Parasitic gaps in restrictive and appositive clauses[1]

Stanley Dubinsky
University of South Carolina

1. Introduction

The syntactic and semantic distribution of parasitic gaps (P-gaps), as in (1), has been the subject of scrutiny at least since the publication of Engdahl 1983.

(1)   Which candidate did you slander *t* after promising to vote for *pg*?

Key issues of concern have been: (i) the position and category of the antecedent of the P-gap (i.e. whether it must be in an A-bar position and whether it must be an NP), (ii) the nature of the P-gap itself (e.g. whether it is a trace or a null pronominal and whether it is subject to subjacency), (iii) the relationship between the true gap and the P-gap (e.g. whether the trace can c-command the P-gap, and whether the two must have the same Case and/or Theta-role), (iv) the licensing of the P-gap (e.g. whether it is licensed at S-structure (Spell-Out) or at LF), and (v) the relationship between P-gaps and ATB extraction (i.e. whether they are instances of the same construction).[2]

This paper presents data which motivate the recognition of an additional factor controlling the distribution of P-gaps: namely, whether the P-gap is in a restrictive or appositive clause. P-gaps will be shown to be unacceptable when they occur in a phrase that is parenthetical or appositive. The formal solution presented here extends the analysis of P-gaps in Nissenbaum 1998, 2000 and the syntax of appositives in De Vries 2006. Consider first the contrasts in (2) and (3).

(2)   a. Which building did she try to sketch *t* [without looking at it/*pg*]
        b. Which article did she file away *t* [without glancing at it/*pg*]
        c. Which building did she try to sketch *t* [while looking at it/*pg*]
        d. Which article did she file away *t* [while glancing at it/*pg*]

(3)   a. Which building did she try to sketch *t* [looking at it/**pg*]
        b. Which article did she file away *t* [glancing at it/**pg*]
        c. Which building did she try to sketch *t* [only/barely looking at it/**pg*]
        d. Which article did she file away *t* [only/barely glancing at it/**pg*]

---

        2. For an extensive overview of the literature on these topics, see Culicover 2001 and its containing volume (Culicover & Postal 2001).

In (2), a P-gap can alternate with the overt pronoun *it* in adjunct phrases introduced by *without* or *while*. In (3), however, P-gaps are found to be impossible when *without* and *while* are omitted, or when they are replaced with *only* or *barely*.

A second set of facts which is relevant to the discussion involves the ungrammaticality of P-gaps in appositive relative clauses, as opposed to restrictive relative clauses. This is illustrated in (4) and (5).

(4)   This is the professor that every student who knows him/*pg* well dislikes *t*.

(5)   a. This is the professor that the seniors, who know him/**pg* well, dislike *t*.
        b. This is the professor that John, who knows him/**pg* well, dislikes *t*.

In (4), we see that a restrictive relative clause may host a P-gap, while in (5), an appositive relative cannot.

In the account that follows, we will see that the adjuncts in (2) are, like the relative clause in (4), restrictive, and that those in (3) are non-restrictive appositives, like the relative clauses in (5). Extending the syntax of appositive relatives (De Vries 2006) to the adjuncts in (3), it will be shown that the illicit P-gaps in (3) are contained, like those in (5), in coordinate structures. The uniform differences between the syntax of (2)/(4), on the one hand, and (3)/(5), on the other, will be shown, when applied to the model of P-gap formation posited by Nissenbaum (1998, 2000) to predict the impossibility of P-gaps in (3) and (5).[3] Section 2 will review the evidence for positing coordinate structure for appositive relatives, and extend these arguments to what we will call "appositive adverbial" clauses. Section 3 will examine more closely the ways in which appositive and restrictive clauses contrast in their ability to host P-gaps. Section 4 will present an explanation, based on the coordinate structure proposal in De Vries 2006 and the account of P-gap formation in Nissenbaum 1998, 2000.

2. *Appositive syntax extended*
In De Vries 2006, several arguments are put forward to show that appositive relatives, unlike restrictive relatives, are contained within a paratactic coordinated structure. We will review some of them here. The basic structure that De Vries attributes to appositive relative clauses is shown here in (6).[4]

(6)   a. The first US president, who was born in 1731, declined to become king.
        b. [$_{CoP}$ [$_{DP}$ the first US president] &: [$_{DP}$ [$_{CP}$ who was born in 1731]]]

---

3. At the same time, the availability of ATB extraction out of coordinated noun phrases, as in (i), suggests that the derivation of P-gaps is indeed subject to different constraints than ATB gaps.
(i)   Who do you think that she is [a friend of __] and [confessor to __]?
        4. The head of the coordination phrase CoP is indicated by de Vries as *&:* which is phonologically null but "contains a clue for PF that its (paratactic) complement must be pronounced with a new, low intonation phrase". Since the intonation pattern associated with appositive adverbials is the same, we will assume the same head-phrase representation for them as well.

First, in contrast with a restrictive relative clause (RRC), an appositive relative clause (ARC) does not fall into the scope of a quantifier belonging to its antecedent. In (7b), the quantifier *all* is embedded within the first conjunct of a coordinated phrase and cannot have scope over the ARC *who passed the test*. Similar effects are seen when we compare appositive adverbial clauses (AAC) with restrictive adverbial clauses (RAC), as in (8).[5]

(7)   a. all the lecturers that passed the test   RRC   [=De Vries 2006:(40)]
          b. all the lecturers, who passed the test   ARC

(8)   a. Marjorie rarely tried to paint landscapes before sketching them.   RAC
          b. Marjorie rarely tried to paint landscapes, only sketching them.   AAC

In (8a), the quantifier *rarely* has scope over the entire phrase *paint landscapes before sketching them*, such that the sentence does not entail that Marjorie rarely tried to paint landscapes. In (8b), in contrast, *rarely* only has scope over *paint landscapes* and not over *only sketching them*, such that the quantification is not restricted by the appositive adverbial and the sentence does entail that Marjorie rarely tried to paint landscapes. This is consistent with the hypothesis that the AAC in (8b) is a second conjunct.

       A second observation about RRC/ARC differences concerns the fact that deletion of the former normally results in a change of meaning or grammaticality, as opposed to the latter. Consider (9) and (10).

(9)   a. We left the package for a family that needed it the most.   RRC
          b. We were hoping to visit the New York *(that I remember)   RRC

(10)   a. We left the package for John, who we trust.   ARC
          b. We were hoping to visit New York, which has so many things to do. ARC

Deletion of the RRC in (9a) would greatly alter the meaning of the sentence, since the RRC restricts the denotation of the nominal *a family*. In (9b), deleting the RRC *that I remember* would render the sentence ungrammatical. In contrast, deletion of the ARCs in (10) would have no such effect, neither altering the denotation of the nominal with which they are associated nor making them unacceptable. This is presumably a consequence of their not being a part of the first DP in the coordinate structure. Likewise, in (11), we see that deletion of a RAC affects meaning, while deleting an AAC does not affect it in the same way.

(11)   a. He didn't fire the pot without glazing it.   RAC
          b. He didn't understand the article, barely glancing at it.   AAC

In example (11a), the adverbial clause *without glazing it* restricts the denotation of the

---

       5. A fairly extensive discussion of differences between restrictive and non-restrictive subordinate clauses is to be found in Rutherford 1970.

predicate, such that the sentence does not entail that *he didn't fire the pot*. In (11b), the adverbial clause *barely glancing at it* is appositive and the sentence does entail that *he didn't understand the article*.

Another difference between ARCs and RRCs concerns their positional distribution. As pointed out in Jackendoff 1977, ARCs must follow RRCs. Observe the contrast in (12) [=DeVries 2006:(43)].

(12)   a. The man that came to dinner, who was drunk, fainted.   RRC>ARC
       b.*The man, who was drunk, that came to dinner fainted.   *ARC>RRC

In (12a), according to De Vries, *the man that came to dinner* is the first conjunct and the ARC *who was drunk* is the second. Example (12b) is unacceptable because there would be no way, under his analysis, for the second conjunct (the ARC) to come to be embedded within the first. A comparison of adverbial clauses in this regard does not yield quite as straightforward results, although we will see that positional data weakly support the analysis. First of all, since adverbials can generally be extraposed, it is in principle possible to find restrictive and appositive adverbial clauses freely ordered relative to one another. Example (13) shows this.

(13)   a. Sheila walked with John while talking about her trip, barely glancing at him.
       b. Sheila walked with John, barely glancing at him, while talking about her trip.

Both (13a), where RAC>AAC, and (13b), where AAC>RAC, are acceptable. Note though, that these adverbial clauses can appear (unlike relative clauses) almost anywhere in the sentence, including immediately before or after the subject. Observe (14).

(14)   a. Sheila, barely glancing at him, walked with John while talking about her trip.
       b. Sheila, while talking about her trip, walked with John, barely glancing at him.
       c. Barely glancing at him, Sheila walked with John while talking about her trip.
       d. While talking about her trip, Sheila walked with John, barely glancing at him.

There are however some cases in which the distribution of an appositive adverbial is seen to be more limited than that of a restrictive adverbial. Consider (15).

(15)   a. Judy filed the report right on time after reviewing it this morning.
       b. Judy filed the report after reviewing it this morning, right on time.

In (15b), the temporal adverb *right on time*, referring to the time when Judy *filed the report*, is extraposed to the right of the restrictive adverbial *after reviewing it this morning*. In (16), we see that this is not as possible for an appositive adverbial to intervene between the main predicate and its temporal adverb.

(16)   a. Judy filed the report right on time, barely reviewing it this morning.
       b.?Judy filed the report, barely reviewing it this morning, right on time.

4

On the hypothesis that *right on time* in (16b) occupies a position to the right of a second conjunct, rather than the rightmost position in its clause, the relative unacceptability of (16b) is predicted. A more robust contrast involves the extraposition of a resultative predicate phrase, as in (17).

(17) a. Joan painted the barn bright red after scraping it.
     b. Joan, after scraping it, painted the barn bright red.
     c. Joan painted the barn after scraping it, bright red.

Parallel to (15b), the predicate *bright red* in (17c) is seen to the right of the restrictive adverbial clause *after scraping it*. Example (18), with an appositive adverbial, contrasts with (17).

(18) a. Joan painted the barn bright red, barely scraping it.
     b. Joan, barely scraping it, painted the barn bright red.
     c.??Joan painted the barn, barely scraping it, bright red.

Once again, the contrast between (17c) and (18c) is explained if the adverbial clause in (18c) *barely scraping it* occupies a second conjunct position. The proposed structures of (17c) and (18c), showing this difference, are given in (19).[6]

(19) a. [… painted the barn __$_1$] after scraping it] bright red$_1$]
     b.??[$_{CoP}$ [… painted the barn __$_1$] &: [barely scraping it] [bright red$_1$]]

     Next, there is the fact that appositive relative clauses (contrasted with restrictive relatives) are "opaque for syntactic licensing relations" [De Vries 2006:256, Jackendoff 1977, Demirdache 1991). Example (20) [=De Vries 2006:(56)] illustrates this.

(20) a. Everyone$_1$ spoke about the museum that he$_1$ had visited.   RRC
     b.*Everyone$_1$ spoke about the Millenium Dome, which he$_1$ had visited.   ARC

Taking up Progovac's 1998 assertion that conjuncts do not c-command each other, De

---

6. William Davies (personal communication) points out that the acceptability of these examples and the perceived contrast between the RAC and AAC cases are influenced by prosody. The heavier the constituent at the end of the sentence, the more likely that extraposition will be acceptable in both cases. Thus in (i), where the temporal adverb is the heavy phrase *on the eve of the designated day*, and in (ii), where the resultative predicate is *the most hideous shade of red*, extraposition results in relatively acceptable sentence and the contrast between the RAC and AAC cases pretty well vanishes.
(i) a. Judy filed the report after reviewing it, on the eve of the designated day.
   b. Judy filed the report, barely reviewing it, on the eve of the designated day.
(ii) a. Joan painted the barn, after scraping it, the most hideous shade of red.
    b. Joan painted the barn, barely scraping it, the most hideous shade of red.
One possible explanation for this is that local extraposition (to the right of a restrictive adverbial) is available for prosodically lighter phrases, and that long distance extraposition (to the right of an appositive adverbial) requires a higher degree of prosodic weight.

5

Vries suggests that the unacceptability of (20b) with the intended bound variable interpretation is the result of the ARC *which he had visited* being a second conjunct and being "shielded" from c-command by the quantifier *everyone*. Parallel facts can also be shown in a comparison of restrictive and appositive adverbial clauses. Consider (21).

(21) a. Everyone$_1$ left the trade show early after adding up his$_1$ orders.   RAC
      b.*Everyone$_1$ left the trade show early, barely adding up his$_1$ orders.   AAC

The absence of a bound variable interpretation for (21b), parallel with (20b), suggests that the conjunct analysis applied to the ARC clause can readily be extended to the AAC cases.

     Similar contrasts between RRCs and ARCs can be found with regard to the distribution of negative polarity items (NPIs), as in (22).

(22) a. Was he interviewed by a reporter who asked something/anything
         worthwhile?   RRC
      b. Was he interviewed by Tom Brokaw, who always asks
         something/*anything worthwhile?   ARC

Here again, the ungrammaticality of (22b) with *anything* follows from the ARC being a second conjunct and not c-commanded by any constituent of the main clause. That is, the NPI *anything* contained in the second conjunct ARC is not in the scope of, and not licensed by, the interrogative property of the first conjunct main clause. In examining the behavior of NPIs in RACs and AACs, respectively, we must be careful to avoid subordinators that by themselves can license NPIs. Example (23) illustrates this.

(23) John filed the article without/barely/before/*after/*only reading any of it.

In (23), although nothing in the main clause licenses the NPI *any*, we find that *without*, *barely*, and *before* all do so. The subordinators *after* and *only* do not, so we will proceed with these. In (24), we find that a RAC headed by *after* can contain the NPI *any* if licensed by the main clause.

(24) a. Did John file the article after reading any of it?   RAC
      b. Susan didn't/*did sketch the building after sneaking any glances at it.   RAC

In (24a), the interrogative *did John file the article* licenses *any* in the *after* clause. In (24b), *any* in the *after* clause is only licensed by main clause negation (i.e. *didn't* is grammatical and *did* is unacceptable). Now consider the NPI *any* in an AAC headed by *only* (which does not by itself license NPIs).

(25) Susan didn't sketch the building, only sneaking (*any) glances at it.   AAC

Here, in (25), main clause negation cannot license the NPI *any* in the AAC headed by

6

only, confirming that the appositive adverbial is not in the scope of the functional projections of the main clause.

　　We have now observed five ways in which appositive adverbial clauses are similar to appositive relative clauses, and five ways in which appositive clauses are generally distinct from restrictive clauses. Six ways, if one includes the parasitic gap data introduced at the outset. Adopting De Vries' analysis, we might posit the following structure for AACs.[7]

(26)
　　　　　　　　　　　　CoP
　　　　　　　CP$_1$　　　　　　Co′ *
　　　　he fired the pot　　&:　　　CP$_2$
　　　　　　　　　　　　　　　　barely glazing it
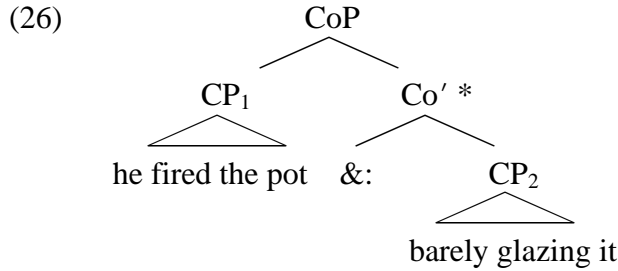
As indicated in note 4, the head of the coordination phrase CoP, *&:*, is phonologically null but "contains a clue for PF that its (paratactic) complement must be pronounced with a new, low intonation phrase". The asterisk * associated with Co′ is meant as an indication that CP$_1$ and CP$_2$ do not c-command each other.

　　The analysis of appositive relatives, adapted from De Vries and applied to AAPs, explains: (i) why a quantifier in the main clause (CP$_1$) will not have scope over the AAP (CP$_2$), as in (8b); (ii) why the AAP does not restrict the meaning of the assertion in the main clause, as in (11b); (iii) why a resultative relative cannot be extraposed to the right of an AAP, as in (18c); (iv) why a quantifier in the main clause cannot bind a variable in an AAP, as in (21b), and (v) why an NPI in an AAP cannot be licensed by the main clause, as in (25). The next section will review, and expand, our observations on the distribution of parasitic gaps, showing that these are possible in restrictive clauses of various types, but not in their appositive counterparts.

3. Parasitic gaps and apposition
Let's now turn back to our first observation that restrictive clauses host P-gaps and that appositives don't. We saw this contrast for restrictive and appositive adverbials in (2) and (3). In example (27) we see that this contrast obtains with quite a broad range of subordinators.[8]

---

7. Haegeman (2003:327) proposes that premise-conditionals (as opposed to event-conditionals) are merged directly with CP to form a structure as in (i) that is "close to coordination".

(i)　　　　　　　　CP　　　　　　　　　　　　　　　　　　[=Haegeman 2003:(22)]
　　　　　CP1　　　　CP2
　　　　　　Peripheral conditional

8. An anonymous reviewer of this paper suggests that p-gaps for both types of clauses become acceptable when the clauses are preposed to a position immediately following the subject. However, other native speakers do not confirm this observation. Those I have tested find a clear contrast between (i) and (ii).

(27)   a. Which proclamation did they publicize *t*
                despite/without/after/before/while arguing over it/*pg*.
         b. Which proclamation did they publicize *t* (only) arguing over it/**pg*.

It would appear to be the case that a restrictive adverbial clause must contain some sort of aspectual or other preposition, such that a restriction on the denotation of the main clause can be derived.
Prepositions such as *after* and *without* belong to this category, with *after glazing it* in (28a) aspectually restricting the denotation of *she did fire which pot*. Adverbial clauses that do not restrict the denotation of the main clause, such as *barely finishing it* in (28b), always have lowered appositional intonation. Only the former can host a P-gap. This is seen in cases such as (29), where the omission of the apectually restricting subordinator *after* renders the adverbial incapable of hosting a P-gap.

(28)   a. Which pot did she fire *t* after glazing it/*pg*.
         b. Which pot did she fire *t*, barely finishing it/**pg*.

(29)   a. What did John want *t* after having eaten two helpings of it/*pg*?
         b. What did John want *t*, having eaten two helpings of it/**pg*?

Now (as pointed out by an anonymous reviewer), normally restrictive adverbial clauses can sometimes be inserted appositionally, and when this happens, they are infelicitous with P-gaps. Compare (28a) and (30).

(30)   Which pot did she fire *t*, after glazing it/**pg*.

The adverbial clause in (30) must have an overt pronominal object, when pronounced with the lowered intonation of appositives. Thus, we might conclude that the appearance

---

(i)   Which barn, after priming it/*pg*, did Joan paint *t* red?
(ii)   Which barn, barely priming it/**pg*, did Joan paint *t* red?
A similar paradigm is given here in (iii) and (iv).
(iii)   a. Which stories did she not repeat, believing them/**pg* to be a complete fabrication.
         b. Which stories, believing them/**pg* to be a complete fabrication, did she not repeat.
(iv)   a. Which songs did she put on her Ipod, before deciding she didn't like them/*pg* very well.
         b. Which songs, before deciding she didn't like them/*pg* very well, did she put on her Ipod.
I will therefore continue to assume that the relevant difference involves the restrictive or appositional status of these clauses, rather than their surface position.
         Note also that movement of adverbials out of their base position alters their control possibilities.
In (v), *Mary* cannot readily control the subject position of the adverbial.
(v)   ??The fountain inspired Mary$_1$ to write a poem after/while PRO$_1$ looking at it for a long time.
However, movement of the adverbial to a position before the infinitival renders a control interpretation quite possible.
(vi)   The fountain inspired Mary$_1$, after/while PRO$_1$ looking at it for a long time, to write a poem.
This would suggest that coreference between *Mary* and PRO in (vi) is induced in some manner other then through a binding relation (otherwise (v) and (vi) should be equally possible). Accordingly, we need not worry about Control into appositives being a syntactic factor in their analysis.

8

of a P-gap requires that the semantically appropriate host clause occupy the syntactically required position. Being the second conjunct of a CoP would appear not to be such a position.

      To round out this discussion, we can show further that the distribution of P-gaps in adverbial clauses is not as dependent on the selection of a particular sudordinating complementizer, as it is on the denotation of that complementizer and its concomitant syntax. This is observed in Haegeman 2003:330, where temporal *while* is compared with contrastive *while*. The first is restrictive and the second appositive, as illustrated in (31). Example (31b) has, among other properties, the lowered appositive intonation triggered by the head of CoP. Haegeman notes that only temporal *while* can host a P-gap, as in example (32).

(31)   a. June chopped onions while James washed the lettuce.
        b. June likes to chop onions, while James hates to.

(32)   a. These are the vegetables that Jane sorted *t* while George washed them/*pg*.
        b. These are the vegetables that Jane likes to add *t*, while George hates them/**pg*.

Thus, it would appear that semantically non-restrictive adverbial clauses must appear in apposition (some semantically restrictive adverbial clauses may also do so), and that clauses in syntactic apposition cannot (among other things) host P-gaps.

      What we have shown here regarding appositive adverbial clauses and P-gaps is also true, as we have seen, with respect to appositive relative clauses and P-gaps. Recall (4) and (5b), repeated here as (33).

(33)   a. This is the professor that every student who knows him/*pg* well dislikes *t*.
        b. This is the professor that John, who knows him/**pg* well, dislikes *t*.

Appositive relatives and adverbials thus share, in addition to all the properties shown in section 2, the inability to host P-gaps.

      In addition to P-gaps associated with *wh*-clauses and cleft constructions, we find the restrictive-appositive distinction to affect the distribution of P-gaps in *tough* constructions. Example (34) illustrates this.

(34)   a. It appears easy to insult John without even talking to him.
        b. It appears easy to insult John, just looking at him.

It is clear from the intonational pattern associated with (34b), as opposed to (34a), that the latter is an appositional adverbial clause.

      Evidence for the restrictive or appositional nature of adverbials associated with *tough* constructions is readily available. In example (35a), *rarely* has scope over all that follows, such that the sentence does not entail that *peaches rarely seem hard to peel*. In (35b), *rarely* has scope only over the main clause. In (36), the extraposition of a resultative predicate presents evidence for hierarchical differences between the restrictive

9

and appositive adverbials, relative to the tough construction. As expected, only the restrictive adverbial clauses can host a P-gap licensed by the trace of *tough*-movement.

(35)   a. Peaches rarely seem hard to peel after boiling them.
       b. Peaches rarely seem hard to peel, just looking at them.

(36)   a. That fence will be hard to paint __ after priming it white, a dark shade of red.
       b.??That fence will be hard to paint __, just looking at it, a dark shade of red.

(37)   a. This dough is hard to knead *t* without adding water to it/*pg*.
       b. This dough is hard to knead *t*, just looking at it/**pg*.

The unacceptability of (37b) is expected if, as suggested, it is contained in a second conjunct.

4. *Some non-explanations and an explanation for the contrasts*
The contrast between (2a) and (3a) does not appear to be explicable on the basis of previous observations of and explanations for, the distribution of P-gaps. For instance, it is known that a P-gap cannot be c-commanded by the true gap that licenses it, accounting for the unacceptability of (38) [=Engdahl 1983:(57)].

(38)   Which articles did you say [*t* got filed by John [without him reading them/**pg*]]

If the true gap fails to c-command the P-gap in (2a), then it should also fail to c-command it in (3a). The observation that P-gaps are subject to subjacency has been used to argue for their being traces of A-bar movement (see Kayne 1983). The unacceptability of (39) is taken to be a Complex NP Island violation, in which extraction to a position outside of *the person [who wrote __]* violates subjacency.[9]

(39)   This is an article we read *t* [without meeting [$_{NP}$ the person [who wrote it/**pg*]]]

Regarding the contrast between (2a) and (3a), we observe that (3a) has less structure around the P-gap than does (2a), not more. Subjacency is thus not a factor.
        Kiss 1985[2001] proposes a Case matching condition on parasitic gaps, which states "In a parasitic gap construction, the Case of both the real gap and the parasitic gap must be properly transmitted to the phonologically realized operator." This principle is invoked to explain the contrast in (40) [=Kiss 1985[2001]:(10)].

(40)   a.*the book from which$_{1,2}$ I copied t_1 without buying t_2
       b. the book which$_{1,2}$ I copied from t_1 without buying t_2

---

9. Note that Cowper 1985 shows that such Complex NP Island violations are amnestied when the NP heads are quantifiers, compare (i) [=Cowper 1985:(1a)] and (ii).
(i)   This is the type of book that [$_{NP}$ no one [who has read *pg*]] would give *t* to their mother.
(ii)   This is a book that [$_{NP}$ the people [who have read **pg*/it]] would not give t to their mother.

In (40a), Kiss explains, the P-gap "having the category NP and being marked accusative, cannot transmit its features to the non-Case-marked PP antecedent". With respect to (2a) and (3a), Case differences and Case transmission cannot be at play, since in each instance both the true gap and the P-gap are accusative.

An analogous condition referring to the thematic properties of gaps is offered in Franks 1993. There, Franks proposes (first for ATB constructions, and then for P-gap constructions) that "the gaps must pertain either to the most prominent or to not most prominent arguments". For the application of this condition, Franks adopts the thematic prominence hierarchy set out in Speas 1990 (p. 16): "Agent < Experiencer < Theme < Goal/Source/Location < Manner/Time". As should be obvious, (2a) and (3a) cannot be differentiated on any thematic basis, since the gaps in each are the same and the only difference between them is the absence of a subordinator in (3a).

Finally, we might note the accessibility hierarchy for occurrences of parasitic gaps, tentatively put forward by Engdahl (1983:(7)). This concerns the relative acceptability of P-gaps in different domains. Engdahl suggests that manner adverbs are more likely to have acceptable P-gaps than temporal adverbs, purpose clauses, and others. She also claims that untensed domains are more accessible than tensed domains. In this instance, both clauses are untensed gerundives, and the presence or absence of tense cannot play a role. But the idea that some classes of adverbs (e.g. manner adverbs) are more likely to have acceptable P-gaps is, as we have seen, on the right track, and the remainder of this section will elaborate how this distinction can be formally accounted for.

Let us adopt for current purposes, the analysis of P-gap constructions given in Nissenbaum 1998 and 2000.[10] There, P-gaps are shown to be produced through null Operator movement, in a manner familiar from Chomsky 1986 and Postal 1998, and illustrated here in (41).[11]
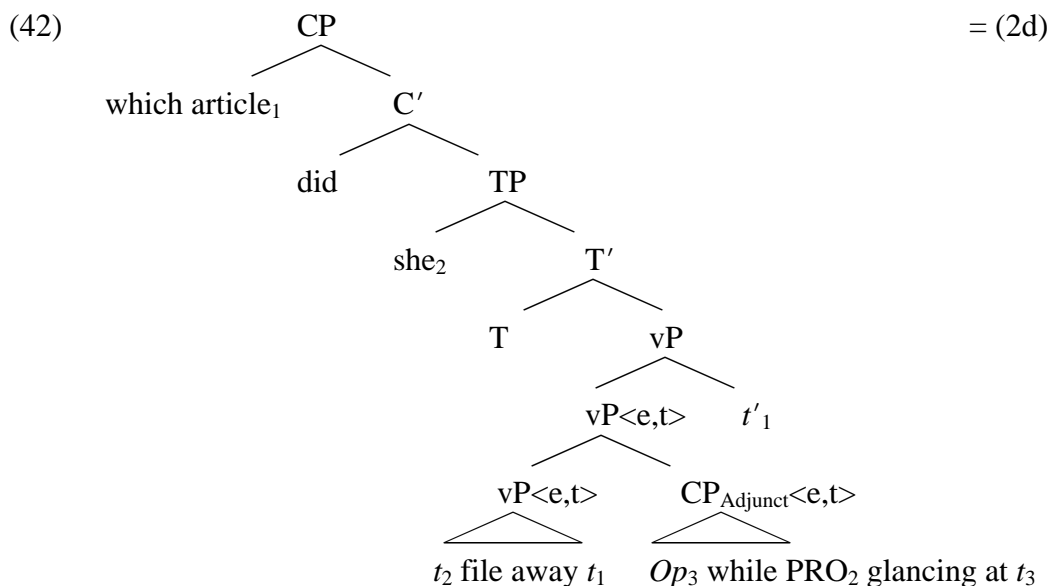
(41) $[_{CP}$ [which article]$_1$ did $[_{TP}$ she$_2$ $[_{vP}$ $[_{vP}$ file away t_1]

$[_{CP}$ Op_3 while $[_{TP}$ PRO$_2$ glancing at t_3]]]]   = (2d)

In (41), *which article* in Spec,CP must form a chain with its trace t_1 (i.e. its lower copy). Correspondingly, the null operator in the adjunct must form a chain with its trace t_3. In his analysis of P-gap constructions like (2d), Nissenbaum shows that: (i) the modified vP and the P-gap-containing adjunct "are both propositional cores", (ii) the adjunct adjoins to vP, and (iii) both the modified vP and its P-gap-containing adjunct are property-denoting. Further, citing the work of Lebeaux (1988, 1990) and Fox (1999, 2000),

---

10. Another plausible approach to these constructions is found in in Nunes 1995 and 2004, Hornstein 2001, and Hornstein & Nunes 2002. Sideward (or interarboreal) movement is proposed as a natural extension to the minimalist unpacking of "move" into the combined simple operations of "copy" plus "merge". Nissenbaum (2000:Chapter 2) presents a number of empirical problems for a sideward movement analysis of P-gap constructions; namely, that it appears to make incorrect predictions with respect to reconstruction and variable binding.

11. Evidence for *while* occupying the head of CP, rather than heading a PP projection, are given in Dubinsky & Williams 1995, where it is shown to be a temporal complementizer occupying the head of CP.

Nissenbaum contends that A-bar movement "passes through an intermediate position between the surface subject position and the highest internal argument of the VP" (i.e. "targets every vP along the way to the final landing site"). A differently articulated derivation of (2d), showing these aspects, is given in (42).

(42)　　　　　　　　　　CP　　　　　　　　　　　　　　　　　　　　　　= (2d)

which article$_1$　　　　　C′

　　　　　　did　　　　　TP

　　　　　　　she$_2$　　　　　T′

　　　　　　　　　　T　　　　　vP

　　　　　　　　　　　vP<e,t>　　　t'_1

　　　　　　　　　vP<e,t>　　　CP$_{Adjunct}$<e,t>

　　　　　　t_2 file away t_1　　Op_3 while PRO$_2$ glancing at t_3

In (42), the lowest vP (by virtue of the movement of *which article* from t_1 to t'_1) and the Adjunct (by virtue of the movement of Op_3 from t_3) are turned into predicates of type <e,t> through predicate abstraction (Heim & Kratzer 1998). Merger of the lowest vP and the Adjunct creates a conjoined predicate that composes with the intermediate trace of *which article*, ensuring that the *wh*-element is interpreted as the filler of both the true gap and the P-gap.

　　　　While Nissenbaum's analysis provides a very adequate account of sentences such as (2d), we need to understand what it is that renders (under his account) Operator movement and subsequent predicate conjunction impossible in the case of (3d) and analogous cases. Consider (3d), repeated here.

(3)　　　d.　Which article did she file away *t* [barely glancing at it/*pg*]

Suppose that the removal of *while* from (2d) makes the adjunct ineligible to be a restrictive modifier.

　　　　Consider the fact that subordinating complementizers such as *while*, *after*, and *without* each denote an explicit relation between the main clause and the adverbial clause. For example, in (2a) and (2b) the preposition *without* introduces an adverbial clause that is counterfactual and which denotes an event/state that is false relative to the main clause proposition. In (2c) and (2d), the subordinator *while* introduces an adverbial clause whose temporal relation to the main clause is explicit.

12

To illustrate, the adverbial clause headed by *while* in (2a) has the potential of starting earlier and ending later than the matrix clause event. This is shown in (43).

(43) a. SKETCH (e$_1$) [WHILE [LOOK AT (e$_2$)]]   =(2a)
      b. t$_i$ …t$_j$ (e$_1$) $\wedge$ t$_k$ …t$_m$ (e$_2$) $\wedge$ t$_k$ $\preceq$ t$_i$ $\wedge$ t$_j$ $\preceq$ t$_m$

Here, the subordinator *while* insures that the event in its domain (e$_2$) begins at a time (t$_k$) that is the same or earlier than the initial time of the matrix clause event (e$_1$), and ends at a time (t$_m$) that is same or later than the final time of the matrix clause event. Thus, in (2a), the *sketching* spanned a time that was contained (and possibly properly contained) within the time spanned by the event of *looking at*. The subordinating elements in (27a) all play similar roles in defining the modificational relation between the matrix and subordinated clauses.
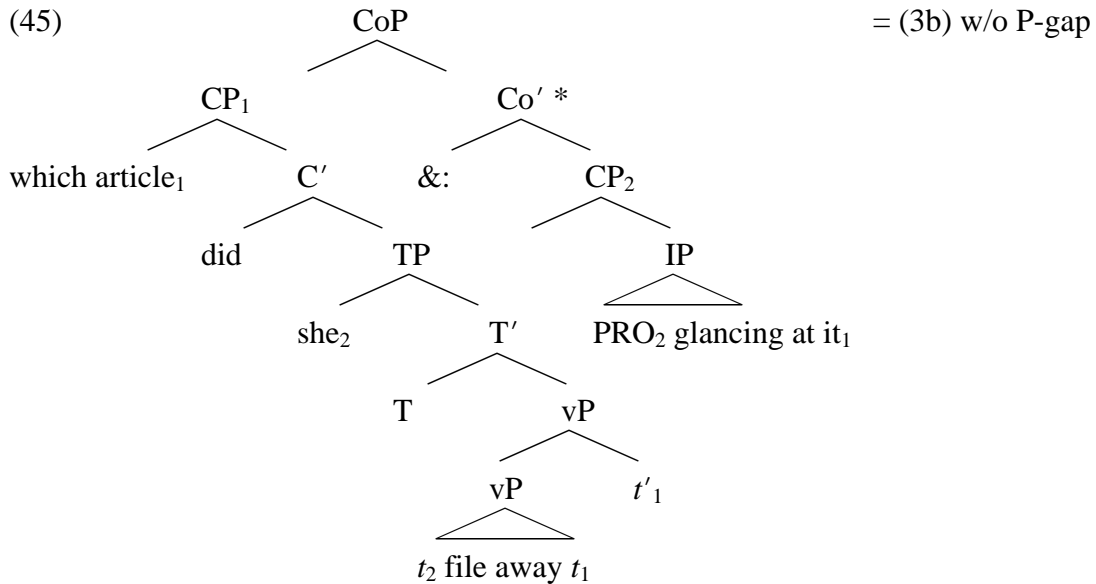
The deletion of *while* or *without* in (3a) and (3b) leaves the adverbial clause without any explicit restrictive function, relative to the main clause. Without any fixed interpretable relation between the adverbial clause and the main clause vP, restrictive modification by the former is impossible, as is the derivation (44) given for (3b).
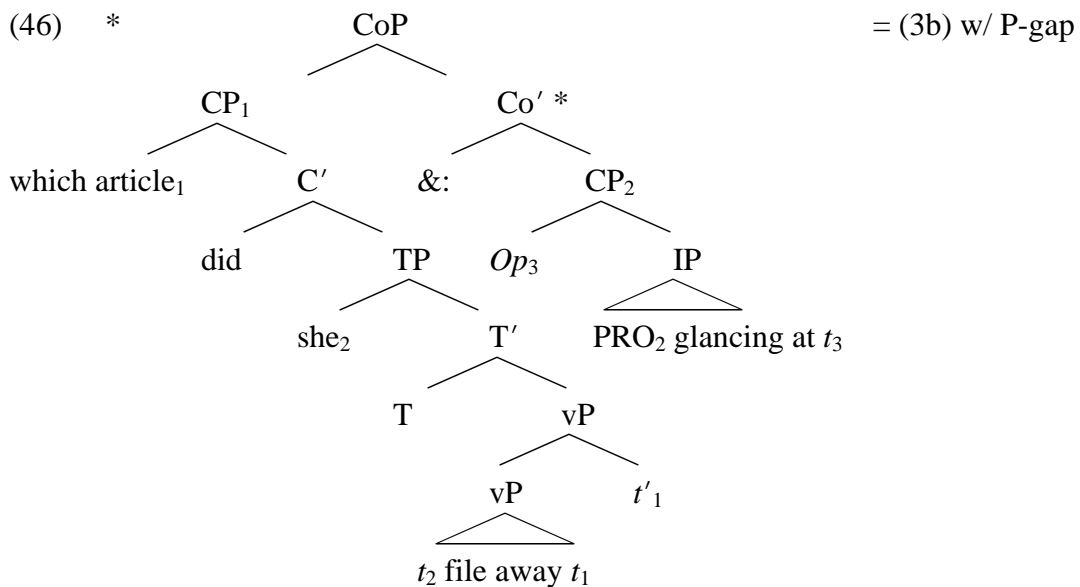
(44)   CP   = (3b)

         which article$_1$ C′

                        did   TP

                              she$_2$ T′

                                    T   vP

                                    #vP<e,t>   *t′*$_1$

                              vP<e,t>   CP$_{Adjunct}$<e,t>

                        t$_2$ file away *t*$_1$ *Op*$_3$ PRO$_2$ glancing at it/*t*$_3$
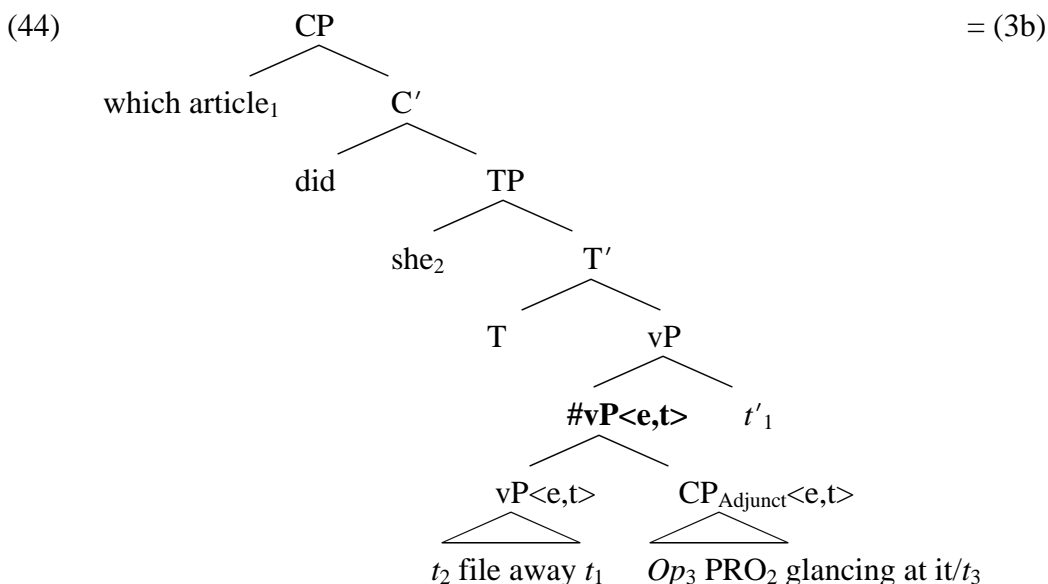
Here, in (44), the higher vP (marked with "#") is uninterpretable, since the adjunct CP fails to denote any particular relation vis-à-vis the lower vP. Accordingly, the adverbial phrase *glancing at it* cannot be inserted into a position that would allow the licensing of a P-gap. The addition of *only* or *barely* in (3c) and (3d) do not enable the adverbial phrase to enter into the derivation as a restrictive modifier either. These subordinators characterize only the proposition denoted by the adverbial, rather than denoting a (two-place) relation between the adverbial clause and the main clause. This suggests that it is the semantic properties of the subordinator, rather than the structural effects concomitant with having one, that affect the ability of the adverbial clause to occur in a structural

position in which P-gaps can be licensed.

Although the adverbial clause *glancing at it* in (3b) may not restrictively modify the main clause and cannot appear adjoined to vP, it can readily be inserted as an appositive adverbial clause. That is, it can be the second conjunct in an appositive construction. This possibility is shown here in (45).

(45)   CoP   = (3b) w/o P-gap

```
                        CoP
                  /            \
            CP₁                  Co′ *
          /      \            /        \
which article₁    C′        &:          CP₂
                /    \                 /      \
             did      TP            IP
                    /    \       /        \
                 she₂     T′   PRO₂ glancing at it₁
                         /  \
                        T    vP
                            /   \
                          vP     t′₁
                         /   \
                      t₂ file away t₁
```

However, here the adverbial clause is not in a position in which a P-gap could be licensed. Accordingly, (3b) is ungrammatical if a P-gap is inserted in place of the pronoun *it*. Observe (46).

(46)   *   CoP   = (3b) w/ P-gap

```
                        CoP
                  /            \
            CP₁                  Co′ *
          /      \            /        \
which article₁    C′        &:          CP₂
                /    \                 /      \
             did      TP    Op₃       IP
                    /    \         /        \
                 she₂     T′    PRO₂ glancing at t₃
                         /  \
                        T    vP
                            /   \
                          vP     t′₁
                         /   \
                      t₂ file away t₁
```

In (46), *which article*$_1$ moves from t_1 through t'_1 to Spec,CP$_1$. However, the position of the adverbial clause makes it unable to Merge with the lowest vP. It is thereby unable to create a conjoined predicate, and the intermediate trace t'_1 of *which article* is not in a position to allow the *wh*-element to be interpreted as the filler of the P-gap, as it is in (42).

Conclusions
In this paper, I have tried to explain the role that restriction and apposition play in determining the distribution of parasitic gaps in English, suggesting that non-restrictive clauses (i.e. appositives) are semantically excluded from positions normally allocated to restrictive clauses, and further that the syntactic positions available to them preclude their being able to host parasitic haps. If the explanation presented here is on the right track through, we should expect to find similar facts in any language which has both syntactically distinct derivations for restrictive and oppositional structures, and the ability to have parasitic gaps. This is work that remains to be done.

On final note regarding appositives and coordination is called for. Adopting De Vries approach, as I have done here, leaves us with a hierarchical structure (in the shape of a CoP) in this normal hierarchical relations (particularly c-command) don't apply. This is not an optimal state of affairs and begs the questions of whether the syntax of apposition might lie outside the narrow domain of single root derivations (as has been proposed in McCawley 1982 and elsewhere). While a solution to the syntax of appositives will not be presented at this point, we can at least point to the direction that any solution needs to take. De Vries solution, a coordinate structure in which the specifier and complement do not c-command each other, is in fact on the right track. A look at some data here below will help make it clear that parenthetical/appositives are not independent clauses. Nor are they hierarchically embedded into the mail clause in the manner of standard coordination.

Consider the following pair of sentences, whose subjects have a restrictive relative clause and an appositive relative clause, respectively.

(47)   a. My/each assignment which was complete was handed in to the same TA.
        b. My/*each assignment, which was completed yesterday, was handed in to the
            same TA.

It is clear in (47) that the quantifier each cannot bind the operator in an appositive relative. The pronoun *my* is grammatical in (47b), but the quantifier *each* makes the sentence ungrammatical. In (48), however, we see that the quantifier *each* can antecede an indefinite pronoun in either a restrictive or an appositive relative.

(48)   a. Each assignment$_1$ that had its$_1$ bibliography attached was handed in to the
            same TA.
        b. Each assignment$_1$, regardless of whether its$_1$ bibliography was attached, was
            handed in to the same TA.

It is clear that (48a) is restrictive and (48b) is not. The first restricts the denotation of *each assignment*, such that (48a) does not entail that *each assignment was handed to the same TA*. (48b) does entail this, and also has the intonation characteristic of appositives. In contrast, *each* cannot antecede a pronoun in a subsequent sentence, as (49) shows.

(49)   My/#each assignment$_1$ was handed in to the same TA. Its$_1$ bibliography was
         attached.

The contrast between (48b) and (49) suggests that parenthiticals/appositives are not autonomous clauses in the manner of (49), and that an appositive is subordinate to the main clause even if the subject can't bind into it.

At the same time, appositives are clearly distinct from normal coordinate structures when placed in the scope of a conditional. Consider (50).

(50)   a. If Judy lost the files after having failed to copy them, then she's sure to get
            fired.
         b. If Judy lost the files, having failed to copy them, then she's sure to get fired.

In (50a), the adverbial *after having failed to copy them* restricts the antecedent of the conditional such that (50a) cannot entail (51). She would be fired on account of both losing the files and having not made any copies.

(51)   If Judy lost the files, then she's sure to get fired.

Example (50b), on the other hand, has an appositive adverbial *having failed to copy them*, and does entail (51). That is, losing the files is sufficient to get her fired and while having no copies is an aggravating circumstance, it is not part of the condition that guarantees her dismissal. Now compare (50) with (52).

(52)   If Judy lost the files and she failed to copy them, then she's sure to get fired.

Here the antecedent of the conditional has a standard coordinate structure, and the sentence does not entail (51). This casts some doubt on the appositive in (50b) being part of a single constituent headed by CoP, as a De Vries type analysis would suggest. Note that the problem is unrelated to whether the main clause *Judy lost the files* c-commands *having failed to copy them*, but rather with whether the appositive is in the scope of the conditional *if*.

(53)   a. **if** [$_{CoP}$ [$_{CP}$ Judy lost the files] &: [$_{CP}$ having failed to copy them]], **then** …
         b. [$_{CoP}$ [$_{CP}$ **if** Judy lost the files] &: [$_{CP}$ having failed to copy them]], **then** …

That is to say, under the CoP analysis of appositives, either *if* is outside of CoP as in (53a) or it is inside the first conjunct as in (53b). The failure of *if* to have scope over the appositive, leading (50b) not to entail (51), would indicate that (53a) is not the correct

representation. On the other hand, in (53b) the antecedent *if* clause fails to have scope over the consequent *then* clause leaving it unclear how to derive the conditional interpretation at all.

Alternatives (and recent ones) to a De Vries style coordination analysis exist in the literature, although it is difficult to see how they can contend with the difference in P-gap licensing that motivates our adoption of De Vries' and Nissenbaum's analyses. Potts (2003) L_{CI} (logic of conventional implicature) analysis of nominal appositives places them too low in the structure to preclude P-gap licensing. McCawley's (1982, 1998) analysis of these structures presumes root-node coordination, such that the appositive and the rest of the sentence are conjuncts, allowing for the appositive conjunct to occur inside of its main clause antecedent (resulting in cross-branches, e.g. a constituent X that precedes Y, a daughter of Z, and which follows Z). The problem with McCawley's analysis and others like it (aside from playing havoc with dominance and precedence relations) is that they take appositives to be autonomous S nodes, adjoined to the root. Another alternative is proposed in Potts 2003 and adapted from Huddleston & Pullum 2002, there a three-dimensional "supplement relation" links the appositive to the main clause as an additional root node for which command relations do not apply. This approach, while leading to as plausible an account of P-gap phenomena as De Vries' style coordination, is not without problems. For one thing, the "supplemental relation" forces attachment high enough in the structure (at the root node) to preclude any hope of associating an appositive relative clause with its linearly adjacent nominal. Thus Potts' syntactic alternative is semantically incomplete, and his semantic account leaves no way to straightforwardly handle syntactic facts, such as the distribution of P-gaps. As Potts himself puts it, "multidimensionality" is called for, but whether the multidimensionality need be syntactic or semantic is yet to be settled.

References
Engdahl, Elisabet. 1983 [2001]. Parasitic gaps. *Linguistics and Philosophy* 6.5-34.
        Reprinted in Peter Culicover & Paul Postal (eds.), *Parasitic gaps*, 69-97.
        Cambridge, MA: MIT Press.
Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.
Cowper, Elizabeth. 1985. Parasitic gaps, coordinate structures, and the subjacency
        condition. *Proceedings of NELS (Northeast Linguistics Society)* 15.75-86.
Culicover, Peter. 2001. Parasitic gaps: A history. In Peter Culicover & Paul Postal
        (eds.), *Parasitic gaps*, 3-68. Cambridge, MA: MIT Press.
Culicover, Peter, & Paul Postal. 2001. *Parasitic gaps*. Cambridge, MA: MIT Press.
Demirdache, Hamida. 1991. *Resumptive chains in restrictive relatives, appositives and
        dislocation structures*. MIT dissertation.
Dubinsky, Stanley, and Shoko Hamano. 2006.   A window into the syntax of Control:
        Event opacity in Japanese and English. In Anastasia Conroy, Chunyuan Jing,
        Chizuru Nakao and Eri Takahashi (eds.), *University of Maryland Working
        Papers in Linguistics (UMWPiL) 15*. College Park MD: UMWPiL.
Dubinsky, Stanley, and Kemp Williams. 1995. Recategorization of prepositions as
        complementizers. *Linguistic Inquiry* 26.125-137.

Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30.157-196.

Fox, Danny. 2000. *Economy and semantic interpretation*. Cambridge, MA: MIT Press.

Franks, Steven. 1993. On parallelism in across-the-board dependencies. *Linguistic Inquiry* 24.509-529.

Haegeman, Liliane. 2003. Conditional clauses: External and internal syntax. *Mind & Language* 18:317–339.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar*. Malden, MA: Blackwell Publishers.

Hornstein, Norbert. 2001. *Move!: A minimalist theory of construal*. Malden, MA: Blackwell Publishers.

Hornstein, Norbert, & Jairo Nunes. 2002. On asymmetries between parasitic gap and across-the-board constructions. *Syntax: A Journal of Theoretical, Experimental and Interdisciplinary Research* 5.26-54.

Huddleston, Rodney and Geoffrey K. Pullum. 2002. *The Cambridge Grammar of the English Language*. Cambridge, UK: Cambridge University Press.

Kayne, Richard. 1983. Connectedness. *Linguistic Inquiry* 2.349-371.

Kiss, Katalin É. 1985. Parasitic chains. *The Linguistic Review* 5.41-74. Revised version printed in Peter Culicover & Paul Postal (eds.), 2001, *Parasitic gaps*, 99-124. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1977. *X'-syntax: A study of phrase structure*. Cambridge, MA: MIT Press.

Lebeaux, David. 1988. *Language acquisition and the form of the grammar*. University of Massachusetts dissertation.

Lebeaux, David. 1990. Relative clauses, licensing, and the nature of the derivation. *Proceedings of NELS (Northeast Linguistics Society)* 20.318-332.

McCawley, James. 1982. Parentheticals and discontinuous structure. *LinguisticInquiry* 13:91–106.

McCawley, James D. 1998. *The Syntactic Phenomena of English*. Chicago: Chicago University Press, 2 ed.

 Nissenbaum, Jon. 1998. Movement and derived predicates: evidence from parasitic gaps. In Kimary Shahin, Susan Blake and Eun-Sook Kim (eds.), *Proceedings of the Seventeenth West Coast Conference on Formal Linguistics* (WCCFL), 507-521. Stanford, CA: CSLI Publications.

Nissenbaum, Jon. 2000. *Investigations of covert phrase movement*. MIT dissertation.

Nunes, Jairo. 1995. *The copy theory of movement and linearization of chains in the Minimalist Program*. University of Maryland dissertation.

Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, MA: MIT Press.

Postal, Paul. 1998. *Three investigations of extraction*. Cambridge, MA: MIT Press.

Potts, Christopher. 2003. *The logic of conventional implicatures*. UCSC dissertation.

Progovac, Ljiljiana. 1998. Structure for coordination. State-of-the-Article. *GLOT International* 3.7:3-6 [Part I] and 3.8:3-9 [Part II].

Rutherford, William E. 1970. Some observations concerning subordinate clauses in
       English. *Language* 46:97-115.
Speas, Margaret. 1990. *Phrase structure in natural language*. Dordrecht: Kluwer
       Academic Press.
Vries, Mark de. 2006. The syntax of appositive relativization. *Linguistic Inquiry*
       37:229-270.

Linguistics Program
University of South Carolina
Columbia, SC 29208
dubinsky@sc.edu