Phrase Structure Paradoxes and C-Command Paradoxes: A Comparison of Bruening (2014) and Larson (2024)

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Abstract

"Phrase structure paradoxes" (Pesetsky 1995) are cases where constituency tests indicate one structure but syntactic dependencies that are supposed to require surface c-command point to a different one. There are two general approaches to these that one can take: (1) Give up surface c-command. (2) Maintain surface c-command but reinterpret constituency test data. Bruening (2014) takes the first approach, while Larson (2024) takes the second. In this paper I compare the two approaches. I show that there is a less well-known class of paradoxes where the syntactic dependencies that are supposed to all refer to surface c-command contradict each other. For instance, in some environments the Binding Conditions point to one structure but variable binding and negative polarity item licensing point to a different one. Approach (2) cannot explain such data. Approach (1) can. I argue that syntactic dependencies are not homogeneous and require different structural conditions. Once this is recognized, all paradoxes are resolved, and there is no conflict with constituency test data. In particular, adjuncts can be high and on the right and still participate in syntactic dependencies with material that does not c-command them on the surface. I also show that the approach to constituency test data in Larson (2024) runs into problems with adjuncts like *again* and makes incorrect predictions regarding the effect of islands on stranding in VP preposing.

1 Introduction

Since at least Reinhart (1976), it has been recognized that there are conflicts between standard tests for constituency and syntactic dependencies that are thought to make reference to surface c-command. For instance, a preposition and its NP complement behave like a constituent for tests such as displacement:

(1) . . . James, [to whom] it needed to be pointed out that leaving the burner on is dangerous, . . .

This means that the NP complement of the P does not c-command anything outside of the PP. Yet complements of Ps participate in relations that are standardly assumed to involve surface c-command. For instance, as Reinhart observed, complements of prepositions give rise to Condition C effects when they are covalued with an R-expression that follows them and is dominated by the same VP:

(2) * Someone should point out to her$_1$ that Rosa$_1$'s driving is dangerous. (Reinhart 1976: 155, (16b))

If a pronoun needs to c-command an R-expression on the surface in order for disjointness to be required, as most work since Reinhart (1976) has assumed, then this is a very clear case of a conflict between a constituency test and a surface c-command diagnostic. (Note that the "c-" in c-command stands for "constituent.")

Pesetsky (1995) dubbed these sorts of conflicts "phrase structure paradoxes," for which various solutions have been proposed (Pesetsky 1995, Phillips 2003, Lechner 2003, Janke & Neeleman 2009). In this paper, I will compare what I believe is the only successful proposal, that in Bruening (2014), with a recent proposal by Larson (2024). Bruening (2014) takes the approach of giving up surface c-command. Syntactic dependencies are instead not homogeneous, and require reference to different syntactic relations, but none of them surface c-command. Once the structural conditions on different syntactic dependencies are understood, it can be seen that they are not in conflict with constituency test data. Larson (2024) takes the other logically possible approach and reinterprets the constituency test data. In Larson's approach, all syntactic dependencies rely on surface c-command, and branching within the VP is uniformly downward to the right. One test for constituency, stranding in VP preposing, is reanalyzed as distributed pronunciation in the copy theory of movement (Chomsky 1993).

In this paper, I show that there is another, less frequently acknowledged class of paradoxes involving syntactic dependencies. Namely, they contradict each other. Binding Conditions A, B, and C, for instance, might point to one structure, but variable binding and negative polarity item licensing point to another. In a different set of environments, variable binding and negative polarity item licensing contradict each other. I call these "c-command paradoxes." I argue that only the approach in Bruening (2014) is compatible with c-command paradoxes. The approach in Larson (2024) cannot deal with them, because they invalidate the assumptions of that approach (namely, that every syntactic dependency refers to surface c-command). In contrast, once the structural conditions on each syntactic dependency are understood, these dependencies can be seen to be compatible both with each other and with the evidence from constituency tests. Both types of paradox are resolved.

I should stress at the outset that I am not claiming that there is no role for a relation like c-command in syntax. In fact, I argue that sisterhood and (derivatively) c-command are crucial to the scope of quantifiers and modifiers (see section 5 in particular). What I am arguing here is that the syntactic dependencies that are commonly viewed as requiring surface c-command and therefore as being tests for surface c-command—Binding Conditions A, B, and C, variable binding, weak crossover, the *each... the other* construction, NPI licensing, and superiority (Barss & Lasnik 1986, Larson 1988)—actually do not involve surface c-command at all. The scope of a quantifier is crucial to several of these relations, but this scope is not determined by surface c-command. The hypothesis that I will adopt here is that the scope of a quantifier is the sister of that quantifier after Quantifier Raising (QR). This makes scope c-command, but not *surface* c-command. The important point here is that none of the phenomena that have been claimed to be surface c-command diagnostics actually are; not a single one of them refers to surface c-command.

Section 2 describes the two proposals that are being compared here. Section 3 lays out the contradictory behavior of the syntactic dependencies that are often claimed to involve surface c-command. Section 4 then shows what the actual requirements of each dependency are. None of

them require surface c-command. Section 5 discusses adjunct scope with particular reference to the adjunct *again*, and shows that an adjunct on the right must be adjoined high. At the same time, syntactic dependencies work left to right rather than right to left. This is exactly as expected given the conclusions of section 4, but it is incompatible with radical right branching. Section 6 shows that the distributed pronunciation theory of Larson (2024) makes an incorrect prediction regarding the relevance of islands to stranding in VP preposing. 7 discusses some residual issues from Larson (2024).

2 The Two Proposals

In this section, I describe the two proposals that are being compared here.

2.1 Bruening (2014)

Bruening (2014) argues that syntactic dependencies are not homogeneous and require different structural relations. None of them make any reference to surface c-command. Bruening (2014) concentrates on the Binding Conditions and shows that they require the conjunction of precedence and a different notion of command, phase-command. Consider the formulation of Binding Condition C below:

(3) Binding Condition C: An R-expression may not be covalued with an NP that precedes and phase-commands it.

Phase-command is defined as follows:[1]

(4) Phase-Command: X phase-commands Y iff there is no ZP, ZP a phasal node, such that ZP dominates X but does not dominate Y.

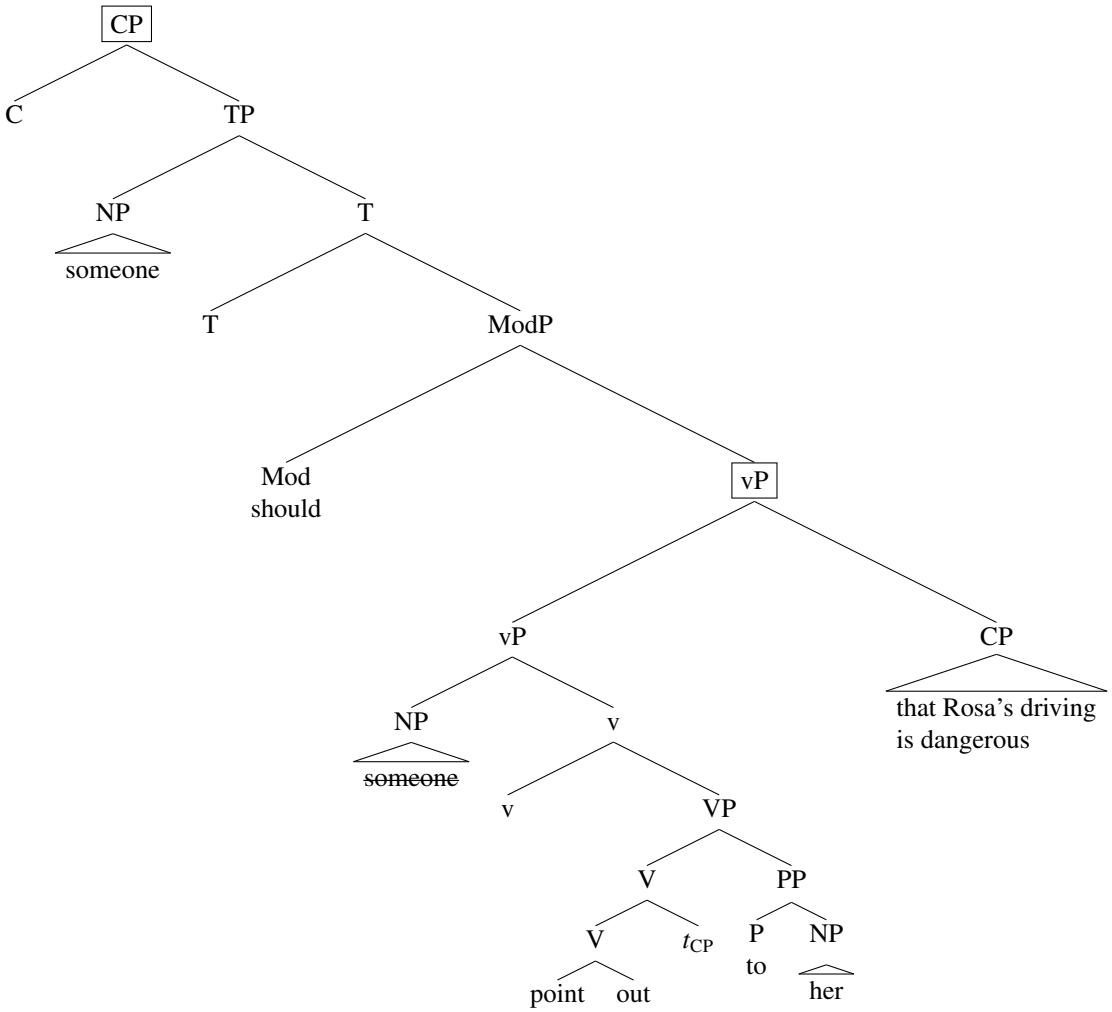
(5) Phasal nodes: CP, vP, NP

C-command says that every node in the tree matters; phase-command says that only particular ones do. These are the phasal nodes from Phase Theory (Chomsky 2000). The three phasal nodes that matter here are CP, vP, and NP. Note that PP is not a phasal node; see Bruening (2014) for justification.

I will give two brief illustrations. The first is the Condition C effect in (2), repeated and diagrammed below. The exact structure of the VP is not crucial. It is likely that the CP has extraposed across the particle and PP (see Bruening 2018). I show it adjoined to vP. When there are multiple segments of vP, CP, and NP, only the highest node is the phasal node (Bruening 2018).

(6) * Someone should point out to her$_1$ that Rosa$_1$'s driving is dangerous. (Reinhart 1976: 155, (16b))

[1] "vP" is meant to be the maximal projection of whatever head introduces the external argument. In many works, this is called "VoiceP." In this paper, I will use "vP," because that label is what both Larson (2024) and Bruening (2014) use. Similarly, "NP" is meant to be whatever the maximal projection of a nominal phrase is (so long as that is not PP; it is crucial that PPs are not phasal nodes).



In this structure, there is no phasal node that dominates the pronoun *her* that does not also dominate the R-expression *Rosa*. The only phasal nodes that dominate *her* are vP and CP (boxed in the tree), and both of those dominate *Rosa*. *Her* also precedes *Rosa*. If *her* is covalued with *Rosa*, then Condition C is violated. At the same time, we have a constituent, the PP, that is able to undergo processes that only constituents can undergo, like wh-movement (as in (1)).

For the second illustration, consider example (7) below, from Bruening (2014), and example (8), from Jason Merchant (email correspondence):[2]

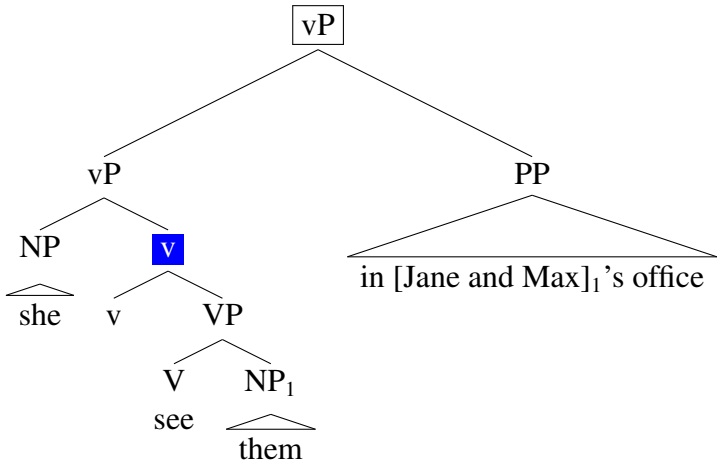
(7) * I spoke to them$_1$ about binding and argued with them$_1$ about gapping in [Joan and Martin]$_1$'s office.

[2]Phillips (2003) and Lechner (2003) claim that stranding in VP ellipsis bleeds Condition C. However, there is a confound with their examples: Repeating the R-expression serves to disambiguate among multiple referents with the same phi-features. Disambiguation is known to permit violations of Condition C (e.g., Schlenker 2005). Merchant's example has fewer NPs involved and those do not share phi-features, so there is no need for disambiguation. As he notes, Condition C effects are quite strong in such cases. Additionally, Bruening (2018) claims that stranding of a CP in VP preposing bleeds Condition C. I have found that many speakers disagree with this judgment. I will assume here that stranding in VP preposing and VP ellipsis, of any category, does not bleed Condition C. (If it is found that it does, then all that needs to be said is that the stranded category moves outside of the vP phase; this is what Bruening 2018 said about stranded CPs.)

(8) * Abby saw them$_1$ in my office; she didn't — in [Jane and Max]$_1$'s office.

In (7), part of a VP including the verb is coordinated, while a PP on the right is interpreted as modifying both of the conjuncts. In (8), a VP is elided, stranding a PP. Both point to a structure with the PP high on the right:

(9)



Following Bruening (2024), I take VP ellipsis to target the mother of v (or Voice, in Bruening 2024; it could also target the lower vP). This node is in blue in the tree. The stranded adjunct is adjoined to vP, outside of the elided constituent. In this structure, every phasal node that dominates the pronoun *them* also dominates the R-expression *Jane and Max*. The pronoun also precedes the R-expression (it being unpronounced due to ellipsis does not change this). Covaluing the two therefore violates Binding Condition C.

Recognizing that many syntactic dependencies involve precede-and-command rather than c-command makes the "paradox" disappear. Phrases can be high and on the right, as constituency tests tell us, and still be in the command domain of a preceding element.

Bruening (2014) also shows that not all syntactic dependencies involve the same structural relations. Precede-and-command is relevant to the Binding Conditions, but it is not what is relevant for relations like variable binding and negative polarity item (NPI) licensing. Sections 3 and 4 will show this at length.

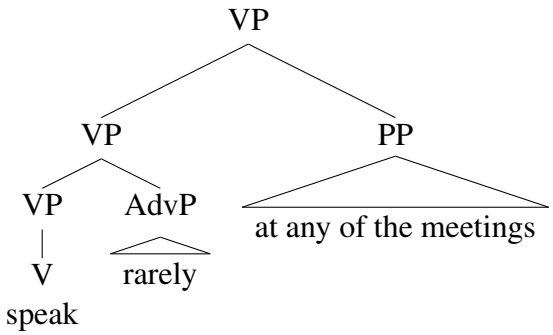
2.2 Larson (2024)

Larson (2024) is concerned primarily with adjuncts to VP that can strand in VP preposing and (to a lesser extent) VP ellipsis. Consider the following example:

(10) Mary warned she would speak rarely during the committee visit, and [speak rarely] she did — at any of the meetings. (Larson 2024: 662, (7b))

In this example, the PP *at any of the meetings* is stranded by VP preposing, and so is apparently high and on the right, so that the constituent [speak rarely] can front without it:

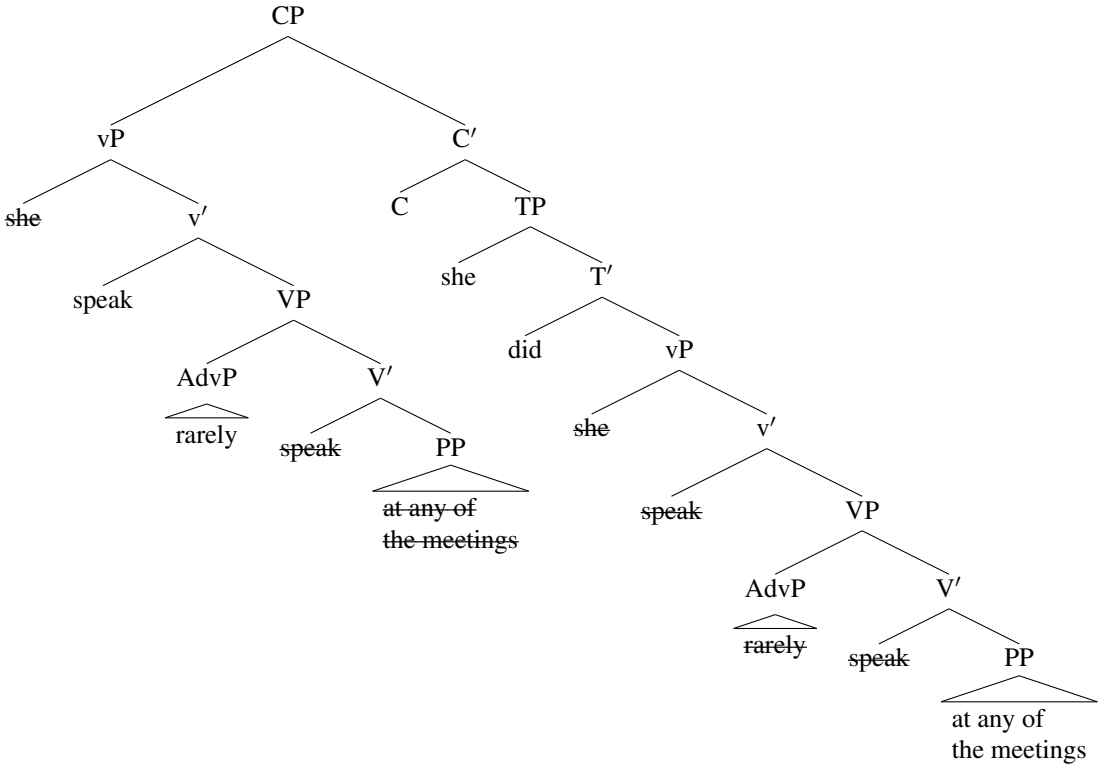
(11)



At the same time, the PP contains a negative polarity item (NPI) *any* which is licensed by *rarely* in the preposed VP. If NPI licensing requires surface c-command, as Larson (2024) assumes, then the NPI should not be licensed in this example.

Larson (2024) proposes that phrase structure paradoxes of this sort can be resolved by: (1) taking surface c-command to be the important relation for syntactic dependencies like NPI licensing; (2) taking all branching in the VP to be downward and rightward; (3) accounting for the stranding of modifiers in VP preposing as distributed pronunciation in the copy theory of movement. The following tree illustrates the proposal for the above example:

(12) . . . and [speak rarely] she did — at any of the meetings. (Larson 2024: 672, (28))

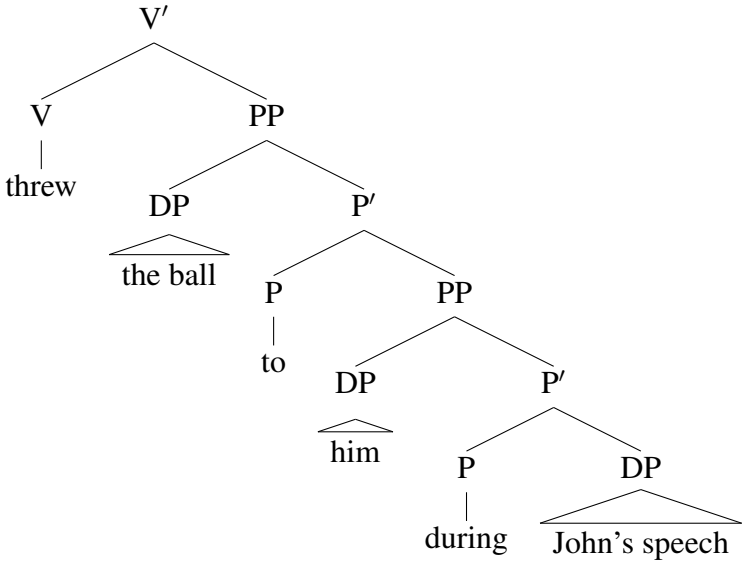


Here, the vP preposes to Spec-CP along with all of its arguments and modifiers. These are merged in "VP shells" of the type proposed by Larson (1988), where rightward is always downward. Stranding is viewed as distributed pronunciation: The PP is not pronounced in the fronted position, and is instead pronounced in the base position (strikethrough indicates non-pronunciation). In both copies, the NPI licenser *rarely* c-commands the NPI *any*, and so the NPI is licensed.

Thus, Larson (2024) defuses the apparent evidence from stranding in VP preposing for adjuncts being high on the right. They can be low instead, and still be stranded, through distributed pronunciation in the copy theory of movement. Much of Larson's paper is devoted to spelling out principles for pronunciation in the copy theory of movement (which will not be relevant here).

One issue that Larson (2024) does not address is how to handle PPs, as in (2). Larson could simply stipulate, as many have done (e.g., Reinhart 1976), that PPs do not count for c-command. However, Larson criticizes approaches like Ernst's (1994) m-command plus precedence[3] on the basis that c-command is to be preferred over all other structural relations. I infer from that that Larson would want to maintain strict c-command. That being the case, he would need to adopt the even more radically right-branching structures proposed by Pesetsky (1995), where the complement of a P appears in the specifier of the next projection down:

(13) (based on Pesetsky 1995: 174, (456))



But then it is unclear how to account for the very clear ability of PPs to undergo processes as constituents, even when they are followed by other material, as in (1). The PP *to him* is not a constituent in (13).[4] A reviewer suggests that Larson could permit movement of a PP as an apparent constituent through distributed pronunciation: In (13), the P′ consisting of *to him during John's speech* could undergo movement, while only *to him* is pronounced in the higher position. The rest of the material, *during John's speech*, would be pronounced in the lower position. Taking this approach would make incorrect predictions for movement of PPs in wh-questions and relative clauses. In VP preposing, it is always possible to pronounce all of the moved material in the higher position. This is not possible in wh-movement and relative clauses:

(14) a. With whom did you consult during this process?
b. * With whom during this process did you consult?

[3]Note that Ernst's (1994) m-command plus precedence also does not solve the problem of PPs. NPs do not m-command out of PPs any more than they c-command out of them.

[4]Pesetsky (1995) proposes that these radically right branching structures co-exist with leftward-branching ones of the traditional sort. Since Larson (2024) attempts to reinterpret constituency tests, which are what motivate Pesetsky's left-branching structures, I infer that he would not want to posit two co-existing structures.

(15) a. the FBI, with whom we consulted during this process, …
b. * the FBI, with whom during this process we consulted, …

It would somehow have to be stipulated that material that fronts along with a wh-phrase or relative operator could not be pronounced in the fronted position. (Stating this restriction appropriately would also not be easy, since some material can be pronounced with a fronted wh-phrase, like *whose pictures of vintage cars from the 1940s*.)

PPs are therefore a real problem for Larson's right-branching structures. However, since Larson (2024) is silent on PPs, I will mostly leave them aside here, and refer the reader to the extensive discussion in Bruening (2014).

2.3 A Quick Note on Exempt Anaphors

Before going on to compare the two proposals, it is necessary to make a brief remark about exempt anaphors. Above I illustrated Larson's approach to phrase structure paradoxes using NPI licensing. In addition to that syntactic dependency, Larson (2024) also presents examples of anaphors inside NPs as though they involve syntactic binding. It is important to set the record straight on these. Apparent anaphors inside NPs were shown to be exempt from binding by Pollard & Sag (1992) and Reinhart & Reuland (1993), and this has been confirmed by much subsequent literature (e.g., Runner et al. 2003). The reciprocal anaphor *each other* in possessor position is one such exempt anaphor. It does not need a local c-commanding binder in possessor position, unlike *each other* in an object position:

(16) (Janke & Neeleman 2009: 37, (90))
a. * John and Mary hoped that the psychologist would explain their weaknesses to each other.
b. John and Mary hoped that the psychologist would explain each other's weaknesses to them.

Larson (2024) presents the following example as illustrating syntactic binding:

(17) Mary said she would give them presents, and [give them presents] she did on each other's birthdays. (Larson 2024: 662, (7a), based on Pesetsky 1995: 230, (570c))

It does not, since *each other* is in possessor position. This is therefore not an example of a phrase structure paradox, contra Pesetsky (1995) and Larson (2024). However, valid examples like it can be constructed (like those in (7–8)).

Larson (2024) also presents the following example to argue for the copy theory of movement and distributed interpretation of moved phrases (Chomsky 1993):

(18) Alice_1 asked which picture of $\text{herself}_{1/2}$ Mary_2 bought. (Larson 2024: 669, (22))

The claim is that the anaphor *herself* can either be interpreted in the Spec-CP that it appears in on the surface, in which case it is bound by *Alice*, or it can be interpreted in its base position, in which case it is bound by *Mary*. However, Reinhart & Reuland (1993) argued that there was no reconstruction for Binding Condition A, since anaphors inside picture NPs are exempt from Binding Condition A. Both Pollard & Sag (1992) and Reinhart & Reuland (1993) showed that

apparent anaphors inside picture NPs do not need syntactic binders at all. This is also true when the picture NP is a wh-phrase:

(19) Susan was perturbed. How many pictures of herself were taken in that pub, anyway? (Bruening & Tollan 2025)

In this example, the antecedent for *herself* does not even appear in the same sentence. Given this, there is no reason to think that reconstruction and the copy theory play any role in "binding" in Larson's example. The exempt anaphor takes its antecedent based on something like point of view.

I will not use any such examples in this paper. I will make sure that the examples I use to illustrate syntactic binding do in fact involve syntactic binding, and do not include exempt anaphors.

3 C-Command Paradoxes

As described in section 2, Larson (2024) assumes that all syntactic dependencies refer to surface c-command. His radically right-branching structures are meant to enable surface c-command for all of these dependencies within the VP. These syntactic dependencies presumably include at least Binding Conditions A, B, and C; variable binding; weak crossover; the *each... the other* construction; NPI licensing; and superiority (these are the dependencies discussed by Barss & Lasnik 1986 and Larson 1988). In this section, I show that these dependencies do not all pattern together, and in fact they frequently contradict each other. I call these cases "c-command paradoxes." The existence of these paradoxes invalidates the assumption behind Larson's approach. Only the approach that gives up surface c-command (Bruening 2014) is compatible with the data.

There are many well-known problems with surface c-command, although they are seldom acknowledged as problematic for the general assumption that surface c-command is the primary relation for all of syntax.[5] I bring some of them together in this section and the next and show that the various dependencies contradict each other. This makes it impossible to maintain the view that they all depend on surface c-command. Section 4 will show what each dependency actually requires.

3.1 The Possessor Paradox

A simple illustration of how the syntactic dependencies contradict each other comes from the well-known problem of possessors. Binding Conditions A, B, and C indicate that possessors do not c-command out of the containing NP:

(20) a. Her father adores her/*herself.
b. Then her$_1$ mother-in-law said to Ruth$_1$, ...

An anaphor in object position cannot take a possessor as an antecedent, while a pronoun can (20a). A pronoun as a possessor can also be covalued with a subsequent R-expression without giving rise

[5] Jackendoff (1990: 435) notes that the syntactic requirements of the various phenomena that are supposed to refer to surface c-command do not align. However, he gives very little data, and several examples use exempt anaphors rather than true anaphors.

to a Condition C violation (20b). The Binding Conditions, then, clearly show that possessors do not c-command out of the NP they are part of.

In contrast, a quantifier as a possessor can bind a pronoun outside of the NP as a variable (Higginbotham 1980), and a negative possessor can license an NPI (both illustrated in (21a)). In the *each… the other* construction, the *each* part can be a possessor and license *the other* (in (21b) *each* is also inside a PP, but we are ignoring that additional problem here):

(21) a. No$_1$ woman's mother-in-law **ever** fully approves of her$_1$.

b. …imagines two sisters finding each other across timelines — in **each** woman's universe **the other** had died young, … (https://locusmag.com/2020/04/karen-burnham-reviews-short-fiction-bcs-strange-horizons-lightspeed-tor-com-and-diabolical-plots/)

Variable binding, NPI licensing, and the *each… the other* construction thus contradict Binding Conditions A, B, and C, and indicate that possessors *do* c-command out of the containing NP.

If we assume that all of these dependencies require surface c-command, as is standard, then we have a paradox: Some of the dependencies indicate one structure, while others point to a different one. This paradox cannot be resolved by positing radically right branching structures plus distributed pronunciation in the copy theory of movement. The only way to resolve this paradox is to recognize that the different dependencies refer to different structural relations.

It should be noted that various proposals have been made to deal with this particular paradox, primarily for variable binding (e.g., Reinhart 1983, Kayne 1994, Hornstein 1995, Ruys 2000). However, none of these proposals extend to all of the c-command paradoxes. See especially the data in section 3.3 and in Barker (2012).

3.2 Other Dependents of NP

We find the same contradiction with other dependents of NPs. Binding Conditions A, B, and C indicate that these dependents do not c-command outside of the containing NP:

(22) a. [Advisors to the president] contradict him/*himself frequently.

b. [A friend of his$_1$] stood behind Stanley$_1$.

However, variable binding, NPI licensing, and the *each… the other* construction indicate the opposite:

(23) a. [A friend of each$_1$ contestant] stood behind her$_1$. (Barker 2012: (25b))

b. ? [The author of no linguistics article] **ever** wants it to go unread. (Kayne 1994: 25)

c. A morphodynamic system consists of a coupling of two homeodynamic systems such that [the constraint dissipation of **each**] complements **the other**,… (https://en.wikipedia.org/wiki/Incomplete_Nature)

Once again, if we believe that all of these dependencies refer to surface c-command, we are faced with a paradox. Positing right branching structures will not help in this case, either; if we posit a structure where the dependent of N c-commands subsequent material, then we incorrectly predict that Binding Conditions A, B, and C will work differently.

3.3 Adjuncts High on the Right

I will give one more example of a c-command paradox in this section. This comes from a class of adjuncts in English that appear on the right, and which have generally been considered to be adjoined high in the clause. For instance, their contents are outside of the binding domain of an object in VP (Reinhart 1976, 1981, Bruening 2014). Here are some examples:

(24) a. So many people wrote to him$_1$ that Brando$_1$ couldn't answer them all. (Reinhart 1976: 47, (63))

b. Rosa won't like him$_1$ anymore, with Ben$_1$'s mother hanging around all the time. (Reinhart 1976: 23, (19c))

c. We'll just have to fire him$_1$, whether McIntosh$_1$ likes it or not. (Reinhart 1976: 23, (19d))

The fact that no Condition C violation occurs when an object pronoun is covalued with an R-expression inside the adjunct clause indicates that the adjunct clause must be high. This is confirmed by the fact that these adjuncts cannot prepose along with a VP:

(25) (Bruening 2014: 346, (12))

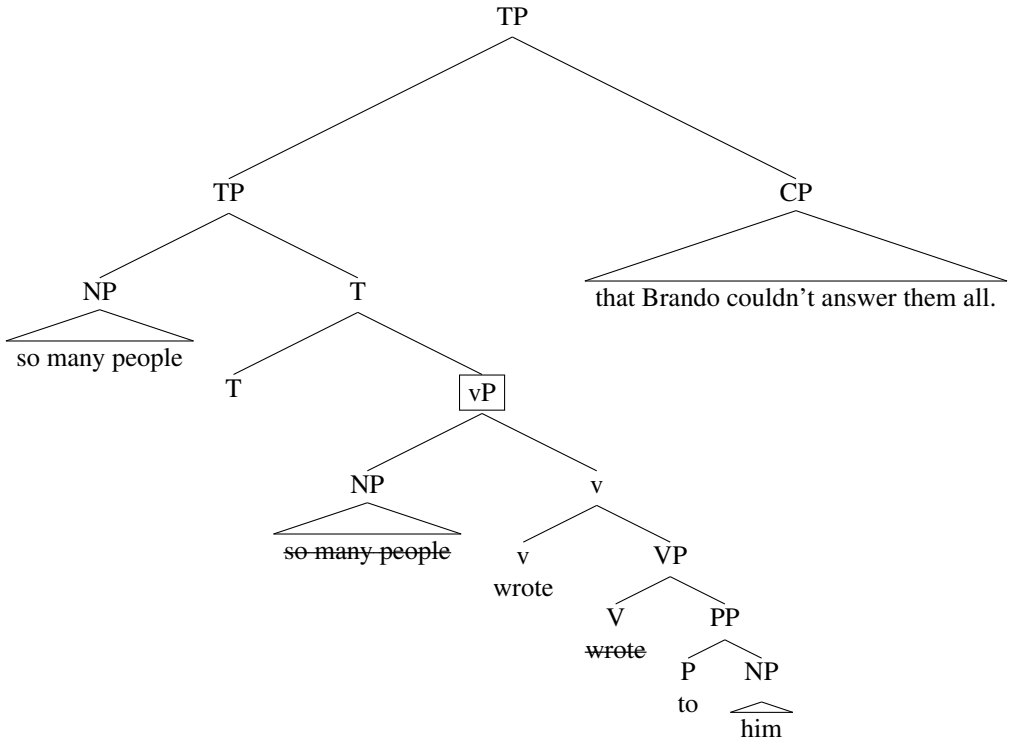
a. So many people wrote to him [$_{CP}$ that he couldn't answer them all].

b. * . . . and write to him [$_{CP}$ that he couldn't answer them all], so many people did.

c. . . . and write to him, so many people did [$_{CP}$ that he couldn't answer them all].

In anyone's theory, then, these adjunct clauses must be outside of the VP. Since they are on the right, they must be attached to the clause in a high position on the right, something like the following (see Bruening 2014 for evidence that the adjunct is higher than the subject):

(26)



In the analysis in Bruening (2014), there is a phasal node, vP, that dominates the pronoun and does not dominate the R-expression. Condition C is not violated if they are covalued. (If one believes that surface c-command is what is relevant for Binding Condition C, the pronoun does not c-command the R-expression, either.)

Binding Condition C (and constituency tests) put these adjuncts high, then, such that they are not c-commanded by an object within VP. However, as Bruening (2014) shows, a quantifier can bind a pronoun as a variable in the very same configuration where no Binding Condition C violation is incurred:

(27) a. So many people wrote to every actress$_1$ that she$_1$ couldn't answer them all. (Bruening 2014: 374, (116c))

b. Rosa wouldn't go out with any boy$_1$ with his$_1$ mother hanging around.

c. We'll have to fire every worker$_1$ whether he$_1$ likes it or not.

There is also a distinct lack of weak crossover, even though the trace of the wh-phrase could not c-command the pronoun that the wh-phrase binds as a variable:

(28) a. Who$_1$ did so many people write to t_1 that he$_1$ couldn't answer them all? (Bruening 2014: 375, (118))

b. Who$_1$ is Rosa going to stop going out with t_1, with his$_1$ mother hanging around all the time? (Bruening 2014: 375, (118))

c. Who$_1$ are you going to fire t_1, whether he$_1$ likes it or not?

The *each... the other* construction also works with *each* as the object in VP and *the other* within the high adjunct:

(29) (Lynsey and Samantha are officials in different branches of a government office, but they always rely on each other.)
So many people complained to each woman that the other had to help deal with them all.

In this case, NPI licensing seems to pattern with Binding Condition C rather than with variable binding (the licenser is underlined, NPI boldfaced):

(30) a. * So many people returned <u>none</u> of their bottles that **any** deposits were refunded.

b. * She will go out with <u>no one</u> with **any** of her relatives hanging around all the time.

c. * They will fire <u>no one</u>, whether **anyone** likes it or not.

Here we have another, but slightly different, c-command paradox: Binding Condition C and NPI licensing indicate that an NP inside VP does not c-command one of these high adjuncts, but variable binding, weak crossover, and the *each... the other* construction indicate the opposite.

Note that it is also not possible to analyze these adjunct clauses as structurally ambiguous: If they could ever be low, then they should be able to prepose with the VP in (25), and an NPI should be licensed in (30).

3.4 Significance of C-Command Paradoxes

These three examples show that syntactic dependencies that are supposed to refer to surface c-command contradict each other. They contradict each other in other structural configurations, as well; more examples will be given in section 4. In addition to phrase structure paradoxes, then, where c-command tests contradict constituency tests, we also have c-command paradoxes, where the various c-command diagnostics contradict each other.

These paradoxes cannot be resolved by positing radically right branching structures with distributed pronunciation. If there is a surface c-command relation between the two relevant positions, then all of the syntactic dependencies should behave the same. They do not. Larson's (2024) proposed solution for phrase structure paradoxes has nothing to say about these c-command paradoxes, since it seeks to reanalyze the constituency test data rather than the c-command diagnostics. Indeed the existence of c-command paradoxes is incompatible with any approach to phrase structure paradoxes that maintains that surface c-command is the structural relation behind all syntactic dependencies.

In contrast, the proposal in Bruening (2014) is able to account for these paradoxes. In this proposal, syntactic dependencies are not all the same. The Binding Conditions refer to precedence and phase-command, while the other dependencies refer to other structural relations (which will be identified in section 4). It is therefore expected that they can behave differently in identical structural configurations.

Additionally, note that the high adjunct clauses from section 3.3 show that every theory must allow adjunction high on the right. This is true even in Larson's radically right-branching analysis of VPs. Once one allows this, however, it dampens the attractiveness of the radically right branching approach. If adjuncts *can* be high on the right, then why not say that they are inside the VP, as well? It is hard to see how to rule out that possibility in a theory that allows high rightward adjunction outside of VP.

4 What the Syntactic Dependencies Actually Refer to

Section 3 showed that the syntactic dependencies that are supposed to refer to surface c-command frequently contradict each other. In this section, I investigate what structural relation each of the syntactic dependencies does refer to. None of them refer to surface c-command, and they are all different.

I do not go into Binding Conditions A, B, and C here, since they are shown in great detail in Bruening (2014) to refer to precedence and phase-command, not c-command. In this section, I will go beyond Bruening (2014) and investigate in detail variable binding, weak crossover, the *each…the other* construction, NPIs, and superiority. None of these refer to surface c-command, either. Linear precedence is relevant to all of them. Once this is recognized, there is no motivation for right branching structures of the sort proposed by Larson (2024).

4.1 Variable Binding

Section 3 showed that a quantifier could bind a variable in several configurations where no Condition C effect emerges, indicating that it is not possible to maintain that they both depend on surface

c-command (Bruening 2014). Barker (2012) has argued extensively that surface c-command is not required for variable binding. Here are a few examples illustrating a distinct lack of surface c-command between the quantifier and the pronoun that it binds as a variable. (31a) has the quantifier as a dependent of N; (31b) has the quantifier inside an adjunct clause; and (31c) has the quantifier inside a tensed relative clause modifying an NP.

(31) a. This shows that [the fate of every$_1$ individual] is decided by his$_1$ inner ego. (Barker 2012: 622, (26a))

b. . . . [after seeing each$_1$ animal] but before categorizing it$_1$ on the computer or recording it$_1$ on their response sheet. (Barker 2012: 624, (31b))

c. It ended and [$_{NP}$ the amount of Wealth [$_{CP}$ that each$_1$ person had]] was added to their$_1$ overall score. (Barker 2012: 624, (34a))

Given data like this, it is impossible to maintain that variable binding requires a surface c-command relation between the quantifier and the pronoun that it binds.

Moulton & Han (2018) claim to find psycholinguistic evidence that variable binding with and without surface c-command behave differently, but this is refuted by Kush & Eik (2019). There is no evidence that surface c-command plays any role whatsoever in variable binding, and plenty of evidence that it does not.

It is also important that variable binding does not pattern with Binding Conditions A, B, and C. It does not require phase-command any more than it requires c-command. The examples in section 3.3 showed this, where the quantifier in object position does not phase-command into the high adjunct (as shown by the lack of Condition C). The example in (31c) also shows quite clearly that surface phase-command is not necessary, as the quantifier is embedded in at least two phases, NP and CP, that do not dominate the pronoun.

Barker (2012) and Kush & Eik (2019) conclude that what is required for a quantifier to bind a pronoun as a variable is scope. The quantifier must include the pronoun in its scope. The question then is what determines what the scope of a quantifier is. This is actually two questions. The first is what the structural representation of scope is. The second is what the mechanism is that allows a quantifier to take scope higher than its surface position (and what the constraints on this mechanism are). To answer the first, I will assume that scope is sisterhood. A quantifier takes scope over its sister in a syntactic tree. This means that quantificational binding does in fact involve c-command: The pronoun to be bound as a variable must be contained in the sister of the quantifier. However, this sisterhood relation is not (necessarily) the one that holds on the surface, since quantifiers can take scope much higher than their surface position. Rather, the sisterhood relation that matters is one that holds at some other representation. (So, again, surface c-command is irrelevant.)

As for the mechanism of scope taking, I will tentatively assume that it is A-bar movement, as in the classical conception of Quantifier Raising (May 1977, 1985). In experiments, Tanaka (2015) found that subjects' willingness to accept scope for a quantifier outside of an island correlated with the acceptability of wh-movement out of that island (see also Wurmbrand 2018 for discussion). I take this to indicate that scope-taking and overt wh-movement are parallel, and both are instances of A-bar movement.[6] Along with Wurmbrand (2018), I will take this invisible A-bar movement to

[6]It is also possible that some other mechanism that has been proposed for scope taking is correct, rather than A-bar movement. For instance, the continuation proposal of Shan & Barker (2006) has a number of attractive qualities, including deriving reconstructed linear precedence (immediately below).

be, not movement at a later stage of Logical Form, but regular cyclic movement parallel to overt wh-movement, but with the lower copy of the movement chain pronounced.

To take a concrete example, consider (31c), repeated here as (32):

(32) It ended and [$_{NP}$ the amount of Wealth [$_{CP}$ that each$_1$ person had]] was added to their$_1$ overall score. (Barker 2012: 624, (34a))

In this example, the quantifier *each* must have undergone A-bar movement to adjoin above the subject NP in the second conjunct:

(33) It ended and [~~each~~$_1$ [$_{NP}$ the amount of Wealth [$_{CP}$ that each$_1$ person had]] was added to their$_1$ overall score].

Its sister in this position is the entire second conjunct, so the pronoun is in its scope and can be bound by it.

QR must be able to cross island boundaries, as in this example, as well as finite clause boundaries (see especially Wurmbrand 2018). This does depend on the quantifier; as we will see in sections 4.4 and 4.6, negative quantifiers are much more restricted in their ability to take scope. *Each*, in contrast, is able to take very wide scope. In fact, there appear to be few if any restrictions on it. Wurmbrand (2018) argues, however, that QR is computationally costly, and so it is often dispreferred in processing. See that work for details.

Importantly, however, in addition to scope (sisterhood after QR), there is also a linear precedence requirement on variable binding. Specifically, the quantifier must precede the pronoun on the surface, or at least strongly prefers to do so:

(34) a. ?? This shows that [the fate of his$_1$ inner ego] is decided by each$_1$ individual.
b. ?? . . . [after seeing it$_1$] but before categorizing each$_1$ animal on the computer or recording it$_1$ on their response sheet.
c. ?? It ended and [$_{NP}$ the amount of Wealth [$_{CP}$ that he$_1$ had]] was added to each$_1$ player's overall score.
d. ?? So many people wrote to her$_1$ that each$_1$ actress couldn't answer them all.

However, there are complications, where syntactic movement can disrupt surface precedence:

(35) a. Which of his$_1$ relatives does every$_1$ man love — the most? (Barker 2012: 629, (47a))
b. His$_1$ mother seems to every$_1$ boy — to be a genius. (Barker 2012: 630, (48))

Barker (2012) suggests that what is required is reconstructed linear precedence: An A-position occupied by the quantifier (or a phrase containing it) must precede an A-position occupied by the pronoun (or a phrase containing it).[7]

There is one structural configuration where the pronoun precedes the quantifier and it is not clear that movement has occurred. This is with an initial *unless* clause:

[7] A reviewer asks what sort of model of grammar permits one to refer to reconstructed linear precedence. Any model of grammar in which the syntax deals with linear order can do it. Linear precedence between any two positions in a syntactic structure can be computed, even when one or both of those positions contains no pronounced material. All of the arguments in this paper indicate that linear order is the province of the syntax; once this is accepted, then I see no difficulty referring to reconstructed linear precedence.

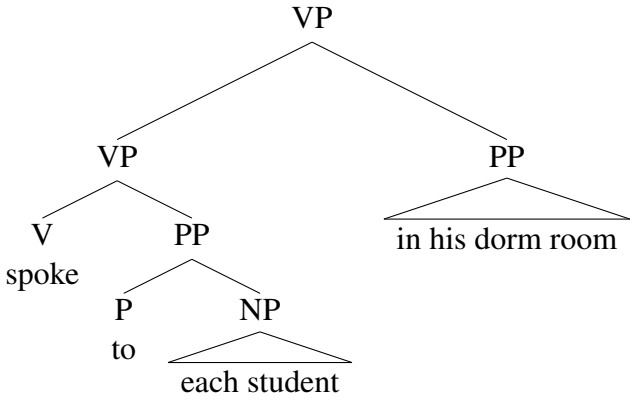
(36) a. Unless he$_1$'s Mr. T, no$_1$ straight man should be wearing much more than one, or maybe two, small subtle pieces of jewelry (watches not included). (Barker 2012: 629, (45a))

b. Unless he$_1$'s been a bandit, no$_1$ man can be an officer; unless she$_2$'s been a trollop, no$_1$ woman can be a noble lady. (Barker 2012: 629, (45c))

Barker (2012) suggests that these can be analyzed as having reconstructed linear precedence, if the *unless* clause has preposed from an underlying position later in the clause. I will assume that such an analysis is viable, and what is required for variable binding is scope plus (reconstructed) linear precedence.

This being the case, there is no motivation for a right branching structure for a VP adjunct like the following:

(37) The headmaster spoke to each$_1$ student in his$_1$ dorm room.



The quantifier can easily take scope over the PP, even if the PP is adjoined high on the right, as in the tree above. The quantifier just needs to undergo QR to some position higher than the VP node that dominates the adjunct. The quantifier also precedes the pronoun on the surface, and so it can bind it as a variable. This type of structure is exactly what constituency tests point to (e.g., *The headmaster will speak to each student in the cafeteria, and the water polo coach will — in the gym*). Right branching structures are unnecessary, and they do not help for any of the other cases gone through here where there is no surface c-command.

4.2 Weak Crossover

Weak crossover is frequently presented as a phenomenon that involves surface c-command (e.g., Barss & Lasnik 1986, Larson 1988). The typical claim is that the trace of a wh-phrase must c-command a pronoun in order for the wh-phrase to bind that pronoun as a variable (e.g., Lasnik & Stowell 1991: 690, (14)). However, linear accounts of weak crossover have been proposed, indeed they are among the earliest accounts of weak crossover (Chomsky 1976, Higginbotham 1980, Bresnan 1995, Shan & Barker 2006, Culicover 2013). In the linear order account, the trace of the wh-phrase must precede the pronoun. To be more precise, an A-position occupied by the wh-phrase must precede an A-position occupied by the pronoun or a phrase containing it. I argue here that all of the data supports the linear account, and is incompatible with the surface c-command account.

Section 3.3 already presented examples from Bruening (2014) that were problematic for surface c-command. I repeat the examples from (28) below:

(38) a. Who$_1$ did so many people write to t_1 that he$_1$ couldn't answer them all? (Bruening 2014: 375, (118))

b. Who$_1$ is Rosa going to stop going out with t_1, with his$_1$ mother hanging around all the time? (Bruening 2014: 375, (118))

c. Who$_1$ are you going to fire t_1, whether he$_1$ likes it or not?

As was shown in section 3.3, the adjunct clause that contains the pronoun is high, outside of the c-command domain of the complement of the verb. Yet a wh-phrase that starts inside the complement of the verb can perfectly well bind a pronoun in the high adjunct. This should be impossible if the trace of the wh-phrase must c-command the pronoun in order to bind it.

Other examples from the literature make the same point:

(39) Which actress$_1$ did you [admit you had an affair with t_1] after she$_1$ died? (Shan & Barker 2006: (54))

In this example, the trace of the wh-phrase is in an embedded clause, while the pronoun is in an adjunct that semantically modifies a higher clause. The trace therefore does not c-command the pronoun on the surface. It does precede it.

Jackendoff (1990) and Bresnan (1995) present versions of the following paradigm to argue that weak crossover is based on precedence rather than c-command:

(40) (Bresnan 1995: 255)

a. * Who$_1$ did you talk about her$_1$ parents with t_1?

b. Who$_1$ did you talk with t_1 about her$_1$ parents?

c. * Who$_1$ did you talk with her$_1$ parents about t_1?

d. Who$_1$ did you talk about t_1 with her$_1$ parents?

In this paradigm, the two PP arguments of *talk* can be reordered. As can be seen, what matters for variable binding is precedence: In the good examples, the trace of the wh-phrase precedes the pronoun, while in the bad examples, it follows it. In neither order does the trace c-command the pronoun, on the simplest assumptions about phrase structure. Of course, one could adopt the radically right-branching structures of Pesetsky (1995), where the object of a P does c-command following material, but this will not work for the examples above.

Lasnik & Saito (1991) observe that weak crossover is asymmetric in parasitic gap constructions. In particular, it only appears in the first dependency, and not in the second ("parasitic") one:

(41) (Munn 2001: 374, (9a,c))

a. Who$_1$ did you gossip about t_1 despite his$_1$ mother's having vouched for *pg*?

b. * Who$_1$ did his$_1$ mother gossip about t_1 despite you having vouched for *pg*?

According to Munn (2001), this asymmetry supports a null operator account of parasitic gaps (Chomsky 1986, Nissenbaum 2000). The null operator is basically a pronoun, and its trace is

converted into a resumptive pronoun at LF (following Safir 1996). This somehow enables the pronoun to be bound by the wh-phrase (see Levine & Hukari 2006 for extensive criticism of this account).

What is relevant here is that this asymmetry just follows from the linear account of weak crossover. In (41a), the pronoun follows an A-position occupied by the wh-phrase (the one marked "t_1"), while in (41b), it precedes all of them. Moreover, the linear account predicts that, if the parasitic gap precedes the real gap, then weak crossover should appear in the parasitic dependency and not in the "real" dependency. The null operator analysis predicts the opposite. Levine & Hukari (2006) have tested part of this prediction, namely, the case where the pronoun occurs in the clause with the parasitic gap. They judge it ungrammatical on the bound reading:

(42) a. *?? Who$_1$ did his$_1$ mother's stories about *pg* annoy t_1? (Levine & Hukari 2006: 317, (26))

b. ??* Whose$_1$ work did his$_1$ fan's ideas about *pg* materially improve t_1? (Levine & Hukari 2006: 316, (24))

This is inconsistent with the null operator account, and is only consistent with the linear account. Levine & Hukari (2006) do not present the case where the pronoun occurs in the clause with the "real" gap; that would be something like the following:

(43) a. Who$_1$ did those stories about *pg* lead his$_1$ mother to punish t_1?

b. Whose$_1$ work did a fan's ideas about *pg* lead his$_1$ editor to demand a new version of t_1?

Informal surveys support the prediction of the linear account: (43a–b) are acceptable on the bound reading, or at least are more acceptable than (42a–b).

All data from the literature, then, is consistent with linear order being the important factor in weak crossover rather than surface c-command. To further distinguish between surface c-command and linear order, I constructed the following pairs of examples where the wh-phrase is extracted out of an object NP. On no analysis should the trace of the wh-phrase c-command anything outside of the object NP. Yet there is a clear asymmetry in binding between a pronoun occurring after the gap and one that occurs before it (these contrasts have been verified by an informal survey[8]):

(44) a. Who$_1$ should you never show [pictures of t_1] to their$_1$ parents?

b. * Who$_1$ should their$_1$ parents never be shown [pictures of t_1]?

(45) a. Who$_1$ did you tell [stories about t_1] to their$_1$ boss?

b. * Who$_1$ did their$_1$ boss hear [stories about t_1]?

I conclude that all of the data on weak crossover are inconsistent with surface c-command being the important factor. Rather, linear precedence is what matters. Specifically, an A-position occupied by the wh-phrase must precede an A-position occupied by the pronoun or a phrase containing it.

Weak crossover therefore also provides no motivation for radically right branching VPs in examples like the following:

[8]Out of eight respondents, five agree with the reported contrast (63%). One disagrees and finds the contrast in the opposite direction; one finds them all equally bad; and one finds them all equally good.

(46) Which boy$_1$ did the headmaster talk to *t* in his$_1$ dorm room?

The PP can be adjoined high, as constituency tests tell us, and the wh-phrase can still bind the pronoun as a variable, because the trace of the wh-phrase precedes the pronoun.

4.3 The *Each... the Other* Construction

To my knowledge, no one has systematically investigated the *each... the other* construction to determine whether it truly requires reference to surface c-command.[9] I will not undertake a complete investigation here, but I can give enough examples to draw some conclusions. First, we have already seen in section 3 that *each* can be a possessor of an NP or another dependent of an NP while *the other* is outside of that NP (examples 21b and 23c). *Each* can also occur inside VP while *the other* occurs in a high adjunct (29). Second, modifying examples of variable binding without surface c-command from Barker (2012) to the *each... the other* construction always seems to work:

(47) a. This shows that [the fate of **each** man] was decided by **the other**.

b. When the game ends, [$_{NP}$ the amount of Wealth [$_{CP}$ that **each** player has]] is subtracted from **the other**'s overall score.

It is clear that it is not necessary for *each* to c-command *the other* on the surface, or even phase-command it.

It appears that what is necessary is scope: The scope of *each* must include *the other*. In this way the *each... the other* construction behaves exactly like variable binding. However, there appears to be an even stronger linear precedence requirement on the *each... the other* construction than there is on variable binding. *Each* must precede *the other* on the surface; reconstruction is not allowed:

(48) a. * Which of the other's cars did each man sell?

b. * the brother of the other's that each woman loves the most

c. * The other seems to each girl to be cooler than her.

Examples modeled after the *unless* clauses from Barker (2012) also fail:

(49) a. * Unless the other turns turncoat, each should not have to watch his own back.

b. * Unless the other made a particular choice, each woman died in this universe.
(cf. Each woman died in this universe unless the other made a particular choice.)

In fact, rather than reconstruction undoing movement, movement seems to change licensing in the *each... the other* construction. I find examples like the following online ((50c repeates (21b); the example in (50a) seems to have a typo, a missing *it*, but once this is fixed native speakers judge it to be acceptable):

[9]Jackendoff (1990) cites Dougherty (1970) and Chomsky (1973) as examining this construction, but neither of them provides data that would distinguish surface c-command from any other relation. (It is possible that Jackendoff meant Dougherty (1974), but that work also does not give data on the structural relation that must hold between *each* and *other*.)

(50) a. . . . because from each one's perspective the other is moving and [it] itself is at rest. (https://physics.stackexchange.com/questions/613241/how-to-tell-who-is-experiencing-time-slower-and-who-faster-when-travelling-at-di)

b. And each one's scheme the other wou'd defeat (poem at https://www.rmg.co.uk/stories/blog/national-poetry-day-contribution)

c. . . . imagines two sisters finding each other across timelines — in **each** woman's universe **the other** had died young, . . . (https://locusmag.com/2020/04/karen-burnham-reviews-short-fiction-bcs-strange-horizons-lightspeed-tor-com-and-diabolical-plots/)

In these examples, a phrase has fronted; that phrase contains *each*, while it moves across *the other*. Undoing the movement would make these examples very unacceptable:

(51) a. * The other is moving and it itself is at rest from each one's perspective.

b. * The other would defeat each one's scheme.

c. * The other had died young in each woman's universe.

I conclude that there is a very strong linear precedence requirement such that *each* must precede *the other* on the surface. In addition, *each* must include *the other* in its scope (and *each* can take very wide scope, even out of tensed clauses). What is definitely not required is surface c-command. There is therefore no motivation for a right branching analysis of the VP in an example like the following:

(52) We talked to each boy in the other's dorm room.

The PP can be adjoined high, and the *each. . . the other* construction will still be licensed, because *each* can take scope over the PP and it precedes *the other*.

4.4 Negative Polarity Items

Besides exempt anaphors (see section 2.3), the only example of a syntactic dependency that Larson (2024) presents is NPI licensing. Recall his example:

(53) Mary warned she would speak rarely during the committee visit, and [speak rarely] she did — at any of the meetings. (Larson 2024: 662, (7b))

Larson assumes that the licenser of the NPI (here, *rarely*) must c-command the NPI (here, *any*) on the surface. His radically right branching structure ensures that it does.

We have already seen that there is no surface c-command requirement on NPI licensing. Licensers can be possessors and other dependents of NP while the NPI is outside of that NP (21a, 23b). Here are more examples of possessors (I underline the licenser and boldface the NPI):

(54) a. <u>No</u> one's explanation for that fact has **ever** made **any** sense.

b. <u>Few</u> teams' fans **ever** continue to support them when the team changes cities.

Fronting of a phrase containing a negative item can also feed NPI licensing, for instance of an NPI in subject and object position:

(55) a. * **Anyone** said **anything** about the very clear conflict of interest at <u>no</u> point.

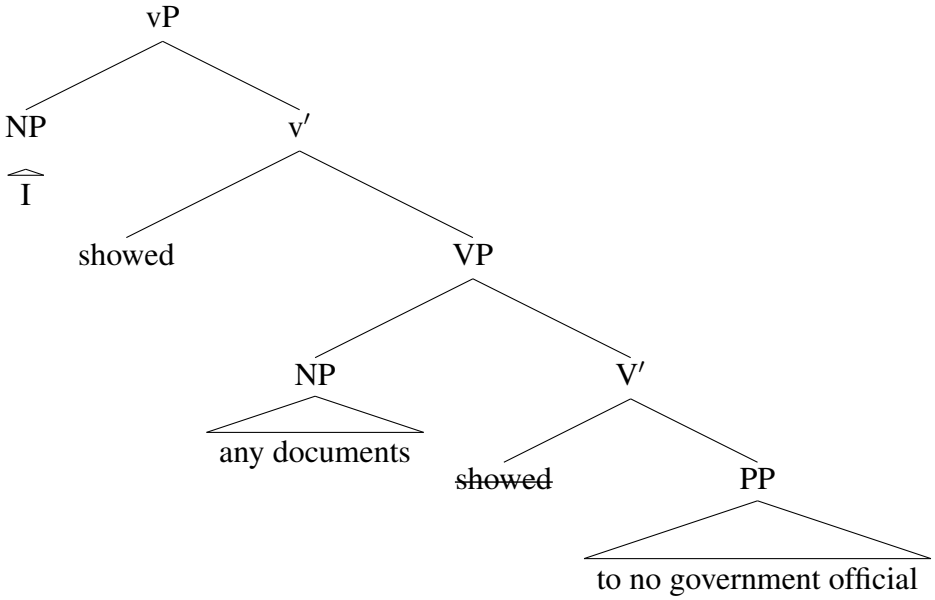
b. [At no point] did **anyone** say **anything** about the very clear conflict of interest.

Since *[at no point]* has moved as a constituent, it must be a constituent, and the negative element within it could not c-command out of that constituent. One could stipulate that PPs do not count for c-command, but the same fronting configuration can be replicated with other types of phrases besides PPs:

(56) [Left unmentioned] was **any** recognition of the Electoral College vote in Georgia and across the nation that affirmed Joe Biden's victory.
(https://www.ajc.com/politics/ossoff-hammers-newt-republicans-oppose-braves-name-change-as-early-voting-starts/IFAAKJAACZH7RPXX6WWK65EFPU/)

The licenser here is *unmentioned*, which does not c-command out of the fronted constituent. One could stipulate that a negative feature can percolate to a dominating node, so that the negative licenser here is the entire constituent *[left unmentioned]*, but allowing this in Larson's radically right branching structures would incorrectly allow backward NPI licensing in an example like the following:

(57) * I showed **any** documents to no government official.



If a negative feature can percolate to *[left unmentioned]* in (56), then it should be able to percolate to the lower V′ in this example. V′ is the sister of the NP containing the NPI. This should be sufficient to license it under a surface c-command condition.

It should be clear that allowing feature percolation in order to maintain a surface c-command condition actually defeats the point. If features can percolate, then there is no reason to expect any given licenser to c-command the NPI that it licenses on the surface.

Hoeksema (2000) cites many examples (many naturally occurring) where there is no surface c-command relation between the licenser and the NPI. For instance, in (58), the verb *need* is an NPI when it has a bare VP complement (as opposed to a *to* infinitive). However, it does not need to be c-commanded by its negative licenser, an object quantifier in (58a):

(58) a. You **need** say no more. (Hoeksema 2000: 131, (39a))

b. * You **need** tell Fred that he is not invited. (Hoeksema 2000: 131, (40))

In contrast, negation in a lower (tensed) clause is not sufficient to license NPI *need* in (58b). What definitely is necessary for NPI licensing is scope, and the scope of negation can be no higher than the (tensed) clause it occurs in (I will say more about scope below). What is definitely not necessary is surface c-command, since *no more* does not c-command *need* in (58a). Note also that Larson's radically right branching VPs will not help in (58a): *No more* is the object of *say*, not the object of *need*, so no copy of *no more* will c-command any copy of *need* even in a radically right-branching structure with VP shells.

I follow Acquaviva (2002) in concluding that NPI licensing is not homogeneous. There is one requirement that all NPIs must meet, which is that they occur in the semantic scope of an appropriate licenser. This is what licenses *need* in (58a): *no more* can take scope over *need*. Negation in a lower tensed clause cannot take scope over a higher clause in (58b). (I will make a precise proposal about negative scope below.)

In addition to scope licensing, some NPIs must meet a morphological licensing condition. Acquaviva (2002) suggests that this licensing condition is linear precedence. Not all NPIs need to meet the morphological licensing condition of linear precedence. *Need* does not need to, for instance; it only requires semantic scope. This is why (58a) is acceptable. Expressions with *any* are among those that need to meet the morphological licensing condition. This is what is behind such strong contrasts as the following:

(59) a. No one said **anything**.
b. * **Anyone** said nothing.

(60) (Barss & Lasnik 1986: 350, (18–19))
a. I gave no one **anything**.
b. * I gave **anyone** nothing.

The morphological licenser is a negative element like *no*. This negative element must precede the NPI that requires morphological licensing.

The kinds of contrasts (59–60) are what motivated a surface c-command requirement. However, as we have seen, a surface c-command condition is not met in (54a–b), (55b), or (56), whereas a linear precedence requirement is. I will therefore adopt the Acquaviva (2002) proposal regarding scope licensing and morphological licensing, where the latter requires linear precedence.

Further examples motivate linear precedence as the licensing condition on those NPIs that require morphological licensing. In all cases, where an NPI is within the scope of its licenser and it is preceded by its licenser, that NPI is licensed. Additionally, in many cases (within the VP in particular), surface linear precedence seems to be *necessary*. Changing the word order changes the licensing direction, as examples like the following show (involving heavy shift of an NP across a PP):

(61) a. I will give none of my Magic the Gathering trading cards to **anyone**.
b. * I will give **any** of my Magic the Gathering trading cards to no one.
c. I will give to no one **any** of my Magic the Gathering trading cards.
d. * I will give to **anyone** none of my Magic the Gathering trading cards.

Reversing the order of two PPs also changes the licensing direction:

(62) a. These networks are subject to few regulations at **any** level of government.
b. * These networks are subject to **any** regulations at few levels of government.
c. These networks are subject at few levels of government to **any** regulatory oversight.
d. * These networks are subject at **any** level of government to few regulations.

Fronting of an NP also changes licensing:

(63) a. I will offer no one **any** of my dual lands cards.
b. * I will offer **anyone** not one of my dual lands cards.
c. Not one of my dual lands cards will I offer **anyone**.
d. * **Any** of my dual lands cards <will> I <will> offer no one.

((63d) is unacceptable regardless of where the auxiliary occurs.)

I conclude, with Acquaviva (2002), that linear precedence is what is required for NPIs that need morphological licensing, not surface c-command.

As with variable binding, there are some cases where linear precedence does not hold on the surface. These seem to fall into two categories. The first includes subjects and preposed phrases. In (64) an NPI that is embedded inside a preposed phrase can be licensed by a licenser to its right:

(64) a. A solution that is **any** better, I have not been able to find *t*. (Hoeksema 2000: 130, (35a))
b. A fireman who has **ever** used this equipment, we don't have *t* available right now. (Hoeksema 2000: 130, (35b))

I assume that linear precedence holds once the preposed phrase is reconstructed (to the position marked "*t*"). Note that reconstruction is not generally allowed: A preposed phrase containing the licenser is not able to reconstruct in order to feed licensing; see (61d), which after reconstruction would be identical to (61a). The preposed phrase must contain the NPI, not the licenser. Moreover, the NPI must be embedded: see (63d), where the NPI is the head of the moved constituent. NPIs generally cannot be preposed unless they are embedded:

(65) a. * Anyone, I don't like.
b. * Anywhere, she won't go.
c. * Ever I haven't heard such rubbish!

It is not clear at this point why the NPI must be embedded inside the preposed phrase in order for the NPI to be licensed under reconstruction. Vu (2020) suggests that the problem is not reconstruction, but fronting: Fronted phrases prefer to be referential, and so NPIs do not front well. Acquaviva (2002) makes a different suggestion regarding NPIs inside subjects, next, which could also be applied to NPIs inside fronted phrases (but I will argue against it).

An NPI can also occur inside a subject while its licenser occurs to the right of the subject:

(66) a. [A doctor who knew **anything** about acupuncture] was not available. (Linebarger 1980)
b. [A good solution to **any** of these problems] does not exist. (Hoeksema 2000: 136, (63a))

Acquaviva (2002) proposes that the morphological licenser in these cases is the existential quantifier at the left edge of the subject (while the scope licenser is negation). As with preposed phrases, an NPI in a subject is only licensed if overt material precedes it within the subject (i.e., it is embedded):

(67) (Acquaviva 2002: (19), (20a–b))
  a. * **Anything** else was not available.
  b. * **Any** tickets to the afternoon concerts were not available.
  c. * **Any** DOCTOR was not available.

If an existential quantifier at the left edge of an NP could be an NPI licenser, however, then we would incorrectly expect NPIs to be licensed embedded inside an NP object, too:

(68) a. * I showed a solution that was **any** better to no physics professor.
  b. * I sent a fireman who had **ever** used this equipment to no five-alarm fire.
  c. * I recommended a doctor who knew **anything** about acupuncture to no spinal fusion patient.

It appears that NPIs inside NPs that precede a negative element are only acceptable if that NP is a *subject*. Since subjects are widely assumed to have undergone movement in English, in contrast with objects, I take this to indicate that such NPIs are licensed under reconstruction, exactly as with the fronted phrases in (64). This is what de Swart (1998) proposes (see also Sauerland & Elbourne 2002). Reconstruction is further indicated by the necessity of the existential subject to take scope below *likely* in the following examples:

(69) a. A doctor with **any** reputation is likely not to be available. (Sauerland & Elbourne 2002: (10a))
  b. A politician who has **any** integrity is not likely to address John's constituency. *$\exists$ >likely, likely> $\exists$ (Vu 2020: 50, (13))

Moreover, if reconstruction would not put the NPI to the right of the licenser, the sentence is deviant:

(70) a. * A solution that is **any** better was shown *t* to no physics professor.
  b. * A fireman who had **ever** used this equipment was sent *t* to no five-alarm fire.

I conclude that Acquaviva (2002) is incorrect, and NPIs embedded inside subjects are not licensed by an existential quantifier at the left edge of the subject. All of the evidence indicates that NPIs embedded inside subjects are licensed via reconstruction. They reconstruct to a position preceded by their licenser. This finding further supports the contention that NPIs embedded inside preposed phrases are also licensed via reconstruction. This is confirmed by examples where reconstruction would not put the NPI in a position to the right of its licenser:

(71) a. * A solution that is **any** better, I have shown *t* to no physics professor.
  (cf. A solution that is any better, no physics professor has been able to find.)
  b. * A fireman who had **ever** used this equipment, we sent *t* to no five alarm fire.

Explaining the conditions on such licensing via reconstruction is not so important here. I leave it as an observed fact that the NPI must be embedded within the subject or preposed phrase. The important part here is that, once the moved phrase reconstructs to its base position, it is preceded by its licenser.

The second class of exceptions to linear precedence involves *only* as the licenser. *Only* appears to be able to license an NPI to its left:

(72) A resemblance between genitive and relative marking is even reconstructible for Indo-European, though it is rare in the Indo-European descendant languages, appearing with **any** regularity only in Iranian. (Hoeksema 2000: 139, (75))

(73) (Branigan 1992: 49, (53a,c))

a. John paints pictures **at all** well only rarely.

b. Jay tells jokes with **any** gusto only occasionally.

(On the face of it, the examples in (73) are incompatible with the radically right branching structures that Larson (2024) proposes for VPs.)

In (72) and (73a–b), *only* is part of an adjunct and it licenses an NPI in another adjunct to its left. I find that *only* in an adjunct can license an argument NPI to its left, as well:

(74) a. Some sources say that Charles granted Grifo **anything at all** only at the insistence of Swanahild. (https://www.8thcentury.com/the-blood-court-judge-carloman-presiding/)

b. They accomplish **anything at all** only with direct and constant supervision. (https://www.coursehero.com/file/p6pcoh7/Leadership-is-a-reciprocal-influence-process-Leaders-not-only-influence/)

Only can also license *ever* to its left (I find numerous examples like this online):

(75) Since the start of my business I have **ever** only cared about my customers and the community. (https://x.com/NEROPOlSON/status/1996391276841980397)

I will not attempt to explain the exceptionality of *only* as a licenser, but will leave it as an observed exception. Unlike all other licensers, it can license an NPI to its left.

As can be seen, NPI licensing is not homogeneous. There are NPIs like *need* that only need to be in the semantic scope of their licenser. There are other NPIs that require a morphological licenser in addition. This morphological licensing requires linear precedence. For the most part, this precedence must hold on the surface, except that subjects and preposed phrases that contain an embedded NPI can reconstruct for licensing. Additionally, *only* can license elements to its left.

One might wonder if we can replace linear order with c-command once we recognize the complexities of NPIs like *need*, reconstruction of subjects and preposed phrases, and leftward licensing by *only*. The answer is no, because of cases gone through above where the licenser precedes but does not c-command the NPI: (54a–b), (55b), (56). And, to reiterate, accounting for these by allowing feature percolation removes any expectation for surface c-command to be necessary, and therefore it also removes the motivation for radically right branching VPs.

Let me now return to the issue of scope licensing, and what the scope of a negative element is. We have seen that the scope of negation seems to be limited to a finite clause in (58b). It can apparently be even more limited than that; in (30a–c), repeated below, a negative object inside the VP cannot take scope over a high adjunct presumably adjoined to TP:

(76) a. * So many people returned none of their bottles that **any** deposits were refunded.
b. * She will go out with no one with **any** of her relatives hanging around all the time.
c. * They will fire no one, whether **anyone** likes it or not.

It should be noted that sentential negation also fails to license an NPI in these high adjuncts:

(77) a. * So many people didn't return their bottles that **any** deposits were refunded.
b. * She won't go out with boys with **any** of her relatives hanging around all the time.
c. * They won't fire Bill, whether **anyone** likes it or not.

I suggest that negative elements like *no* are not quantifiers that undergo QR. Rather, they are existential elements that Agree (Chomsky 2000) with an abstract negative operator that is located roughly where sentential negation appears (Penka 2011). This explains why the scope of a negative element is essentially that of sentential negation occurring in the same clause. It also explains why fronting of a constituent containing a negative element feeds NPI licensing, and in fact is able to license an NPI in subject position, where NPIs are not licensed by sentential negation:

(78) a. * **Anyone** didn't say **anything** about the very clear conflict of interest.
b. [At no point] did **anyone** say **anything** about the very clear conflict of interest.

The abstract negation that Agrees with *no* in (78b) must be higher than it in order to Agree with it. (I will leave open whether Agree requires c-command, precedence and phase-command, or some other relation; in any case, it must be higher in the tree than the subject if it Agrees with something to the left of the subject.) Negation therefore takes scope over the subject in (78b), while the morphological licenser, *no*, precedes the subject. (I assume that the abstract negation being higher, in CP, is what triggers subject-auxiliary inversion.) In (78a), in contrast, the negative operator does not precede the subject NPI, regardless of whether it can take scope over it.

We also explain why fronting of a negative phrase can cross clause boundaries and still license a subject NPI in the higher clause:

(79) Not a word I said would **anyone** believe that I meant.

This is overt A-bar movement, which can be long-distance. It is not QR of a negative quantifier. What takes scope is the abstract negation, which is base-generated in the matrix clause. It has to be higher than *not* on the surface, which puts it in a position where it takes scope over *anyone* (and *not* precedes *anyone*).

We also explain why phrases containing negative elements cannot reconstruct for licensing. Example (80b) repeats example (61d):

(80) a. I will give none of my Magic the Gathering trading cards to **anyone**.
b. * I will give to **anyone** none of my Magic the Gathering trading cards.

I assume that reconstruction is motivated by semantic interpretation (Fox 1995). If *none* is just an existential, then reconstructing it in (80b) will have no effect (the two orderings of two existentials are equivalent). There is therefore no motivation for reconstruction in (80b), and so the morphological licensing condition cannot be met (scope licensing is satisfied, by the abstract negation). In

contrast, a phrase containing an NPI can independently reconstruct for scope, putting it to the right of its morphological licenser.

The only remaining task is to explain the restrictions on the Agree relation. We have already seen that possessors inside NPs can license NPIs outside of the containing NP, so the abstract clausal negation must be able to Agree with a possessor. The abstract negation also seems to be able to agree with postnominal material inside an NP, at least sometimes:[10]

(81) ? [The author of no linguistics article] **ever** wants it to go unread. (Kayne 1994: 25)

Acquaviva (2002) gives the following, structurally similar example, but I find it unacceptable:

(82) [$_{NP}$ Fathers [$_{PP}$ of few sons]] have **any** fun. (Acquaviva 2002: (30a))

However, similar examples are better:

(83) Friends of few radical leftists would **ever** betray them to the government.

We also saw that the abstract negation can Agree into a PP (78b) and into a VP or AP constituent (56). It thus appears that Agree is constrained only by CP boundaries. A negative element inside a finite clause does not seem to be able to license an NPI outside that clause:[11]

(84) a. * The author who wrote no linguistics article **ever** wants to be snubbed.
b. * Friends who few people trust would **ever** turn their backs on them.
c. * That she didn't leave surprised **anyone**.

It can be seen that NPIs behave differently in this respect from quantifiers like *each*, which can take scope out of finite clauses.

To sum up, the conditions on NPI licensing are complex, and not all NPIs behave the same. Nor do all licensers (witness the exceptionality of *only*). Those NPIs that require morphological licensing require that they be preceded by their licenser. They also have to fall within the scope of an appropriate operator, which is often an abstract negation that Agrees with an overt negative element. Agree can cross most phrases but is blocked by CP boundaries.

The takeaway for the rest of this paper (section 5 in particular) is that NPI licensing is largely a matter of linear order, not surface c-command. Within the VP, the morphological licenser is

[10]This means that Agree is not constrained by phase boundaries. It has always been clear that Agree can cross the vP phase boundary. The data here indicate that it can cross the NP phase boundary, as well. In cases of phi-feature agreement, the apparent blocking effect of NP is probably due to featural minimality: The containing NP will always be a closer target than any NP within it. When Agree is with something like a negative feature, there is no blocking effect, since the containing NP does not have this feature.

[11]A reviewer asks why (ia–b) are not acceptable:

(i) a. * Books read by no one, I gave to anyone.
b. * Books read by no one were given to anyone.
c. * I gave books read by no one to anyone.

I note that (ic) is similarly unacceptable. I tentatively assume that the reduced relative clause is also a barrier to Agree, the same as a finite relative clause. There could also be other factors at work, since **Books by no one surprised anyone* is also unacceptable (in my judgment). Whatever factors these are, they also render (82) unacceptable for speakers like me who reject it.

required to precede the NPI, so long as we do not use *only* as a licenser. Going back to Larson's example in (53), there is no reason to think that the licenser *rarely* needs to c-commands the NPI *any*. It precedes it and (an abstract negation) is able to take scope over it, which is sufficient to license it.

4.5 Superiority

Superiority is also often thought to involve surface c-command. The claim is that, in a multiple question in English, only the structurally higher wh-phrase can undergo movement to Spec-CP (Kuno & Robinson 1972, Chomsky 1973):[12]

(85) a. Who should see what?
b. * What should who see?

Surface c-command is relevant because the restriction is often stated in such a way that a wh-phrase cannot cross another wh-phrase that c-commands it.

The nature of this condition is not clear at all. Clifton et al. (2006) find numerous attested violations of superiority online, including the very one in (85b) (their (14c)). Some languages display no superiority effects (see for instance Bhattacharya & Simpson 2007). Various non-structural factors have also been claimed to play a role. See Pesetsky (1987) on D-linking, and Clifton et al. (2006) on stress clash. Bhattacharya & Simpson (2007) argue that factors like animacy, thematic relations, and prosody are actually more important than c-command. There is also a processing account of superiority, according to which acceptability tracks the difficulty of resolving a long-distance dependency (Arnon et al. 2006, Hofmeister et al. 2007). In this account, longer dependencies are more difficult than shorter ones (hence, (85a) is preferred to (85b)), and properties of the wh-phrase filler and any intervening wh-phrase also affect the ease of processing the dependency.

I cannot possibly address all of these factors here. What I will attempt to do is answer the following question: If there is a role for structure in superiority, is it based on c-command, or linear order? C-command is confounded with linear order in almost all examples of multiple questions in English in the literature. However, Hewett (2025) argues that linear order is what matters, rather than c-command, and I will show with additional evidence that this seems to be correct (with one caveat to be brought up below).[13]

First, the following paradigm suggests that linear order is the relevant factor:[14]

(86) a. Who should I talk to *t* about what?
b. * What should I talk to who about *t*?
(87) a. What should I talk about *t* with who?
b. * Who should I talk about what with *t*?

[12] All judgments in this subsection are meant to be comparative, not absolute. I present all sentences in pairs. If one is marked unacceptable and the other acceptable, that is meant to mean that one is judged better than the other, all other things being equal.

[13] Jackendoff (1990) also argues that superiority involves linear order rather than c-command, but all of his examples use *which*-phrases, which are known to be able to violate superiority.

[14] I find examples like (86a) and (86c) online, but no relevant examples of (86b). I do find two relevant examples of (86d). (Searches performed 12/14/2025, search string an infinitive: "who to talk to about what," etc.) As stated above, there are other factors involved in multiple questions that can overcome linear order.

This paradigm was already given by Jackendoff (1990: 433, (25a–d)), but using *which* phrases, which I am avoiding here. Part of the paradigm is given in Larson 2014: 317, (48d), McInnerney 2022: 285, (147), Hewett 2025: (108a). In this paradigm, two PP arguments of the verb can be reordered. In both orderings, moving the complement of the first P is more acceptable than moving the complement of the second. (Proponents of radically right-branching structures would say that in examples like these, c-command is uniformly rightward, so this paradigm may not be convincing to some.)

Second, it is possible to construct examples where the first wh-phrase is a dependent of an object NP, while the second is the complement of a (selected) preposition. In such cases, neither wh-phrase would c-command the other, in any analysis. In these cases, I find that the linearly first one prefers to be the one that undergoes overt movement:[15]

(88) a. Who did you show [a picture of *t*] to who?
b. * Who did you show [a picture of who] to *t*?

(89) a. Who did you tell [stories about *t*] to who?
b. * Who did you tell [stories about who] to *t*?

This is inconsistent with c-command being the relevant factor, since the base position of the first wh-phrase does not c-command the second wh-phrase (nor does the second c-command the first). It is consistent with linear order being the relevant factor.

Hewett (2025) gives a similar contrast, where both wh-phrases originate within NPs:

(90) (Hewett 2025: note 60, (ic,d))
a. What did you introduce [the inventor of *t*] to [the promoter of what]?
b. ?* What did you introduce [the inventor of what] to [the promoter of *t*]?

I do not find these to be particularly natural multiple questions, but I believe the contrast does go in the indicated direction.

There is one set of data that appears to be inconsistent with both linear order and c-command. The adjunct wh-phrases *where* and *when* can cross an object wh-phrase. Kuno & Robinson (1972) give the following pairs as equally grammatical:

(91) (Kuno & Robinson 1972: 474, (3-4a))
a. Where did you buy what?
b. What did you buy where?

(92) (Kuno & Robinson 1972: 474, (3-4b))
a. When did you buy what?
b. What did you buy when?

[15] In an informal survey with seven respondents, four agree with the presented contrast (57%), two find the contrast in the other direction, and one finds no contrast.

Similar examples abound in the literature, and I find numerous attested examples of both *where to buy what* and *what to buy where* online (searches performed 1/9/2025). This optionality seems to be well founded empirically.[16]

Note that *where* and *when* must both follow the object if the subject is the other wh-phrase:

(93) a. Who bought a car where/when?
b. * Who bought where/when a car?

The answer to *where* and *when* also appears after the NP object:

(94) a. Where did they buy what?
b. They bought the car in Honolulu, and the motorcycle in Las Vegas.

(95) a. When did they buy what?
b. They bought the car at some point last year, and the motorcycle at some point this year.

This appears to be incompatible with linear order being the relevant factor. It is also incompatible with c-command being the relevant factor, since either the object should c-command the adjunct, or the adjunct should c-command the object. (In Larson's (2024) radically right branching structures, only the object is predicted to be able to move in (91–92), so these data are also incompatible with radically right-branching structures.) It is possible that these adjuncts are structurally ambiguous, and can either c-command an object or be c-commanded by one. It is difficult to show whether this is correct. However, I believe a better explanation for the optionality is available.

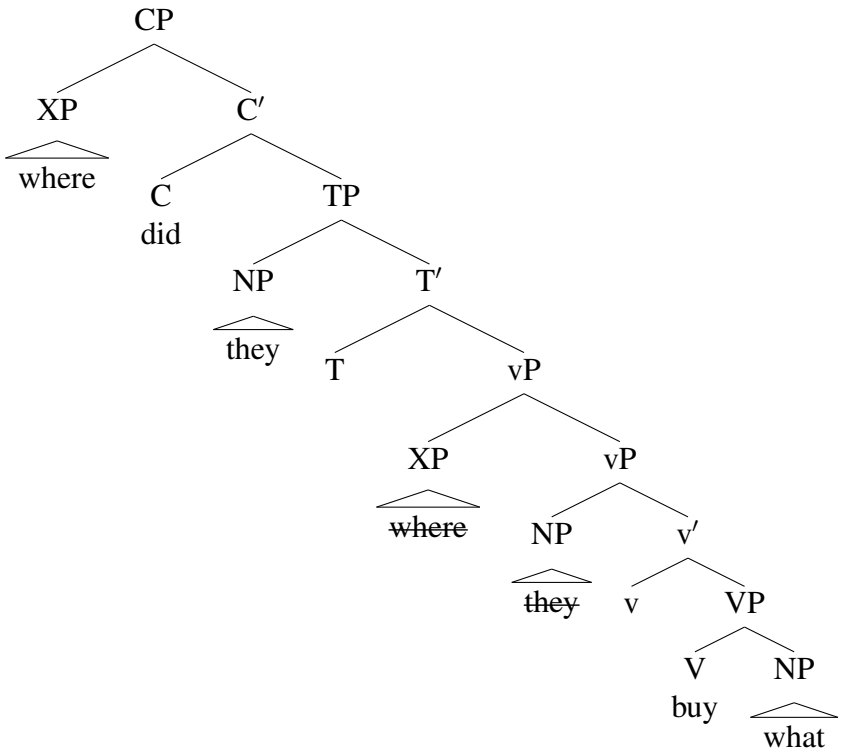
Discussing different facts, Bruening (2014: 362) proposes that, while fronted arguments must reconstruct to their base (thematic) position, fronted adjuncts only need to reconstruct to the edge of the phase where they are interpreted:

(96) Adjunct Reconstruction Principle: An adjunct must reconstruct to the edge of the phase where it is semantically interpreted. (Bruening 2014: 362, (76))

This means that, in an example like *Where did they buy what?*, the adjunct wh-phrase *where* is represented only in Spec-CP and in Spec-vP, it is not represented in the post-object position:

[16] A reviewer claims to have the judgment that, when the object wh-phrase is the one that moves, D-linking is involved (in some unspecified way). I do not have this judgment, and I do not find any support for it in examples found online, either. There are many websites with examples of very general questions like the following, where there is no pre-established list of things or places: "How do you sort out what to buy where with so many choices?" (https://frugalhausfrau.com/better-living-for-less12-strategies-to-keep-your-food-costs-low-quality-high/know-your-suppliers-their-products-and-their-prices/). I believe that the two alternatives are equivalent semantically and pragmatically.

(97)



In this representation, the (interpreted) trace of *where* precedes *what*, and so this satisfies the superiority condition. Moving *what* instead of *where* also satisfies it, since in that case the trace of *what* precedes *where*. Hence, both options are acceptable.

Hewett (2025) notes that when *where* is forced to have a representation after the object, as in the following pair, only the object wh-phrase can move:

(98) (Hewett 2025: (110))
- a. What did you eat *t* near where?
- b. * Where did you eat what near *t*

This makes sense in the analysis just proposed: The presence of *near* forces *where* to reconstruct to a position after *near* (because *where* is an argument of *near*), and so (98b) violates the linear-order-based superiority condition.

I conclude that, modulo all of the complications inherent in superiority judgments, it is linear order that matters, not surface c-command. Superiority therefore provides no motivation for a right-branching analysis of examples like the following:

(99)
- a. What did you give *t* to who?
- b. * Who did you give what to *t*?

Since superiority is about linear order and not c-command, the PP can be high on the right in examples like these.

Before leaving the empirical phenomena, I note that Hewett (2025) argues that intervention in A-movement in the passive is also about linear order and not c-command. Hewett's generalization is that, in the passive, it is always the leftmost potential undergoer of A-movement that becomes

the subject. Hewett's arguments converge with those of this section to show that the empirical phenomena that are supposed to involve surface c-command actually do not. Linear precedence plays a very large role in all of them.[17]

4.6 Accounting for C-Command Paradoxes

None of the syntactic dependencies that are supposed to be defined in terms of surface c-command actually refer to surface c-command. Variable binding requires scope and (reconstructed) linear precedence. Weak crossover refers to linear precedence. The *each... the other* construction requires scope and strict linear precedence. Negative polarity items are quite complex, but for the most part they require scope and linear precedence. Superiority involves a number of factors, but to the extent that there is a structural condition, it involves linear precedence rather than surface c-command.

Since the Binding Conditions refer to phase-command and linear precedence, we can now understand why they would give different results from the other syntactic dependencies, none of which refer to phase-command. In the possessor paradox, NP is a phasal node, so the possessor does not phase-command outside of the NP. This means the possessor cannot antecede a reflexive, but it can antecede a pronoun or an R-expression (20a–20b). In contrast, the scope of quantificational elements can cross NP boundaries, so a quantifier in possessor position can bind a pronoun as a variable. An abstract negation can also Agree with a negative possessor and so a negative possessor can license an NPI (21a). *Each* as a possessor can license *the other* outside of the possessed NP (21b), because it can take scope over it and precedes it.

Other dependents of N behave in the same way, since NP is again a phasal node. Any dependent of N will not phase-command outside of the containing NP, so dependents of N cannot antecede reflexives but they can antecede pronouns or R-expressions (22). In contrast, a quantifier can take scope outside of a containing NP. So we see dependents of NPs successfully participating in variable binding (23a) and the *each... the other* construction (23c). The abstract negation can also Agree with some postnominal elements, and so postnominal dependents of N are able to license an NPI (23b). In (44a) and (45a), we also saw that a wh-phrase extracted from a post-nominal position could bind a pronoun as a variable without giving rise to weak crossover.

In the high adjunct case, there is a phasal node, vP, that dominates the object but does not dominate the high adjunct (see the tree in (26)). The object can therefore be a pronoun covalued with an R-expression inside the high adjunct, without violating Binding Condition C (24). A quantified object, however, can take scope over the high adjunct, depending on what it is; *each* and wh-phrases can easily take scope over the adjunct, but the abstract negation does not, and so we see NPI licensing diverging from variable binding, weak crossover, and the *each... the other* construction (30 vs. 27, 28, 29).

Since negative elements are not quantifiers like *each* and do not undergo QR like them, we should expect to see NPI licensing being more restricted than variable binding in other cases, as well. Indeed this is true. We saw that a quantifier could bind a variable out of a tensed relative clause inside an NP (repeated in (100a)). This is not a possible configuration for NPI licensing (100b), since the abstract negation cannot Agree with a negative indefinite across a clause boundary

[17] Hewett (2025) does argue that parasitic gap licensing is a genuine test for c-command. Specifically, the real gap cannot c-command the parasitic gap. I will not address here the question of whether this is accurate.

(we saw similar examples in (84)):

(100) a. It ended and [$_{NP}$ the amount of Wealth [$_{CP}$ that each$_1$ person had]] was added to their$_1$ overall score. (Barker 2012: 624, (34a))

b. * When the game ends, [$_{NP}$ the cards [$_{CP}$ that no one has taken]] are added to **anyone**'s score.

In other cases of tensed clauses, we also see variable binding and NPI licensing diverging:

(101) a. But the actual thinking seems to be [that each$_1$ person owns his own body], and that he$_1$ may not alienate his own body, by selling it,... (Barker 2012: 624, (34b))

b. But the actual thinking seems to be [that no one owns another's body], and that **anyone** may sell it. (free choice interpretation only)

This is expected on the view where syntactic dependencies are not homogeneous, but it is a paradox again on the view that all syntactic dependencies require surface c-command.

As a matter of fact, such paradoxes will arise between any two syntactic dependencies, since, as we have seen, the conditions on each are unique. We have already seen the Binding Conditions diverge from all of the others. NPI licensing diverges from variable binding, weak crossover, and the *each... the other* construction, as just shown. Superiority differs from all of them with locative and temporal adjuncts, as shown in section 4.5. The strict linear precedence requirement on the *each... the other* construction distinguishes it from variable binding, as was shown in section 4.3. In other words, take any two syntactic dependencies, and you will encounter a paradox in some syntactic configuration, if you believe that they all refer to surface c-command.

The only possible conclusion is that these syntactic dependencies do not refer to surface c-command. The paradoxes disappear once the conditions on each are understood.

4.7 Back to Phrase Structure Paradoxes

Once the conditions on each syntactic dependency are understood, phrase structure paradoxes disappear, as well. This was shown for the Binding Conditions in section 2.1. I repeat the example of VP ellipsis below:

(102) * Abby saw them$_1$ in my office; she didn't — in [Jane and Max]$_1$'s office.

The PP can be adjoined high, outside of the elided constituent, and still trigger a Binding Condition C violation, so long as every phasal node that dominates the pronoun also dominates the R-expression. See the tree in (9).

Section 2.1 also resolved the paradox of PPs. PPs can be constituents, while the complement of the P phase-commands out of the PP. PPs are not phasal nodes (see Bruening 2014 for justification). Quantifiers can also easily take scope out of PPs, and the abstract negation can Agree into a PP, so we see PPs being transparent for all syntactic dependencies.

Turning to NPI licensing combined with stranding in VP preposing, recall Larson's example:

(103) Mary warned she would speak rarely during the committee visit, and [speak rarely] she did — at any of the meetings. (Larson 2024: 662, (7b))

The stranded PP can be high, outside of the constituent that fronts, and the NPI can still be licensed. *Rarely* just needs to precede the NPI, which it does, and the abstract negation needs to be able to take scope over it, which it can. (Note that VP preposing changes neither precedence nor the ability of abstract negation to take scope.)

Thus, resolving the c-command paradoxes by giving up surface c-command also resolves phrase structure paradoxes. If none of the syntactic dependencies involve surface c-command, then there are no paradoxes. All of the data are consistent. Larson's (2024) proposal resolves one particular phrase structure paradox, but it has nothing to say about others (like the PP paradox) and it runs up against all of the c-command paradoxes illustrated here.

5 Adverb Scope *Again*

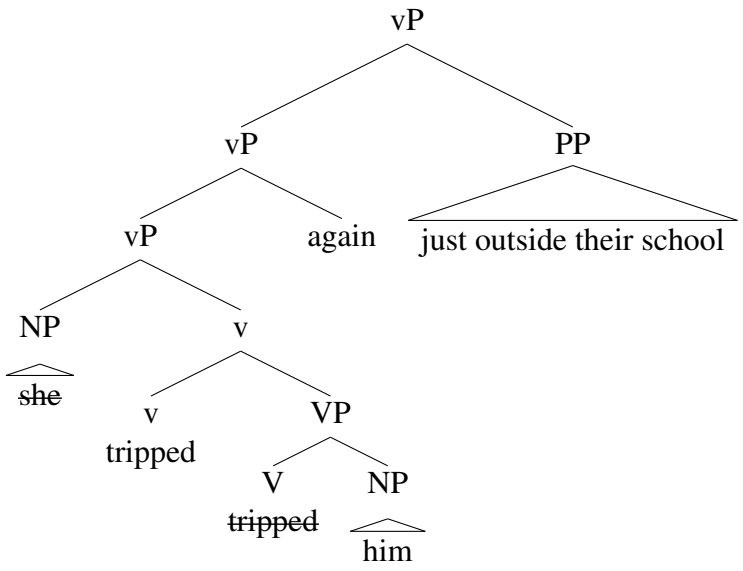
I now turn away from c-command paradoxes to other issues with the proposal in Larson (2024). In this section I show that it is not tenable to analyze all adjuncts as adjoining low. In Larson's (2024) radically right branching structures, adjuncts merge low in the VP, and they get lower as they go rightward. This contrasts with views where adjuncts adjoin higher than objects, and get higher as they go rightward (as in the comparison analysis here, that of Bruening 2014). Larson (2024) refers to his earlier work (Larson 2004) which, he claims, shows that apparent scope effects of quantificational adverbs are consistent with the "rightward is lower" view. However, Larson (2004) only talks about the adverbs *twice* and *intentionally* (in response to Andrews 1983). There are other adverbs that have been argued to be truly scopal, like *again*.

Bale (2007) argues extensively that the scope of *again* is what it adjoins to (its sister). Its at-issue meaning is just an identity predicate, but it adds a presupposition to the effect that an eventuality of the type described by its sister held before. Importantly, when *again* is adjoined to the right of VP material, it takes everything to its left as its scope (what it presupposes), but excludes material to its right. In the following example, Esme previously tripped George, but not outside their school:

(104) I think Esme has a crush on George but she expresses it in the oddest way. For example, last week Esme tripped George in the park. Then just yesterday, [she tripped him] **again** just outside their school. (Bale 2007: 457–458, (18))

This is consistent with *again* adjoined to vP, with *just outside their school* adjoined above that:

(105)



(I assume that the subject moves to Spec-TP, but this movement does not take it outside the scope of *again*; see Asami & Bruening 2025.)

Importantly, Bale (2007) shows that what is to the left of right-adjoined *again* is always within its scope (and is therefore presupposed), while what is to its right is always outside its scope (and therefore can fail to be presupposed):[18]

(106) (Bale 2007: 459, (21))

a. Two weeks ago, I met Esme at her house on a Wednesday. At that time, we planned to meet the following week. So . . .

b. I met her again in Jeanne-Mance Park on a Tuesday.

c. # I met her in Jeanne-Mance Park again on a Tuesday.

d. # I met her in Jeanne-Mance Park on a Tuesday again.

(107) (Bale 2007: 460, (22))

a. Two weeks ago, I met Esme at her house on a Wednesday. At that time, we planned to meet the following week. So . . .

b. I met her at her house again on a Tuesday.

c. I met her at her house on a Wednesday again.

d. # I met her at her house on a Tuesday again.

[18] A reviewer points out that material to the right of *again* does not need to be contrastive. It can in fact be given:

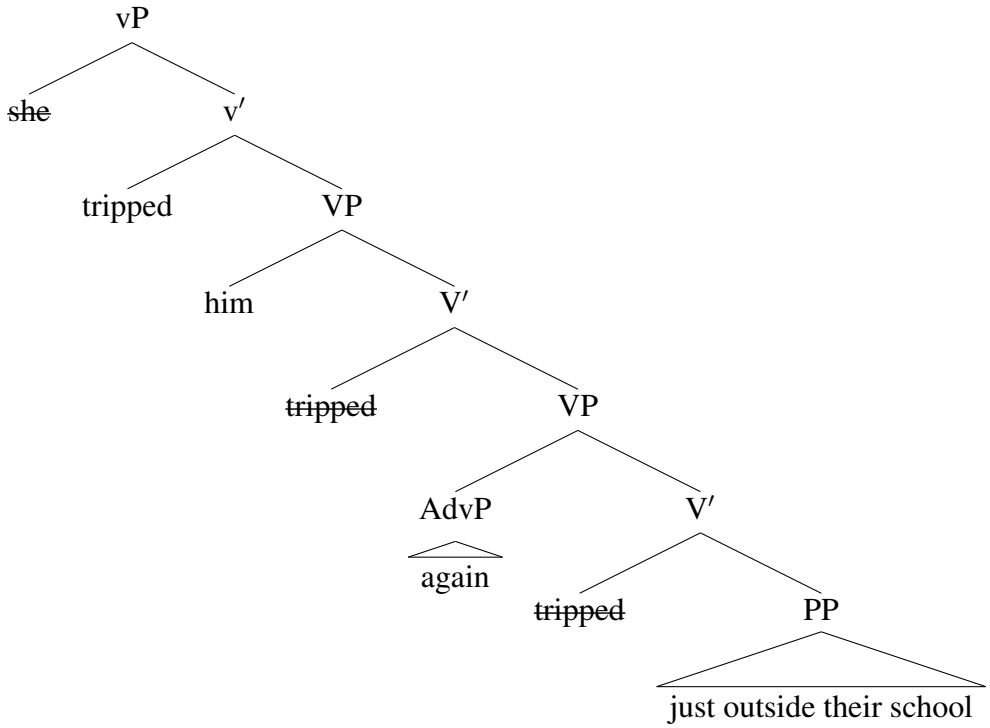
(i) a. I think Esme has a crush on George but she expresses it in the oddest way. For example, last week Esme tripped George in the park. Then just yesterday, she tripped him again in the park.

b. Two weeks ago, I met Esme at her house on a Wednesday. At that time, we planned to meet the following week. So, I met her at her house again on a Wednesday.

In all cases, what *again* presupposes is the material contained within its sister. In these examples, *in the park* and *on a Wednesday* are not part of *again*'s presupposition. The point is that material to the right of *again* can fail to be presupposed, not that it must.

In Larson's radically right branching structures, the example in (104) would presumably have the following structure:

(108)



The first point to make is that Larson has to give up scope being sisterhood. This is in direct conflict with his claim that c-command (which is based on sisterhood) is the most important relation in syntax. That is, in order to maintain that c-command holds between elements in the VP, he has to give up the simplest account of scope, where elements take scope over what they merge with. I take this to be a major strike against this account, as it undermines its conceptual motivation entirely.

Moreover, *again* can also adjoin on the left, in which case its scope is the material to its right:

(109) a. Again Esme didn't hit Harry. (negation must be included in the presuppostion; Bale 2007: 459, (19))

b. On Tuesday, Esme tripped Seymour. On Wednesday, she AGAIN tripped Seymour!

c. Esme and Seymour like to play sports in George's backyard. For example, last week Seymour played badminton in his backyard. Then just yesterday Esme played soccer, AGAIN in George's backyard. (Bale 2007: 456, (16))

On the view that right-adjoining *again* adjoins high on the right, as in (105), we have a uniform account of the scope of *again*: Its scope is its sister, or what it has adjoined to, regardless of its directionality. On Larson's radically right branching analysis, left-adjoining and right-adjoining *again* would have to take scope differently.

The second point is that the analysis of apparent adverb scope in Larson (2004) will not work for *again*. Larson (2004) proposes that apparent scope is actually due to the structured focus-background partition of a sentence with focus. Following von Stechow (1991), Krifka (1992), Herburger (2000), Larson (2004) divides the proposition into a background and a focus. He claims

that the focus is typically the most deeply embedded constituent. Consider the following examples from Andrews (1983):

(110) (Andrews 1983: 695, (1a–b))

a. John knocked on the door intentionally twice.

b. John knocked on the door twice intentionally.

According to Larson (2004), the final adverb is what is focused, while the rest is the background. For (110a), this partitions into a background of *John knocked on the door intentionally* and a focus of *twice*, which yields a meaning where John's intentional knockings on the door were two in number. For (110b), the background is *John knocked on the door twice* and the focus is *intentionally*, which yields a meaning where John's two knockings on the door were intentional. Thus, Larson (2004) captures the apparent effect of adverb scope in a radically right branching structure by referring to focus/background partition rather than scope.

This initially appears promising for *again*. In (108), the lowest constituent, the PP, would be the focus, while the rest would be the background. One could say that the scope of *again* is the background (minus *again*).

There are two problems with this. The first is cases where there are multiple constituents to the right of *again*, as in (106b). If focus falls on the most deeply embedded constituent, while everything else is the background, we expect at most one constituent to be excluded from the presupposition of *again*. We definitely do not expect that multiple constituents to the right of *again* would be excluded.

The second problem is that changing the focus does not change the presupposition of *again*. Consider the following, where capitalization indicates focus stress:

(111) a. I missed the bus two days ago. #Then I missed the TRAIN again.

b. I met Mary in HER office. #Then I met her in MY office again.

Where the focus is placed does not change the presupposition of *again*: It is always the constituent to its left. The structured meaning for (111a) has a background something like $\lambda x.$*I missed x* and focus *the train*. If *again* were sensitive to focus-background structure, such that it presupposed the background of the clause it occurs in, then (111a) should be felicitous (it should only presuppose that I previously missed something). It is not, and *again* can only presuppose that I previously missed the train. *Again* itself can also be focused, as in (109b–c); this also does not change its scope.

I conclude that partitioning the clause into focus and background is not a viable account of the scope of *again*. When it is adjoined on the right, *again* takes the constituent to its left (the constituent it has adjoined to) as its scope. Constituents to its right are outside of this scope. This can only be explained in a left-branching structure, as in (105).

At the same time, syntactic dependencies like NPI licensing and binding work rightward across *again*, not leftward:

(112) *NPI Licensing*

a. Last semester, Guido completed few assignments in Syntax 1. This semester, he completed few assignments again in any of his classes.

b. Last semester, Guido completed (some) assignments in some classes. *This semester, he completed any assignments again in few classes.

(113) *Binding Condition A*

a. The therapist explained her clients to each other. Then she explained them again to themselves.

b. . . . *Then she explained themselves again to them.

(114) *Binding Condition C*

a. * We won't talk about her$_1$ again near the dean$_1$.

b. We won't talk about the dean$_1$ again near her$_1$.

(115) *Variable Binding*

a. I met each girl at her house last week. I met each girl$_1$ again this week at her$_1$ school.

b. I had to meet each girl's parents without her last week. *This week, I will meet her$_1$ parents again with each girl$_1$.

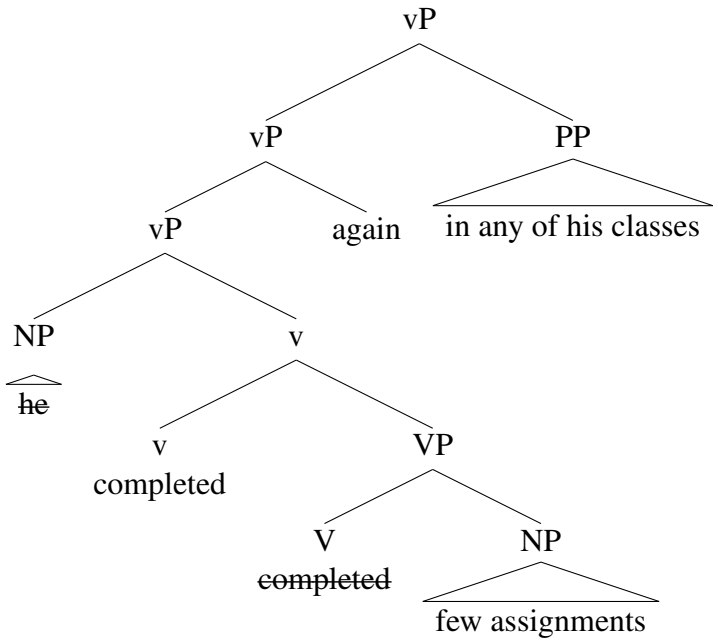
(116) *Each. . . the Other*

a. That pundit critcized those two future presidents during an interview. Then he criticized each again during the other's inauguration.

b. . . . *Then he criticized the other again during each's inauguration.

The only coherent response to these data is to give up the idea that surface c-command plays any role in these dependencies. In section 4, we saw that NPI licensing in the VP refers to linear order. Binding Conditions A and C require precedence and phase-command (Bruening 2014). Variable binding requires semantic scope and linear precedence. The *each. . . the other* construction requires that *the other* follow *each* and occur within its scope. All of these facts are consistent with a structure like the following:

(117)



In this structure, *few* precedes *any*, and it (or the abstract negation) is able to take scope over it. The NPI is licensed, while the scope of *again* excludes the PP.

I conclude that it will not work to analyze adjuncts like *again* as adjoining low in a radically right branching VP. They have to adjoin high on the right. If that is so, then syntactic dependencies cannot make reference to surface c-command.

6 Movement and Islands

In Larson (2024), stranding in VP preposing is analyzed as distributed pronunciation in the copy theory of movement. This leads to an incorrect prediction regarding islands to movement. Consider the following examples:

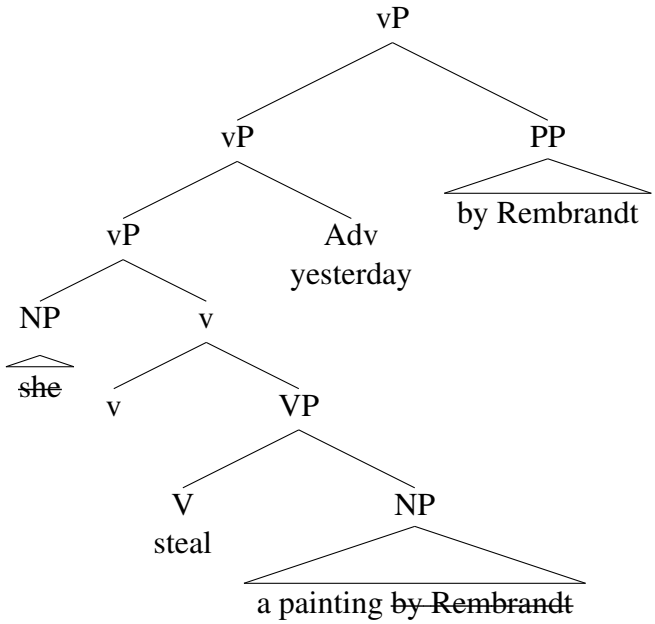
(118) a. Edwin said he would edit a review of someone's article for them, and edit a review he did — for Sue [of her article on phrenology].

b. She said she would steal a painting by a famous artist this week, and steal a painting she did — yesterday [by Rembrandt].

c. She said she would display a book with a startling cover, and display a book she did — (yesterday) [with a cover made of human skin].

In these examples, the bracketed part of what is stranded by VP preposing belongs with the object NP. It has apparently been extraposed from the NP to a position outside of the fronted constituent. In the analysis of Bruening (2014), the example in (118b) would have the following structure:

(119)



The PP *by Rembrandt* must undergo syntactic movement to adjoin to vP. A constituent that excludes this adjunct (and *yesterday*) then preposes to Spec-CP (I will assume that it is the lowest vP, but it could also be VP or the mother of v).

The relevance of syntactic movement is that Lechner (2003) pointed out that island effects emerge in stranding:

(120) She attempted to refute the allegation that they met on each other's birthdays,. . . (Lechner 2003: (20))

a. . . . and refute the allegation that they met on each other's birthdays she did.

b. * . . . and refute the allegation that they met she did on each other's birthdays.

Lechner's example involves an exempt anaphor, but this is not necessary to make the point. Other types of islands besides the Complex NP Constraint can also be constructed. I show examples of the Coordinate Structure Constraint, the Complex NP Constraint with a relative clause, the Adjunct Island Constraint, and the WH Island Constraint:

(121) a. She said she would leave on Tuesday or a day or two after that, and *leave on Tuesday or she did on Wednesday.

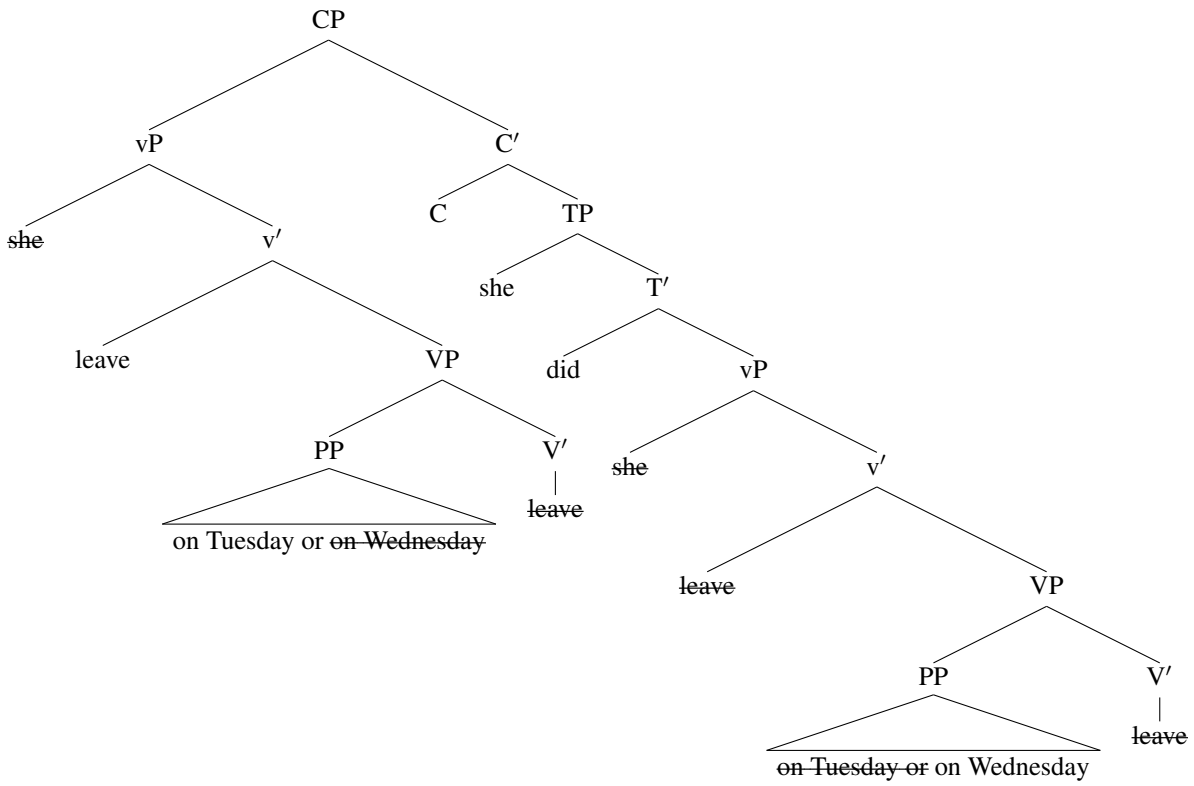
b. She said she could get in with a key she found, and *get in with the key she found she did in the garden. (* where she found the key in the garden)

c. She said she could get in before the guard returned from somewhere, and get in before the guard returned she did from the boiler room. (cannot mean: before the guard returned from the boiler room)

d. She said she would find out why Bill left when he did, and find out why Bill left she did on a Tuesday. (cannot mean: why Bill left on a Tuesday)

In the analysis of Bruening (2014), the stranded adjunct must have moved in order to be stranded in these examples, since only constituents can move. We therefore correctly expect islands to block stranding, since they block the necessary movement. In contrast, in Larson's analysis, adjuncts that are stranded by VP preposing do not move anywhere. They occur where they are base-generated, low in a VP shell. Stranding is just pronouncing the lower copy. Larson's analysis therefore does not expect any island effects, incorrectly. Take example (121a). This would have the following structure with distributed pronunciation (the order of the lowest V and PP does not matter):

(122)



There is no reason that Larson's analysis could not produce this kind of example. His principles of pronunciation refer only to stress and focus, and as far as I can see, they would allow this pronunciation. Note that all the remnants in (121) are possible remnants of VP preposing if there is no island. One would have to say that principles of pronunciation force an adjunct to be pronounced in the highest copy just when it occurs inside an island, but unless this can be motivated independently, it would be nothing more than a restatement of the facts.

Note also that the examples in (118) show that the stranded adjunct does not need to semantically modify the VP that preposes. There is, rather, a clear correlation with the possibility of movement: A low adjunct can be stranded by VP preposing only if it can undergo movement to the edge of the VP that is preposed. Since Larson's analysis of stranding has no movement, it does not expect this correlation.

7 Some Other Concerns

This section discusses two final issues from Larson (2024), double pronunciation in VP preposing, and featural minimality. Neither favors the right branching analysis over any other.

7.1 Pronouncing an Adjunct Twice

Larson (2024) states that some speakers allow double pronunciation of an adjunct in VP preposing, one in the fronted position and one stranded:

(123) John said he would give them the box in the garden, and

give them the box in the garden he DID in the garden on TUESday.
(Larson 2024: 684, (59b))

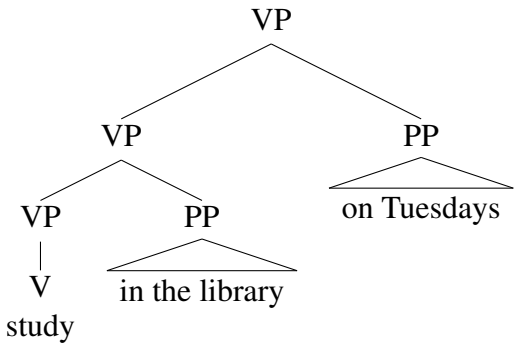
Larson (2024) says that this is strong evidence for his analysis involving distributed pronunciation in the copy theory of movement.

While I am skeptical that this is the right account,[19] even if it is, it does not provide an argument in favor of Larson's right branching structures. Any theory with movement can adopt the same account. In particular, one can believe that adjuncts are adjoined high on the right, and can front along with the VP but be pronounced in both locations. In other words, this fact is completely neutral on the structure involved.

7.2 Featural Minimality

In the traditional description of constituency tests like VP preposing, strandable adjuncts are said to be adjoined successively higher on the right:

(124)



(125) a. . . . and study she does in the library on Tuesdays.
b. . . . and study in the library she does on Tuesdays.
c. . . . and study in the library on Tuesdays she does.

VP preposing is then supposed to be able to front any of the VP nodes (or vP, in the analyses considered here).

Larson (2024) criticizes this approach on the grounds that it is inconsistent with current approaches to movement, which view movement as feature driven and subject to minimality. According to Larson, the highest VP node would always block lower ones from fronting. In (124), only the highest VP could ever move, and stranding should never be possible. Giving a lower node and not a higher one a feature like [Topic] will not work to get around this problem, according to

[19] In footnote 24 in Larson (2024), a reviewer notes that the two occurrences of the adjunct can differ. Larson claims that this is vehicle change (Fiengo & May 1994). However, I find that the two occurrences can differ even more than is noted in that footnote:

(i) a. John said he would meet them in the garden, and
meet them in the garden he did in the sculpture garden.
b. . . . and meet them in the garden he did in the rose garden on TUESday.

I suspect that this phenomenon is repetition, with two (near) identical adjuncts: *he met them in the garden in the garden*. This is rendered more acceptable by the distance between the two occurrences, not by movement in particular.

Larson (2024), because what fronts and what strands does not always align with new versus old information.

This is not a serious objection to the type of left-branching structures in (124) that this paper has argued for at length. There are two points to make. First, featural minimality is rather contentless in practice. If something moves in some language, then the typical response is to posit a feature to drive that movement. In the current case, [Topic] might be the wrong feature, but there is apparently some other feature that is behind the movement. There must be some desire to front a constituent that does not have anything to do with old versus new information. We could create a feature called [Emph] that can be freely attached to any constituent that a speaker wishes to emphasize, and this feature triggers movement to a preposed position to realize that emphasis. In the kind of tree in (124), the syntax can freely put this feature on any of the VP nodes.

Second, there have already been proposals for VP preposing that do not have this problem. Landau (2007) and Bruening (2016) propose that the stranded material is actually adjoined late, to the lower copy, *after* the movement takes place. This approach does not encounter any difficulty with featural minimality, because at the point where movement takes place, the only VP node present is the one that preposes. It is only at a later stage that the stranded material adjoins.[20] If one wished, one could also adopt Larson's own theory of distributed pronunciation of copies (section 7.1) in conjunction with a left branching structure. This would also have no problem with featural minimality.

I conclude that featural minimality is not an issue for left branching structures. All of the data indicates that left branching structures are correct, and whatever theory of movement we adopt had better allow for optionality in what preposes and what remains behind (however we analyze that).

8 Conclusion

In this paper I have compared two approaches to phrase structure paradoxes. One, Larson (2024), maintains the view that surface c-command is the structural relation implicated in all syntactic dependencies, and proposes a new approach to constituency data like VP preposing. The other, Bruening (2014), takes the opposite approach, and jettisons surface c-command. I have shown here that only the latter approach is viable. Trying to maintain surface c-command only leads to more paradoxes, "c-command paradoxes," where the various syntactic dependencies contradict each other. Conversely, giving up surface c-command makes all of the dependencies consistent with each other and with constituency tests. In addition, the particular proposal in Larson (2024) runs into problems with adjuncts like *again* and island effects on stranding in VP preposing. The conclusion is that right branching structures are incorrect, and adjuncts in VP adjoin high on the right.

[20]This analysis does require a violation of cyclicity. However, if it is combined with left to right structure building, as in Phillips (1996, 2003), Richards (1999), Bruening (2010, 2014, 2025), then it would not, late merger to the lower copy would obey cyclicity.

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