

Reconstruction and Linear Order in ATB Movement and Parasitic Gap Constructions*

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Abstract

It is a point of controversy whether across-the-board (ATB) movement in coordination should be analyzed in the same way as parasitic gap constructions. Both have been claimed to show asymmetries in reconstruction of various types, while they have also been claimed to differ in some types of reconstruction and in other respects. We re-examine these claims, and show that where there are asymmetries, they are due to linear order, and not to a difference in the nature of the gaps. We find clear instances of reconstruction into parasitic gap sites, contra much of the literature (e.g., Haik 1985, Nissenbaum 2000), and we also find symmetric reconstruction in ATB movement. We spell out a unified analysis of ATB movement and parasitic gap constructions in a left-to-right derivational syntax, where copies of the filler are merged into gap positions. Linear asymmetries follow from the fact that vehicle change (Fiengo and May 1994) may take place in later copies in gap positions, with greater distance permitting greater vehicle change. We show that a left-to-right model permits a maximally simple analysis, dispensing with many mechanisms that have been proposed just for parasitic gap and ATB movement constructions.

1 Introduction

This paper is concerned with the proper analysis of across-the-board (ATB) movement in coordination (Ross 1967), illustrated in (1), and parasitic gap constructions (Engdahl 1983), illustrated in (2). Throughout the paper, we use “_” to represent a non-parasitic gap, with no commitment to its analysis, and “*pg*” to represent a parasitic gap, again with no commitment to analysis.¹ We refer to the moved element—*which film* in (1) and *which form* in (2)—as the *filler*.

- (1) Which film did one critic love _ and another hate _? *ATB Movement*
(2) Which form should one never sign _ without reading *pg* first? *Parasitic Gap*

There is a debate in the literature on whether ATB movement and parasitic gaps should be analyzed in the same way, or differently. ATB movement has traditionally been analyzed as a single filler binding multiple gaps in a symmetric fashion (Ross 1967, Williams 1978), and one line of research treats parasitic gaps in the same way (e.g., Sag 1983, Williams 1990, Levine, Hukari, and Calcagno 2001, Hornstein and Nunes 2002, Nunes 2004, Chaves 2012b). A prominent counterposition treats parasitic gaps as involving movement of a null operator from the position of the parasitic gap (Contreras 1984, Chomsky 1986, Nissenbaum 2000).

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¹ATB gaps are those that occur in coordinate structures, while parasitic gaps occur outside of coordination, in what are often viewed as syntactic islands. These include adjunct clauses and subjects, primarily. We take no stand here on whether these are actually islands to extraction. See Chaves 2012b for extensive discussion.

In this account, the real gap is bound by the filler, but the parasitic gap is not, it is bound by the null operator (treated basically as a pronoun). Empirical differences between parasitic gap constructions and ATB movement constructions are taken to justify treating them differently (e.g., Postal 1993a, Nissenbaum 2000).

We enter this debate by undertaking a re-examination of the phenomenon of reconstruction, which has been argued both to distinguish ATB movement from parasitic gap constructions, and to reveal their underlying similarity. On the one hand, symmetric reconstruction for variable binding has been claimed to be possible in ATB movement but not in parasitic gap constructions (Nissenbaum 2000); in fact, it is often claimed that parasitic gaps exhibit no reconstruction whatsoever (Haik 1985, Nissenbaum 2000). On the other hand, many publications have claimed that there is also no reconstruction to non-initial gaps in ATB movement (e.g., Munn 1992, 2001; Salzmann 2012). As an example, according to Munn (1992) we only see reconstruction into the first gap for Binding Condition A in ATB movement:²

(3) Condition A (Munn 1992, 10, (19)):

- a. Which pictures of himself₁ did John₁ buy _ and Mary paint _?
- b. * Which pictures of herself₁ did John buy _ and Mary₁ paint _?

Similarly, reconstruction for Binding Condition C has been claimed to take place only in the first conjunct (Citko 2005), and Munn (2001) also shows that weak crossover effects are only found in the initial conjunct and not in subsequent conjuncts.

On the basis of such asymmetries, Munn (1992, 2001), Zhang (2010), and Salzmann (2012) have proposed that only the initial gap in ATB movement is the trace of the filler. For Munn, non-initial gaps are actually parasitic gaps. Parasitic gaps are claimed to show the same asymmetries, and not permit reconstruction to the parasitic gap site at all (Haik 1985, Nissenbaum 2000). In Munn's and Nissenbaum's analyses, parasitic gaps are not traces of the overt filler. Rather, they are traces of null operators (Contreras 1984, Chomsky 1986). As such, we should see no reconstruction of lexical material of the overt filler into the position of the parasitic gap. For Zhang (2010), gaps beyond the first in ATB movement are actually null pronouns plus a morpheme meaning 'same' (intended to capture the identity reading that most cases of ATB movement have). Salzmann (2012) proposes that non-initial gaps are constituents elided under identity with the filler; vehicle change under ellipsis (Fiengo and May 1994) accounts for the reconstruction asymmetries.

Null pronoun and null operator accounts struggle with the above-noted possibility of symmetric reconstruction for variable binding in ATB movement (illustrated in section 3.1). Another apparently contradictory fact is that strong crossover effects show up with non-initial gaps in both ATB movement and parasitic gaps (Williams 1990; illustrated in section 3.2). We also note the following cases of reconstruction into non-initial ATB gaps and parasitic gaps:

(4) *ATB Movement*

- a. It's each other that we can rely on _ and depend on _.
- b. I said I would think critically about myself, and think critically about myself I did _ and will continue to _.

(5) *Parasitic Gaps*

- a. It's herself that [her thinking critically about *pg*] will lead her to understand _ better.
- b. It's herself that she should take a hard look at _ [before she shamelessly promotes *pg*].

²Many works cite an unpublished 1983 manuscript by Kevin Kearney as the origin of this observation. We have been unable to locate this manuscript.

If these examples did not have complete reconstruction of an anaphor into every gap, they would violate Binding Condition B. Parasitic gaps can normally be pronounced as a pronoun, but pronouncing a pronoun in these parasitic gap cases is ungrammatical:

- (6) a. * It's herself that [her₁ thinking critically about her₁] will lead her to understand _ better.
- b. * It's herself that she should take a hard look at _ [before she₁ shamelessly promotes her₁].

In the null operator analysis, null operators are basically equivalent to pronouns (Browning 1987, Munn 2001, e.g.). On the face of it, then, symmetric reconstruction in (4) and (5) is incompatible with the null operator theory of both ATB movement and parasitic gap constructions.

A similar example was provided by Levine, Hukari, and Calcagno (2001, 211, (56)):

- (7) * Himself₁, John₁ admires _ without Mary liking *pg* in the least.

In this example, if the filler were not reconstructed fully to the parasitic gap site, there would be no Binding Condition A violation. In particular, if the parasitic gap were the equivalent of a pronoun, the sentence would be grammatical, since pronouncing a pronoun is:

- (8) Himself₁, John₁ admires _ without Mary liking him₁ in the least.

Hence, we seem to have conflicting evidence regarding reconstruction in both ATB movement and parasitic gap constructions: sometimes there appears to be no reconstruction into non-initial gaps, but in other cases there must be full reconstruction into non-initial gaps.

Given this apparently contradictory evidence, we undertake to re-examine the asymmetries that have been observed in the literature regarding reconstruction. We show first that some of the putative asymmetries are not real, like the one in (3). Second, where there are asymmetries, they are due to linear order and not to the nature of the gaps. This is shown by looking at parasitic gap constructions where the parasitic gap *precedes* the real gap, not previously considered in the literature on reconstruction in parasitic gaps (except briefly by Nissenbaum 2000 and Munn 1994, who report conflicting judgments; see section 2.2). The data indicate that ATB movement and parasitic gap constructions both involve a copy of the filler in every gap. Hence, we conclude that ATB movement and parasitic gap constructions should be analyzed in the same way, with all gaps being bound by and containing a copy of the filler. However, not all copies need to be identical, with copies further away in linear order being allowed to deviate from the filler via the mechanism of vehicle change (Fiengo and May 1994). We show how this pattern makes sense in a model of syntax where sentences are constructed in a left-to-right derivation. Unpronounced copies of the filler are placed in gap positions as the derivation unfolds.

The left-to-right derivation that we propose not only makes sense of the pattern of reconstruction that we find in multiple gap constructions, it also provides a more satisfying account of reconstruction generally, without the need for countercyclic late merger (Lebeaux 1988, Chomsky 1993). It also has the benefit of permitting a simple account of ATB movement. In a bottom-up derivation, somehow two moving elements need to fuse into a single filler in ATB movement. In a left-to-right derivation, however, we simply have a single filler with multiple copies, something that we need anyway for successive-cyclic movement. We can do without sideward movement (Hornstein and Nunes 2002, Nunes 2004) and multidominance (Goodall 1987, Moltmann 1992, Citko 2005). Adopting a left-to-right model of syntax rather than a bottom-up one permits a maximally simple analysis, which is therefore an argument in its favor.

We begin in section 2 with an investigation of the asymmetries in ATB movement and parasitic gap constructions that have been noted in the literature and report speakers' judgments which call these asymmetries into question. The results of our investigation show that some asymmetries are not real, and the ones that are are due to linear order, and not to any difference between real and parasitic gaps. In particular, we see full

reconstruction into parasitic gap sites. In section 2, we also begin to construct our left-to-right analysis as we present each pattern of data. Section 3 addresses some additional data that have been used to argue either for unifying ATB movement and parasitic gap constructions, or for distinguishing them. We show that all of the data that have been thought to distinguish them are incorrect, and ATB movement and parasitic gap constructions behave the same in every respect. In section 4, we develop our left-to-right analysis in more detail. Section 5 is the conclusion.

2 A Critical Look at Claims of Asymmetric Reconstruction

In this section we re-examine evidence that has been presented to argue that reconstruction is asymmetric in ATB movement and parasitic gap constructions. Here we look at Condition C, Condition A, and weak crossover. We will build the analysis that we are proposing as we go, making refinements to cover the data.

The arguments presented are supported by results of a survey which was conducted on thirteen native speakers of English. The speakers were asked to rate sentences on a scale of 1 to 7, with 7 being the best. Most of these thirteen speakers were linguists (graduate students at the University of Delaware).

2.1 Condition C

We begin with reconstruction for Condition C of the Binding Theory. As stated in the introduction, some previous work has claimed that there is an asymmetry in ATB movement, with reconstruction only into the initial conjunct:

- (9) (Citko 2005, 494, (45))
- a. (%*) Which picture of John₁ did he₁ like _ and Mary dislike _ ?
 - b. Which picture of John₁ did Mary like _ and he₁ dislike _ ?

Most of our speakers do not get this contrast. 10/13 find both of the above sentences grammatical, and only 2/13 rate (b) better (a rating of 5/7 versus 1/7). One speaker finds (a) grammatical and (b) marginal (3/7). We indicate the pattern of variable acceptability above with the “%” sign: only some speakers find the sentence unacceptable.

In order to test whether any asymmetries in reconstruction are due to the nature of the gaps involved or to linear order, we constructed examples of parasitic gaps where the parasitic gap precedes the real gap. In such cases, the null operator analysis predicts that we should only see reconstruction to the real gap (the second one). In the following pair, this analysis predicts that (10a) should be ungrammatical and (10b) grammatical:

- (10) a. This is the type of story about Obama₁ that people who hear *pg* think he₁ will be angry about _.
- b. (%*) This is the type of story about Obama₁ that people who tell him₁ to ignore *pg* always end up talking about _.

This is not what we find. 8/13 speakers report no difference between (10a, b). (Five of these eight find them both grammatical, three marginal or ungrammatical; we believe that some speakers dislike parasitic gaps inside subjects, irrespective of reconstruction.) Four find (10a) grammatical and (10b) ungrammatical, while only one reports the predicted judgment of (10b) grammatical and (10a) ungrammatical.

To capture this pattern of data, we propose that syntactic derivations take place left-to-right (Phillips 1996, 2003; Bruening 2010, 2014). This means that in most cases of A-bar movement in English, the filler will be encountered before its associated gap(s). Null copies of the filler will then be merged into any gap

positions associated with the filler. However, null copies do not have to be completely identical to the filler. In particular, *vehicle change* is allowed in some cases (Fiengo and May 1994). We propose that, for most speakers, non-obligatory arguments and adjuncts within a filler permit vehicle change within them in all null copies:³

- (11) (10/13 speakers)
- a. Which picture of John₁ did he₁ like [~~which picture of him₁~~] and Mary dislike [~~which picture of him₁~~]?
 - b. Which picture of John₁ did Mary like [~~which picture of him₁~~] and he₁ dislike [~~which picture of him₁~~]?
 - (12) (8/13 speakers)
 - a. This is the type of story about Obama₁ that people who tell him₁ to ignore [~~story about him₁~~] always end up talking about [~~story about him₁~~].
 - b. This is the type of story about Obama₁ that people who hear [~~story about him₁~~] think he₁ will be angry about [~~story about him₁~~].

Vehicle change keeps the index of an NP, but changes its form for the purposes of the binding conditions. Here, an R-expression is turned into a pronoun, which can be bound non-locally without violating Condition C. When speakers do this, they find no reconstruction for Condition C at all. In none of the above representations is there an R-expression that is coindexed with a commanding pronoun.⁴ Most of our speakers, under most circumstances, do this (10/13 for (a), 8/13 for (b)).

Under some conditions some speakers do not permit vehicle change in the first copy, but do in subsequent ones:

- (13) (2/13 speakers show this pattern)
- a. * Which picture of John₁ did he₁ like [~~which picture of John₁~~] and Mary dislike [~~which picture of him₁~~]?
 - b. Which picture of John₁ did Mary like [~~which picture of John₁~~] and he₁ dislike [~~which picture of him₁~~]?
 - (14) (4/13 speakers show this pattern)
 - a. * This is the type of story about Obama₁ that people who tell him₁ to ignore [~~story about Obama₁~~] always end up talking about [~~story about him₁~~].
 - b. This is the type of story about Obama₁ that people who hear [~~story about Obama₁~~] think he₁ will be angry about [~~story about him₁~~].

These speakers find a Condition C effect with the first gap, but not with later gaps.

Note that we did not find speakers behaving the same in these two cases (the two in 13 are disjoint from the four in 14), so we cannot say there is a dialect difference here. Rather, vehicle change in non-obligatory arguments and adjuncts seems rather idiosyncratic. (The two examples differ in one being a wh-question and another a relative clause; it is possible that different individuals' grammars treat these differently for vehicle change.)

Note also that parasitic gaps must have full copies, or we would have no account of the four speakers who got the pattern of judgments in (14). We will conclude the same about parasitic gaps in the next section, too: they must involve full copies.

³If Fox's Trace Conversion mechanism is correct (Fox 2002), then null copies in the gaps will actually be definites like *the picture* rather than *which picture*. See section 4.3.

⁴To remain neutral on what the relevant structural relation for binding is, we use the term "command." If Bruening (2014) is correct, this should be "precede-and-command" rather than "c-command."

We also offer the following examples for consideration, although they were not included in our survey. Our analysis predicts that both the (a) and the (b) examples will be grammatical for many speakers, but some may find the (a) examples ungrammatical on the indicated indexing (those who do not permit vehicle change in initial gap positions). In contrast, in accounts where reconstruction takes place to real gap positions but not to parasitic gap positions, the prediction is that if there is any asymmetry it will be in the (b) examples being degraded.

- (15) a. (%*) Which story about Obama₁ did him₁/his₁ denying *pg* only spread _ faster?
 b. Which story about Obama₁ did news reports continually repeating *pg* make him₁ finally address _?
- (16) a. (%*) Which rumor about Hillary Clinton₁ did her₁ denying *pg* only spread _ faster?
 b. Which rumor about Hillary Clinton₁ did news reports constantly talking about *pg* make her₁ answer questions about _ in public?

Informal polling indicates that the predictions of our account are correct, as we indicate with the judgments marked.

2.2 Condition A

With Binding Condition A, reconstruction has been claimed to be asymmetric in ATB movement on the basis of examples like the following (judgment marked on the basis of our consultants):

- (17) (Citko 2005, 493, (44))
 a. [Which picture of himself₁] did John₁ sell _ and Mary buy _?
 b. (%*) [Which picture of himself₁] did Mary sell _ and John₁ buy _?

This example uses an anaphor inside a picture-NP. In fact, every such example that has been presented in the literature uses an anaphor inside a picture-NP (Munn 1992, Nissenbaum 2000, Citko 2005). Anaphors inside NPs are known to be exempt from Binding Condition A. Instead, they take a perspective holder as antecedent (Pollard and Sag 1992, Reinhart and Reuland 1993). We note that examples like (17b) become fully acceptable if the perspective holder is established to be *John* in an earlier sentence:

- (18) John₁ is upset. [Which picture of himself₁] will Mary find _ and he₁ then have to explain _?

This means that examples like (17) do not show anything about reconstruction. They are compatible with an analysis where the exempt anaphor is evaluated in its surface position, and an antecedent is found for it in that position. If no perspective taker has been established, then many speakers will take the closest potential antecedent to be the antecedent. Consistent with this, our speakers divide into two groups. Six of thirteen speakers found the sentences equally grammatical (and one found them equally ungrammatical). Five of thirteen found (17a) better as reported by Citko 2005 (and one found (b) better). We assume that those five strongly prefer the closest antecedent for an exempt anaphor, and reject an antecedent that is further away. The six speakers who found the sentences equally grammatical did so because they have no preference for the closest potential antecedent; they just need to find a perspective taker, and in these examples both NPs are possible perspective takers (and neither is a better perspective taker). See also Runner and Kaiser (2005), who find speakers permitting antecedents for exempt anaphors that are not the most local potential antecedent.

Turning to parasitic gaps, the theory that parasitic gaps do not include the lexical content of the filler makes a prediction regarding cases where the parasitic gap precedes the real gap. This is the one case where previous literature has looked at parasitic gaps that come first, but the two works that have done this directly

contradict each other. Nissenbaum (2000) gives the following judgments, which no one we have consulted agrees with:

- (19) (Nissenbaum 2000, 41, (17), judgements his)
- a. ? Which portrait of himself₁ do [people who see *pg* for the first time] usually think Picasso₁ spent the most time on _?
 - b. * Which portrait of herself₁ do [people who know Gertrude Stein₁ hated *pg*] usually think Picasso spent a lot of time on _?

Munn (1994) has the exact opposite judgment, which is consistent with an account based on linear order. Many speakers we have consulted do agree with this judgment:

- (20) (Munn 1994, 407, (31))
- a. * Which picture of herself₁ did [every boy who saw *pg*] say Mary liked _?
 - b. Which picture of himself₁ did [every boy who₁ saw *pg*] say Mary liked _?

Given these conflicting judgments, we constructed our own examples. If parasitic gaps are not traces of the filler and therefore cannot show reconstruction effects, then (21a) should be ungrammatical and (21b) grammatical:

- (21) a. [How many portraits of herself₁] did [the woman who₁ commissioned *pg*] end up asking that artist to take _ back?
- b. (%*) [How many portraits of himself₁] did [the woman who commissioned *pg*] end up asking that artist₁ to take _ back?

In both (21a) and (21b), there should be no reconstruction to the site of the parasitic gap within the subject, instead there should be reconstruction to the real gap in the main clause. Our speakers did not get the predicted judgment: ten out of thirteen found no difference between (21a) and (21b), while three judged (21a) better than (21b). No speaker preferred (21b). (7 out of 13: both ungrammatical; 3: both marginal or grammatical; so a total of 6 judge at least (21a) marginal or grammatical.) These findings are not consistent with the null operator theory of parasitic gaps, but are consistent with an account based on linear order.

As mentioned above, some speakers seem to dislike parasitic gaps inside subjects, particularly when they are within a relative clause. These speakers often find parasitic gaps inside subjects better if the subject is a gerund. Accordingly, we also offer the following examples for consideration, although they were not included in our poll:

- (22) a. (%*) Which portrait of herself₁ would a gallery('s) selling *pg* cause that artist₁ to paint _ again a second time?
- b. Which portrait of herself₁ would that artist₁('s) painting *pg* a second time cause the gallery to stop displaying _?
- (23) a. (%*) Which book about himself₁ would your criticizing *pg* cause Bill₁ to denounce _?
- b. Which book about himself₁ would Bill₁'s criticizing *pg* cause you to denounce _?

Informal polling indicates that some speakers prefer the (b) examples over the (a) examples, consistent with our linear account and inconsistent with the view that there is no reconstruction to parasitic gaps. No speaker prefers the (a) examples.

Again, though, these examples use exempt anaphors inside picture-NPs. Much more telling would be reconstruction with non-exempt anaphors. We therefore also constructed sentences with anaphors in argument position, where they must obey Condition A. What we found is that there is only an asymmetry

between gaps in ATB movement for some speakers. Consider cases of ATB VP-fronting in (24). Five of our thirteen speakers judged both of (24a, b) unacceptable. Seven rated (24a) marginal to acceptable but (24b) ungrammatical. Only one speaker found (b) better:

- (24) a. (%*) [Criticize himself₁], John₁ will _ but Mary won't _ .
 b. * [Criticize himself₁], Mary will _ but John₁ won't _ .

With a fronted argument PP we got similar results: 6/13 report that (25a, b) are equally ungrammatical/marginal, while 5/13 found (a) grammatical but (b) ungrammatical. Two found them equally grammatical:⁵

- (25) a. (%*) [Over himself₁], John₁ pulled a blanket _ and Mary threw a rug _ .
 b. * [Over himself₁], Mary pulled a blanket _ and John₁ threw a rug _ .

When we front the reflexive alone, 11/13 judge both (26a, b) ungrammatical, while 1/13 found (a) grammatical and (b) ungrammatical and 1/13 judged them both grammatical:

- (26) a. * It is only himself₁ that John₁ has to blame _ and Mary will gloat over _ .
 b. * It is only himself₁ that Mary has to blame _ and John₁ will gloat over _ .

On the basis of these findings, we flesh out the proposal we began in the previous section by proposing that many speakers do not permit vehicle change in obligatory arguments of the head of the filler:

- (27) (roughly half the speakers)
 a. * [Criticize himself₁], John₁ will [~~criticize himself₁~~] but Mary won't [~~criticize him₁~~].
 b. * [Over himself₁], John₁ pulled a blanket [~~over himself₁~~] and Mary threw a rug [~~over him₁~~].

This results in a Binding Condition A violation in one of the conjuncts.

Some speakers do not permit vehicle change in the copy that is placed in the first gap, but copies in subsequent gaps can undergo vehicle change, as follows:

- (28) (roughly half the speakers)
 a. [Criticize himself₁], John₁ will [~~criticize himself₁~~] but Mary won't [~~criticize him₁~~].
 b. [Over himself₁], John₁ pulled a blanket [~~over himself₁~~] and Mary threw a rug [~~over him₁~~].

Vehicle change converts the anaphor into a pronoun with the same index, as indicated.

Apparently, vehicle change is not possible when the anaphor itself is the head of the filler, for nearly all speakers:

- (29) * It is only himself₁ that John₁ has to blame himself₁ and Mary will gloat over himself₁.

We note that most cases of vehicle change in the literature involve VP ellipsis or sluicing, where the anaphor, pronoun, or R-expression is a sub-constituent within the larger elided phrase. As far as we know, vehicle change of the head of the elided constituent is unattested (but see section 3.2).

Turning to parasitic gaps, we already presented the following example of a non-exempt anaphor, from Levine, Hukari, and Calcagno (2001, 211, (56)):

- (30) * Himself₁, John₁ admires _ without Mary liking *pg* in the least.

⁵Reinhart and Reuland (1993) suggest that anaphors in PPs are also exempt. This is shown by Hestvik and Philip (2001) to be incorrect; see also Bruening (2014).

This example shows that there must be full reconstruction of the head of the filler even into a parasitic gap site, or the sentence would be grammatical. As shown above, if the parasitic gap is pronounced as an overt pronoun, the sentence is grammatical:

- (31) Himself₁, John₁ admires _ without Mary liking him₁ in the least.

We also attempted to construct examples where the parasitic gap precedes the real gap:

- (32) a. * It is only himself₁ that [people who know *pg*] think John₁ should blame _.
b. * It is only themselves₁ that [people who₁ blame *pg*] will realize John has conned _.

In our poll, 8/13 find (32a,b) both ungrammatical. One finds them both grammatical. Three find (a) marginal (5/7) but b ungrammatical (1 or 2 out of 7). (We suspect that these three might be interpreting *know* intransitively, and so have no gap at all in the subject clause.)

Again, we conclude that parasitic gaps must involve a full copy, otherwise (32a) would be grammatical. If the parasitic gap is instead pronounced with an overt pronoun, the sentence is grammatical:

- (33) It is only himself₁ that [people who know him₁] think John₁ should blame _.

It follows that the parasitic gap must be a full copy of the reflexive. In our analysis, this is because the head of the filler must be copied in full in every gap site, and cannot undergo vehicle change.

These findings are consistent with the data from the introduction indicating symmetric reconstruction into all gaps in parasitic gap constructions:

- (34) a. It's herself that [her thinking critically about *pg*] will lead her to understand _ better.
b. It's herself that she should take a hard look at _ [before she shamelessly promotes *pg*].

In other words, data from non-exempt anaphors show clearly that parasitic gap sites evidence full reconstruction.

We also offer the following data, which were not included in our poll. Informal judgment collection is consistent with reconstruction to every gap in a parasitic gap construction, and inconsistent with the view that there is no reconstruction to parasitic gap sites:

- (35) a. It is only himself that John('s) blaming *pg* could make him more aware of _.
b. * It is only himself that John's blaming *pg* could lead others to understand _ better.
c. * It is only themselves that John's blaming *pg* could lead other people to understand _ better.
(36) a. It's yourself, not other people, that you criticizing *pg* will lead you to understand _ better.
b. * It's yourself, not other people, that you criticizing *pg* will lead them to understand _ better.
c. * It's themselves, not you, that you criticizing *pg* will lead other people to understand _ better.

Some further data illustrating symmetric reconstruction with non-exempt anaphors in ATB movement appears below. Again, informal polling shows that reconstruction is fully symmetric.

- (37) a. It's only themselves that people should blame _ and then try to improve _.
b. It's each other that we can rely on _ and depend on _.
c. Take a hard look at himself, James should _ but probably won't _.
d. I said I would think critically about myself, and think critically about myself I will _ and will continue to _.

To conclude this subsection, reconstruction for Condition A is actually largely symmetric. Where there are asymmetries, they are due to linear order. Importantly, we see reconstruction into parasitic gap sites, contra much previous literature.

2.3 Weak Crossover

Weak crossover has also been claimed to be asymmetric in ATB movement (Munn 2001). In particular, weak crossover only appears in the first conjunct and not in subsequent conjuncts:

- (38) (Munn 2001, 374, (10b,d))
- a. Which man₁ did you hire ₁ and his₁ boss fire ₁ ?
 - b. * Which man₁ did his₁ boss fire ₁ and you hire ₁ ?

We have proposed that asymmetries in ATB movement and parasitic gaps are due not to a difference in the nature of the gaps, but to linear order. In keeping with this, the WCO judgments above simply follow from linear accounts of weak crossover that have already been proposed (Chomsky 1976, Higginbotham 1980, Shan and Barker 2006). We state the descriptive generalization about WCO as follows:

- (39) A quantifier Q can bind a pronoun P as a variable only if some A-position occupied by (a copy of) Q precedes P.

In (38a), an A-position occupied by a copy of the wh-phrase (object of *hire*) precedes the pronoun, and binding is licit. In contrast, in (38b), the pronoun precedes all A-positions occupied by a copy of the wh-phrase, and binding is not allowed.

If this is correct, we predict that, when we use parasitic gap examples where the parasitic gap precedes the real gap, WCO should reverse. We do not have results of a formal poll on this point, but offer the following examples as evidence:

- (40) a. * Which girl₁ did her₁ teacher('s) criticizing *pg* really upset ₁ ?
b. Which girl₁ did the teacher('s) criticizing *pg* make her₁ mother withdraw ₁ from school?
- (41) a. * Which official₁ did his₁ boss's firing *pg* make reporters scramble to get an interview with ₁ ?
b. Which official₁ did the boss('s) firing *pg* make his₁ friend try to intercede for ₁ ?

Judgments collected informally go in the direction indicated, supporting the linear account.

Once again, where there are asymmetries, they follow from linear order, and are not related to a putative difference between real gaps and parasitic gaps.

2.4 Summary

This section has critically examined claims that reconstruction is asymmetric in ATB movement and parasitic gap constructions. We have shown that where there are asymmetries, they are due to linear order. Importantly, we do see clear evidence of reconstruction into all gaps in both ATB movement and parasitic gap constructions. Furthermore, we have begun to develop an account of reconstruction in a left-to-right model of syntax, where copies of the filler are inserted into gap sites as the derivation unfolds. We have proposed that the filler is always copied fully in all gap sites. However, vehicle change may take place in some copies of the filler. The pattern we have found is the following:

- (42) *Vehicle change within copies of a filler:*
- a. The head of the filler may not undergo vehicle change (to be revised in section 3.2).
 - b. Some speakers permit vehicle change in obligatory arguments to the head of the filler but only in copies in non-initial gaps.
 - c. All speakers permit vehicle change in adjuncts and non-obligatory arguments to the filler in copies in non-initial gaps; many permit it in all gaps.

This results in the following pattern of data, summarized from the preceding subsections:

(43) *Reconstruction for Condition C:*

- a. Many speakers show no reconstruction for Condition C with adjuncts and non-obligatory arguments (by 70c).
- b. Some speakers show reconstruction for Condition C, but only in the first of multiple gaps (by 70c).

(44) *Reconstruction for Condition A*

- a. If the anaphor is the head of the filler, it is reconstructed to all gap sites (by 70a).
- b. If the anaphor is an argument and is non-exempt, it reconstructs to initial gaps for all speakers and to all gaps for many speakers (by 70b).

3 Other Evidence

In this section we investigate other types of data that have been presented as either unifying ATB movement and parasitic gap constructions, or distinguishing them. Two of them involve reconstruction. First, reconstruction for variable binding has been claimed to differentiate ATB movement from parasitic gap constructions (Nissenbaum 2000). We show that it does not, and we need full reconstruction into all gap sites, including parasitic gap sites. Second, ATB movement and parasitic gap constructions behave the same regarding secondary strong crossover (Williams 1990). We analyze this as full reconstruction leading to a Binding Condition C violation. Once again, we need reconstruction into parasitic gaps. Finally, parasitic gaps have been claimed to be subject to more restrictions than ATB movement (Cinque 1990, Postal 1993a). We show data from Levine, Hukari, and Calcagno (2001) that contradicts this claim. In general, ATB movement and parasitic gap constructions can be seen to behave identically. Importantly, we need full reconstruction into both kinds of gap sites.

3.1 Reconstruction for Variable Binding

Nissenbaum (2000) argues that reconstruction for variable binding can be symmetric in ATB movement but not in parasitic gap constructions. In particular, a pronoun in the filler can be bound by a different quantifier in each conjunct in ATB movement, but not in parasitic gap constructions:⁶

(45) (Nissenbaum 2000, 43–44, (24), (23))

- a. Which picture of his mother did you give to every Italian _ and sell to every Frenchman _?
(Possible answer: “I gave to every Italian and sold to every Frenchman the picture of his mother that he likes best.”)
- b. # Which picture of his mother did you give to every Italian _ after buying from every Frenchman *pg*?
(Impossible answer: “I gave every Italian₁ the picture of his₁ mother that he₁ liked best after buying from every Frenchman₂ the picture of his₂ mother that HE₂ liked best.”)

This variable binding requires full reconstruction into every conjunct in ATB movement:

⁶Nissenbaum’s proposed answer in (45a) has right-node raising in it, such that the NP corresponding to the wh-phrase follows both quantifiers. In this answer, the variable binding is licit, consistent with our linear account of variable binding in (39). Following Nissenbaum, we will assume that in these particular examples, wh-movement is fed by heavy shift and then right node raising, so that the gaps occur where we have indicated them. See also Postal (1998) and Bachrach and Katzir (2009) on wh-movement being fed by right-node raising.

- (46) Which picture of his mother did you give to every Italian₁ [~~which picture of his₁ mother~~] and sell to every Frenchman₂ [~~which picture of his₂ mother~~]?

Crucially, according to Nissenbaum there is no such reconstruction into a parasitic gap site. This follows on his theory where parasitic gaps are the trace of a null operator, and not the trace of the overt filler.

While Nissenbaum's example does seem to lack the indicated reading, other parasitic gap examples may well have that reading. Consider the following:

- (47) a. Which of his holy icons does seeing every Italian kiss *pg* lead every Frenchman to kiss _, too?
(Possible answer: "His favorite one.")
- b. The town he was born in, seeing every American moving away from *pg* ought to lead every expat Canadian to want to move back to _.
- c. His favorite statue of the virgin, every alter boy would kiss _ without waiting for every bishop to kiss *pg* first.

We conclude that it is possible for parasitic gap constructions to have the same symmetric reconstruction for binding that ATB movement can have.

Nissenbaum (2000) further claims that reconstruction for variable binding is asymmetric with parasitic gap constructions. Reconstruction is possible to the real gap, but not to the parasitic gap (the "#" is how Nissenbaum marks the ungrammaticality of this variable binding):

- (48) (Nissenbaum 2000, 34, (22))
- a. Which picture of his₁ mother did you give to every Italian₁ _ [after buying from Mary *pg*]?
- b. # Which picture of his₁ mother did you give to Mary _ [after buying from every Frenchman₁ *pg*]?

According to Nissenbaum, this is because the parasitic gap is the trace of a null operator, which lacks the lexical content of the filler.

Once again, this asymmetry seems to be due to linear order. If the parasitic gap precedes the real gap, reconstruction for variable binding reverses:

- (49) a. Which picture of his₁ mother did [every Italian₁'s bringing *pg* along] cause him₁ to lose _ ?
- b. * Which picture of his₁ mother did [Mary's bringing *pg* along] cause every Italian₁ to lose _ ?

This is inconsistent with the null operator account, and indicates that parasitic gaps can be full copies of the filler.

Nissenbaum (2000) also claims that ATB movement and parasitic gap constructions differ in another respect, which is that symmetric reconstruction is *obligatory* in ATB movement:

- (50) (Nissenbaum 2000, 44, (24))
- a. Which picture of his mother did you give to every Italian _ and sell to every Frenchman _ ?
(Possible answer: "I gave to every Italian and sold to every Frenchman the picture of his mother that he likes best.")
- b. #? Which picture of his mother did you give to every Italian _ and sell to Mary _ ?
- c. #? Which picture of his mother did you give to Mary _ and sell to every Italian _ ?

While Nissenbaum's examples are degraded, this seems to be due to the particular choice of words. Other examples seem fine:⁷

- (51) a. Which picture of his₁ mother did you buy from every Frenchman₁ _ and then make a copy of _ for Sue?
 b. Which of his₁ holy icons did you steal from every priest₁ _ and then replace _ with a forgery?

We conclude that ATB movement and parasitic gap constructions behave the same regarding reconstruction for variable binding. Both permit symmetrical reconstruction, and both also permit asymmetric reconstruction just to the first gap in linear order. Parasitic gaps, in particular, do not have a special status. We see full reconstruction to parasitic gap sites.

3.2 Secondary Strong Crossover

ATB movement and parasitic gap constructions have also been shown to behave the same with respect to secondary strong crossover, as was noted by Williams (1990). Secondary strong crossover (Postal 1993b) arises when a pronoun commands the gap left by moved constituent; in such a case, the pronoun cannot co-refer with a sub-part of the moved constituent:

- (52) a. * Which manager₁'s sister did he₁ visit _?
 b. Which manager₁'s sister _ visited him₁?

Secondary strong crossover appears in all conjuncts of an ATB movement construction, and with respect to all gaps in a parasitic gap construction (see Williams 1990, Munn 2001, Citko 2005, Salzmann 2012):

- (53) a. * Which manager₁'s sister did he₁ call _ and you send an email to _?
 b. * Which manager₁'s sister did you call _ and he₁ send an email to _?
 (54) a. * Which detective₁'s sister did he₁ warn _ before we arrested *pg*?
 b. * Which detective₁'s sister did you warn _ before he₁ arrested *pg*?

In our account, secondary strong crossover is a Binding Condition C violation. The filler is copied into all gap sites, as described above. The wh-phrase within the filler in these cases is a possessor, and is an adjunct, not an argument. Given what we have seen, we might expect that at least some speakers would therefore permit it to undergo vehicle change. This is not what we see, however; all speakers that we are aware of feel the effects of secondary strong crossover, in both multiple- and single-gap constructions. We suggest that this is because the wh-phrase is part of the head of the filler, and the head of the filler may not undergo vehicle change. The wh-phrase being part of the head will follow from interpreting "head of phrase XP" to be any element that has determined features of XP. The categorial head N has determined categorial features of the NP; the wh-phrase has determined wh-features. So, the head of *which detective's sister* is the entire phrase, *which detective's sister*, because the categorial (and phi) features of this NP constituent come from the N *sister*, but the specifier, *which detective's*, determined the [wh] feature on the NP (which is responsible for that entire NP having moved).

If the wh-phrase in possessor position is part of the head of the filler, then it cannot undergo vehicle change in lower copies, and a Condition C violation will result:

⁷These examples of coordination are more asymmetric than Nissenbaum's, in the sense that there is a temporal or causal order among the conjuncts. It is known that asymmetric coordination permits things that symmetric coordination does not (see Chaves 2012b for recent discussion). In particular, symmetric coordination is claimed to require symmetry in variable binding. See Ruys 1992, Fox 2000, Johnson 2009, 294.

- (55) a. * Which manager₁'s sister did you call [~~which manager₁'s sister~~] and he₁ send an email to [~~which manager₁'s sister~~]?
 b. * Which detective₁'s sister did you warn [~~which detective₁'s sister~~] before he₁ arrested [~~which detective₁'s sister~~]?

In the above representations, an R-expression is commanded by a coindexed pronoun, in violation of Condition C.

As noted by Munn (2001), secondary strong crossover disappears when the pronoun is separated from the second (or subsequent) gap by a clause boundary. This effect happens with both ATB movement and parasitic gap constructions, but it does not take place with the first gap:

- (56) (based on Munn 2001, 375, (14) and note 7)
 a. * Which manager₁'s sister did you inform him₁ that you were going to fire _ and also insult _?
 b. Which manager₁'s sister did you insult _ and inform him₁ that you were going to fire _?
 (57) (based on Munn 2001, 375, (13) and note 7)
 a. * Which manager₁'s sister did you inform him₁ that you were going to fire _ after insulting *pg*?
 b. Which manager₁'s sister did you insult _ after informing him₁ that you were going to fire *pg*?

It appears that, in a single gap construction or with respect to the first gap of a multiple-gap construction, the head of the filler is copied fully into every gap site and may not undergo vehicle change, even across clause boundaries and in positions where successive-cyclic movement is thought to stop:

- (58) * Which manager₁'s sister did you inform him₁ [_{CP} [~~which manager₁'s sister~~] that you were going to fire [~~which manager₁'s sister~~]] (and also insult [~~which manager₁'s sister~~])?

However, in a multiple-gap construction, within a domain that contains a second or subsequent gap (e.g., a second or subsequent conjunct), apparently vehicle change is only blocked within the highest clause of that domain. We hypothesize that an identical copy is placed within the highest clause, but subsequent copies (including in locations where successive-cyclic movement is thought to stop) can undergo vehicle change:

- (59) Which manager₁'s sister did you insult [~~which manager₁'s sister~~] and [_{Domain} [~~which manager₁'s sister~~] inform him₁ [_{CP} [~~his₁-sister~~] that you are going to fire [~~his₁-sister~~]]]?

In both ATB movement and parasitic gap constructions, a copy of the filler is merged in the specifier of the highest category within the domain, labeled "Domain" in the representation above (see section 4). Copies that are within an embedded clause within this domain can then undergo vehicle change, as shown.

Salzmann (2012) presents a topicalization example that works in the same way, except here the offending R-expression is the head of the filler under any definition of head:

- (60) (Salzmann 2012, 433, (66))
 a. * President Bush₁, every Democrat criticizes _ but he₁ admires _.
 b. President Bush₁, every Democrat criticizes _ but he₁ thinks that every member of congress should admire _.

In (71a), the second gap is in the same clause as the coreferring pronoun, and this is the highest clause of the second gap's domain. We therefore see only an identical copy and a Condition C effect. In (71b), however, the second gap is in a clause embedded within the second conjunct. The head of the filler can undergo vehicle change, such that Condition C is not violated:

- (61) a. * President Bush₁, every Democrat criticizes ~~President Bush₁~~ but [_{Domain} ~~President Bush₁~~ he₁ admires ~~President Bush₁~~].
- b. President Bush₁, every Democrat criticizes ~~President Bush₁~~ but [_{Domain} ~~President Bush₁~~ he₁ thinks [_{CP} ~~him₁~~ that every member of congress should admire ~~him₁~~]].

We therefore amend our account of vehicle change to permit vehicle change of the head of a filler in second or subsequent gaps of multiple gap constructions, if they are within a clause embedded within the domain of that gap. We formalize this in section 4.

An important conclusion to take away from this subsection is that ATB movement and parasitic gap constructions behave identically with respect to secondary strong crossover. In particular, we see full reconstruction to parasitic gap sites (unembedded ones).

3.3 Some Claimed Differences

Cinque (1990) and Postal (1993a) claim that there are numerous restrictions on parasitic gap constructions that do not hold of ATB movement, and these differences necessitate treating them differently. Parasitic gaps according to these authors are limited to NPs and may not be APs, adverbs, PPs, or other categories, including predicate nominals. Parasitic gaps are also claimed to be banned from contexts that disallow definite pronouns.

Levine, Hukari, and Calcagno (2001) show that none of these restrictions are real. Parasitic gaps are allowed with APs, PPs, and adverbs, as well as predicate nominals (capitalization indicates contrastive stress):

- (62) (Levine, Hukari, and Calcagno 2001, 185, (7c), (7b), (7a), (7g))
- a. I wonder just how nasty you can PRETEND to be _ without actually BECOMING *pg.* (AP)
- b. That's the kind of table ON WHICH it would be wrong to put expensive silverware _ without also putting a fancy centerpiece *pg.* (PP)
- c. How harshly do you think we can treat THEM _ without in turn being treated *pg* OURSELVES? (adverb)
- d. A doctor, you could spend your whole life trying to be _ without ever becoming *pg!* (predicate nominal)

Parasitic gaps are also allowed in contexts that disallow definite pronouns, for instance “change of color” contexts:

- (63) (Levine, Hukari, and Calcagno 2001, 193, (23))
- a. * We painted the walls it.
- b. Mint green is a color that you might want to paint your CEILING _ without necessarily wanting to paint the surrounding WALLS *pg.*

We conclude, with Levine, Hukari, and Calcagno (2001), that ATB movement and parasitic gaps are entirely parallel. There are no restrictions that are specific to parasitic gaps but not ATB gaps.

3.4 Summary

To summarize this section, parasitic gap constructions and ATB movement constructions behave identically with respect to reconstruction for variable binding, secondary strong crossover, and categorial (and other)

restrictions. Importantly, both show complete reconstruction into all gap sites for variable binding and Condition C (which gives rise to secondary strong crossover).⁸

4 Gaps in a Left-to-Right Derivation

In this section we develop further our left-to-right analysis of reconstruction. We begin by formalizing some notions that are necessary for stating how vehicle change works across clause boundaries. We then use these notions to flesh out how successive-cyclic movement works, and propose an analysis of coordination. Section 4.3 then shows that our analysis can do without the numerous mechanisms that have been proposed for partial reconstruction, parasitic gaps, and ATB movement. We need only what is independently necessary for successive-cyclic movement (null copies) and VP ellipsis (vehicle change).

4.1 Vehicle Change and the Domain of a Gap

Repeated below are the facts as we have seen them so far:

- (64) *Vehicle change within copies of a filler:*
- a. The head of the filler may not undergo vehicle change (to be revised given section 3.2).
 - b. Some speakers permit vehicle change in obligatory arguments to the head of the filler but only in copies in non-initial gaps.
 - c. All speakers permit vehicle change in adjuncts and non-obligatory arguments to the filler in copies in non-initial gaps; many permit it in all gaps.

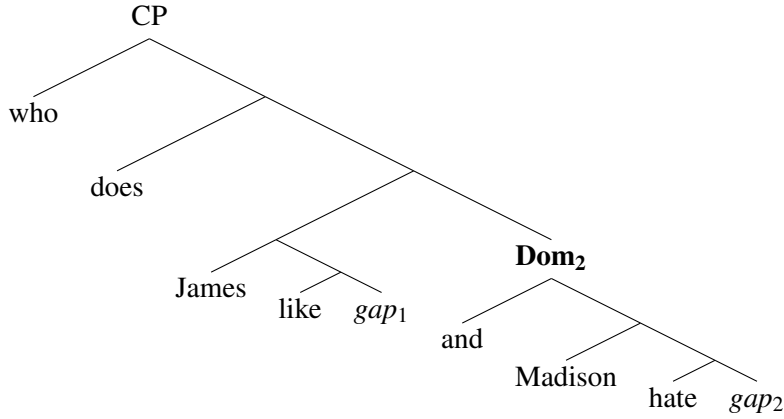
We do need to incorporate the possibility of vehicle change in the head of the filler in embedded clauses with non-initial gaps (section 3.2). To do that, we define a notion of the Domain of a gap in a multiple-gap construction:

- (65) In a multiple-gap construction, where $\text{gap}_1 \dots \text{gap}_n$ ($n > 1$) are gaps in argument positions bound by a single filler F:
- a. The Domain of gap_n is the first node (in linear order) following gap_{n-1} that is not dominated by the mother of gap_{n-1} , excluding all nodes dominated by the first node that follows and is not dominated by the mother of gap_n .
 - b. The Local Filler for gap_n is the first copy of F in the Domain of gap_n .

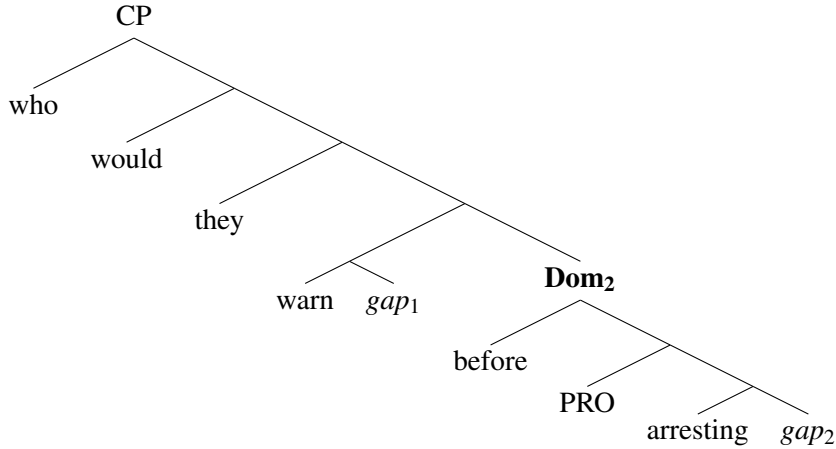
To illustrate, consider some instances of ATB extraction and parasitic gap constructions like the following (trees greatly simplified for now):

- (66) a. Who does James like _ and Madison hate _?

⁸Citko (2005) argues that symmetric reconstruction is also visible in ATB movement constructions in the available readings for *how many* questions (building on Moltmann 1992) and in “idiomatic” interpretations. We have been unable to construct parasitic gap examples that would show reconstruction with *how many* questions. As for “idioms,” by this Citko means the phrase *take pictures*. This phrase does not require reconstruction when *pictures* is dislocated, because even pronouns can have the relevant interpretation: *Q: Where did these pictures come from? A: Bill took them, aren't they nice?* Such phrases are therefore fully compatible with null operator/null pronoun theories of parasitic gap constructions.



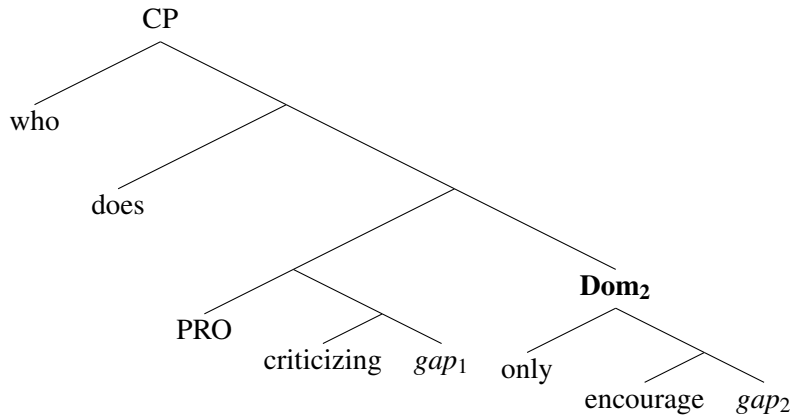
b. Who would they warn _ before arresting *pg*?



The definition in (65a) picks out the node labeled “Dom₂” as the Domain of *gap*₂. This is the first node following *gap*₁ that is not dominated by the mother of *gap*₁.

A parasitic gap inside a subject is shown below:

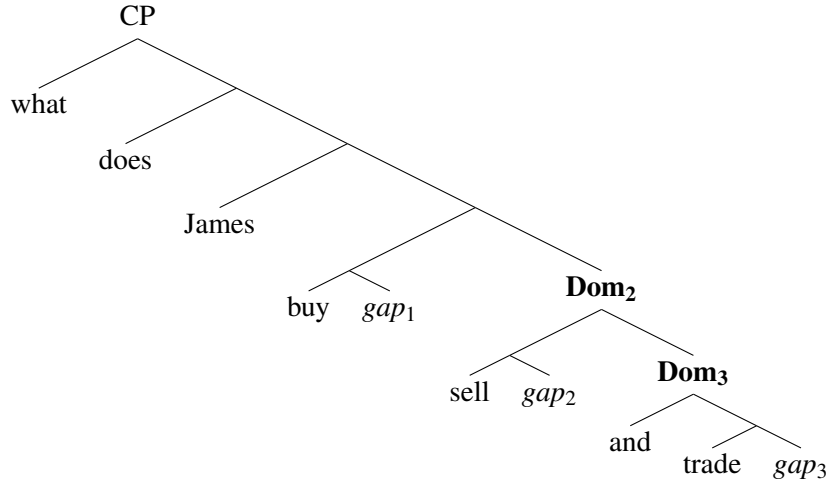
(67) Who does criticizing *pg* only encourage _?



The definition in (65a) picks out the node labeled “Dom₂” as the Domain of *gap*₂.

Three gaps are shown below (we propose an analysis of coordination in section 4.2):

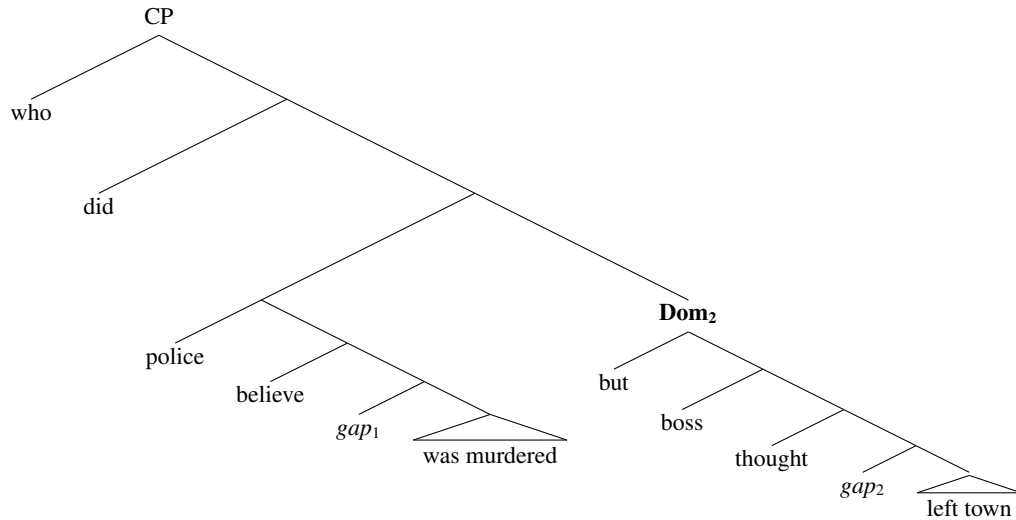
(68) What does James buy _, sell _, and trade _?



The node labelled “Dom₂” is the first node that follows and is not dominated by the mother of gap₁. However, the Domain of gap₂ excludes the node labelled “Dom₃,” so the Domain of gap₂ is Dom₂–Dom₃. The domain of gap₃ is Dom₃.

Below is a case where the gaps are not final in their conjuncts:

- (69) Who did the police believe _ was murdered but the mob boss thought _ left town?



The definition in (65a) again picks out the node labeled “Dom₂” as the Domain of gap₂, since it is the first node that is not dominated by the mother of gap₁.

We assume that a copy of the filler is merged at the edge of the Domain of each gap (more on this below). This copy will be the Local Filler for gap_n in the definition in (65b). Now we can state the final version of our principles regarding vehicle change:

- (70) *Vehicle change within copies of a filler (final version):*
- The head of the filler may not undergo vehicle change, unless it is in a copy of the filler that is in the Domain of gap_n and is separated by a clause boundary from the Local Filler for gap_n.
 - Some speakers permit vehicle change in obligatory arguments to the head of the filler but only in copies in non-initial gaps.
 - All speakers permit vehicle change in adjuncts and non-obligatory arguments to the filler in copies in non-initial gaps; many permit it in all gaps.

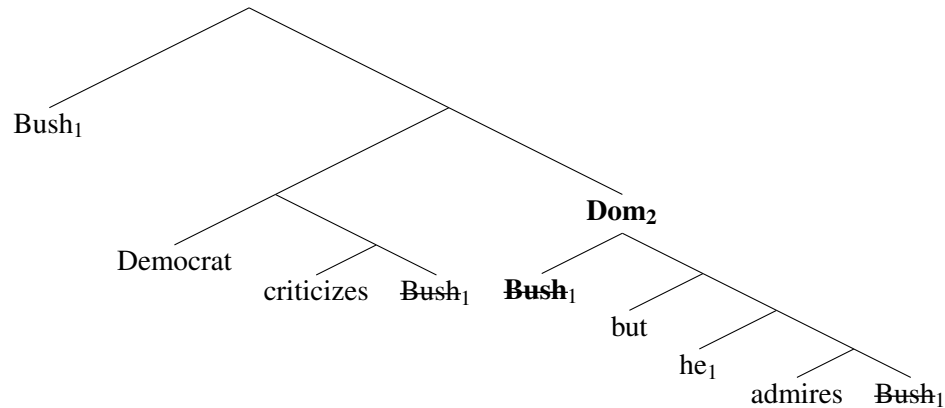
We illustrate (70a) with the examples from Salzmann (2012) above:

(71) (Salzmann 2012, 433, (66))

- a. * President Bush₁, every Democrat criticizes _ but he₁ admires _.
- b. President Bush₁, every Democrat criticizes _ but he₁ thinks that every member of congress should admire _.

The ungrammatical example will not permit vehicle change, since the lowest copy of *Bush* is not separated from the Local Filler (in boldface) by a clause boundary:

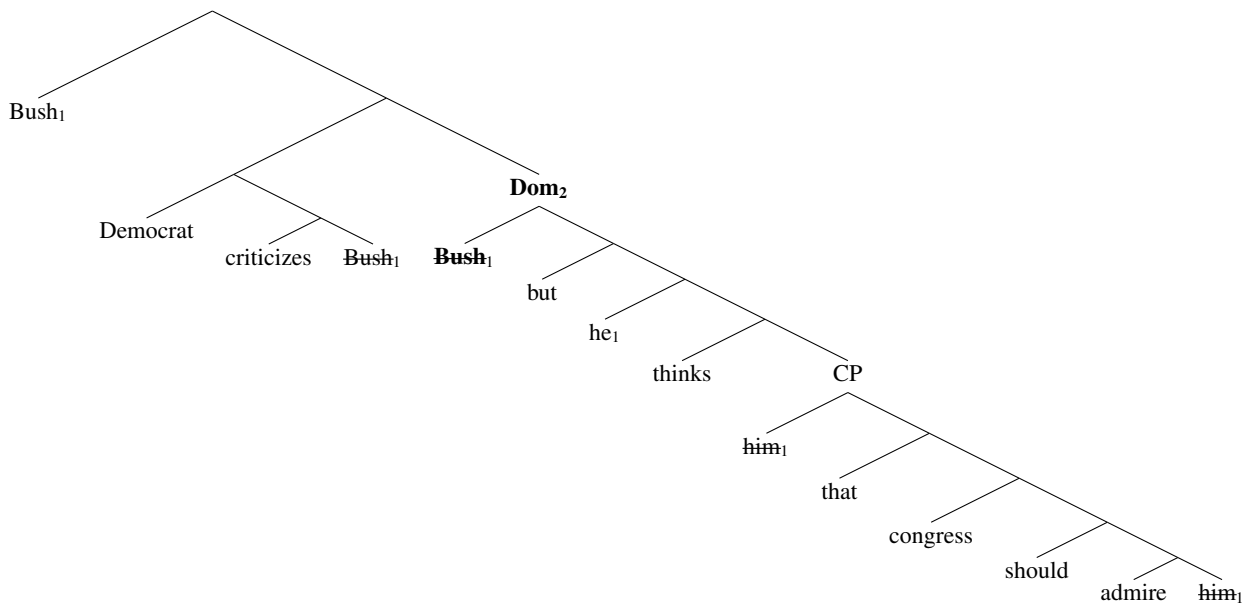
(72)



This leads to a Condition C violation.

However, if there is a clause boundary between the boldfaced Local Filler and a given copy, then vehicle change can take place in that copy:

(73)



The Local Filler in bold is separated from lower copies by a CP boundary, so they can undergo vehicle change, as shown. This leads to Condition C not being violated, since there is no R-expression that is bound by a coindexed expression in an argument position (the pronounced copy of *President Bush* is in an A-bar position).

The conditions on vehicle change in (70a–70c) appear quite complicated. As they are stated, they are merely descriptions of the facts we have found through our investigation here. We will not attempt to explain these conditions, or try to relate them to other facts. However, we can generalize somewhat.

First, all speakers require a complete and faithful copy of the head of the filler and its obligatory arguments in at least one argument position (gap). Some also require non-obligatory arguments and adjuncts to be faithfully represented at least once, but others do not, and permit vehicle change in non-obligatory arguments and adjuncts in all gap sites. Once obligatory arguments have been copied faithfully into one gap, some speakers permit further copies to undergo vehicle change, while others do not. What all speakers have in common is that the head of the filler and its obligatory arguments must be copied into one gap site. Otherwise, speakers permit vehicle change to varying degrees. Since the derivation is built left-to-right, the most faithful copy will appear in the first gap in linear order, leading to asymmetric reconstruction when that is possible.

Preparatory to moving on, we point out two notions from this subsection that will be important in subsequent subsections: the Domain of a gap, and the Local Filler for a gap.

4.2 The Local Filler and Cyclic Domains

In our left-to-right derivation, copies of the filler are merged into various positions as the derivation is built. The positions where copies are merged include at least the lowest gaps in argument positions, and wherever the theory of successive-cyclic movement says that movement needs to stop (we will assume Spec-CP here). We have also hypothesized that a copy is merged at the edge of the Domain for gap_n in a multiple-gap construction. We suggest that this is necessary because the various syntactic elements that create these domains result in those domains being cyclic domains for movement. In Chomsky’s (2000) *phase* theory, these domains are phases, and it is necessary for moving elements to stop at the edge of a phase.

The domains we are concerned with here include adjunct clauses, which are quite plausibly phases (they are at least CPs). However, they can also include other things that might not normally be considered phases, such as the node that is sister to a subject NP, when that subject NP contains a parasitic gap (see the tree in 67). It might be that this node is the maximal VP (“vP;” e.g.), and that node is always a phasal node, as in Chomsky (2000). However, coordination also seems to define the domains we are concerned with, and coordination can conjoin all different types of phrases. Consider (66a), for instance, where what is coordinated does not appear to be a CP and also does not appear to be a VP (or vP).⁹ We therefore propose that phases can be defined dynamically (Bošković 2014); in particular, a coordinator turns any node it combines with into a phase.

We adopt the analysis of coordination in Al Khalaf (2015), according to which each conjunct has a coordinator (“&”) adjoined to it. In some languages the initial coordinator may be pronounced, but it may

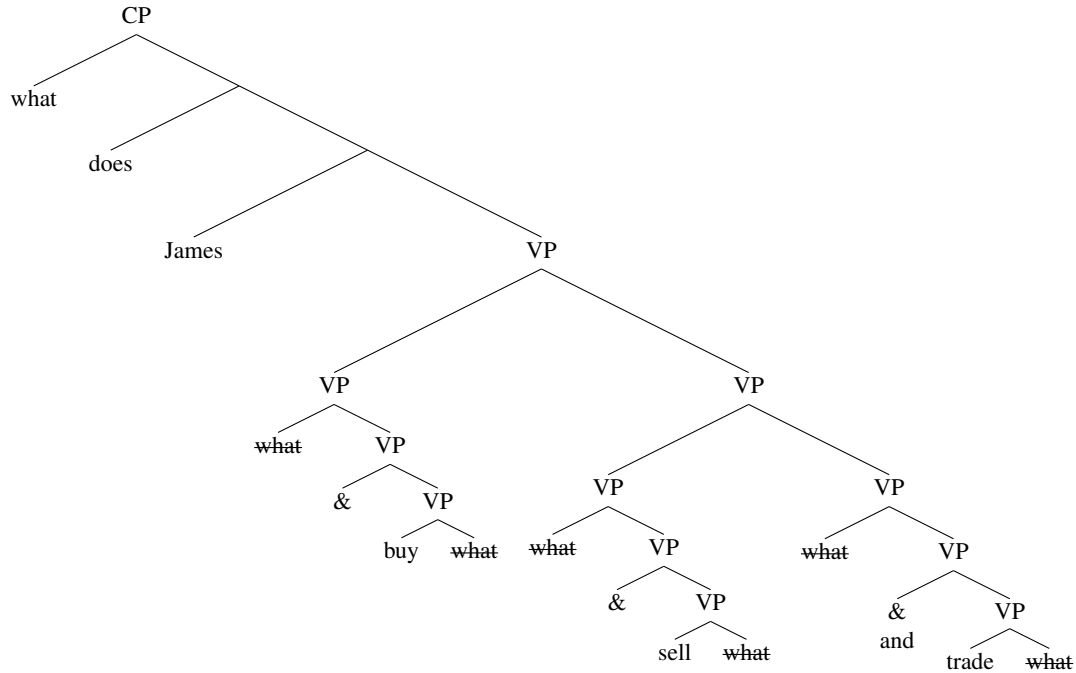
⁹Coordination that takes place below a shared fronted auxiliary has a number of peculiar properties. The simplest analysis would be to analyze this as coordination of TP, with ATB head movement of T to C. However, this analysis would expect that expletives would be fine in such cases, but they are not:

- (i) a. * What is there in Austin and there in Dallas?
b. What is there in Austin and what is there in Dallas?
c. What is there in Austin and in Dallas?
- (ii) a. * What does it seem that she will do and it appear that she will not do?
b. What does it seem that she will do and appear that she will not do?

This suggests that what is actually coordinated is something lower, perhaps VP (or vP). See Johnson (2009) and references there on low coordination. Note also example (69), where the verb in the second conjunct is tensed, although it co-occurs with fronted *did*. Another issue is that a fronted auxiliary can fail to agree with the subject of the second conjunct (An 2007). We will leave apparent ATB verb movement aside in this paper.

not be in English. This leads to the following representation for our three-conjunct example:¹⁰

(74) What does James buy ₁, sell ₂, and trade ₃?



As just stated, adjoining a coordinator turns the category adjoined to into a phase, so an unpronounced copy must be merged at the edge of each conjunct, as shown. Every gap will therefore have a Local Filler as defined above, occupying the edge of the Domain of that gap. Another copy of the filler will also be merged in the gap in argument position, as shown. (If there are clause boundaries, then copies will also be merged in intermediate phase edges like Spec-CP, as in 73.)

4.3 On Interpretation and Simplicity

Our analysis can now be combined with any account of the interpretation of null copies within the copy theory of movement. The most prominent such account is the Trace Conversion Algorithm of Fox (2002). This algorithm is stated below:

(75) *Trace Conversion* (Fox 2002, 67, (10))

- a. Variable Insertion: (Det) Pred \rightarrow (Det) [Pred $\lambda y(y=x)$]
- b. Determiner Replacement: (Det) [Pred $\lambda y(y=x)$] \rightarrow the [Pred $\lambda y(y=x)$]

Informally, a wh-movement structure with a null copy in the gap position like (76a) has the paraphrase in (76b), with a definite determiner:

- (76) a. Which film did one critic love ~~which film~~?
- b. Paraphrase: For which film x did one critic love *the film x* ?

Applied to our ATB movement and parasitic gap examples, this would result in the following paraphrases:¹¹

¹⁰For the purposes of this paper, we also ignore the difference between “open” and “closed” coordinators in Al Khalaf (2015). This difference is not germane to the topic of this paper. See that work for details.

¹¹Multiple gap constructions also permit non-identity readings, for instance *respectively* and *additive* readings. The semantics will have to be modified to accommodate such readings. See especially Chaves 2012a, 2014.

- (77) a. Which film did one critic love ~~which film~~ and another hate ~~which film~~?
 Paraphrase: For which film x did one critic love *the film x* and another hate *the film x*?
- b. Which form should one never sign ~~which form~~ without reading ~~which form~~ first?
 Paraphrase: For which form x should one never sign *the form x* without reading *the form x* first?

It is not clear how Trace Conversion would apply with categories other than NP (see, e.g., Fox 2002, 67, note 6 and Takahashi 2010), and there might well be better ways to interpret unpronounced copies of moved constituents. The point that is important here is, whatever way will work for movement with a single gap will work just as well for multiple gaps in our analysis. They will be interpreted in the same way. We do not need any sort of “chain composition” for parasitic gaps (Chomsky 1986), or countercyclic lambda abstraction plus predicate modification as proposed by Nissenbaum (2000). We also do not need multidominance (Goodall 1987, Moltmann 1992, Citko 2005), sideward movement (Hornstein and Nunes 2002, Nunes 2004), or some way of fusing two movement chains into one in ATB movement.

Our left-to-right derivation also obviates the need for countercyclic late merger as a mechanism for accounting for the lack of reconstruction effects (e.g., Lebeaux 1988, Chomsky 1993, and much subsequent work). We account for apparent lack of complete reconstruction through vehicle change, independently necessary to account for similar effects in VP ellipsis (Fiengo and May 1994). Note that our analysis is similar in this respect to that of Salzmann (2012), who also proposes vehicle change as the mechanism for reconstruction asymmetries in ATB movement. However, Salzmann also posits a special kind of ellipsis licensed by the coordinator in ATB movement. Again, we do not need any such mechanism, we just need what is independently necessary for successive-cyclic movement generally.

To summarize, our analysis uses only mechanisms that are needed anyway for long-distance movement (null copies) and ellipsis (vehicle change). The left-to-right derivation therefore permits a maximally simple account. In contrast, bottom-up derivations require numerous complications and ad hoc devices.

5 Conclusion

This paper re-examined claims of asymmetric reconstruction in ATB movement and parasitic gaps. We showed that reconstruction can actually be symmetric, and sometimes must be. This is true both with ATB movement and parasitic gaps. In particular, we see full reconstruction to parasitic gap sites, contra much previous literature. Moreover, where there are asymmetries in reconstruction, they are due entirely to linear order.

Recognizing the role of linear order, we proposed that derivations are constructed left-to-right, not bottom-up as in most approaches. Once we move to a left-to-right model, we arrive at a maximally simple account of multiple gap constructions and partial reconstruction. Multiple gap constructions are interpreted in the same way as single gap constructions, with null copies being merged in gap sites. Vehicle change, a mechanism independently necessary for VP ellipsis, can take place in these null copies, in a pattern based on linear order: basically, the first gap requires a full, identical copy, but later copies may undergo vehicle change, to different degrees for different speakers.

On the basis of this result, we suggest that researchers explore possible further benefits of moving to a left-to-right model of syntax rather than a bottom-up one. In this model, linear order is present from the beginning, rather than being specified only at PF as in Kayne (1994) and much other work. In other work, we have shown that a left-to-right model explains numerous facts of coordination (Al Khalaf 2015, Al Khalaf and Bruening 2015). Bruening (2014) shows that a left-to-right model explains numerous facts about binding, as well. It is likely that such a model will lead to improved understanding of numerous syntactic phenomena.

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