The Constraints and Consequences of Possessor Extraction in English[*]

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Abstract I analyze possessor extraction (PE) in English, a restricted possibility for some speakers. I argue that the complexities of this corner of English provide evidence for Cyclic Linearization (Fox & Pesetsky 2005, inter alia), which restricts English PE via its interaction with a PF condition on genitive morphology (Gavruseva & Thornton 2001) that possessor-extracting speakers can satisfy at the local phase level. By extension, these results reveal some linearization constraints on stranding, and suggest the non-phasehood of DP, the non-uniformity of left branch extractions, and the origination of expletive *there* in vP.

1 Introduction

This paper examines a case of *possessor extraction* (PE), the A′-movement of a possessor from the possessed nominal phrase. For most English speakers, A′-movement of possessors requires pied-piping of the containing possessum DP, as in (1).

(1) **Standard English possessum pied-piping**
Mary is the author [$_{CP}$ [**whose new book**]$_k$ they said [____$_k$ is good]]

Such pied-piping is standardly thought to be the only possibility for English. This view is challenged by examples like (2) below, which are the subject of this paper. In (2) we see an equivalent of (1) available in the colloquial language of some speakers, in which the possessor extracts, stranding the Saxon genitive [*'s*] and possessum DP in an embedded clause. This initial English PE example is appropriately marked with '%', as PE is not available to all speakers, but I omit this in subsequent examples.

(2) **PE in English**
$^{\%}$ Mary is the author [$_{CP}$ **who**$_k$ they said[[____$_k$**'s new book**] is good]]

In (2) 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 (2) where PE is taking place eliminate the possibility of this /s/ being subject agreement. The fact that the possessor is female also removes any possibility of this being a reduced resumptive *his*.

 While not all speakers accept such PE examples, many do as part of the spoken register. This construction is often rated as markedly informal, which may contribute to its rarity in

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written form.[1] While PE has been well established in various languages[2] like Hungarian (3), the possibility of PE in English has received little attention.

(3) **Hungarian PE** (Szabolcsi 1984)
ki-nek$_k$ ismer-té-tek [a ___$_k$ vendég-é-∅-t]
who-DAT know-PST-2PL [the guest-POSS-3SG-ACC]
'Whose guest did you know?' [Lit: 'Whose did you know guest?']

The only literature I know to have reported the existence of PE in English is Gavruseva & Thornton (2001), discussed in the next subsection. As I'll show, while English PE is true movement, its distribution is quite restricted. An analysis of those restrictions and their consequences for syntactic theory are the focus of this paper.

1.1 Background

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

(4) **No extraction of *whose***
* Mary is the author [$_{CP}$ **whose**$_k$ they said [[___$_k$ **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, which as such is in principle movable:

(5) **A structure for possession**

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        DP
       /  \
   PossP    \
          D   NP
         ['s]
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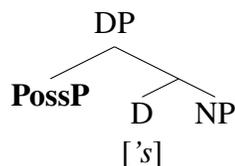
[1]English PE isn't absent in writing, however, as the following examples retrieved from the internet show:

(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/TAIDJ8LEBGL3O0D5I/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)

[2]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.
[3]I assume that *whose* represents *who* plus ['s].

While this phrase can apparently be moved for some speakers as (2) showed, the marking '%' on (2) reminds us that for many English speakers, such movement is not possible.

Various works attribute the typical illicitness of PE in English to PF conditions that reject movement which separates a possessor from genitive morphology (Chomsky 1995, Radford 1997, Gavruseva & Thornton 2001). Indeed, Gavruseva (2000) argues that such adjacency conditions play an important role in constraining PE cross-linguistically, banning PE in languages where such constraints apply. In this paper, I will accept this general line of explanation for those English speakers who reject PE. However, I argue that the nature of PE in English is not explained by positing that speakers who permit PE lack such a constraint, but actually indicates that such speakers can satisfy this requirement in weaker, local way. This account permits PE, but only under very limited circumstances, as we'll see.

As mentioned, I am aware of one work that notices English PE: Gavruseva & Thornton (2001). This work focused on PE in long-distance *whose*-questions in child speech, which is quite frequent. Gavruseva & Thornton argue that PE is possible in child speech because these children have not yet acquired the PF constraints that require pied-piping, and consequently block PE in English. This perspective on the acquisition path leads us to expect a total lack of PE in a mature English grammar.

However, in a control study on adults reported in the same work, Gavruseva & Thornton (pg. 255) found PE in adult speech. 11% of their adult data comprises PE of the form shown in (2) above.[4] Gavruseva & Thornton suggest that this 11% is the result of speech errors. However, a closer look at their data shows that almost all instances of PE gathered in this adult study were produced by two speakers, Cristy and Kath. Cristy produced PE about half as often as pied-piping, while Kath produced PE even more often than pied-piping. These speakers appear to have PE as a productive option. Indeed, in this work I claim that PE is a reality of the English of some speakers.

In the present study, an informal query of 31 speakers, mostly residents of the Boston area, resulted in 18 reporting PE to be grammatical.[5] This investigation revealed a number of restrictions on the construction, which corroborate similar findings by Gavruseva & Thornton. The examination of these constraints comprises the core of this paper.

1.2   Results in preview

I argue that English PE obeys the following generalization, which subsumes an array of restrictions on this construction that will be laid out in the next section:

(6)   **CP edge generalization on English PE**
      A possessor must reach the left linear edge of the local CP before extracting from the possessum DP

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[4]A very small percentage of their data is comprised of other unusual extraction configurations (for instance, movement of *whose*) which I take to be genuine errors.

[5]My informants are mostly American, though the set of those who accept PE includes two Canadian, one Australian, and one British informant. There is no clear generalization about the age/origin of PE speakers.

A particularly clear instantiation of this generalization is evident with PE from non-subjects, exemplified in (7). We see here that PE from an object possessum is ungrammatical if this possessum is stranded in its base position (7a). Rather, the possessum must be displaced to the edge of the local CP (7b).[6]

(7) **Displacement of non-subject possessum under PE**

    a. *$\textbf{Who}_k$ do they think [$_{CP}$ Mary read [___$_k$**'s book**]]?

    b. ✓ $\textbf{Who}_k$ do they think [$_{CP}$ [___$_k$**'s book**]$_j$ Mary read t_j]?

1.2.1 The central claims: Cyclic Linearization and [*'s*] adjacency

I argue that the generalization in (6), which derives (7) and related restrictions, is predicted given two claims—the Cyclic Linearization (CL) theory of spellout (Fox & Pesetsky 2005, Podobryaev 2007, Sabbagh 2007, Ko 2011, 2014) and an adjacency requirement on the Saxon genitive [*'s*] and possessor (Gavruseva 2000, Gavruseva & Thornton 2001).

    As mentioned, Gavruseva (2000) argues that PF conditions on genitive morphology restrict PE in some languages. I argue that while English speakers that reject PE enforce adjacency between possessor and [*'s*] absolutely, speakers who permit PE have the option of satisfying this requirement locally, as stated in (8):

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

I argue that (8) predicts restricted PE of the sort described by (6) through its interaction with CL. CL hypothesizes that successive-cyclic movement (and certain exceptions to it) are motivated by the information-preserving nature of spellout—*Order Preservation*. This property of spellout only allows syntactic derivations which do not generate contradictory linearization statements, thus motivating successive-cyclicity and related effects.

    The power of CL in predicting the details of English PE, a restricted and infrequent construction, provides evidence for something like CL as an aspect of UG. Under my account, CL is a part of the grammar of both speakers who permit PE and those who don't. 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.

1.2.2 Implications

This analysis of English PE has implications for several other topics. The account of the displacement of non-subject possessums previewed in (7) makes some correct predictions about how CL restricts stranding in intermediate phase edges generally. The possibility of PE in English, but not other left branch extractions, supports an understanding of left branch

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[6]Speakers disagree about just how grammatical examples like (7b) are, but all agree that they are much better than those like (7a), which are unambiguously bad.

extractions as grammatically non-uniform (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). These concerns also lead to a novel argument that expletive *there* originates in vP (Biberaur & Richards 2005, Deal 2009).

1.3 Roadmap

Section 2 describes the basic facts about English PE, which section 3 argues is true extraction. Section 4 explains the concepts used in section 5 to build an account of this construction. Section 6 addresses general consequences for syntactic theory. Section 7 extends the examination to CL and stranding in phase edges, and the origination of expletive *there*. Appendix A considers a remaining puzzle about matrix adverbs, and appendix B speculates on the implications from the perspective of language acquisition.

2 The basic facts and puzzles

Here I describe the facts about English PE. This involves some preliminary analysis, leading to a generalization (6) that the core of this paper is concerned with deriving.

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

(9) a. **Question**
         Who do you think [[___$_k$**'s hat**] is the biggest]?
     b. **Embedded question**
         I can't remember [**who**$_k$ I said[[___$_k$**'s friend**] is coming over]
     c. **Relative clause**
         The student [**who**$_k$ you suspect[[___$_k$**'s answers**] were copied]]
     d. **Free relative**
         I'll speak to [**who**$_k$ever you say[[___$_k$**'s idea**] is the best]
     e. **Cleft**
         It's Michelle [**who**$_k$ we think[[___$_k$**'s cat**] is the cutest]
     f. **Topic/focus movement**
         John may be boring, but let me tell you about Jim. **This guy**$_k$, I'm pretty sure
         ___$_k$**'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.[7] For clarity of judgments, many of the PE sentences that I use in this paper extract *who*.

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[7]Gavruseva (2000) points out that the sorts of *wh*-phrases capable of PE in a given 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.

(10) **Extraction of other possessors**

    a. [**Which** student]$_k$ did he claim[[____$_k$ **'s idea**] was stolen]?

    b. [**How many** people]$_k$ do you think[[____$_k$ **'s books**] are on the table]?

    c. I went to the place [**where**$_k$ she said[[____$_k$ **'s pastries**] are tastiest]][8]

    Further examination quickly reveals a number of puzzles. First, notice that all of the English PE examples shown so far have been multi-clausal. This is not a coincidence. As (11) shows, English PE within a single clause is not possible:

(11) **No PE in monoclausal derivations**

    a. *__Who__$_k$ did you meet [____$_k$ **'s friend**]?

    b. *__Who__$_k$ will [____$_k$ **'s friend**] arrive tomorrow?

Additionally, most of the English PE examples I've presented so far show PE from a subject. As previewed in (7) above, non-subject[9] DPs exited by PE must be displaced to the edge of their local CP. Not doing so is entirely ungrammatical, as (12) shows again:

(12) **Displacement of non-subject possessum under PE**   [=(7)]

    a. *__Who__$_k$ do they think [$_{CP}$ Mary read [____$_k$ **'s book**]]?

    b. ✓ **Who**$_k$ do they think [$_{CP}$ [____$_k$ **'s book**]$_j$ Mary read t_j]?

Example (12) demonstrates the necessity of this displacement with an object possessum, but as (13-15) below show, the same applies for non-subject possessums in general. Leaving the possessum in its base position is ungrammatical for all of these scenarios.

(13) **PE from direct object**

    a. **Who**$_j$ do they think [[____$_j$ **'s book**]$_k$ we should give Mary t_k]?

    b. **Who**$_j$ do they think [[____$_j$ **'s book**]$_k$ we should give t_k to Mary]?

(14) **PE from indirect object**[10]

    a. **Who**$_j$ do they think [[____$_j$ **'s cat**]$_k$ we should give t_k the prize]?

    b. **Who**$_j$ do they think[[____$_j$ **'s cat**]$_k$ we should give the prize [to t_k]]?

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 clearly improve on alternatives like (15b):

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[8]The possibility of examples like (10c) is interesting in light of the fact that *where's* is not independently grammatical. Whatever the source of that ungrammaticality is, it is apparently ameliorated by movement. I suspect the same is true for other typically bad *wh*-possessors (*which's / *what's / *when's*). The source of this effect and its rescue by movement will have to wait for other work.

[9]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.

[10]Though movement of the IO here is independently ruled out for some English speakers.

(15) **PE from expletive associate**

      a. Mary said [there was [some student]'s book on the table]

      b. * **Who**$_j$ did Mary say [there was[____$_j$**'s book**] on the table]?

      c. $^?$ **Who**$_j$ did Mary say[[____$_j$**'s book**]$_k$ there was t_k on the table]?

Gavruseva & Thornton noticed this obligatory displacement of non-subject possessums (specifically for objects) in their study as well, in both children and adults. They suggest that this displacement is caused by the moving possessor pied-piping the possessum to the edge of the embedded CP, stranding it there by subsequent movement.

I adopt this view for the possessum displacement in (12-15).[11] If this hypothesis is accurate, this stranding of possessums in the embedded CP edge provides overt evidence that movement out of CPs successive-cyclically passes through their edge, joining arguments in previous literature on Afrikaans (Du Plessis 1977), English (Urban 1999), West Ulster English (McCloskey 2000, Henry 2012), and Polish (Wiland 2010).

Those works show elements that are strandable in an intermediate CP edge, as well as in their base position. I have just shown, however, that non-subject possessums in English cannot be stranded in their base position by PE. This fact presents a puzzle which suggests that the state of affairs here is more complex than the usual cases of stranding.

2.1   The possessor extracts from DP via the linear edge of CP

We've seen that PE from non-subject possessums requires pied-piping the possessum to the edge of the local CP. At first glance, such facts suggest that PE is only possible from the structurally highest DP in the clause. Before A′-movements, the structurally highest 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 description is consistent with what has been shown so far.

If this were a sufficient description, however, PE of postnominal possessors from a possessed subject should be grammatical. In reality, this is not the case:

(16) **No PE of postnominal possessors**[12]

      a. ***Who**$_k$ did you say [$_{CP}$ [**a cookie recipe of** ____$_k$'s] is getting popular]?

      b. *That's the senator [**who**$_k$ they think [$_{CP}$ [**a friend of** ____$_k$'s] got a huge bribe]]

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[11]An alternative idea is that this displacement is the result of embedded topic/focus movement, something independently possible in English. While this idea is compatible with the conditions on English PE that I will present in this paper, the displaced possessum in English PE need not have a topic/focus reading, though if such movement were responsible for forming such examples, that reading should be obligatory.

[12]These examples improve if [*'s*] is absent, indicating that this morpheme's requirements are influential in constraining PE, as this paper argues.

We have already seen examples of PE from subjects, so there is no benefit to attributing the ungrammaticality of these examples to the known difficulty of extracting from subjects.[13]

Notice that in the sentences of (16), the content of the possessum DP intervenes between the trace of PE at the right side of DP, and the left edge of the local CP. This observation suggests the following generalization, which I'll show is correct:

(17) **CP edge generalization on English PE** [=(6)]
A possessor must reach the left linear edge of the local CP before extracting from the possessum DP

This generalization is graphically depicted below:

(18) $[_{CP2}$ PossP ... $[_{CP1}$ (*α) $[_{DP}$ (*α) ___'s] ...]]

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 these did not pied-pipe to the CP edge prior to PE, (17) would not be met.

This generalization also clarifies the apparent impossibility of PE in monoclausal sentences (11). If (17) holds, PE cannot become evident unless there is more than one CP crossed by movement of the possessor. The account in this paper predicts that PE may occur string-vacuously in such contexts, however. More on this in subsection 5.3.

2.1.1 Preposition stranding and PE

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

(19) **Pied-piped P blocks PE**
   a. Who$_j$ do they think[(***from**) [___$_j$'s house]$_k$ we should leave [(**from**) t_k]?
   b. Who$_j$ do they think[(***to**) [___$_j$'s cat]$_k$ we should give the prize [(**to**) t_k]?

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 originated 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 P-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.[14]

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[13]On this note, however, the difficulty of extracting from subjects may play a role in making some instances of English PE intolerable for many speakers. Further, the general difficulty of movement out of moved phrases could be a source of the unacceptability of PE for many speakers, since English PE always exits a moved DP (either the A-moved subject or pied-piped non-subject).

[14]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 preparation) 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, and leads to a cross-linguistic generalization about how word order constrains stranding in intermediate phase edges.

2.1.2 Complementizers and PE

The distribution of complementizers and adverbs in PE derivations also fits 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:

(20) **Overt C with non-subject extraction**
Who$_j$ do they think [$_{CP}$ (**that**) Mary likes ___$_j$]?

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

(21) **The *that*-trace effect**
Who$_k$ do they think [$_{CP}$ (***that**) ___$_k$ likes Mary]?

PE from 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 necessarily constitute an instance of the *that*-trace effect:[15]

(22) **No overt C with PE from subject**
Who$_k$ do they think [(***that**) [___$_k$'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 (obligatorily pied-piped) non-subject DPs is also incompatible with an overt C. If the possessum DP in such scenarios is stranded in spec-CP as mentioned, C should not be able to precede it anyway. An overt C to the right of the stranded DP is also not possible, which I attribute to the Doubly-Filled Comp Filter (Chomsky & Lasnik 1977).

(23) **No overt C with PE out of a pied-piped non-subject possessum**
Who$_j$ did you say[(***that**)[___$_j$'s cat]$_k$ (*that) John saw t_k]
(cf. Whose cat did you say (that) John saw?)

2.1.3 Adverbs and PE

High adverbs are possible on either side of the English subject:

(24) **Variable high adverb position**
(Fortunately/frequently) John (fortunately/frequently) has money.

PE from a subject is incompatible with such an adverb to the left of that subject, but is possible with the adverb to its right:

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[15]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 presented here ultimately predicts (22) anyway.

(25) **No adverb preceding subject exited by PE**
   Who$_k$ did you say[(***usually**)[___$_k$'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 in DP and the edge of CP. PE from a non-subject, necessarily involving pied-piping as already shown, behaves the same:

(26) **No adverb preceding non-subject exited by PE**
   Who$_j$ did you say[(***allegedly**)[___$_j$'s cat]$_k$ (allegedly) John saw t_k]?

2.2 The puzzle we've come to

I've shown that English PE is subject to the generalization in (17), which prevents any material from intervening between the trace of PE within DP, and the linear edge of the local CP. As previewed, I will argue that this generalization emerges from two mechanisms: The pressures of CL, and an adjacency condition on the Saxon genitive [*'s*] that PE speakers can satisfy at a local (phase-bound) level of the derivation.

2.2.1 Against a discriminating [*'s*]

Some of the ungrammatical examples of English PE seen in this section look superficially like they might relate to cliticization requirements of [*'s*]. However, there turns out to be no clear way to state what such requirements would be. Evidently [*'s*] can attach to lexical nouns, as in the basic non-PE cases, and verbs (2, and many more), but not adverbs (25, 26), or functional heads like P (16, 19) or C (22, 23). Also, as we'll see in (90) later on, in ditransitive sentences it is possible for [*'s*] to end up cliticizing onto a pronoun. These facts do not yield an obvious generalization about what [*'s*] may attach to in PE derivations.

   It is also not obvious why [*'s*] would be discriminating in PE contexts, even though it isn't selective generally, and can cliticize to adverbs and functional heads (Zwicky 1987):

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

Under such a claim, it also remains puzzling that [*'s*] can cliticize onto verbs in some PE contexts, but not in those like (7a) where an object possessum is stranded in its base position.

   Given these issues, I account for the facts about English PE without positing any such restrictions on [*'s*]. With this hypothesis dispensed with, in the next section I make the case that PE is true movement, setting the stage for the core analysis previewed above.

3 English PE is true extraction

One might question whether English PE truly involves movement. Here I present some arguments that a movement analysis is correct.

Recall that English PE only occurs in long-distance A′-movement contexts, unlike more standard PE languages like Hungarian. This fact might be thought to show that English PE is an illusion created by a DP-internal parenthetical clause, between the possessor and ['s]. 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 (2) could be true extraction in a bi-clausal context (28a), or a single clause with a parenthetical *they said* in the possessed DP (28b):

(28) **String: *Mary is the author who they said's new book is good***
   a. **Extraction analysis**
      Mary is the author [$_{CP2}$ who$_k$ they said[$_{CP1}$ [$_{DP}$ ___$_k$'s new book] is good]]
   b. **Parenthetical analysis**
      Mary is the author [$_{CP}$ [$_{DP}$ who (**they said**)'s new book] is good]

As (29) shows, parentheticals are not independently attested in this DP-internal position, weakening the parenthetical analysis of PE:

(29) **Parentheticals are not permitted between PossP and ['s]**

   a. I like [$_{DP}$ John (***I think**)'s idea]
   b. [$_{DP}$ Who (***in fact**)'s cat] is cutest?
   c. [$_{DP}$ A friend of John (***Mary suspected**)'s] came over yesterday
   d. I don't like John's puppy, but [$_{DP}$ Mary (***of course**)'s puppy] is cute

Even if this fact is not taken seriously, a variety of other lines of evidence show that the parenthetical analysis of English PE is insufficient.

3.1 Failures of parenthetical subtraction

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 here yields an impossible string, whether or not the auxiliary *do* is counted as part of the parenthetical:[16]

(30) **Failed parenthetical subtraction: *Who do they think's cat he saw?***

   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?

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[16]Thought it ought to be counted, as the auxiliary is required for a parenthetical in a question:

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

Similar facts can be observed when we consider the phenomenon of 'Free Deletion in Comp' (Chomsky & Lasnik 1977), which can derive examples like (31), where the *wh*-operator in a relative clause may be silent:

(31) **Null relativization**

    a. The person [(who/$\varnothing_{WH}$) I like]

    b. The cat [(which/$\varnothing_{WH}$) I saw]

Comparable PE sentences with no overt *wh*-phrase are possible, as in (32).[17] However, removal of the supposed parenthetical material here does not yield a grammatical result:[18]

(32) **Null relativization in PE**

    a. The person [$\varnothing_{WH}$ **I said**[____'s cat is cute]] → *The person['s cat is cute]

    b. The person [$\varnothing_{WH}$ **I said**[____'s cat you saw]] → *The person['s cat you saw]

A similar effect is apparent with adjunct control. Example (33) 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 un-controlled:

(33) **Adjunct control with PE**
Which author **did you$_k$ say**['s book looked good [before **PRO$_k$** ordering it]]?
→
*Which author's book looked good [before **PRO$_{???}$** ordering it]]?

These examples where parenthetical subtraction yields impossible sentences indicate that there was never really a parenthetical there in the first place.

3.2 PE is blocked by non-bridge verbs

If English PE is an illusion caused by a DP-internal parenthetical, we 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 productive in parenthetical clauses:

(34) **Productive parenthetical *whisper***
Mary (John **whispered**) wants (John **whispered**) a kitten (John **whispered**) for her birthday (John **whispered**)

---

[17]Notice that in the (grammatical version of) example (32b), the non-subject possessum ['*s cat*] has been pied-piped to the edge of the local CP, just as in all other cases of PE from non-subjects. What is interesting about (32b) is that here, the moving possessor is null. As the constraint on ['*s*] that I've proposed to make sense of non-subject pied-piping in PE references adjacency to the possessor, we should consider what to make of this condition in circumstances where the possessor is not present in the linear string. The reality of sentences like (32b) may suggest that 'Free Deletion in Comp' is literally as the name states, meaning that the possessor was indeed overt and available for adjacency calculations, before deletion applied in the CP edge. See Fitzpatrick (2006) for more on how such apparent deletion in the CP edge is derived.

[18]The post-subtraction strings in (32) do have interpretations, but the point is that these strings no longer instantiate relativization structures headed by *person* as the given bracketing conveys.

This verb is among the manner of speech verbs (*mutter, stammer, mumble, groan*) that are non-'bridge' verbs, whose complements are not transparent for extraction, though these verbs are fine in parentheticals.

As (35) shows, pied-piping possessor movement from the complement of such a verb is no good (35a). An equivalent PE configuration is no better (35b):

(35) **No extraction from complement of non-bridge verbs**

    a. **Pied-piping possessor movement**
       The person [[whose cat]$_k$ I thought/said/***whispered/*groaned** [___$_k$ is cute]]

    b. **PE**
       The person [who$_k$ I thought/said/***whispered/*groaned**[___$_k$'s cat] is cute]

In contrast, verbs with transparent complements (*think, say, claim, prove, suspect, tell, believe, hear,* etc.) are generally fine with PE, as we've seen throughout this paper.

3.3 Negative quantifiers in parentheticals

An independent fact about parentheticals is that they generally can't contain negative quantifiers like *nobody*:[19]

(36) **Bad subject of a parenthetical clause**
    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*:

(37) **Negative quantifier and NPI licensing with PE**
    That person is the author [who$_k$ **nobody** said[___$_k$'s work] is **any** good]

The facts presented in this section are consistent with an analysis of PE as real movement, rather than a parenthetical construction.[20]

4 The two mechanisms that constrain English PE

As previewed, I argue that the restricted distribution of English PE is predicted by the interaction of CL, and an adjacency requirement on [*'s*] that PE speakers can satisfy locally. This section explains these concepts, which are applied in the next section.

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[19]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*).

[20]If possessors really can 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$_k$ washed [___$_k$'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.

4.1 Cyclic Linearization

Chomsky (2000, 2001, inter alia) argues that phrases successive-cyclically move out of phases (including at least vP and CP) via the specifier ('edge') of phases because this position is an escape hatch, from which further movement is permitted. In this theory, the edge is an escape hatch because it is not subject to phase-level spellout, which targets only the phase head's complement. After spellout, the complement is impenetrable to further syntactic operations. Thus material moving out of the complement must get to the edge of the phase before spellout applies, in order to avoid being trapped in the complement.

In contrast, Fox & Pesetsky (2005) argue that spellout applies to entire phasal constituents, edges included. Phases spell out as soon as they are done being built up by successive applications of Merge. This hypothesis requires that spellout does not make constituents impenetrable, because in this system, all movement from phases is of material that has undergone spellout within that phase. As such, successive-cyclic movement through phase edges does not occur because edges are not subject to phase-level spellout. Rather, Fox & Pesetsky argue that successive-cyclic movement is motivated by the information-preserving nature of spellout, *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 ordering 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. Fox & Pesetsky argue that exiting a phase by moving out via its linear edge is one way to keep linearization consistent for a derivation:

(39) **Successive-cyclic movement through linear edge of the phase**

a. $\checkmark$ $[_{ZP}\ \alpha\ [_{PhaseP}\ \alpha\ \beta\ [_{XP}\ \alpha\ ]]]$

b. $*$ $[_{ZP}\ \alpha\ [_{PhaseP}\ \beta\ [_{XP}\ \alpha\ ]]]$

By exiting via the linear edge of each phase passed, phase-exiting phrases are determined by PF to precede the content of each phase in question. This is ultimately consistent with a final representation where the moved material precedes all phases that it moved through.

If a movement out of a phase doesn't pass through that phase's linear edge, hence crossing over some material in the phase on the way out, there is a way to salvage the derivation: Moving that crossed-over material into the next phase to a position preceding what crossed it, thus restoring their original order, keeps linearization coherent. For instance, (40a) below is bad if it remains as-is due to α non-successive-cyclically crossing over β on the way out of the phase. However, the derivation won't fail if, as (40b) shows, β later moves to precede α within the next phase as it did in the first:

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

a. * $[_{YP} \, \alpha \, [_{PhaseP} \, \beta \, [_{XP} \, \alpha \,]]]$

$\rightarrow$

b. $\checkmark$ $[_{YP} \, \beta \, \alpha \, [_{PhaseP} \, \beta \, [_{XP} \, t_\alpha \,]]]$

This schema is the essence of Fox & Pesetsky's account of Holmberg's Generalization.

In what follows, we will see that pressure to obey the scenarios in (39) and (40) restricts PE by interacting with the previewed adjacency condition on [*'s*], discussed further below.

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)**
For any derivation containing [*'s*], [*'s*] must be linearly adjacent[21] to the possessor it selects at the final PF representation of that derivation.

This constraint is phrased in such a way that it must be satisfied 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. I argue that (constrained) 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)** [=(8)]
The Saxon genitive [*'s*] must be adjacent to the possessor it selects at the spellout of the minimal phase (vP, CP) containing [*'s*].

As we'll see, after satisfaction of this locally-evaluated condition, subsequent movement operations can 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 on freely.

---

[21]I define adjacency a relation between two elements α and β, whereby α and β are concantenated 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. 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 morphemes. Intuitively such elements are what we call 'bound morphemes'.

4.3 The importance of spelling out phase 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. As we'll see, this interaction results in satisfaction of the requirements of [*'s*] only under particular circumstances, as desired.

This crucial interaction is not possible for Chomsky (2000, 2001), for which phase-level spellout is limited to phase complements. To see why, consider that in a PE derivation, successive-cyclic A′-movement moves 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 (complement) of a phase to whose edge the possessor has extracted. In such a configuration, as schematized in (43), the extracted possessor and the possessum DP are separated by a spellout domain (here YP):

(43) **Possessor and [*'s*] separated by a spellout domain**

$$XP$$
$$[\textsc{Phase}]$$

PossP$_k$

$$X \qquad YP$$
$$[\textsc{Spellout domain of } X]$$

$$\dots [_{DP} \underline{\quad}_k \textit{'s}] \dots$$
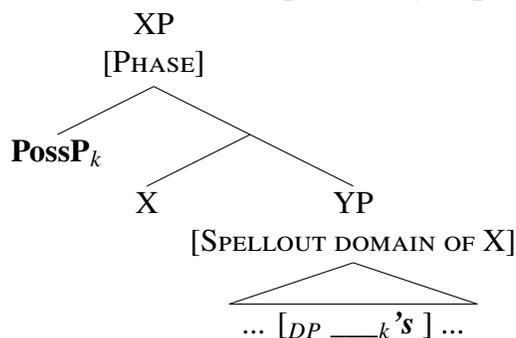
When spellout applies to YP in (43), the local adjacency requirement of [*'s*] is not met. This is because the extracted possessor has moved outside of the spellout domain YP of this phase XP, before spellout applied to YP. Thus spellout of YP finds [*'s*] non-adjacent to the possessor, and this derivation fails. This failure can be avoided if instead of PE, the possessum DP is pied-piped along with movement of the possessor. However, in doing this, PE fails to occur. This issue arises at any point where a spellout domain would separate the possessor and possessum, leading this theory of phases to ultimately predict a total lack of PE, contrary to the facts presented in this paper.

5 Predicting the facts

Now I will show how the concepts explained above predict the details of PE in English, which as explained, obey the following generalization:

(44) **CP edge generalization on English PE** [=(6)]
A possessor must reach the left linear edge of the local CP before extracting from the possessum DP.

First I discuss PE out of subjects, followed by the more complex case of PE from non-subjects. I take all vPs to be phasal following Legate (2003), Ko (2014), and references therein, a claim which will also be relevant to the discussion of expletives later on.

5.1 PE from subjects

### 5.1.1 PE from subjects: The embedded vP level

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 in situ subject and its possessor are already at the linear edge of vP, which they will soon exit.

(45) **Transitive/unergative vP**
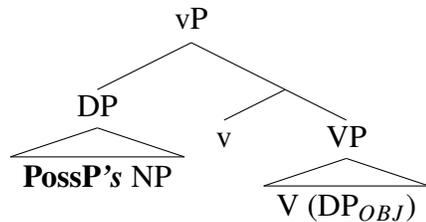
Further, if movement of a phrase to the specifier of a head requires a probing feature on that head to find that phrase in its c-command domain (Chomsky 1995, 2001), then phrase-bound specifier to specifier movement is not possible (Ko 2014). This is because a head does not not c-command, and therefore cannot move, anything already in one of its specifiers. This is illustrated by the schema in (46), where we see that the head α c-commands its complement κP and all that it contains, but not its specifier βP or any content thereof:

(46) **Heads do not c-command their specifiers**
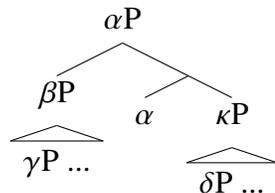
Thus for instance, movement of βP or γP to a higher specifier of αP isn't possible. In the same way, extraction of the possessor in a vP like (45) is not only unnecessary as far as CL is concerned, but impossible anyway.

If the subjects of passives and unaccusatives are externally merged as complements of V, where they receive their theme θ-role, they must move to spec-vP in order to maintain a coherent linearization under CL. Given that English V moves to v (Larson 1988, Chomsky 1995, Kratzer 1996, and others), movement of the theme subject to spec-vP brings it to precede V within vP, just as it will after A-movement to spec-TP. This movement within vP automatically brings a possessor contained by the theme subject to the linear edge of vP:

(47) **Subject movement in unaccusative/passive vP**

```
              vP
          /        \
     DP_j         /    \
    /     \      v     VP
PossP's NP        /‾‾\
                 V  t_j
```
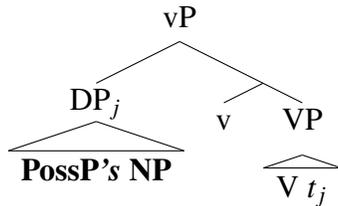
It is also in principle possible for the possessor to extract to the edge of vP, with the theme subject then moving to a lower specifier of vP below the extracted possessor via tucking-in (Richards 1997, 1999, inter alia) as in (48) below. This string-vacuous possessor extraction satisfies the adjacency requirements of [*'s*] just as if the possessor had not exited DP.

(48) **PE out of theme subject with subject tucking-in**

```
                  vP
              /        \
        PossP_i         vP
                     /      \
                  DP_j     /   \
                 /    \    v    VP
               t_i 's NP      /‾‾\
                             V  t_j
```
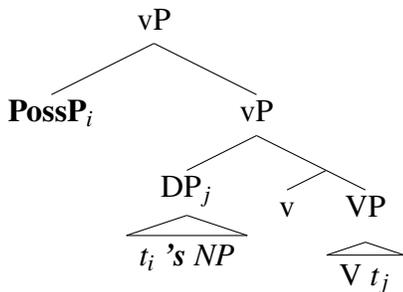
Because the derivation in (47) accomplishes the same thing as (48), but with less movement operations, we might expect concerns of economy to favor (47). However, nothing of substance for my account changes if the reality is (48).

So far, the adjacency requirement of [*'s*] has not been relevant. However, it will be when we consider the next phase of the derivation.

5.1.2 PE from subjects: The embedded CP level

After the completion of vP, I assume that upon external merge of T, the subject A-moves to spec-TP. Upon external merge of C, the opportunity to extract the possessor arrives. In section 2, I showed that at this stage of the derivation, various restrictions hold. In short, as (49) shows again, nothing can intervene between the trace of PE within DP and the linear edge of the embedded CP:
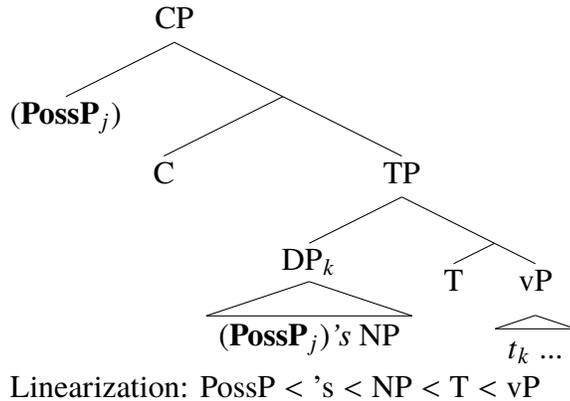
(49) **CP edge restrictions on PE from subjects**

    a. Who_k did you say[(***frequently**)[_____k's friend] (frequently) has money]?

    b. Who_k do they think [(***that**) [____k's name] (*that) is Mary]?

Before examining how things can go wrong in (49), let's establish why these examples are grammatical when the problematic material in the left edge of CP is absent.

If no material is present in the CP edge, after A-movement of the possessed subject to spec-TP, the possessor it contains is already at the linear edge of CP. The possessor could string-vacuously extract to spec-CP, though such movement is unnecessary.
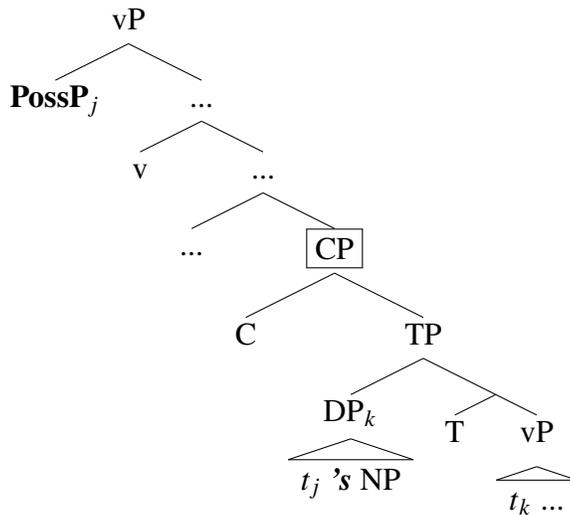
(50) **Harmless string-vacuous PE from subject**

```
                    CP
              _____|_____
        (PossP_j)                      |
                  _____|_____
                 C                TP
                          _____|_____
                      DP_k              |
                   ____|____         T    vP
             (PossP_j)'s NP           __|__
                                      t_k ...
```

Linearization: PossP < 's < NP < T < vP

The linear order established at the spellout of this CP satisfies the adjacency requirement of ['s], which is linearly adjacent to the possessor at PF whether or not the possessor string-vacuously extracts at this point. CL will also be satisfied here, as the extracting possessor has reached the linear edge of CP either way.

After (50), 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 locally satisfied. As such, extraction of the possessor succeeds:

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

```
              vP
         _____|_____
    PossP_j          ...
                 _____|_____
                v            ...
                        _____|_____
                       ...          CP
                                 _____|_____
                                C          TP
                                       _____|_____
                                     DP_k        |
                                   ___|___     T   vP
                                  t_j 's NP        __|__
                                                   t_k ...
```

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

Next, let's examine a derivation where there is problematic material in CP. Consider a derivation like (52), where the embedded CP contains an adverb in the left periphery. CL motivates the possessor to extract via the linear edge of CP. Therefore the possessor

19

must move to the left of that high adverb, to reach the CP edge. Notice that if at this stage the possessor moves, but strands the possessum subject in spec-TP, that high adverb consequently intervenes between the possessor and [*'s*]:

(52) **Movement around intervening adverb to linear edge of CP**

CP
- PossP$_j$
- AdvP
  - C
  - TP
    - DP$_k$
      - t_j *'s* NP
    - T
    - vP
      - t_k ...
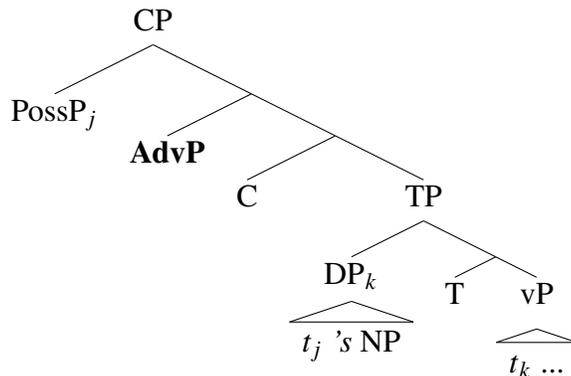
While subsequent movement of the possessor from CP in (52) is licit as far as CL is concerned, there is a problem. When this embedded CP undergoes spellout, PF will find the possessor and [*'s*] in this phase non-adjacent due to the intervening adverb. Therefore this CP will be deviant at PF. However, there is a way to avoid this problem: Pied-piping the possessum DP around that adverb to the edge of CP, along with the possessor (53):

(53) **Pied-piping movement over adverb to the linear edge of CP**

CP
- DP$_k$
  - PossP*'s* NP
- AdvP
  - C
  - TP
    - t_k
    - T
    - vP
      - t_k ...
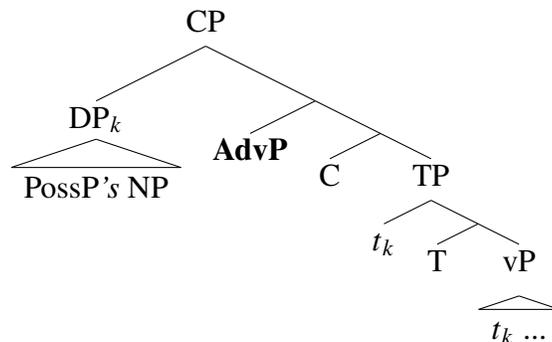
The movement in (53) satisfies CL as well as [*'s*] within this embedded CP. After (53), the possessor can extract into the matrix vP, as in (51) above. In such derivations we end up with the high adverb to the right of the stranded possessum, which as we saw in (49a), is the only grammatical way to have such an adverb in a CP exited by PE.[22]

Derivations in which instead of a high adverb there is an overt complementizer, as in (49b), will be identical to what I have just shown for the adverb scenario. 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

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[22]This result could also have been reached by adjoining the adverb to the right rather than the left of the subject, but the point is that even if the adverb originates left of the subject, the derivation can converge.

result in deletion of the complementizer due to the Doubly Filled Comp Filter, something we independently know to hold in English. Thus as (49b) above showed, an overt C on either side of a subject that PE has exited is impossible.

This concludes the analysis of PE from subjects. Next I will show how this account also makes the right predictions for the restrictions on PE from non-subject DPs.

5.2 PE from non-subjects

5.2.1 PE from non-subjects: The embedded vP level

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

(54) **Non-subject exited by PE cannot be stranded in situ**
     a.   * The person [**who**$_j$ you think [John ate ___$_j$**'s food**] is Mary]
     b.   ✓ The person [**who**$_j$ you think[___$_j$**'s food**$_k$ John ate t_k] is Mary]

To begin understanding why this is so, let's examine such derivations at the embedded vP. PE from any non-subject DP will work in essentially the same way.

In (55) below we see a transitive vP in which PE has exited a direct object, stranding it in situ in the complement of V. This derivation will be satisfactory for CL, as the moving possessor has reached 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 in situ subject (here EA, the external argument) and V:

(55)   ***PE from in situ non-subject in vP**
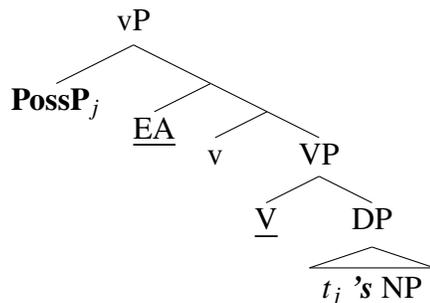
The way to satisfy CL as well as [*'s*] is to pied-pipe the possessum DP to the edge of vP, which succeeds in bringing the possessor to the phase edge while keeping [*'s*] adjacent:

(56)   **Pied-piping of non-subject possessum in vP**

vP
DP_j — EA — v — VP
PossP's NP
V t_j
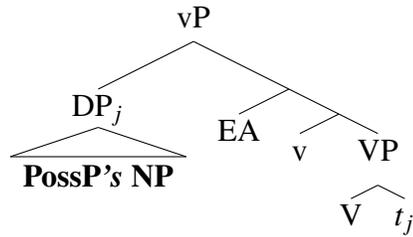
Thus we have an explanation for why base position stranding of a non-subject exited by PE is ungrammatical. Such stranding violates the requirements of ['s] at the spellout of vP.

At this point, the possessum has been pied-piped into the edge of vP, but it cannot remain here, as shown in (57) below:

(57) **Non-subject possessums cannot be stranded in spec-vP**

    a. *The person [**who**$_j$ I think [$_{CP}$ they [$_{vP}$ [___$_j$**'s food**]$_k$ ate t_k]]] is Mary

    b. *[**Which student**]$_j$ did you say [$_{CP}$ she [$_{vP}$ [___$_j$**'s book**]$_k$ found t_k]]?

As we've seen in examples like (54b) above, the non-subject possessum must be pied-piped to the edge of the embedded CP. 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. To see why this account in fact predicts that the possessum cannot remain in spec-vP, let's consider the next phase of the derivation.

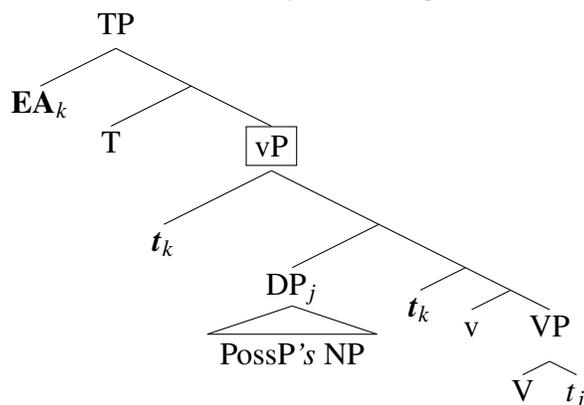### 5.2.2   PE from non-subjects: The embedded CP level

Upon the merge of T, the subject A-moves to spec-TP from its external merge site in the lower spec-vP. This movement carries the subject across the possessum DP which in (56) was pied-piped to an outer spec-vP (58):

(58) **A-movement of subject across pied-piped possessum in vP edge**

TP
EA$_k$ — T — [vP]
DP_j — t_k — v — VP
PossP's NP
V t_j
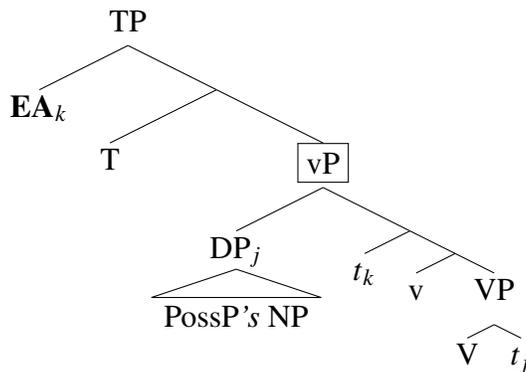
Recall that CL motivates elements exiting a phase to pass through that phase's linear edge. We can imagine that for this reason, A-movement of the subject in (58) might stop off in a higher spec-vP, above the moved possessor and possessum, as in (59) below. However, such a derivation requires movement of the subject from one specifier of vP to another. Such a phrase-bound spec-to-spec movement is not possible, as discussed in subsection 5.1.

22

(59)   ***A-movement of subject through linear edge of vP**

```
              TP
         _____
      EA_k        _____
          T      | vP |
              _____
            t_k      _____
                  DP_j      _____
              _____  t_k   v   VP
              PossP's NP           ___
                                   V  t_j
```

Thus we expect the only possibility to be the derivation in (58), where the subject non-successive-cyclically moves across the pied-piped possessum in the edge of vP. The derivation in (59) would end up problematic for linearization anyway—here the subject's derived position at the vP edge precedes the possessor, but the possessor will later move to spec-CP post-extraction, where it will precede the subject. Thus the ordering of possessor and subject will end up inconsistent in (59). In contrast, the derivation in (58) avoids a linearization problem, as the possessor precedes the subject within vP, just as will be the case in CP.

As mentioned in section 4.1, CL makes a prediction about how to repair non-successive-cyclic phase exits, which 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, to a position that precedes what previously crossed it. Doing so keeps the linearization information of both phases consistent, as (60) illustrates again:

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

    a. * $[_{YP}\ \alpha\ [_{PhaseP}\ \beta\ [_{XP}\ \alpha\ ]]]$

        →

    b. ✓ $[_{YP}\ \beta\ \alpha\ [_{PhaseP}\ \beta\ [_{XP}\ t_\alpha\ ]]]$

Given this hypothesis, if the A′-moved possessum DP in spec-vP must be non-successive-cyclically crossed by A-movement of the subject as in (58), we expect that this possessum cannot remain in spec-vP. Rather, 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:

(61)   **Non-subject possessum is pied-piped to spec-CP**
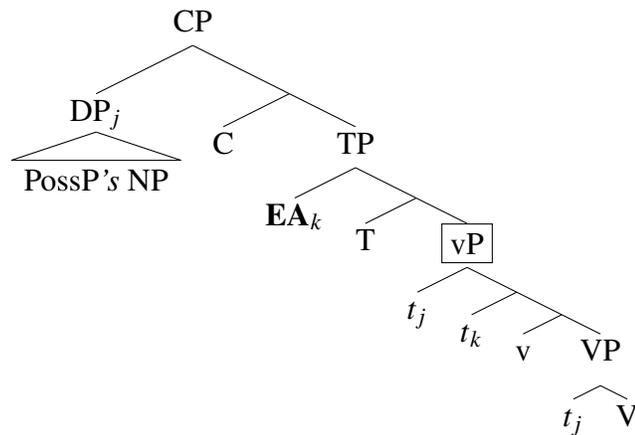
-Linearization of vP: PossP < NP < SUBJ < v ...
-Linearization of CP: PossP < NP < C < SUBJ < T < vP ...

This additional pied-piping maintains a coherent linearization. The present account thus correctly predicts that non-subject possessums must be pied-piped 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.

After pied-piping the non-subject possessum throughout the derivation of the embedded CP, the possessor can move on freely, as in (51). Nothing forces further pied-piping, as 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 its requirements were met.

We have just seen a successful derivation of PE from a non-subject, but this is not 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. These are repeated in (62) below, where we see that just like PE from subjects, PE from non-subjects allows no material to intervene between the trace of PE in DP and the embedded CP edge:

(62)   **CP edge constraint on PE from non-subjects**

   a. **No overt C on either side of pied-piped non-subject**
      Who$_k$ did you say[$_{CP}$ (*that)[___$_k$**'s cat**] (*that) John saw]?
      (cf. Whose cat did you say (that) John saw?)

   b. **No adverb left of pied-piped non-subject**
      Who$_k$ did you say[$_{CP}$ (*allegedly)___$_k$**'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$_k$ do you think[$_{CP}$ [(***from**) ___$_k$'s house]$_k$ we should leave [(**from**) t_k]?

The proposal so far yields familiar explanations for these restrictions. Such material in the left edge of the embedded CP is problematic because it forces movement of the possessor to the CP edge in order to satisfy CL, resulting in that material intervening between the possessor and [*'s*] within CP at the time when CP spells-out (see section 5.1.2). Alternatively,

24

if such movement does not occur, that material will be non-successive-cyclically crossed by movement of the possessor later on, incurring a violation of CL. Either way, such material in the left edge of the embedded CP is incompatible with PE derivations.

5.3   Why English PE requires multiclausality

We now have the tools to tackle a remaining puzzle. Recall that English PE is impossible in monoclausal derivations:

(63)   **No PE in monoclausal derivations**

    a.   **PE from subject**
        *Who$_k$ will [___$_k$'s article] be published next year?

    b.   **PE from non-subject**
        *Who$_k$ did they criticize [___$_k$'s article]?

Given that a non-subject possessum must be pied-piped to the local CP edge prior to PE as just discussed, there is no chance for the possessor to extract from a non-subject if the derivation contains only one clause. In this case, there is no opportunity for the possessor to break away after pied-piping the possessum to the local CP edge, since at this point the derivation ends. Thus more than one clause is needed for PE from non-subjects to occur.[23]

For similar reasons, PE out of subject possessums cannot become evident in a single clause derivation. In such a scenario, any material between the extracted possessor and subject possessum that would diagnose the occurrence of that PE violates the adjacency requirements of ['s] within CP, as (64) below illustrates with T to C movement:

(64)   **Diagnosing monoclausal PE out of subjects violates adjacency**
    * [$_{CP}$ **Who**$_k$ will(C-T$_j$) [$_{TP}$ [$_{DP}$ ___$_k$**'s** cat] t_j win the contest]]?

In short, English PE cannot become apparent unless movement of the possessor crosses a clause boundary. Consequently, such PE cannot be surface-evident in monoclausal derivations. However, nothing said here prevents string-vacuous PE, which cannot violate either CL or the requirements of ['s]. The possibility of string-vacuous extraction accounts for the well-known fact that possessors appear to c-command out of the possessum for the purposes of variable binding:

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[23]If we expand the derivation to two embedded CPs, PE should be able to strand the possessum in either intermediate clause edge. This prediction is mostly correct, but it turns out that PE from a non-subject with stranding of the possessum in the lower spec-CP is degraded:

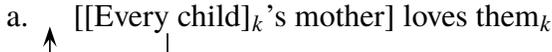(1)   a.   **PE from subject with double embedding**
      Who do you think(t_k's cat) he said(t_k's cat) is cute
    b.   **PE from non-subject with double embedding**
      Who do you think(t_k's cat) he said($^?t_k$**'s cat**) they saw t_k

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

(65) **String-vacuous PE feeds variable binding**

    a.   [[Every child]$_k$'s mother] loves them$_k$

    b.   [[Who]$_k$'s landlord] hates them$_k$?

Such string-vacuous PE is also accurately expected to be possible for what I have characterized as 'non-PE speakers', for which these facts about variable binding by possessors also hold. The stronger constraint on [*'s*] in the grammar of such speakers is irrelevant to string-vacuous extraction.

This concludes the core analysis of English PE, which I argued is governed by the interaction of CL and the requirements of [*'s*]. In the next section, I discuss some general consequences of this analysis.

6 Consequences

6.1 In support of CL

The CL theory is crucial to the account provided here, because of its inclusion of phase edges in spellout domains. This allows successive-cyclic movement through phase edges to interact with the adjacency condition on [*'s*], which is enforced at spellout. I argued that CL and this condition together predict some otherwise puzzling facts about English PE. These facts are intricate, and the construction in which they hold is does not appear to be very frequent, as suggested by the reality that it is nearly undocumented.

Given this, the complex restrictions on English PE are unlikely to be a set of memorized quirks. Rather, these details should emerge from more general grammatical principles. Indeed, this paper has argued that the facts can be derived from just two principles, one language-specific and one general. The first was a PF condition on [*'s*], and the second was CL. This account proposes that CL is an aspect of the knowledge endowed by UG, automatically possessed by all speakers. Having CL intrinsically, the only thing English speakers need to know to determine whether their grammar bans PE, or permits it in the restricted form described here, is the point in the derivation when the requirements of the bound morpheme [*'s*] may be satisfied. As such, to the extent that this analysis is correct, it stands as evidence for CL as an aspect of UG.

An important detail captured by this account is the fact that non-subject possessums must be pied-piped as far as CP under PE. I argued that stranding of non-subject possessums in spec-vP should be possible in principle, though in reality it is not. I pointed out that under CL, the crossing-over of this position by A-movement of the subject is predicted to require that it be emptied, thus forcing the possessum to be pied-piped further. 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 crossed it:

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

a. * $[_{YP} \; \alpha \; [_{PhaseP} \; \beta \; [_{XP} \; \alpha \;]]]$

$\rightarrow$

b. $\checkmark$ $[_{YP} \; \beta \; \alpha \; [_{PhaseP} \; \beta \; [_{XP} \; t_\alpha \;]]]$

In the Chomskyan approach to phases, there is no 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 section 7, I'll examine a few other scenarios that I argue support this prediction of CL.

6.2 The non-phasehood of DP

This account of English PE is not compatible with a theory in which DP is a phase. This account has relied on assuming that the adjacency condition of [*'s*] can be satisfied in its local phase, thus allowing the possessor to separate from [*'s*] provided that [*'s*] remains within a phase where its requirements were met. Given this logic, if DP were a phase in of itself, the requirements of [*'s*] would be immediately 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 under PE at all, predicting the possibility of leaving non-subject possessums in situ in VP under PE. As we've seen, in reality this is not the case.

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).

This analysis faces no problem if there is a nominal phase, but it is below 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.[24] Another potential solution would be to posit that the English DP is a phase for LF, but not for PF. Alternatively, if Rackowski & Richards' (2005) account of successive-cyclicity and 'unlocking' effects in terms of the locality of probing is on the right track, DPs may show some phase-like properties by virtue of being ϕ-feature bearers, despite not being spellout domains. I leave these considerations to future work.

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

(67) ***Exactly*-stranding**
What$_k$ (exactly) did you say t_k (**exactly**) that she wants t_k (exactly)?

---

[24]Such an understanding is evocative of Chomsky's approach to phases, in which there is an edge of phasal constituents that is not subject to spellout within the phase. However, as discussed in section 4.3, this theory is more broadly incompatible with the account given here.

If DPs are phases, which successive-cyclic movement must pass through the edge of, such stranding should be possible in the edge of DP. However, as Zyman (under review) points out, this appears not to be the case. This result is consistent with a non-phasal DP.

(68)   **No *exactly*-stranding in the edge of DP**
       What$_k$ (exactly) did you write [$_{DP}$ t_k (***exactly**) a book about t_k]?

6.3   The non-uniformity of left-branch extractions

The central topic of this paper has been a case of left branch extraction from the nominal phrase, a sort of movement that is generally impossible in English. This fact raises a puzzle for Ross' (1967) proposal that languages like English (but not all languages) obey the Left Branch Condition (LBC), which bans left branch extraction.

Subsequent works have argued that the restrictions on left branch extraction are more 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:

(69)   a.   **Russian PE in a question**
            Ču$_k$ ty   čitaješ [___$_k$ knigu]?
            whose you read   book

       b.   **No Russian PE with relativization**
            * Vot$_k$ ženščina [**čej**   ja tebe   showed [___$_k$ house]]
            this   woman   whose I to.you showed   house

Such patterns suggest that the LBC is not a unitary constraint.

If Gavruseva (2000) and Gavruseva & Thornton (2001) are correct, PF adjacency conditions on genitive morphology play a role in determining whether left branch extraction of possessors (aka PE) is available in a given language. It is possible to imagine a language where those conditions are not at issue, and thus don't restrict PE, with other left branch extractions banned for independent reasons. One such language is Hungarian, which permits PE but bans left branch extraction of other material, such as adjectives (Bošković 2005).

A second such language is the English of PE speakers, which as I've argued, allows (restricted) PE due to the weakening of adjacency constraints on ['s], but otherwise obeys the LBC—PE speakers are no more capable of other sorts of LBE than non-PE speakers. 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.

7   Extensions on crossing and stranding at vP

The analysis of English PE in this paper has lead to an examination of some predictions of CL for stranding in the vP edge. In this section, I show how CL predicts the availability

of such stranding in a few other scenarios. See Davis (in preparation) for a more thorough cross-linguistic consideration 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:

(70)   ***all*-stranding in spec-CP**   (McCloskey 2000, ex. 8)
       What$_k$ (all) did he say [$_{CP}$ t_k **(all)** that we should buy t_k (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 (71) below:

(71)   **No *all*-stranding in spec-vP**   (McCloskey 2000, ex. 14e)
       What$_k$ did he tell$_j$ [$_{vP}$ t_k **(*all)** t_j his friends [$_{CP}$ t_k (all) that he wanted t_k]]?

The concepts defended in the present paper predict this fact, for two reasons. The logic used here will sound familiar at this point, since the same basic configuration has already been discussed for non-subject possessum stranding under PE in English.

First, recall that CL requires a phrase A′-moving out of vP to stop in the most linearly peripheral position of vP, which must be a specifier above the subject in situ in a lower spec-vP. The subject later A-moves to spec-TP across that outer spec-vP, presumably non-successive-cyclically as argued in 5.2.2. There is no problem with this derivation, as long as the A′-moved material in the outer spec-vP moves along to spec-CP. However, if A′-movement were to strand *all* (or anything else) in that spec-vP, movement of the subject across that stranded material is predicted by CL to cause a linearization problem:

(72)   **A-movement across outer spec-vP**
       [$_{TP}$ T ... [$_{vP}$ [t_{wh} (*all)]$_k$ SUBJ v V t_k]]

A second reason why spec-vP *all*-stranding is banned has to do with head movement. McCloskey argues that V moves out of vP in West Ulster English, and this movement results in exactly the same crossing problem as A-movement of subjects does. Given 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 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 predicted by CL to rule out *all* stranding in spec-vP:

(73)   **Head movement across spec-vP**
       [$_{XP}$ X ... [$_{vP}$ [t_{wh} (*all)]$_k$ v V t_k]]

This analysis 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 (74). 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:

(74) **Stranding numeral quantifier in spec-vP in Korean** (Ko 2011, ex. 24)

Kong-ul$_k$ amato [$_{vP}$ [t_k **sey-kay**]$_j$ haksayng-tul-i t_j patassulkesita]
Ball-ACC probably 3-thing student-PL-NOM received

'The students probably received three balls'

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

(75) **Stranding numeral quantifier in spec-vP in Japanese** (P.c. Takashi Morita)

Ringo-o$_k$ osoraku/tabun [$_{vP}$ [t_k **san-ko**]$_j$ John-ga umaku t_j nusu-nda]
Apple-ACC probably 3-thing John-NOM well steal-PST

'John probably skillfully stole 3 apples'

That spec-vP stranding is ungrammatical in West Ulster English, but possible in Japanese and Korean, validates the predictions of CL.[25]

A phenomenon in English that provides convergent evidence for this approach comes from the stranding of adjuncts like *exactly/precisely* under *wh*-movement. To review, such adjuncts can be stranded in their base position, or in an intermediate CP edge:

(76) *Exactly*-stranding
[$_{CP}$ What (exactly) did you say [$_{CP}$ t_k (**exactly**) that she wants t_k (exactly)]]?

A-movement of the subject in English should rule out *exactly*-stranding in spec-vP. I argue that this prediction is accurate. Example (77) below only has an odd reading construing *exactly* as an adverb of v/VP, rather than a stranded modifier of DP:

(77) ***Spec-vP *exactly*-stranding**
[$_{CP}$ What$_k$ did you [$_{vP}$ t_k (***exactly**) eat t_k]]?

A similar stranding pattern can be found with other DP adjuncts of quantity/degree, like *to the nearest pound*, which can be stranded in its base position or at a CP edge:[26]

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[25]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 preparation) I analyze the differing stranding patterns in the dialects analyzed by Henry, in the context of a cross-linguistic study of stranding in edges.

[26]Credit for this observation goes to David Pesetsky.

(78) **Quantity adjunct stranding**
Tell me [$_{CP}$ [how much flour]$_k$ (to the nearest pound) you said [$_{CP}$ t_k (**to the nearest pound**) that the bakery wants t_k (to the nearest pound)]]

Such an adjunct is not strandable in spec-vP. With this adjunct the judgment is clearer than for the *exactly*-stranding in (77), as it cannot easily be construed as an adverb of v/VP:

(79) ***Quantity adjunct stranding in spec-vP**
[How much flour]$_k$ (to the nearest pound) did the bakery [$_{vP}$ t_k (***to the nearest pound**) ask for t_k (to the nearest pound)]?

Example (79) shows this fact in a transitive sentence, but the same restriction holds in passive (80) and unaccusative (81) derivations:

(80) ***Quantity adjunct stranding in spec-vP: Passive**
[How many boats]$_k$ (to the nearest hundred) has the American navy [$_{vP}$ t_k (***to the nearest hundred**) been provided with t_k (to the nearest hundred]?

(81) ***Quantity adjunct stranding in spec-vP: Unaccusative**
[How many firefighters]$_k$ (to the nearest dozen) did the house [$_{vP}$ t_k (***to the nearest dozen**) burn down despite the efforts of t_k (to the nearest dozen)]?

This is expected, if CL requires internal argument subjects to pass through the vP edge in order to precede V (section 5.1). From that position, A-movement to spec-TP crosses anything stranded in the periphery of vP by A′-movement, causing a linearization violation.

7.2 Stranding and 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, as repeated in (82):

(82) **PE from expletive associate**

a. Mary said [there was [some student]'s book on the table]

b. * **Who**$_j$ did Mary say [there was[___$_j$**'s book**] on the table]?

c. $^?$ **Who**$_j$ did Mary say [[___$_j$**'s book**]$_k$ there was t_k on the table]?

While the optimal example in (82c) is marked, it is clearly better than (82b), where the expletive associate is stranded in situ. This stranding phenomenon can be used as a diagnostic for the derivational history of expletive *there*. Several works argue that expletive *there* is externally merged in spec-vP (Biberaur & Richards 2005, Deal 2009) before A-moving to spec-TP. If this is so, we expect A-movement of the expletive to result in a crossing effect that makes it impossible for PE to strand the expletive associate in spec-vP.

Example (82c) is ambiguous between stranding in situ or in spec-vP, since copular V in English moves to T, unless T is filled by an auxiliary. Therefore (83) below adds an

auxiliary in order to allow V to remain low, and disambiguate the position of stranding. In this example, we see more clearly that the expletive associate exited by PE cannot remain in a position corresponding to spec-vP:

(83) **Expletive associate must strand in spec-CP under PE**
Who$_k$ do you think[$_{CP}$ ($t_k$$^?$**'s friends**) there have [$_{vP}$ (t_k*****'s friends**) been a lot of stories told to (t_k*'s friends)]]?

This stranding gap is indicative of A-movement of the expletive. This conclusion is independently supported by the fact that adjunct stranding under *wh*-movement of the sort discussed in the previous subsection also is not possible in spec-vP in expletive constructions:

(84) **No spec-vP DP adjunct stranding with expletive**

a. [How many students] (exactly) have there [$_{vP}$ (***exactly**) been in the office today]?

b. [How many kilos of gold] (to the nearest hundred) have there [$_{vP}$ (***to the nearest hundred**) been consumed in the production of fancy pens]?

These facts only stand as evidence for A-movement of the expletive if vP is a phase in expletive constructions. If it is not, then successive-cyclic movement will not pass through the edge of vP in such contexts anyway, and there would be no reason to expect stranding there. Thus some evidence for phasehood in this environment is necessary.

Nissenbaum (2000) argues that parasitic gaps in clausal adjuncts are licensed by successive-cyclic movement through spec-vP. Thus if such a parasitic gap can be licensed in a given environment, it suggests that successive-cyclic movement through spec-vP occurred, something that would be unnecessary if that vP were not a phase. Legate (2003) used this logic to diagnose the phasehood of vP in a variety of contexts. Legate did not perform this test in expletive constructions, however. I perform this test in (85), where I argue that we indeed see successful PG licensing:

(85) **PGs in expletive constructions**

a. $^?$ Who$_k$ was a there a big rumor about t_k [after the police arrested PG$_k$]?

b. $^?$ [Which employee]$_k$ was there a big party for t_k [before the boss promoted PG$_k$]?

To the extent that (85) constitutes evidence that expletive constructions have a phasal vP, or at least allow the possibility of successive-cyclic movement through vP, the facts in (83-84) thus stand as evidence for the origination of the expletive in vP.

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 general principle predicts the details of English PE via its interaction with a phase-level version of an independently proposed PF condition on genitive morphology.

This study extended to a consideration of how CL constrains stranding in the edge of vP. I also argued that English PE teaches us about the non-uniformity of left branch extractions, suggests the non-phasehood of DP, and leads to a novel argument for the origination of expletive *there* in vP. The appendix discusses a remaining puzzle about adverbs in PE, and offers some preliminary thoughts about the implications for language acquisition.

9 Appendices

9.1 Appendix A: A prosodic restriction between clauses

The account of English PE in this paper leads to an expectation about right-hand matrix adverbs. Such adverbs placed between the matrix and embedded clause should not interfere with PE, due to being outside of the embedded CP. In fact, such adverbs are degraded in PE contexts. This is demonstrated in (86), which shows that such an adverb is fine with pied-piping possessor movement, but bad with PE:

(86) **Matrix adverb interfering with PE**

    a. Who$_k$ did you say ($^{??/*}$**yesterday**)[[____$_k$'s cat] is cute]?
       (cf. [Whose cat]$_k$ did you say **yesterday** [____$_k$ is cute]?)
    b. Who$_k$ did you say ($^{??/*}$**yesterday**)[[____$_k$'s cat]$_j$ he saw t_j]]?
       (cf. [Whose cat]$_k$ did you say **yesterday** [he saw ____$_k$]?)

This puzzle appears related to a restriction on *exactly*-stranding mentioned in McCloskey (2000). While it is normally possible to strand *exactly* in the edge of an embedded CP, the presence of such adverbs similarly results in degradation:

(87) **Matrix adverb interfering with *exactly*-stranding**

    a. Who did you say ($^{?/*}$**yesterday**)[exactly came to the party]?
    b. What did he say ($^{?/*}$**yesterday**) [exactly that we wanted]?

This suggests that an independent factor, not specific to PE, is responsible for (86) and (87).

McCloskey observes similar restrictions on *all*-stranding in West Ulster English, and suggests that the stranded material must prosodically incorporate with V. Phonologically lighter intervening material incurs a lesser violation of this requirement, resulting in gradient judgment patterns like the following:

(88) **Prosodic condition on *all*-stranding**

    a. What did he **say all** that he wanted to buy?   (McCloskey (2000), ex. 11b)
    b. What did he **say** $^?$<u>to him</u> **all** that he wanted to buy?   (Ex. 15b)
    c. What did he **say** $^{?}$*<u>to his friends</u> **all** that he wanted to buy?   (Ex. 15c)

In my intuition, the deviant *exactly*-stranding examples in (87) improve if the intervening material is phonologically lighter, as in (89). Here we see that an intervening pronoun or preposition incurs no violation:

(89) **Phonologically light interveners in *exactly*-stranding**

    a. What did you tell **him/her** exactly that we want?

    b. Who did you speak **to/with** exactly at the party?

Similarly, PE examples with a light pronominal intervener incur a relatively weak violation:

(90) **Phonologically light interveners in PE**

    a. $^?$**Who**$_k$ did you tell **me** [[____$_k$ **'s name**] is Bill?

    b. $^?$**Which place**$_k$ did they tell **you** [[____$_k$ **'s prices**] are lowest?

Overall then, we see a similar pattern of acceptability with all three of these English stranding environments. If the relevant constraint is indeed prosodic, perhaps such stranding patterns are providing evidence for prosodic well-formedness conditions on some syntactic configurations, in the vein of Richards (2016). As this constraint is apparently not unique to English PE, I will not explain it here.

9.2 Appendix B: PF knowledge and the acquisition of PE

The distribution of PE in children that Gavruseva & Thornton (2001) report is highly similar to that of PE in adult speakers that I've reported here, including the stranding of non-subject possessums in an embedded spec-CP, and the lack of PE in monoclausal contexts. Gavruseva & 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 adults 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 PF constraint on PE that adults do.

PE in children has additional quirks, but these are mostly derivable from the fact that children at the relevant stage of development are capable of *whose*-movement as in (4) above, unlike adults. If the PF adjacency condition that children have is fundamentally the same as that of adult speakers who permit PE, the possibility of *whose* movement makes a correct prediction about child PE. As Gavruseva & Thornton show, 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:

(91) **Intermediate stranding of ['s] in child speech**   (Gavruseva & Thornton, ex. 1c)
    Who$_j$ do you think [t_j **'s**]$_k$ spiderman saved t_k **cat**?
    (cf. Whose cat do you think spiderman saved?)

This derivation is permitted by the present 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 to spec-CP, subsequently stranding [*'s*] there by extraction of *who*.

As the [*'s*] of the object possessum is pied-piped to the embedded CP edge, (91) shows the influence of the local adjacency condition on [*'s*] that I've argued is present in possessor-extracting adults. I suggest that children 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 this way, some adults remain 'child-like' in this aspect of their grammar, though in losing *whose*-movement sentences like (91) become impossible.

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