win the contest]]?

In short, the PF requirements of [’s] in English either don’t provide the space for PE to have a chance to occur out of non-subjects in monoclausal derivations, and makes such PE undetectable when out of subjects. The puzzling lack of PE in monoclausal derivations is thus explained, using the same concepts I’ve applied throughout this paper. <sup>26</sup>

**5.4 Interim summary**

This concludes my analysis of English PE. I have argued that the pressures of the CL theory interact with a locally-evaluated adjacency condition on [’s] available to PE speakers, ultimately deriving the linear generalization (17) on English PE and thereby accounting for the construction’s puzzling properties – Most notably among them, the pied-piping of non-subjects exited by PE as far as spec-CP, and the ban on PE in monoclausal derivations.<sup>27</sup> In the next section, I discuss the general theoretic consequences of this analysis.

<sup>25</sup>String-vacuous extraction accounts for the fact that possessors seem to c-command out of the possessum DP for the purposes of variable binding:

(1) 

<sup>26</sup>My account predicts that if we expand the derivation to, for instance, two embedded CPs, PE should be able to strand the possessum in either intermediate clause edge. This prediction is mostly correct, as shown here, but it turns out that PE out of a non-subject stranding the possessum in the lower spec-CP is degraded:

- (1) a. **PE out of subject with double embedding**  
Who do you think(*t*<sub>k</sub>'s cat) he said(*t*<sub>k</sub>'s cat) is cute
- b. **PE out of non-subject with double embedding**  
Who do you think(*t*<sub>k</sub>'s cat) he said(<sup>?</sup>*t*<sub>k</sub>'s cat) they saw *t*<sub>k</sub>

While this effect is not absolute, degradation is evident. I leave this puzzle for the future.

<sup>27</sup>There is a remaining puzzle about the distribution of right adjoined matrix clause adverbs. While my account predicts that such adverbs should not disrupt PE at all, due to being outside of the lower CP phase, such adverbs are quite degraded in PE contexts. This is demonstrated below, where in (1) we see that such an adverb is fine with pied-piping possessor movement, but as in (2), bad with PE:

- (1) a. Who<sub>k</sub> did you say (<sup>??</sup>/\*yesterday)[[\_\_<sub>k</sub>'s cat] is cute]?  
(cf. [Whose cat]<sub>k</sub> did you say yesterday [\_\_<sub>k</sub> is cute]? )
- b. Who<sub>k</sub> did you say (<sup>??</sup>/\*yesterday)[[\_\_<sub>k</sub>'s cat]<sub>j</sub> he saw *t*<sub>j</sub>]]?  
(cf. [Whose cat]<sub>k</sub> did you say yesterday [he saw \_\_<sub>k</sub>]? )

I suggest that this puzzle is related to a restriction on *exactly*-stranding mentioned in McCloskey (2000). While *exactly*-stranding can typically strand this adverb in the edge of an embedded CP, doing so is degraded



## 6 General theoretic consequences

### 6.1 The non-uniformity of left branch extractions

The central topic of this paper has been what amounts to a case of left branch extraction out of the nominal phrase, a sort of movement that is generally impossible in English. This fact raises a puzzle that is particularly difficult from the perspective of Ross' (1967/1986) proposal that languages like English (but not all languages) obey the Left Branch Condition (LBC). Subsequent works have argued that restrictions on left branch extraction are more complex and nuanced than Ross' hypothesis would lead us to expect (Grosu 1974, Corver 1990, Bošković 2005). For instance, Grosu observes that while *wh*-movement in questions can extract possessors in Russian, the same is not possible under relativization:

(68) a. **PE in a question**

Ču<sub>k</sub> ty čitaješ [\_\_\_\_<sub>k</sub> knigu]?  
whose you read book

b. **\*PE in relativization**

vot<sub>k</sub> ženščina [čej ja tebe showed [\_\_\_\_<sub>k</sub> house]]  
this woman whose I to.you showed house

If Gavruseva (2000) and Gavruseva & Thornton (2001) are correct, a factor that determines whether left branch extraction of possessors (aka PE) is possible within a language has to do with PF adjacency conditions on genitive morphology. In some languages these conditions are not at issue, leaving PE possible. It is possible to imagine a language in which the factors banning PE are absent, with other left branch extractions banned for independent reasons. One such language is apparently Hungarian, which permits PE but bans other left branch extractions (Bošković 2005). A second such language is PE English, which as I've argued, allows (restricted) PE but otherwise obeys the LBC. The existence of such languages supports a view of left branch extraction as grammaticality non-uniform, indicating that there cannot be a strict, general LBC as a principle of UG.

### 6.2 The non-phasehood of DP

My account of English PE is not compatible with the phasehood of DP. My account has greatly relied on the PF adjacency requirement of [*'s*] interacting with successive-cyclic movement of the possessor to the edges of vP and CP. In order for that condition to be satisfied, or not, it is necessary for DPs to undergo spell-out along with the vP or CP in which they are present.

It was also central to my account that if [*'s*] is stranded inside a phase where its PF conditions are satisfied, its adjacency requirements are not asserted on subsequent phases that do not contain it. This part of the logic, encoded by the phrasing 'minimal phase' in

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when the matrix clause contains a right-adjoined adverb:

- (2) a. Who did you say (*\*/?*yesterday)[exactly came to the party?] (My example)  
b. What did he say (*\*/?*yesterday) [exactly that we wanted?] (McCloskey 2000, fn. 9)

My intuition is that too much material pronounced in this inter-clausal position creates suboptimal prosody. Thus some independent factor, unrelated to PE specifically, is responsible for both (1) and (2).

(42), was necessary in order to allow the possessor to eventually break away from [’s]. Given this logic, if DP were a phase in of itself, the requirements of [’s] could in fact be satisfied within DP. Spellout of DP would find the possessor adjacent to [’s], satisfying its requirements right there. There would thus be no reason to pied-pipe DP under PE at all, predicting the possibility of leaving an object DP in-situ in VP under PE. As I’ve shown, this is not the reality of English — Pied-piping at least as far as CP is required:

(69) **Non-subjects exited by PE can’t remain in-situ**

\* **Who<sub>k</sub>** do they think [<sub>CP</sub> Mary read [<sub>\_\_</sub><sub>k</sub>’s book]]?

The strongest conclusion to draw from this result is that the English DP is not a phase. While the phasehood of DP is a complex issue (see Citko 2014 for an overview), this result is at least superficially in agreement with Matushansky (2005), who argues that the phasehood of DP remains ambiguous. For other works on movement that are incompatible with the phasehood of DP, see Sabbagh (2007) and Zyman (under review).

While a phasal DP would be a challenge to my analysis, there is no problem if there is a nominal phase, but it is below the position of the possessor and [’s]. As a result, these will spell out along with vP or CP as needed. While I lack independent evidence for such a view, I note that it would be consistent with my analysis.<sup>28</sup> Yet another resolution would be to stipulate that the adjacency requirement of [’s] is only evaluated at the spellout of vP and CP. If an independent reason to exclude DP from this requirement can be unearthed, then the phasehood of DP could be maintained in this analysis.

A corner of English grammar that may provide a relevant diagnostic for DP phasehood is the stranding of adverbs like *exactly/precisely* under *wh*-movement (Urban 1999).<sup>29</sup> Such adverbs can be stranded in their base position, or in an intermediate CP edge:

(70) **Exactly-stranding**

What<sub>k</sub> (exactly) did you say *t<sub>k</sub>* (exactly) that she wants *t<sub>k</sub>* (exactly)?

If DPs are phases, which successive-cyclic movement must stop in the edge of, *exactly* stranding should be possible in the edge of DP. However, this appears not to be the case.

(71) **No *exactly*-stranding in the edge of DP**

What<sub>k</sub> (exactly) did you write [<sub>DP</sub> *t<sub>k</sub>* (**\**exactly***) a book about *t<sub>k</sub>*]?

This result is consistent with the non-phasehood of DP that my analysis requires.

### 6.3 In support of CL

Internal to my account, the CL theory is useful because of its inclusion of phase edges in spellout domains. This allows successive-cyclic movement through phase edges to

<sup>28</sup>Such an understanding is evocative of Chomsky’s approach to phases, in which there is an edge that is not subject to spellout within the phase. However, as I have argued previously and will again in the next subsection, this understanding of phases is fundamentally incompatible with my account. As discussed in section 4.3, Chomsky’s theory rules out the possibility of in English PE altogether. In what follows, I highlight the fact that CL, and not Chomsky’s theory, make predictions about the interaction of successive-cyclic movement and stranding at vP, in PE and beyond.

<sup>29</sup>Zyman (under review) argues that the rightward position of such stranded adverbs is actually outside of VP, due to the claimed obligatory late merge of adjuncts. While this analysis calls the status of the rightward stranding position into question, it does not affect stranding at intermediate phase edges under A’-movement, which is entirely permitted by that account.

interact with the adjacency condition on [’s], which is enforced at spellout. I argued that CL and this PF condition work together to predict some otherwise mysterious facts about English PE. This set of facts is fairly intricate, and the construction in which they hold is not produced particularly frequently. This is self-evidently true, as the phenomenon is nearly undocumented.

Given this, the intricate restrictions on English PE are unlikely to be a set of memorized quirks. Rather, these details should be epiphenomenal of more general, simple principles of the grammar, and I have aimed for precisely such an account. My account posits that CL is an aspect of the syntactic knowledge endowed by UG, automatically possessed by all speakers, and that the difference between speakers who permit PE and speakers who don’t is the point in the derivation that an interface condition holds. I argue that effectiveness of this account in capturing the puzzling details of this corner of English serves as evidence for CL, or something relevantly like it, as an aspect of syntax.

A particularly striking detail which supports CL, and will be explored further in section 7, was the fact that non-subject possessums must be pied-piped as far as CP under PE. I argued that stranding of non-subject possessum DPs in spec-vP under PE should be in principle possible, though in reality it is not. I pointed out that under CL, the crossing-over of this position by A-movement is predicted to require that it be emptied, therefore the possessum must pied-pipe as far as spec-CP. This is an instantiation of a general prediction of CL explained in section 4.1, that if an element in a phase is crossed by something non-successive-cyclically moving out of that phase, the crossed material must also move out, to a position above what previously crossed it:

(72) **Repairing a potential linearization problem**

- a. \* [<sub>YP</sub> α [<sub>PhaseP</sub> β [<sub>XP</sub> α ]]]  
 →  
 b. ✓ [<sub>ZP</sub> β [<sub>YP</sub> α [<sub>PhaseP</sub> β [<sub>XP</sub> t<sub>α</sub> ]]]]

In Chomsky’s approach to phases, there is no obvious reason why movement of a lower specifier across a higher one of the same phase should require movement of the higher one as well. In the next and final contentful section of this paper, I’ll examine a few other scenarios in light of the prediction of CL just mentioned, that A-movement of subjects rules out stranding in spec-vP under A’-movement.

## 7 Extensions on crossing and stranding at vP

In this section, I show how CL predicts the availability of stranding in spec-vP in a few other scenarios. In this paper I have focused on stranding in spec-vP, since this is where the analysis of English PE has lead us. See Davis (in prep) for a broader cross-linguistic consideration of CL and the distribution of stranding in phase edges.

### 7.1 Predicting the distribution stranding at vP

McCloskey (2000) shows that in West Ulster English, *wh*-movement can strand the post-nominal quantifier *all* either in its base position, or at the edge of an intermediate CP crossed by that movement:

(73) **all-stranding in spec-CP**

What<sub>k</sub> (all) did he say [<sub>CP</sub> t<sub>k</sub> (**all**) that we should buy t<sub>k</sub> (all)]?

McCloskey argued that those intermediate instances of *all*-stranding provide evidence for successive-cyclic A'-movement through CP edges. However, he notes that *all*-stranding in specifiers of vP isn't possible. This is a puzzle if both vP and CP are phases. McCloskey's analysis of West Ulster English argues that V moves to a head above vP, thus his examples demonstrating this stranding gap attempt *all*-stranding after V, as in (74) below:

(74) **No all-stranding in spec-vP**

What<sub>k</sub> did he tell<sub>j</sub> [<sub>vP</sub> t<sub>k</sub> (**\*all**) t<sub>j</sub> him/his friends/Mickey [<sub>CP</sub> t<sub>k</sub> (all) that he wanted t<sub>k</sub>?]]

CL predicts this gap in the stranding paradigm for two reasons. The logic used here will sound familiar at this point, as the same basic scenario has already been discussed in terms of possessum stranding under PE in English. Recall that CL requires a moving *wh*-phrase to stop in the most peripheral position of the vP phase, which must be a specifier above the the subject in spec-vP. The subject later A-moves to spec-TP across that outer spec-vP, presumably non-successive-cyclically as I've already argued. There is no problem with this, as long as the A'-moved material in the outer specifier moves along to spec-CP. However, if *wh*-movement were to strand an *all* in that spec-vP, movement of the subject across the stranded *all* is predicted by CL to cause a linearization problem:

(75) **A-movement across outer spec-vP**

[<sub>TP</sub> T ... [<sub>vP</sub> [<sub>t<sub>wh</sub></sub> (**\*all**)]<sub>k</sub> SUBJ v V t<sub>k</sub>]]

As mentioned, CL predicts that any material in a phase crossed by non-successive-cyclic movement out of that phase must also move out. But if some of that material does not move on, as in the above scenario, a crash at PF is expected. Thus in this way, CL predicts the impossibility of *all*-stranding in spec-vP. This scenario holds both for external arguments, which are generated in spec-vP, as well as internal arguments, which as mentioned in section 5.1 must move to spec-vP under CL.

McCloskey argues that V moves out of vP in West Ulster English, and this movement results in exactly the same sort of crossing configuration as A-movement does. Given something like the head movement constraint (Travis 1984), there is no head which V can move to that precedes the specifiers of vP within this phase. Therefore there is no way that head movement of V out of vP can stop off in a position preceding the specifiers of vP, and movement of V out of vP will necessarily non-successive-cyclically cross any specifiers of vP. Just as in the A-movement scenario, this state of affairs is correctly predicted by CL to rule out *all* stranding in spec-vP.

(76) **Head movement across spec-vP**

[<sub>XP</sub> X ... [<sub>vP</sub> [<sub>t<sub>wh</sub></sub> (**\*all**)]<sub>k</sub> Y Y t<sub>k</sub>]]

This solution for West Ulster English predicts that stranding in spec-vP is possible, as far as linearization is concerned, only when what is stranded isn't later crossed by non-successive-cyclic movement out of vP. This prediction is verified by a fact from Ko (2011), who shows that object scrambling in Korean can strand a numeral quantifier in spec-vP (77). Importantly, in this configuration in Korean the subject remains in-situ in vP below the stranded quantifier, and the verb can't have moved leftward across spec-vP, as Korean is head-final:

(77) **vP numeral quantifier stranding in Korean**

Kong-ul<sub>j</sub> amato [<sub>vP</sub> [<sub>\_\_j</sub> **sey-kay**]<sub>k</sub> haksayng-tul-i t<sub>k</sub> patassulkesita  
ball-ACC probably 3-thing student-PL-NOM received

‘The students probably received 3 balls’

The same is possible in Japanese, which has the same relevant properties as Korean:

(78) **vP numeral quantifier stranding in Japanese**

**Ringo-o**<sub>k</sub> osoraku/tabun [<sub>\_\_k</sub> **san-ko** ]<sub>j</sub> John-ga umaku t<sub>j</sub>  
Apple-ACC probably [ 3-thing-(about) ] John-NOM well  
nusu-nda  
steal-PST

‘John probably skillfully stole 3 apples’ (P.c. Takashi Morita)

That spec-vP stranding is bad in West Ulster English, but good in Japanese and Korean, validates the predictions of CL and the ban on phrase-bound spec-to-spec movement.<sup>30</sup>

A relevant phenomenon in English mentioned already in my discussion of DP phasehood is the stranding of adverbs like *exactly*, *precisely* under *wh*-movement. To review, such adverbs can be stranded in their base position, or in an intermediate CP edge:

(79) **Exactly-stranding**

[<sub>CP</sub> What (exactly) did you say [<sub>CP</sub> t<sub>k</sub> (exactly) that she wants t<sub>k</sub> (exactly)]]?

A-movement of the subject in English should rule out *exactly*-stranding in spec-vP. In my judgment, this prediction is accurate — Example (80) below only has an odd reading construing *exactly* as an adverb of v/VP, rather than a stranded modifier of DP:

(80) **\*Spec-vP exactly-stranding**

[<sub>CP</sub> What<sub>k</sub> did you [<sub>vP</sub> t<sub>k</sub> (**\*exactly**) eat t<sub>k</sub>]]?

A similar stranding paradigm can be found with other adverbs of quantity, like *to the nearest pound*:<sup>31</sup>

(81) **Quantity adverb stranding**

Tell me [<sub>CP</sub> [how much flour]<sub>k</sub> (to the nearest pound) you said [<sub>CP</sub> t<sub>k</sub> (to the nearest pound) that the bakery wants t<sub>k</sub> (to the nearest pound)]]

As before, such an adverb seems unstrandable in spec-vP. With this adverb the judgments are even clearer than in (80), as it cannot be construed as an adverb of v/VP:

(82) **\*Quantity adverb stranding in spec-vP: Transitive subject**

[<sub>CP</sub> [How much flour]<sub>k</sub> (to the nearest pound) did the bakery [<sub>vP</sub> t<sub>k</sub> (**\*to the nearest pound**) ask for t<sub>k</sub> (to the nearest pound)]]?

<sup>30</sup>Henry (2012) shows that there is in fact more variance on *all*-stranding in West Ulster English than reported in McCloskey (2000). For the pattern reported in the dialect studied by McCloskey (2000), I make good predictions. In Davis (in prep) I analyze the differing stranding patterns in the dialects analyzed by Henry, in the context of a cross-linguistic study of stranding in edges.

<sup>31</sup>Credit for this observation goes to David Pesetsky.

Example (82) shows this in a transitive sentence, but the same restriction holds in passive derivations. This is as expected, if CL requires both external and internal argument subjects pass through a lower spec-vP (section 5.1). A-movement of the subject to spec-TP thus rules out stranding in the higher spec-vP formed by A'-movement:

- (83) **\*Quantity adverb stranding in spec-vP: Passive subject**  
 $[_{CP} \text{ [How much flour]}_k \text{ (to the nearest pound) was the bakery } [_{vP} t_k \text{ (*to the nearest pound) sent } t_k \text{ (to the nearest pound)}]]?$

## 7.2 Stranding under PE and the origination of expletive *there*

In section 2, I demonstrated that expletive associates exited by PE end up pied-piped to the edge of the local CP, just like all non-subject DPs:

- (84) **PE from expletive associate**
- a. Mary said [there was someone's book on the table]
  - b. \* **Who<sub>j</sub>** did Mary say [there was[      's book] on the table?]
  - c. ? **Who<sub>j</sub>** did Mary say[[      's book]<sub>k</sub> there was  $t_k$  on the table?]

While the preferred example in (84c) is marked, it is clearly better than (84b), where the expletive associate is stranded in-situ. This stranding pattern can be applied to the question of where expletive *there* is externally merged. There is literature arguing that expletive *there* is in fact externally merged in spec-vP (Biberaur & Richards 2005, Deal 2009). If *there* is merged in spec-vP and moves to spec-TP (Deal 2009), we expect A-movement of *there* to result in a crossing effect that makes it impossible for PE to pied-pipe and strand an expletive associate in spec-vP. The mechanics of this prediction are precisely the same as for the movement of subjects that we've already seen.

Example (84b) is actually ambiguous with base-position stranding of the expletive associate, since copular verbs in English move from V to T. To avoid this problem, in (85) I include an auxiliary, which moves to T and allow the copula to remain in vP. In (85) we see that the expletive associate indeed cannot be stranded in spec-vP, but must reach the CP edge:

- (85) **Expletive associate must strand in spec-CP under PE**  
**Who<sub>k</sub>** do you think $[_{CP} (t_k \text{?'s friends})$  there have $[_{vP} (t_k \text{*'s friends})$  been a lot of stories told to $(t_k \text{*'s friends})]]?$

The lack of spec-vP stranding of the possessum in this context suggests that the expletive originated in vP and moved to spec-TP, resulting in a crossing interaction that, as previously discussed, rules out spec-vP stranding under A'-movement.

It's worth noting that if vP is not actually a phase in expletive constructions, this argument disappears. If this vP is not a phase then successive-cyclic movement will not stop through its edge anyway. Legate (2003) considered the phasehood of a variety of vPs using a few diagnostics, one among them being parasitic gap licensing. Following Nissenbaum (2000), parasitic gaps are licensed by successive-cyclic movement through spec-vP. Thus if a parasitic gap can be licensed in a particular construction, it suggests that successive-cyclic movement through spec-vP occurred, something that would be unnecessary if that vP were not a phase. While the examples are complex, I argue that A'-movement can indeed license parasitic gaps in expletive constructions:

(86) **PGs in expletive constructions**

- a. ? [Which employees]<sub>k</sub> were there a lot of stories told to *t<sub>k</sub>* [after John hired PG<sub>k</sub>]?
- b. ? [Which students]<sub>k</sub> were there a there lot of things said about *t<sub>k</sub>* [after the police arrested PG<sub>k</sub>]

To the extent that parasitic gap licensing serves as a diagnostic for vP phasehood, \*86) combined with the distribution of expletive associate stranding under PE indicates that *there* did indeed move from within vP.<sup>32</sup>

## 8 Conclusion

In this paper, I described and analyzed the complexities of PE in English, a little-studied possibility for many speakers. I argued that English PE provides evidence for the CL theory of phases. This principle of syntax predicts the details of English PE via its interaction with a phase-based version of a proposed PF condition on genitive morphology.

This study extended to a consideration of how CL constraints stranding in the edge of vP. I also argued that English PE teaches us about the non-uniformity of left branch extractions, and provides a novel argument that expletive *there* originates in vP. My analysis of English PE entails that DPs are not phases.

## 9 Appendix: On PF knowledge and the acquisition of PE

The distribution of PE in children that Gavrusseva & Thornton (2001) report is highly similar to that of PE in mature speakers that I've reported in this paper, including the stranding of non-subject possessums in an embedded spec-CP, and the lack of PE in mono-clausal contexts. Gavrusseva & Thornton argue that children do PE due to a lack of PF knowledge. I have argued in this paper that adult PE is possible not because adult lack certain PF knowledge, but rather because they are able to evaluate the relevant PF condition in a way that permits PE of a restricted sort. If children have an analogously restricted distribution of PE, it may suggest that children have the same phase-based PF constraint on PE that adults do.

PE in children has some other quirks, but these are ultimately derivable from the fact that children at the relevant stage of development seem capable of *whose*-movement as in (4) above, unlike adults. If the PF adjacency condition that children have is fundamentally the same of that as adult speakers who permit PE, the incorporation of *whose* movement makes a striking correct prediction about child PE. As Gavrusseva & Thornton show, it seems that children are able to move *whose* to an intermediate spec-CP, subsequently stranding [*'s*] in that spec-CP by movement of *who* into the matrix clause (Gavrusseva & Thornton, ex. 1c):

(87) **Intermediate stranding of [*'s*] in child speech**

**Who** do you think *'s* spiderman saved **cat**?

(cf. Whose cat do you think spiderman saved?)

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<sup>32</sup>Implicit in this diagnostic for phasehood is the idea that successive-cyclic movement does not occur unless there is a syntactic reason for doing so. While we can imagine that this is not necessarily the case, I will follow Legate's logic here.

This derivation is actually permitted by my account of English PE, in the context of a grammar that allows *whose*-movement. While adults must pied-pipe the non-subject possessum DP in its entirety to spec-CP, stranding it there, children can move *whose* alone, subsequently stranding [’s] in the embedded CP edge.

This derivation shows the hallmarks of the local adjacency condition on [’s] that I have been arguing is present in possessor-extracting adults. I suggest that children might first hypothesize a locally evaluated PF condition on genitive morphology, and expand this to the global level later on. Thus PE starts out as rampant in child speech, and while many mature out of it, others retain local evaluation as an option as adults. Thus in a way, some adults remain ‘child-like’ in this aspect of their grammar, though in losing *whose*-movement sentences like (87) become impossible. Serious consideration of this understanding of the acquisition path will have to wait for future work.

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