Gapping is low coordination (plus VP-ellipsis): A reply to Johnson*

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Abstract

Johnson (2009) argues that gapping — e.g. *Some had ordered mussels, and others swordfish* — does not arise through ellipsis because gapping has properties that VP-ellipsis does not. He proposes instead that the gap in gapping results from low coordination and across-the-board movement. I argue that the across-the-board movement component of Johnson's account should be abandoned, as it does not derive any of the unique properties of gapping. Moreover, it fails to derive the correct surface form for gapping in certain syntactic contexts. I revive an ellipsis account of gapping in which it is low coordination plus VP-ellipsis. This correctly generates the gapping sentences that are problematic for Johnson. Once the information-structural properties of low coordinations are taken into consideration — their coordinates must have parallel focus structures — it also derives the unique properties of gapping.

1 Introduction

Gapping removes the finite element (T and its host) in the second and subsequent coordinates of a coordination structure — possibly along with additional material — leaving behind two remnants:[1]

(1) Some had ordered mussels, and others Δ swordfish.

In the second coordinate of (1), the finite perfect auxiliary *had* and the main verb *ordered* go missing, which I indicate with a 'Δ'. As Stump (1977) observes, gapping bears a striking resemblance to pseudogapping, the elliptical construction in (2), which does not remove the finite element.

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[1] By this definition, gapping does not subsume stripping (or bare argument ellipsis), e.g. *Max had ordered mussels, and Sam, too.* Johnson (2004) takes stripping to be a subtype of gapping that leaves behind just one remnant. I remain agnostic on this question.

(2) Some had ordered mussels, and others had Δ swordfish.

Pseudogapping is frequently analyzed as a type of VP-ellipsis (Stump 1977, Jayaseelan 1990, Lasnik 1999a,b,c, though see Levin 1986 for a different view). Assuming that VP-ellipsis is deletion at PF (Merchant 2001), the object remnant *swordfish* in the second coordinate raises before the VP is deleted. This of course leaves the finite auxiliary behind.[2]

Where does the gap in gapping come from, then? Given its similarity to pseudogapping, it is tempting to assimilate gapping to VP-ellipsis as well. Over the years, however, Kyle Johnson has argued that they behave differently in a number of important ways.[3] Building on previous work, Johnson (2009:293) identifies three unique properties of gapping:

1. Gapping is restricted to coordination structures (Jackendoff 1971:22, Hankamer 1979:18f.), and possibly to coordination-like structures such as comparatives as well(Moltmann 1992, Lechner 2004). For instance, the gap cannot occur in an adjunct clause (3a). In contrast, pseudogapping is grammatical outside of coordinations (3b).

   (3) a. * Some had eaten mussels, because others Δ shrimp.
   b. Some had eaten mussels, because others had Δ shrimp. (Johnson 2009:293)

2. The gap cannot be embedded (Hankamer 1979:19). For example, gapping is ungrammatical when only the gap is contained inside the complement clause of the verb *claim* (4a). Pseudogapping, however, can be embedded (4b).[4]

   (4) a. * Some had eaten mussels, and she claims that others Δ shrimp.
   b. Some had eaten mussels, and she claims that others had Δ shrimp.
   (Johnson 2009:293)

[2] I assume that VP-ellipsis is deletion of VP simply because this is what Johnson (2009) assumes. There is some debate about whether it is actually VP that deletes or some larger verbal constituent, such as vP or VoiceP (Johnson 2008, Merchant 2012). Nothing I say here distinguishes amongst these options.

[3] His work on gapping begins with Johnson 2004, an unpublished manuscript originally dated 1996, and continues in subsequent work (Johnson 2000, 2009). In this paper, I argue specifically against the theory of gapping advanced in Johnson 2009.

[4] A reviewer suggests that (4a) might be ungrammatical for another reason. She or he claims that stripping, an elliptical operation that leaves behind one remnant, can be embedded as long as the sole remnant is not preceded by an overt complementizer:

(i) A: Who do you think will win the Wold Cup?
B: John says (*that) Spain, and I think (*that) Brazil.

I am not sure that I agree with the reviewer's judgment in (i). Regardless, removing the overt complementizer in (3a–b) does not make gapping any better:

(ii) * Some had eaten mussels, and she claims others Δ shrimp.

When the gap is embedded without an overt complementizer, as in (ii), gapping is still ungrammatical.

3. The antecedent in gapping cannot be embedded (Hankamer 1979:19). In the gapping sentence in (5a), embedding just the antecedent of the missing material is ungrammatical. By contrast, the parallel pseudogapping sentence in (5b) is grammatical, if a bit awkward.[5]

   (5) a. * She's said Peter has eaten his peas, and Sally Δ her green beans, so now we can have dessert.
   Intended: 'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

   b. ? She's said Peter has eaten his peas, and Sally has Δ her green beans, so now we can have dessert.
   'She has said that Peter has eaten his peas; Sally has eaten her green beans.'
   (Johnson 2009:293)

   These sentences must be judged relative to an interpretation in which only the antecedent clause — not the gapped clause — is embedded. With this meaning, (5a) and (5b) would entail the conjunction of the proposition that she has said that Peter has eaten his peas and the proposition that Sally has eaten her green beans. (Both sentences have another interpretation, in which the entire conjunction is embedded; it is not relevant here.)

These three properties make it difficult to assimilate gapping to VP-ellipsis. Instead, Johnson proposes that gapping arises through the combination of two mechanisms, neither of which is deletion. First, T goes missing in gapping because it is not present in noninitial coordinates to begin with. Gapping always involves, what Johnson calls, low-coordination structures, in which multiple vPs are coordinated under a single T head. Second, when additional material goes missing, it does so through across-the-board movement of the VP in each coordinate. Together, Johnson contends, these two mechanisms can account for the unique properties of gapping.

I will argue that Johnson is only half right. Gapping in English does involve low coordination. But rather than across-the-board movement, I will propose that gapping uses VP-ellipsis to remove additional material.

My argument proceeds in the following way. I start in §2 by describing Johnson's across-the-board movement account in more detail. The low-coordination component successfully derives the first two unique properties of gapping. I show, however, that neither low coordination nor across-the-board movement is able to account for the final property. They are unable to capture the correct generalization about what cannot be embedded in the first coordinate of a gapping sentence. The correct generalization, which I call the No Embedding Generalization, rules out the *correlates* from being embedded. Moreover, as I argue in §3, across-the-board movement is not able to generate the correct surface shape for gapping in all syntactic environments.

Then, in §4, I revive an ellipsis account of gapping that was originally proposed by Coppock (2001) and Lin (2002). It shares the low-coordination component of Johnson's account. T goes missing in the same way, through low coordination, but additional material is removed by deletion — specifically, by VP-ellipsis. This generates the correct surface form for gapping in a

[5] I think that it might be awkward because the sentence has an alternate parse. The auxiliary *has* in the second coordinate can also be interpreted as a main verb that takes *her green beans* as a direct object. Replacing the perfect auxiliary with a modal, for examples, makes the sentence much better to my ear: e.g. *She's said Peter has eaten his peas, but Sally won't her green beans.*

completely general way. Moreover, because this ellipsis account invokes low coordination, it also derives the first two properties of gapping.

The final property of gapping, I propose in §5 arises for reasons that are not syntactic. I argue that the coordinates in a low coordination must have parallel focus structures, an information-structural property that I call Low-Coordinate Parallelism. Combined with a constraint requiring the remnants in gapping to contain a focus, which I dub the Focused Remnant Requirement, this derives the No Embedding Generalization. As I discuss in §6, Low-Coordinate Parallelism is also able to account for why gapping destroys the environment for VP-ellipsis, which Johnson 2009 takes to constitute another problem for the ellipsis account.

2 Is gapping across-the-board movement?

First, some terminology. Gapping always removes T and its host, but only sometimes does it remove additional material. It is thus possible to distinguish two types of gapping. In the simple gap in (6a), just the finite auxiliary *had* goes missing. By contrast, in the complex gap in (6b), some additional material — the main verb *ordered* — goes missing, in addition to the finite auxiliary.[6]

(6) a. *Simple gap ($\Delta = T$)*
Some had ordered mussels, and others Δ drunk a cocktail.

b. *Complex gap ($\Delta = T$ + additional material)*
Some had ordered mussels, and others Δ swordfish. = (1)

In either case, gapping leaves behind two remnants. In simple gaps, since only T goes missing, one of these remnants must be the verb phrase, e.g. *drunk a cocktail* in (6a).

Intuitively, each remnant contrasts with a constituent in the first coordinate. These correlates are easy to identify. Along with the remnants, they are usually realized with a pitch accent (whose presence I indicate with small caps):

(7) a. SOME had ordered MUSSELS, and OTHERS Δ drunk a COCKTAIL. = (6a)

b. SOME had ordered MUSSELS, and OTHERS Δ SWORDFISH. = (6b)

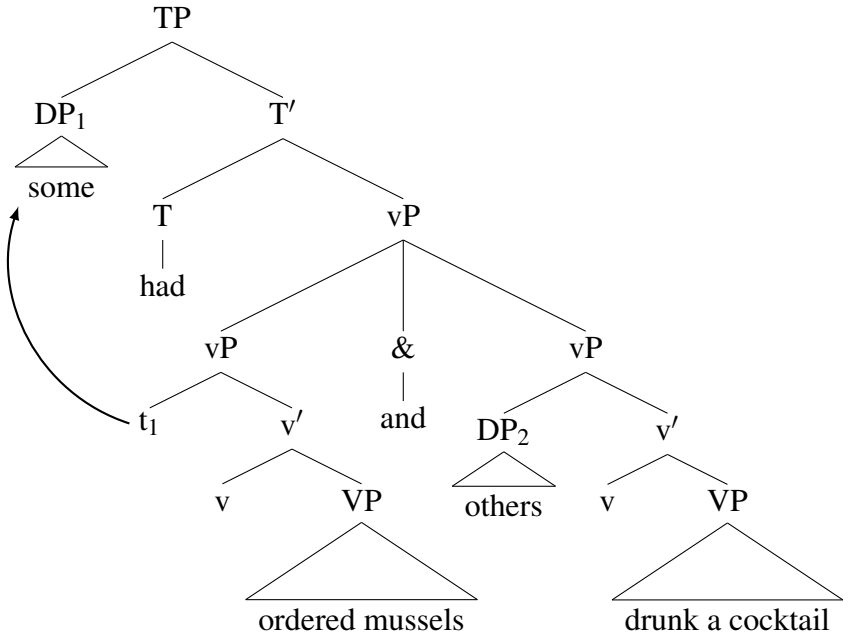
The contrastive relationship between remnants and correlates — and its formal realization in a particular intonational contour — has often been remarked upon (Kuno 1976, Hankamer 1979:183f., Sag 1976:287, Levin and Prince 1986, Hartmann 2001:162–166, Kehler 2002:81–100, Winkler 2005:191–194), and later on I will be characterizing it more precisely. Now, though, I move on to describe Johnson's (2009) theory of gapping in more detail.

2.1 The role of low coordination

For Johnson (2009), simple gaps transparently show the underlying structure of all gapping sentences. He proposes, following Siegel (1987), that the simple gap in (6a) is nothing more than a low-coordination structure:

[6] Of course, T does not always have to be realized on an auxiliary. When it instead appears on the main verb in the first coordinate, the main verb itself goes missing, e.g. *Some ordered mussels, and others swordfish*. For clarity, I will always use examples of gapping with an overt auxiliary.

(8) = (6a)



T is missing from the second coordinate because it was never there to begin with. A single T head is shared, so to speak, by both vP coordinates.

For the parse in (8) to be grammatical, Johnson must make two assumptions about how and where subjects can be case licensed. While these assumptions might be noncanonical, they are not unmotivated:

1. A-movement must not be constrained by the Coordinate Structure Constraint, so that the subject of the first vP coordinate (DP_1) can raise into Spec-TP. This apparent island-violating movement also seems to occur out of embedded infinitival clauses that are coordinated:

   (9) a. Liz made Mason$_1$ out [[$_{TP}$ t$_1$ to be intelligent] and [$_{TP}$ Sarah to be kind]]. (Johnson 2004:45)

   b. He$_1$ was considered [[$_{TP}$ t$_1$ to be some kind of mastermind] and [$_{TP}$ her to be a lackey]].

   Lin (2002:59–84) offers one way of understanding this. If the Coordinate Structure Constraint holds of LF representations, as Fox (2000:51–58) argues, and if A-movement reconstructs, A-movement will not be subject to the Coordinate Structure Constraint in the first place.[7] See Johnson 2004:41–49 for further discussion.

[7]The Coordinate Structure Constraint would have to require, then, that if a constituent located outside a coordination structure at LF binds a variable (that is, a trace or a pronoun) inside one coordinate, it binds a variable inside every other coordinate as well. Consequently, if A-movement reconstructs, it can never violate the Coordinate Structure Constraint because there would be no A-moved constituent located outside the coordination structure at LF.

A reviewer questions whether this predicts that the following coordination structure with asymmetric A-movement from just one coordinate should be grammatical:

(i) * A water pipe$_1$ is likely [[$_{TP}$ t$_1$ to break] and [$_{CP}$ that we'll have to fix it$_1$]].

(ii) * A water pipe$_1$ is likely [[$_{TP}$ t$_1$ to break] and [$_{CP}$ that it$_1$ will have to be replaced]].

2. Subjects must be able to receive case in the position where they originate, so that the subject of the second coordinate (DP_2) can stay *in situ* in Spec-vP. It is not implausible that this is default case. At least for me, the subject remnant in (10) must bear accusative case, not nominative case.[8]

(10) He wanted to learn piano, and $\left\{ \begin{array}{c} \text{her} \\ \text{*she} \end{array} \right\}$ violin.

The low-coordination structure in (8) is motivated by the unusual scopal properties of gapping. McCawley (1993:243) observes that the subject of the first coordinate in a gapping sentence takes scope over the second coordinate. For instance, a negative quantifier in subject position of the first coordinate can bind a variable in the second coordinate, both when there is a simple gap (11a) and when there is a complex gap (11b).

(11) a. No woman$_1$ can join the army, and her$_1$ girlfriend Δ attend a military academy.
b. No woman$_1$ can join the army, and her$_1$ girlfriend Δ the navy. (Johnson 2009:293)

(12) * No woman$_1$ can join the army, and/but her$_1$ girlfriend can Δ the navy.
(Johnson 2009:293)

If low coordination underlies the gapping sentences in (11a–b), the subject of the first coordinate will be located outside the coordination structure at surface structure. It will c-command, and hence be able to bind, a pronoun in the second coordinate. In this respect, gapping contrasts with pseudogapping, which as shown in (12) does not permit variable binding across coordinates.

2.2 Removing additional material through across-the-board movement

Johnson proposes that the derivation of complex gaps, such as (6b), starts out from the same low-coordination structure. The finite element is missing from noninitial coordinates because multiple vPs share a single T head. The additional material that goes missing in complex gaps does so through two additional steps.

First, if the remnants are not already located outside of VP, they raise out. Importantly, the correlates in the first coordinate do the same. For the sentence in (6b), the remnant *mussels* and its correlate *swordfish* both raise to adjoin to VP:

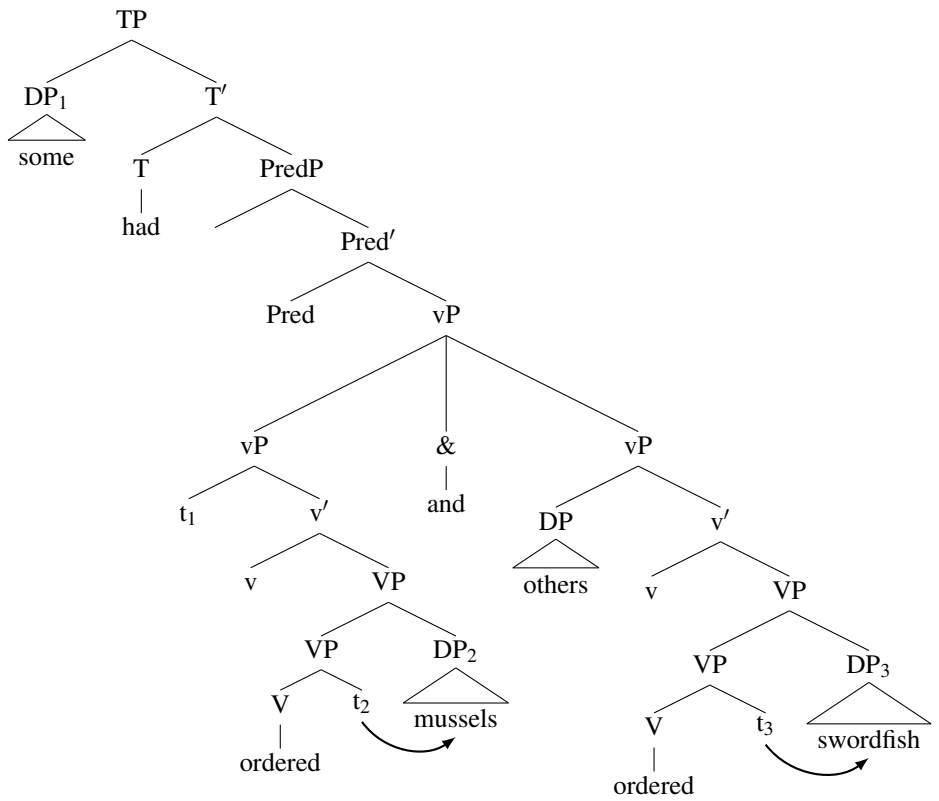
While constituents that do not share the same syntactic category can be coordinated, they must serve the same syntactic function in the clause (Sag et al. 1985). It does not seem implausible to me that infinitival and finite clausal complements serve different functions in this sense. If so, then (i–ii) would be ruled out for independent reasons, because the coordination structure itself is ungrammatical.

[8] A reviewer observes that there are attested examples of a subject remnant getting nominative case:

(i) "We are the clay, and He the potter."
(Benjamin Jowett. 1855. *The Epistles of St. Paul to the Thessalonians, Galatians, and Romans: With critical notes and dissertations*, Volume 2. London: John Murray, p. 491.)

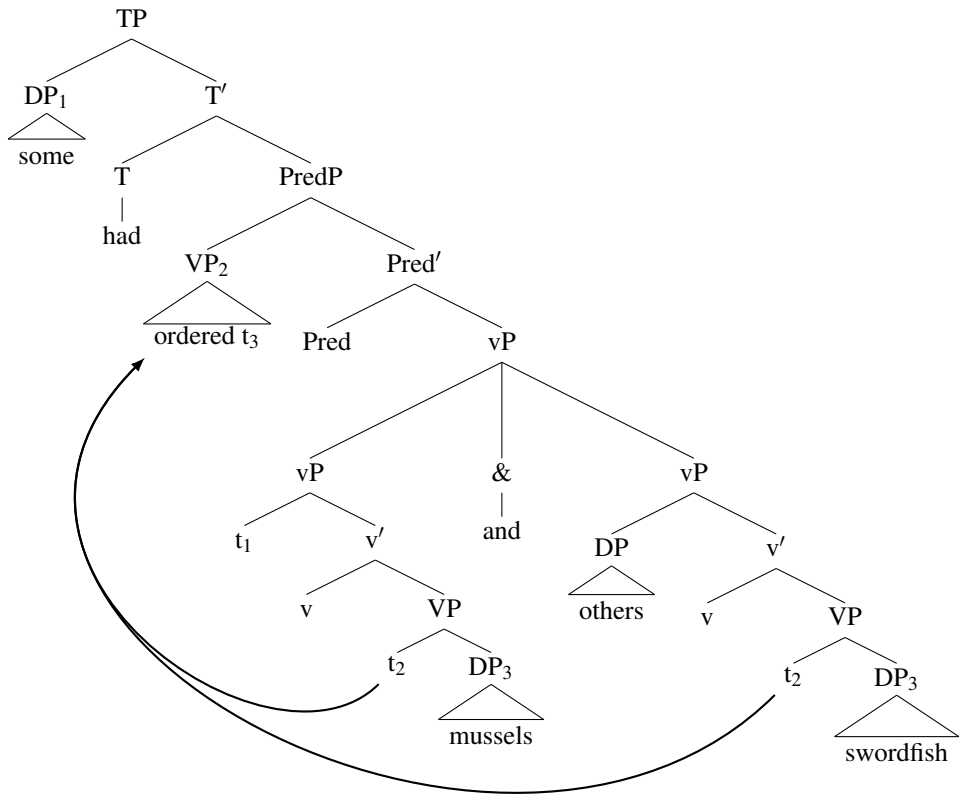
To my ear this sounds archaic. If I heard (i) today, I would think the speaker was either being intentionally poetic or that they were hypercorrecting.

(13)



Then, since the lower segments of VP in each coordinate are now identical, they across-the-board move into the specifier of a functional projection located immediately outside the coordination:

(14) = (6b)



Through this across-the-board movement, the main verb goes missing in the second coordinate. It goes missing in the first coordinate as well, but surfaces outside the coordination structure in its correct linear position to the left of the direct object.

Johnson refers to this kind of movement as predicate shift and considers it akin to operations in German and Dutch that derive the shape of the verbal complex (Zwart 1993:327–333, Hinterholzl 1999). Specifically, Johnson assumes that predicate shift can move the VP into the specifier of a functional projection located just above vP, which he calls PredP following Zwart (1993:327). He suggests (p. 306), not implausibly, that predicate shift can take place even when there is no low coordination, as in (15).

(15) No one$_1$ should $[_{VP}$ eat poi$]_2$ $[_{vP}$ t$_1$ t$_2]$.

Predicate shift would simply be string vacuous in this case, since nothing has raised out of the VP before it moves to the left.

2.3 Deriving the unique properties of gapping

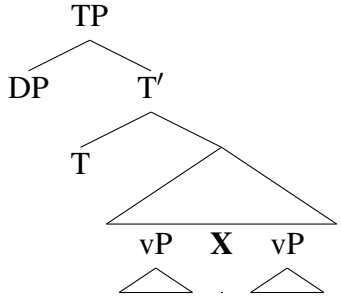
Johnson's account, which combines low coordination and across-the-board movement, succeeds admirably at deriving the first two unique properties of gapping described in §1. He sketches arguments (pp. 296–300), which I describe and expand upon below, for how low coordination all by itself can restrict gapping to coordination structures and prevent the gap from being embedded.

The third and final property of gapping is more problematic. In his 2009 paper, Johnson has little to say about how it might arise from either the low-coordination component or from the across-the-board movement component of his analysis. I will argue that it does not follow from either.

2.3.1 Gapping is restricted to coordinate structures

In gapping, T goes missing because multiple vPs are embedded under a single T head. Only through coordination can vPs be embedded in this way. In other words, only a coordinator can replace the X in the following schema:

(16)



Subordinators, such as *because* or *after*, would not fit in this configuration because they only select for a full finite or nonfinite clause, which would contain its own T. Consequently, gapping only occurs in coordination structures.

A reviewer offers some independent empirical support for this argument. In *there*-existentials, it is possible to coordinate all the material that follows the copula — that is, the pivot and the predicate — but it is not possible to subordinate it:

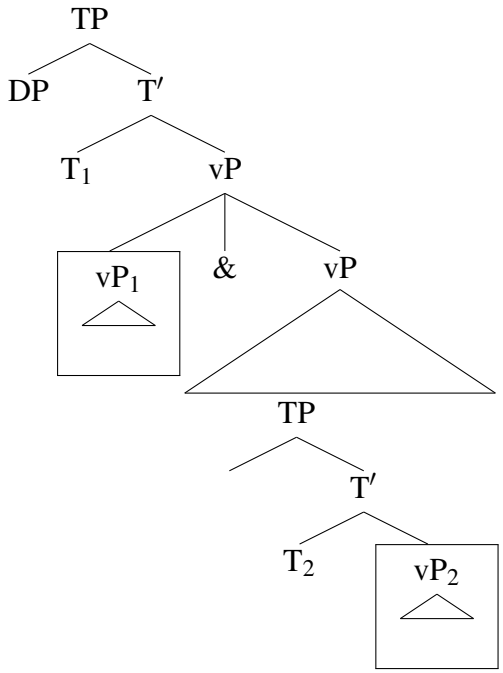
(17) There will be a woman in the garden, $\left\{\begin{array}{l}\text{and}\\ \text{or}\\ \text{*because}\\ \text{*after}\end{array}\right\}$ a man in the house.

Assuming that the pivot is a subject that stays inside the vP because Spec-TP is occupied by an expletive, then (17) shows transparently that multiple vPs can be embedded under a single T head only through coordination.

2.3.2 The gap cannot be embedded

A single T head can be shared by the vP coordinates that it selects for. It cannot, however, be shared with a vP that is embedded *inside* a coordinate. To see this, suppose that the second coordinate in a low-coordination structure contained an embedded finite clause:

(18)



For the gap in gapping to be embedded, T_1 would have to be shared between the first coordinate, vP_1, and the embedded vP_2. This is obviously not possible precisely because vP_2 is contained inside a finite clause with its own T head (T_2).

A reviewer wonders whether this property of gapping could be subsumed under the first property, if it were stated more generally as: '[t]he minimal clause containing the gap must be a coordinate clause.' Indeed, when the gap is embedded, the minimal clause that contains the gap is not itself coordinated. This broader characterization of the first two properties reflects the fact that they can both be derived from the syntax of low coordination.

2.3.3 The antecedent of the gap cannot be embedded

As for the third and final property, it is easy to see how low coordination rules out at least one parse for the ungrammatical gapping sentence in (19), which is a simplified version of Johnson's

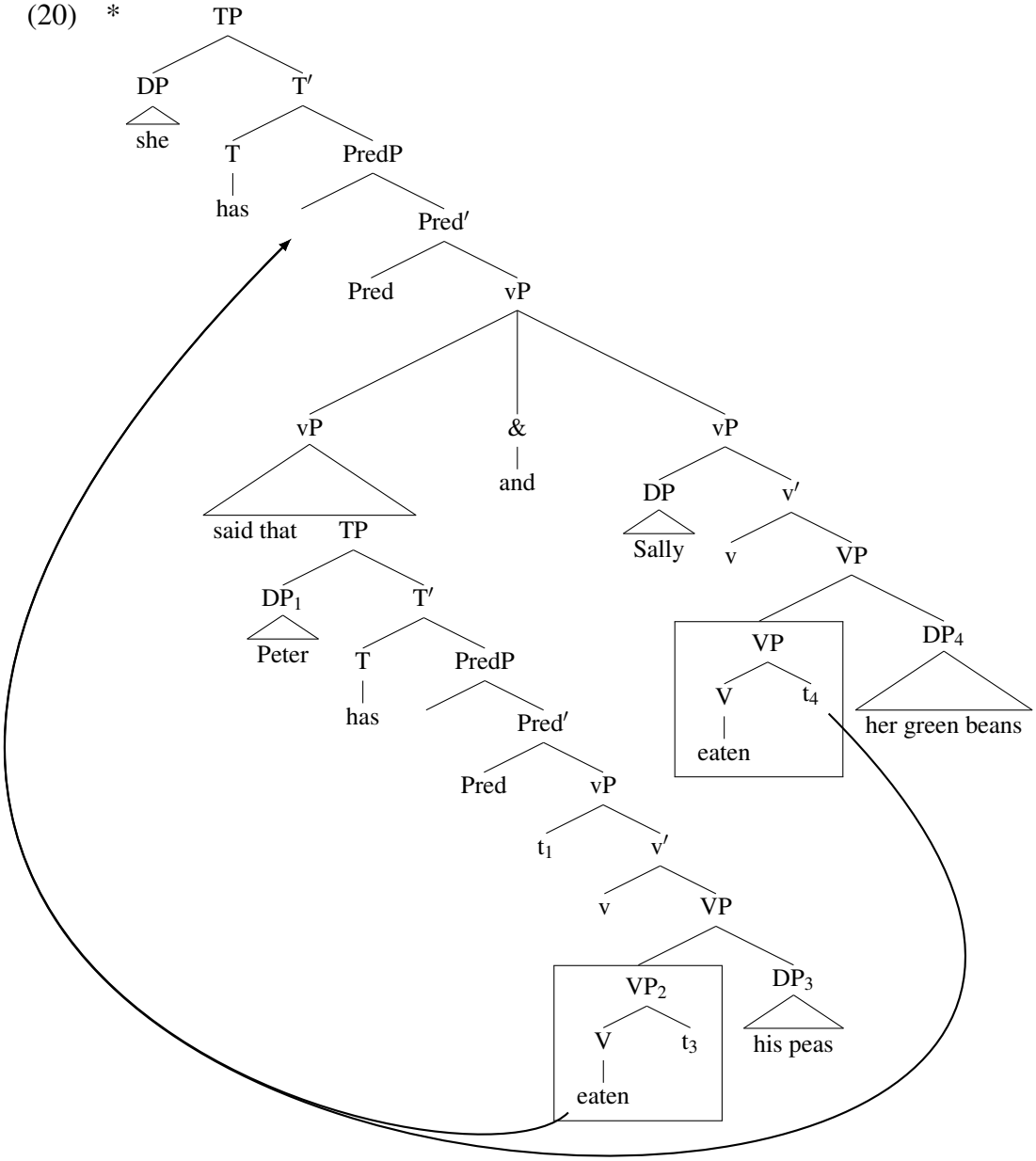
original example in (5a). Recall that it is ungrammatical relative to an interpretation in which just the first coordinate is embedded.

(19) * She has said that Peter has eaten his peas, and Sally Δ her green beans. cf. (5a)
Intended: 'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

Because of the syntax of low coordination, the T head contained within the embedded clause in the first coordinate cannot be shared with the second vP coordinate.

But Johnson must rule out another parse for (19). The T heads of the matrix clause and the embedded clause in the first coordinate are identical — they are both the present tense perfect auxiliary *has*. In principle, then, the second coordinate could be sharing the T head of the matrix clause. Johnson must thus prevent the VP of the second coordinate from undergoing across-the-board movement with the embedded VP of the first coordinate:

(20) * = (19)



Presumably, the VPs cannot across-the-board move into Spec-PredP of the embedded clause because the resulting VP would not c-command its trace in the second coordinate. But why is across-the-board movement into Spec-PredP of the matrix clause not allowed? (This might derive the wrong word order, but that is a different problem.)

In a personal communication, Johnson suggests that the parse in (20) is ruled out by the properties of the across-the-board movement operation. Unlike topicalization which can create long distance dependencies, predicate shift can only be a local, clause-bounded movement operation. Otherwise, it would generate ungrammatical strings like (21).

(21) * Mary $[_{VP}$ eat poi$]_1$ said $[_{CP}$ no one should $t_1]$.

In this respect, predicate shift would resemble scrambling in other Germanic languages. In German, for instance, a wide variety of constituents can move into the so-called *Mittelfeld* (or middle field) — anywhere between C and the right edge of the VP — but this scrambling cannot cross a clause boundary (Haider 2006:209f.). The derivation in (20) is thus ruled out, because VP_2 raises out of the embedded clause in the first coordinate.

While across-the-board movement might explain why the antecedent in the complex gap in (19) cannot be embedded, it has nothing to say about the parallel sentence with a *simple gap*:

(22) ? Mom has checked that Max has eaten his peas, and Dad Δ drunk a beer.

(22) is almost identical to (19). Since no additional material goes missing in the second coordinate of this simple gap, its derivation does not require across-the-board movement. Nonetheless, there is something weird about this sentence that cannot be explained by appealing to the properties of predicate shift.

On closer inspection, (22) turns out to have two distinct construals depending on which elements in the first coordinate stand in a contrastive relationship with the remnants. In the first construal, the remnants *Dad* and *drunk a cocktail* contrast with the correlates *Max* and *eaten his peas*. With pitch accents on these expressions, as in (23a), the sentence is ungrammatical under an interpretation in which the embedding material is present just in the first conjunct.

(23) a. * Mom has checked that [MAX] has [eaten his PEAS], and [DAD] Δ [drunk a BEER].
Intended: 'Mom has checked that Max has eaten his peas; Dad has drunk a beer.'

b. [MOM] has [checked that Max has eaten his PEAS], and [DAD] Δ [drunk a BEER].
'Mom has checked that Max has eaten his peas; Dad has drunk a beer.'

In the second construal, the correlates are the higher subject *Mom* and the larger VP *checked that Max has eaten his peas*.[9] With accents on these expressions, as in (23b), the sentence is in fact grammatical with the very same interpretation that was unavailable in (23a).

It appears that we had been missing a generalization before. The final property of gapping has nothing to do with whether or not the antecedent is embedded. The ungrammatical simple gap in (23a) does not have an antecedent, since no additional material goes missing. Rather, in both the ungrammatical simple gap in (23a) and the ungrammatical complex gap in (19), it is the *correlates* that cannot be embedded under material that is present only in the first coordinate. I state this new generalization as follows:

[9] I thank David Pesetsky (p.c.) for this observation.

(24) *No Embedding Generalization*
The correlates in gapping cannot be embedded.

Across-the-board movement cannot derive the No Embedding Generalization, since the derivation of the ungrammatical simple gap in (23a) does not even use across-the-board movement. In fact, it is unlikely that a strictly syntactic account of the No Embedding Generalization will suffice, as the difference between the ungrammatical simple gap in (23a) and the grammatical one in (23b) is not syntactic. The sentences differ solely in the contrastive relationship between the remnants and correlates.

In sum, while the across-the-board movement account successfully derives the first two properties of gapping from the syntax of low coordination, the final property remains unexplained. It may be possible to derive the ungrammaticality of a complex gap whose antecedent is embedded from the properties of predicate shift, but this would miss a generalization. Simple gaps, whose derivation by hypothesis does not involve across-the-board movement, exhibit a similar restriction, which I stated as the No Embedding Generalization. As I will argue next, there is reason to think that across-the-board movement should not be involved in the derivation of gapping at all.

3 The problem with across-the-board movement

To derive complex gaps, Johnson proposes that the VP of each coordinate undergoes across-the-board movement to a functional projection located just outside the coordination structure. This gets rid of material from the second coordinate, but it also leaves an empty category in the first coordinate. So far, this way of removing additional material in gapping has not been a problem. But what if one of the remnants underlyingly precedes part of the VP? Assuming that the correlate of this remnant stays inside the first coordinate, across-the-board movement would derive the wrong surface form for gapping. It would incorrectly locate the correlate *after* the material inside the VP, since the VP surfaces outside and to the left of everything inside the first coordinate.

Hankamer and Depiante (2005:14) identify a syntactic context with this profile. In (25), the first remnant is the direct object of an object control verb; its correlate in the first coordinate is followed in linear order by VP-internal material.[10]

(25) I have persuaded Tom to write a novel, and Δ Bill Δ a short story.

To show that (25) is a problem for the across-the-board movement account, I make the usual assumption that an object control verb selects for an infinitival complement as its complement.

[10] I have identified a few other syntactic contexts that share the surface profile of (25):

(i) *ECM (Raising-to-Object) predicates*
Obama will want the EU to negotiate with Iran, and Δ China Δ with North Korea.

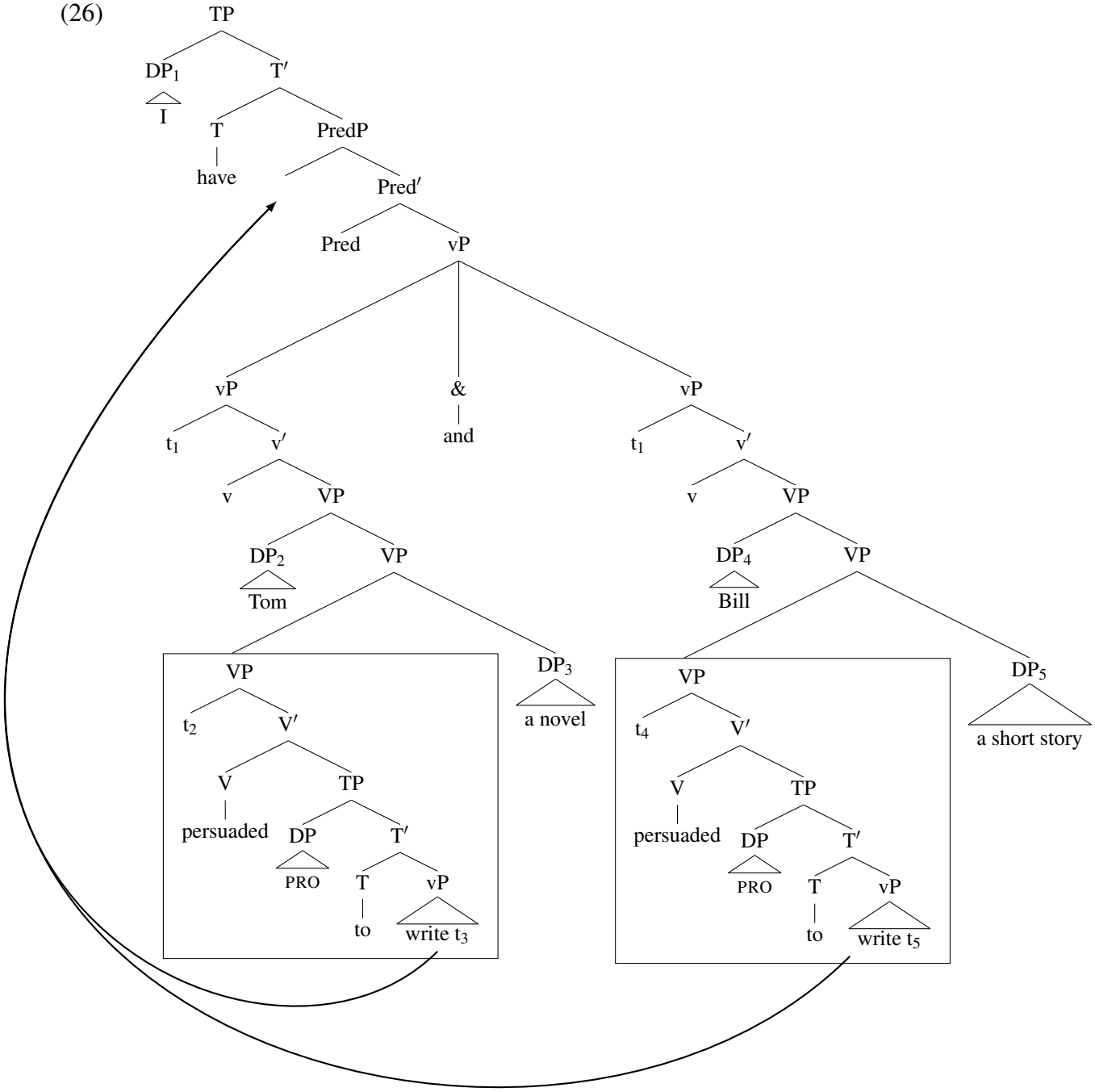
(ii) *Ditransitive predicates*
John should put ice cream on the table, and Mary Δ cake Δ.

(iii) *Postremnant adjuncts*
Max has handed in his final on Tuesday, or Liz Δ her term paper Δ.

For concreteness, I focus entirely on gapping with object control verbs in the main text. But similar argument against the across-the-board movement account could potentially be constructed from the configurations in (i–iii) as well.

The verb's direct object, which controls the PRO subject of the embedded clause, receives a theta-role in Spec-VP.[11] Usually, V would raise to a higher functional projection, but this head movement is plausibly bled by across-the-board movement of VP from each coordinate into Spec-PredP:

(26)



Across-the-board movement of the VP from each coordinate carries along the embedded infinitival clause contained within it. Because the correlate *Tom* is still located inside the first coordinate, however, this generates the following undesired, and in fact ungrammatical, string:

[11] Because the direct object is an argument of the object control verb, the matrix verb phrase must be coordinated in (25). There is no smaller constituent that contains both pairs of remnants and correlates.

(27) * I have persuaded to write Tom a novel, and Bill a short story.

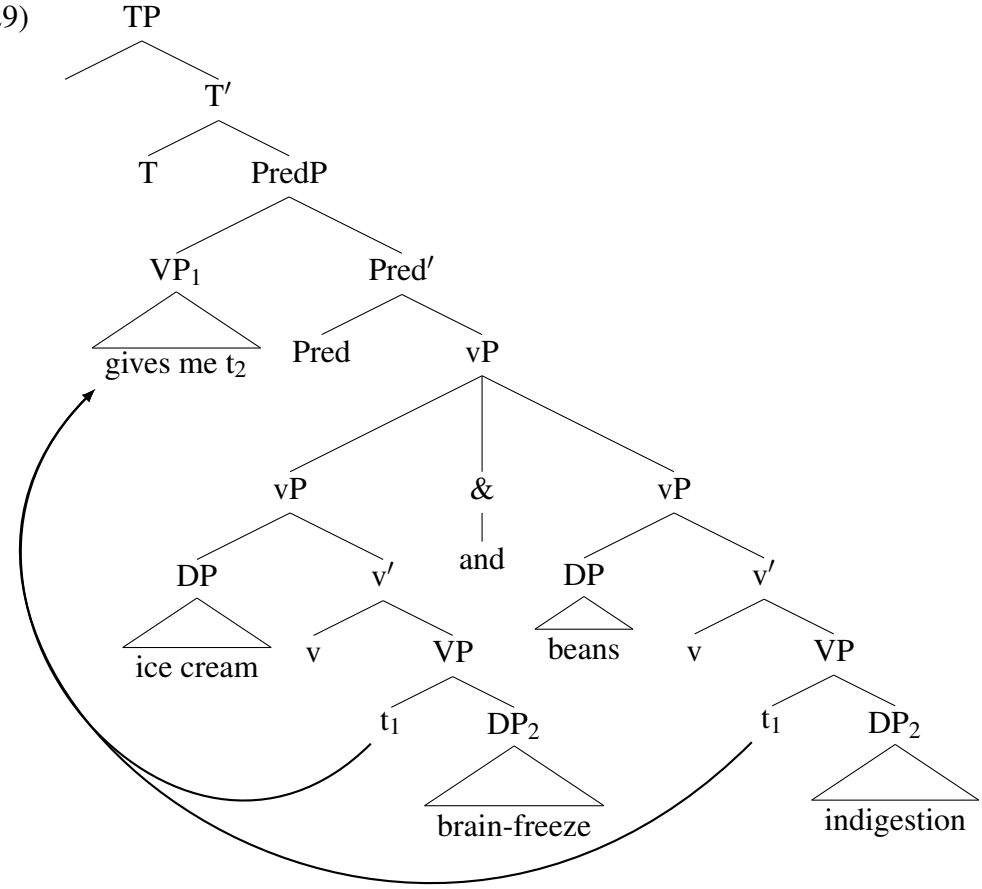
The across-the-board movement account therefore fails to derive the complex gaps in (25), in which one remnant is the direct object of an object control predicate.

What could the proponent of across-the-board movement do to save the account? Johnson considers (pp. 314–318) a similar case where predicate shift produces an illicit word order. At some stage of the derivation for the complex gap in (28), across-the-board movement of VP from each coordinate incorrectly orders the verb and direct object before the subject of the first coordinate.

(28) Ice cream gives me brain-freeze, if I eat it too fast, and beans Δ indigestion, if I eat them too slow. (Johnson 2009:314)

To see this, consider the structure of (28) just after VP has moved leftward in an across-the-board fashion (I omit the conditional clauses for clarity):

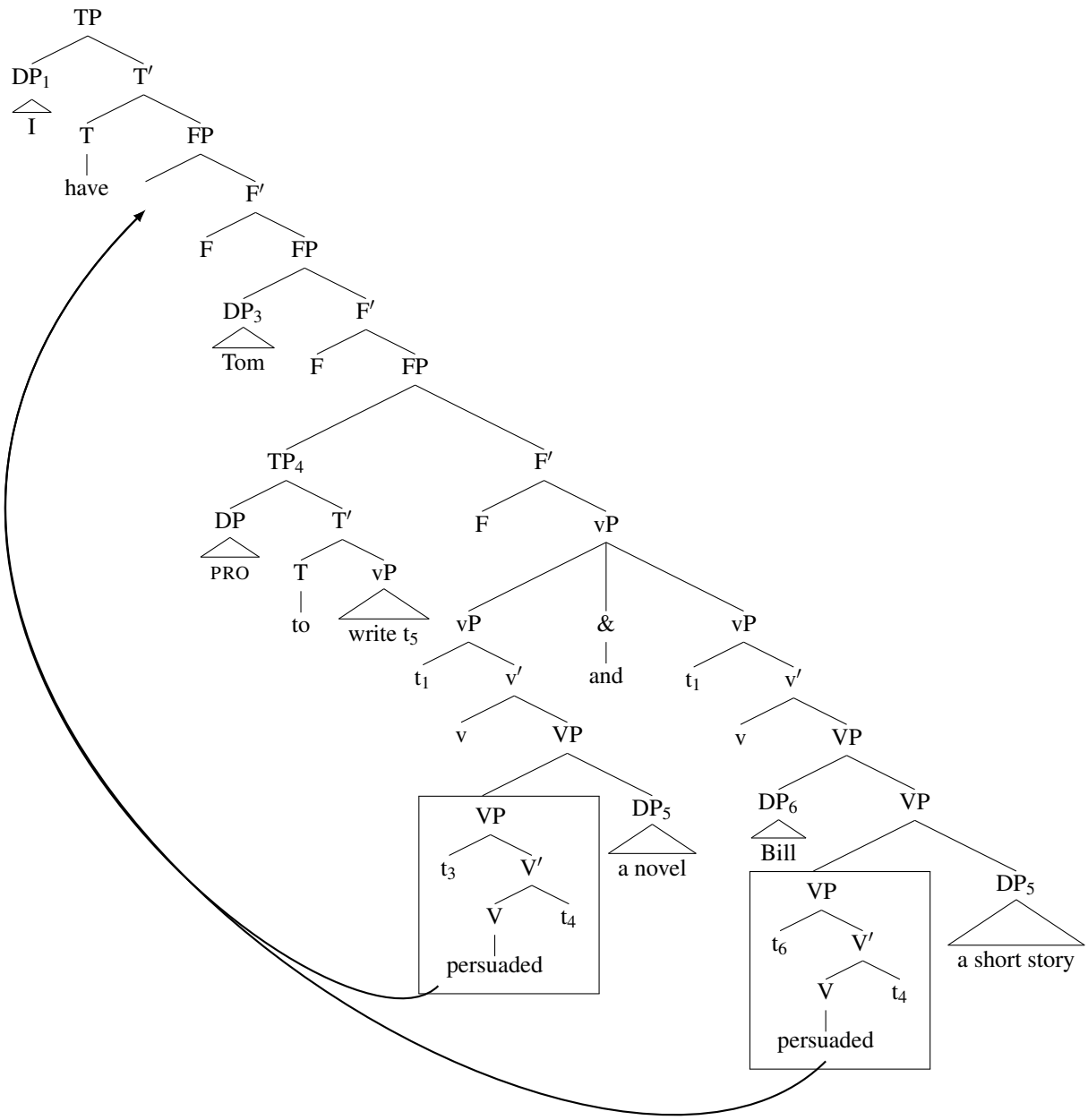
(29)



At this point in the derivation, the VP incorrectly precedes the subject of the first coordinate, *ice cream*. But as Johnson observes, additional movement operations apply to derive the correct linear order. In particular, the subject of the first coordinate moves to Spec-TP to get case.

Perhaps something similar is going on in (25). What if the correlate and the infinitival clause, too, could escape the first coordinate? On the face of it, this is not implausible if predicate shift is part of a larger family of scrambling operations that move elements leftward into the middle field, as I briefly discussed in §2.3.3. So, we are contemplating the possibility that the sentence in (25) has the following derivation:

(30)



First, the remnants *Bill* and *a short story* and the correlate *a novel* raise in each coordinate. Then, the embedded infinitival clauses (TP_4) scramble in an across-the-board fashion to a functional projection located immediately outside the coordination structure. Next, the correlate *Tom* (DP_3) scrambles (from just the first coordinate) to a position immediately above the infinitival clause. This last step is essential so that the lower segment of VP in each coordinate is identical. Finally, VP undergoes predicate shift in an across-the-board fashion to another, yet higher, functional projection. (These functional projections in the middle field are labeled FP just for convenience.)

While these additional movement operations are able, in combination with predicate shift, to derive the sentence in (25), they do so at great cost. The proponent of the across-the-board movement account must make *three* implausible assumptions to maintain the derivation in (30):

1. The additional scrambling operations in (30) would have to be blocked outside of low-

coordination structures without predicate shift. In general, moving an embedded infinitival clause, as in (31a), or a direct object, as in (31b), into the middle field is ungrammatical.

(31) a. * I will $[_{TP}$ **to write a novel**$]_1$ promise t_1.
b. * Liz has $[_{DP}$ **the man holding a martini**$]_1$ met t_1.

These scrambling operations in English are thus even less plausible than predicate shift itself. While the free application of predicate shift outside of coordinations is unmotivated, it does not generate ungrammatical strings, as we saw in (15).

2. Both scrambling operations in (30) would have apply *together* before predicate shift. Across-the-board movement of just the infinitival clause without raising of the correlate from the first coordinate is ungrammatical:

(32) * I_1 $[_{VP}$ t_3 persuaded $t_4]_2$ $[_{TP}$ **to write** $t_5]_4$ $[[_{vP}$ t_1 $[_{DP}$ Tom$]_3$ t_2 $[_{DP}$ a novel$]_5]$, and $[_{vP}$ t_1 $[_{DP}$ Bill$]_3$ t_2 $[_{DP}$ a short story$]_5]]$.

Movement of one constituent usually does not depend on the movement of another constituent in this way.

3. The scrambling operations in (30) would have to apply *obligatorily* when there is predicate shift. As we already observed in (26), predicate shift all by itself derives an ungrammatical string:

(33) * I_1 $[_{VP}$ t_3 persuaded to write $t_4]_2$ $[[_{vP}$ t_1 $[_{DP}$ Tom$]_3$ t_2 $[_{DP}$ a novel$]_4]$, and $[_{vP}$ t_1 $[_{DP}$ Bill$]_3$ t_2 $[_{DP}$ a short story$]_4]]$.

In contrast, scrambling into the middle field is, at least in German and Dutch, an optional movement operation (Thráinsson 2003:188).

Given what we know about movement in English and about these specific movement operations in other, related languages, these three assumptions strike me ad hoc. They are required solely to preserve across-the-board movement as the mechanism that derives complex gaps. It would be preferable not to have to make them.

To make matters worse, the specific combination of movement operations in (30) must be available in English, even though it is not permitted in other languages.[12] Müller (1996) observes for German that, if a certain movement operation applies to an element, the same operation cannot then also apply to a constituent containing that element. For instance, in (34a–b), because one or more phrases have scrambled out of the VP into the middle field, the VP itself cannot scramble (to a position above the subject, which is allowed in German). There is nothing wrong with scrambling the VP, so long as nothing has scrambled out of it, as the relative grammaticality of (34c) shows. And, there is nothing wrong with moving the VP when one or more phrases have scrambled out of it, as long as this happens by some other movement operation, such as topicalization in (34d).

[12] I thank Danny Fox (p.c.) for suggesting this argument.

(34) a. * daß [$_{VP}$ dem Peter t_2 gegeben]$_1$ die Claudia [$_{DP}$ einen Kuß]$_2$ t_1 hat.
that the.DAT Peter given the.NOM Claudia a.ACC kiss has
'that Claudia gave Peter a kiss.'

b. * daß [$_{VP}$ t_2 t_3 gegeben]$_1$ die Claudia [$_{DP}$ dem Peter]$_2$ [$_{DP}$ einen Kuß]$_3$ t_1
that given the.NOM Claudia the.DAT Peter a.ACC kiss
hat.
has
'that Claudia gave Peter a kiss.'

c. ?? daß [$_{VP}$ dem Peter einen Kuß gegeben]$_1$ die Claudia gestern t_1 hat.
that the.DAT Peter a.ACC kiss given the.NOM Claudia yesterday has
'that yesterday Claudia gave Peter a kiss.' (Müller 1996:362)

d. [$_{VP}$ t_2 t_3 Gegeben]$_1$ hat die Claudia [$_{DP}$ dem Peter]$_2$ [$_{DP}$ einen Kuß]$_3$ t_1.
given has the.NOM Claudia the.DAT Peter a.ACC kiss
'Claudia gave Peter a kiss.' (Müller 1996:361)

The derivation in (30) is practically identical to the derivation of the ungrammatical sentence in (34b). Since predicate shift is a middle field operation, the derivation in (30) should be subsumed by Müller's generalization, and it, too, should be ungrammatical. The object DP and the embedded infinitival clause scramble out of VP before it undergoes predicate shift.

The proponent of the across-the-board movement account could probably avoid some of these problems if they permitted movement to happen merely to conserve the shape of a sentence. In discussing (28), Johnson mentions recent work by Müller (2000) and Williams (2003), who propose that once linear relations are established at some level of representation — say, at the vP phase boundary — movement can apply freely thereafter to preserve those relations. With these more liberal assumptions, the additional scrambling operations in the derivation in (30) could apply to preserve the linear relations between constituents inside the first coordinate, which otherwise would be disturbed by predicate shift.

However, if leftward movement is freely available to preserve the linear order of constituents in the first coordinate, then the across-the-board movement account becomes difficult, if not impossible, to test empirically. Moving the VP from each coordinate in an across-the-board fashion could never possibly change the linear relations previously established for the first coordinate. Its only observable effect, then, would be to remove additional material in the second coordinate. But this is exactly what a nonmovement operation like VP-ellipsis does. Deleting the VP in the second coordinate removes additional material without affecting linear relations in the first coordinate.

So, either the across-the-board movement account requires a number of implausible assumptions to derive a sentence like (30), or if movement can apply more liberally to conserve the shape of sentences, it is difficult to see what empirical consequences, if any, would differentiate the across-the-board movement account from a nonmovement account. Either of these is sufficient reason, I believe, to replace across-the-board movement with another mechanism for deriving complex gaps.

Moreover, recall that across-the-board movement plays no role in accounting for the unique properties of gapping. As we saw in §2.3, the syntax of low coordination does all the work in deriving the first two properties; and, across-the-board movement is insufficient for deriving the third property, the No Embedding Generalization. For these reasons, I will argue next that gapping

uses VP-ellipsis to remove additional material. It does all the same work that across-the-board movement does without any of the messy consequences.

4 Gapping uses VP-ellipsis instead

I propose that, when additional material besides T goes missing in gapping, it does so through deletion. To derive simple gaps, all that is needed is low coordination. But complex gaps arise through VP-ellipsis that applies to a low-coordination structure.[13]

This kind of account was proposed by Coppock (2001) and Lin (2002) in response to Johnson's earlier work (2004). There are also earlier proposals that gapping is VP-ellipsis in a clausal coordination structure (Sag 1976:189–300, Jayaseelan 1990:73–78), and the idea that gapping is deletion of some sort is an old one (Ross 1970, Hankamer 1973, 1979, Neijt 1979, van Oirsouw 1987, Wilder 1994, 1997, Hartmann 2001, Merchant 2003).[14] But my proposal is the first to treat gapping as ellipsis that also accounts for all three of its unique properties.

Consider again the gapping and pseudogapping sentences from the introduction, repeated in (35–36) below. They are identical except that T also goes missing in the gapping sentence.

(35) Some had ordered mussels, and others Δ swordfish. = (1)

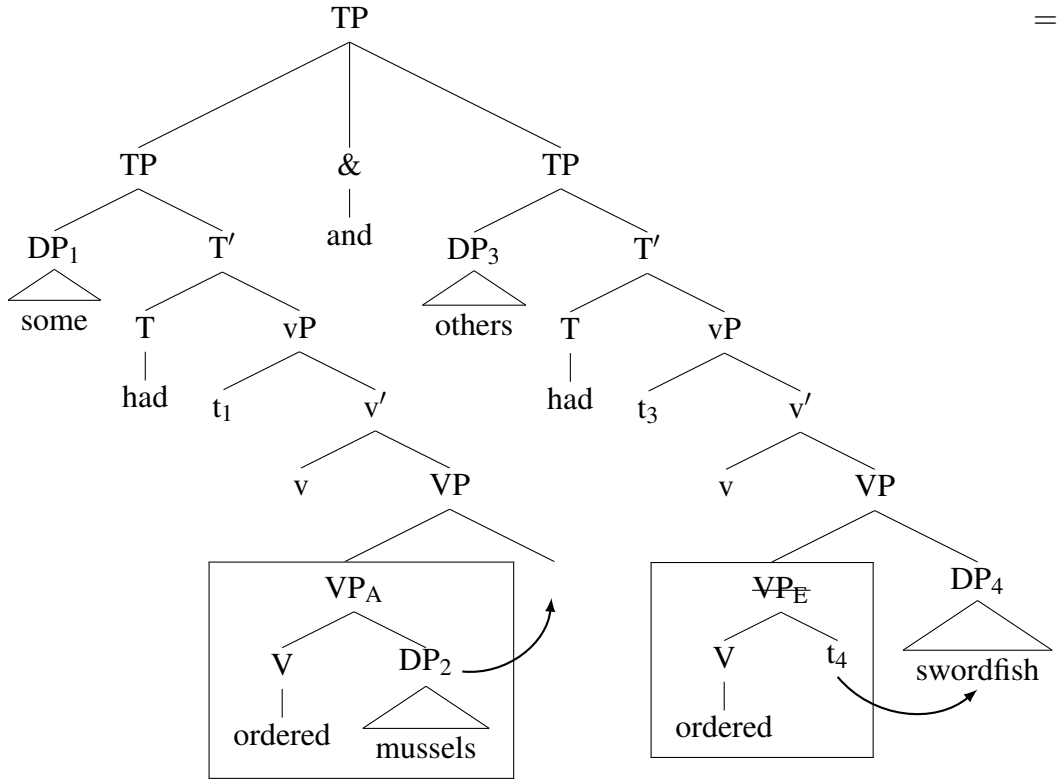
(36) Some had ordered mussels, and others had Δ swordfish. = (2)

The pseudogapping sentence in (36) is nothing more than VP-ellipsis in a clausal coordination structure (Stump 1977, Jayaseelan 1990, Lasnik 1999a,b,c). The remnants survive deletion because they are located outside the VP in the second coordinate when it is deleted under identity with the VP of the first coordinate:

[13] As a reviewer points out, if gapping involves low coordination, then you might expect that head-final languages would order the shared T head after the second coordinate and the remnants it contains, e.g. [[S O V] & [S O]] T. I do not know whether this prediction is borne out. But as I discuss in §7, there may be reason to think that gapping does not have the same underlying structure in every language.

[14] There are, of course, more what-you-see-is-what-you-get analyses of gapping where what goes missing is simply never there to begin with (Oehrle 1987, Sag et al. 1985, Steedman 1990, Culicover and Jackendoff 2005). These accounts confront the significant problem that the remnants behave syntactically as if the missing structure is present at some point in the derivation. For instance, they obey constraints on movement like islands (Hankamer 1979:20f., Neijt 1979:23f.).

(37) = (36)

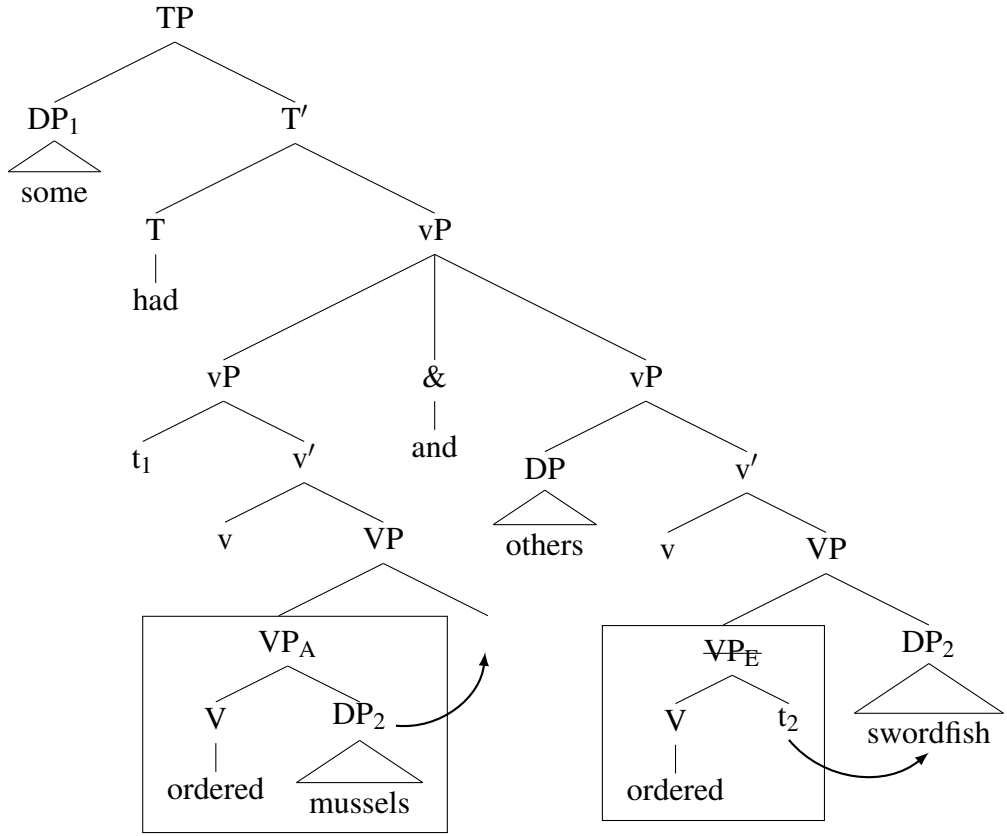


For VP_E in the second coordinate to be elided, it must be identical in some sense to VP_A in the first coordinate. The relevant notion of identity could be syntactic (Fiengo and May 1994) or semantic (Merchant 2001) in nature. In either case, the elided and antecedents VPs in (37) are identical, except for the second correlate in the first coordinate (DP_2), which must be factored out of the identity calculation. Merchant (2008:148f.) suggests that this can be done through covert movement, which I indicate with an arrow originating in the pronounced position. At LF, then, VP_E and VP_A are identical.[15]

The complex gap in (35) is nothing more than VP-ellipsis in a low-coordination structure. As shown in (38), T goes missing because *and* coordinates vPs. Additional material—namely, the main verb *ordered*—goes missing by VP-ellipsis. After the remnant raises out of VP_E, it is deleted under identity with VP_A in the first coordinate. (Again, the correlate, DP_2, can be factored out of the identity calculation through LF movement.)

[15]Coppock (2001:140) offers an alternate way of doing this, relying on the fact that the remnants and their correlates are focused in gapping. She invokes a clause in Merchant's (2001) definition of the eGIVENness identity constraint that allows not just unsaturated arguments to be ∃-bound but also expressions that are in focus. This gives the same result as covert movement of the correlate.

(38) = (35)



The ellipsis account has no problem deriving the surface form of gapping with object control verbs, which we saw in §3 was problematic for the across-the-board movement account. The antecedent VP in the first coordinate does not move, so there is no possibility that it will somehow be ordered incorrectly relative to the correlates:

(39) I_1 have $[[_{vP}\ t_1\ [_{VP_A}$ persuaded Tom to write a novel$]]$, and $[_{vP}\ t_1$ $Bill_2$ ~~$[_{VP_E}$ persuaded t_2 to write $t_3]$~~ a short $story_3]]$. = (25)

Note that the ellipsis account requires the same two assumptions about subject licensing that Johnson's across-the-board movement account does. A-movement must be immune to the Coordinate Structure Constraint, so that the subject can escape from the first coordinate into Spec-TP; and, the subject of the second coordinate must be able to be case licensed *in situ* in Spec-vP. As I discussed in §2.1, neither assumption was unmotivated. Moreover, since these assumptions are shared equally by the two accounts, they cannot be used to distinguish them.

A reviewer wonders whether the ellipsis account predicts that gapping should be able to find its antecedent anywhere in the preceding discourse. Of course, this is impossible. The additional material that goes missing in the gapping sentence in (40a) cannot be interpreted as identical to the VP of A's preceding utterance, i.e. *acquire*.

(40) a. A: Do you think Delta will acquire Virgin America?

B: * No, but the fast food industry will consolidate, and Burger King Δ Wendy's.
Intended: 'No, but the fast food industry will consolidate, and Burger King will acquire Wendy's.'

b. A: Do you think Delta will acquire Virgin America?

B: * No, but the fast food industry will consolidate, and Burger King will Δ Wendy's.
Intended: 'No, but the fast food industry will consolidate, and Burger King will acquire Wendy's.'

In general, however, VP-ellipsis is not completely free in how it finds its antecedent, as Kehler (2002:35–79) shows. For instance, the parallel pseudogapping sentence in (40b) is also not able to take the VP of the preceding utterance as its antecedent. If in the syntactic and discourse environment in (40a–b), a deleted VP must find the closest preceding VP as its antecedent, then the ellipsis account correctly predicts the ungrammaticality of (40a).

What about the three unique properties of gapping that distinguish it from pseudogapping? It turns out that the ellipsis account does a pretty good job of deriving most of them, as Johnson points out (pp. 296–300). If gapping is low coordination (plus VP-ellipsis), the first two properties arise from the syntax of low coordination. As I showed in §2.3, gapping is restricted to coordinate structures because only when vPs are coordinated can they share a single T head. And, the gap cannot be embedded because then it would be contained in a finite clause that could not participate in T sharing with the first coordinate.

As successful as the ellipsis account is, however, it appears to fail with the final property of gapping. As Johnson argues (p. 300), VP-ellipsis, all by itself, cannot account for why gapping is ungrammatical in (41), while pseudogapping is grammatical in (42).

(41) * She has said that Peter has eaten his peas, and Sally ~~eaten~~ her green beans. cf. (5a)
Intended: 'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

(42) She has said that Peter has eaten his peas, and Sally has ~~eaten~~ her green beans. cf. (5b)
'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

If both gapping and pseudogapping involve VP-ellipsis — but only the gapping sentence in (42) is ungrammatical — then VP-ellipsis cannot be the source of the No Embedding Generalization:

(43) *No Embedding Generalization*
The correlates in gapping cannot be embedded.

Johnson takes this to be an insurmountable problem for the ellipsis account. I argue next, however, that the No Embedding Generalization arises for reasons that are not syntactic. Low coordinations have a special information-structural property — they require vP coordinates to have parallel focus structures — which derives the restriction on embedding correlates, and hence the contrast between (41) and (42).

5 Rehabilitating the ellipsis account

It is often observed that gapping has a particular information structure. As Kuno (1976:310) puts it in an early description:

> [c]onstituents deleted by Gapping must be contextually known. On the other hand, the two constituents left behind by Gapping necessarily represent new information and,

therefore, must be paired with constituents in the first conjunct that represent new information.

Setting aside the obvious point that the material that goes missing in gapping must be identical to antecedent material, there are two parts to Kuno's observation.

First, the remnants represent new information relative to the preceding discourse (see also Hankamer 1979:183f., Sag 1976:287, Levin and Prince 1986, Hartmann 2001:162–166, Kehler 2002:81–100, Winkler 2005:191–194). Usually, this is encoded in the intonation of gapping sentences. As shown in (44), the remnants *others* and *swordfish* each bear a pitch accent.

(44) SOME had ordered MUSSELS, and OTHERS ~~ordered~~ SWORDFISH. = (6b)

Since new information that is accented is usually in focus, I propose that gapping requires that each remnant contain a focus:

(45) *Focused Remnant Requirement*
The remnants in gapping must each contain a focus.

As I will discuss in §5.1, the Focused Remnant Requirement limits the possible focus structures that a gapping sentence can have. Noninitial coordinates will always contain a narrow focus on each remnant.

Second, as Kuno observes, the remnants contrast with corresponding phrases in the first coordinate. We have been calling these correlates, and they, too, are often new information and can be realized with pitch accents, as *some* and *mussels* are in (44). This contrastive relationship arises, I contend, from a more general constraint on the information structure of low-coordination structures, which I call Low-Coordinate Parallelism:

(46) *Low-Coordinate Parallelism (informal)*
In vPs that are coordinated, nonfocused material must be semantically identical.

This constraint forces the coordinates in a low coordination to have parallel focus structures by requiring that nonfocused material be semantically identical. Since each remnant bears a focus (by the Focused Remnant Requirement), each correlate will also have to bear a focus.

I define Low-Coordinate Parallelism more formally in §5.2, using Rooth's (1985, 1992) alternative semantics for focus. I then show that it is this information-structural constraint, working in concert with the Focused Remnant Requirement, that derives the No Embedding Generalization. When the correlates are embedded in one coordinate of a low-coordination structure, the focus structures of the coordinates will not be parallel. Pseudogapping, however, does allow its antecedent to be embedded, because it occurs in TP coordinations, which by hypothesis are not subject to Low-Coordinate Parallelism. As a constraint on *all* low-coordination structures, Low-Coordinate Parallelism should hold generally in vP coordination structures — when the correlates are not embedded, or even when there is no VP-ellipsis. I show in §5.3 that this is indeed the case.

5.1 The Focused Remnant Requirement

The remnants in gapping represent new information and bear pitch accents. This follows from the Focused Remnant Requirement (47), which states that each remnant must contain a focus. This

constraint is satisfied in the complex gap in (47).[16]

(47) (By the time I got there, who had ordered what?)
[SOME]$_F$ had ordered [MUSSELS]$_F$, and [OTHERS]$_F$ ~~ordered~~ [SWORDFISH]$_F$. = (6b)

If a focus corresponds to the wh-phrase of a question (Halliday 1967:226), then the remnants in (47) are in focus, since they each can replace the wh-phrase in a multiple wh-question.

When the Focused Remnant Requirement is violated, gapping becomes ungrammatical. The focus on one of the remnants in (47) cannot be removed (see also Hartmann 2001:162f.). This is true whether it is a subject remnant (48a) or an object remnant (49a).

(48) (By the time I got there, what had Max ordered?)
a. * Max had ordered [MUSSELS]$_F$, and $\left\{\begin{matrix}\text{he}\\ \text{him}\end{matrix}\right\}$ ~~ordered~~ [SWORDFISH]$_F$, (too).
b. Max had ordered [MUSSELS]$_F$, and he had ordered [SWORDFISH]$_F$, (too).

(49) (By the time I got there, who had ordered mussels?)
a. * [MAX]$_F$ had ordered mussels, and [LIZ]$_F$ ~~ordered~~ mussels, (too).
b. [MAX]$_F$ had ordered mussels, and [LIZ]$_F$ had ordered mussels, (too).

Crucially, the nonelliptical versions of these sentences, in (48b) and (49b), are grammatical with the same exact focus structure.

Note that it is not enough for the subject and object remnants simply to occur *within* a focus. Given the rules of focus projection (Selkirk 1984), the pattern of accents in (48a) plausibly corresponds to a different focus structure. If the pitch accent on the object remnant is mapped onto a broad focus on the entire second coordinate, as in (50a), gapping is still ungrammatical.[17]

(50) (By the time I got there, what had happened?)
a. * [Max had ordered MUSSELS]$_F$, and [$\left\{\begin{matrix}\text{he}\\ \text{him}\end{matrix}\right\}$ ~~ordered~~ SWORDFISH]$_F$, (too).
b. [Max had ordered MUSSELS]$_F$, and [he had ordered SWORDFISH]$_F$, (too).

The Focused Remnant Requirement requires that each remnant contain an entire focus, and neither remnant in the gapping sentence in (50a) does so. This contrasts strikingly with the fully

[16]Winkler (2005:196–207) argues, following Oehrle (1987:206), that intonation correlates with a scopal ambiguity between negation and the coordinator in gapping sentences. She does not dispute, however, that gapping sentences without negation, such as (47), have the focus structure shown.

[17]This presupposes that focus is able to project through the site of deletion. But it is not actually clear whether that is possible. Certainly, within Selkirk's (1984) theory of focus projection, a deleted expression cannot be F-marked since F-marked expressions must contain a pitch accent, which obviously cannot be realized on something that is not pronounced (Romero 2000:162–164). Consequently, the F-marking on the direct object in (47) will not suffice to F-mark the verb as it normally would do. If the verb, the head of the phrase, cannot be F-marked, the VP cannot be F-marked and so the focus will not project upwards to the level of the whole clause. If this hypothesis could be placed on sounder empirical footing, then the Focused Remnant Requirement could be revised to require simply that each remnant contain an F-mark (or, equivalently, a pitch accent). This F-mark would not project outside of the remnant, yielding the same result as the current version of the rule in (45).

pronounced clausal coordination in (50b), which does allow for a broad focus extending over the entire second coordinate.

Simple gaps, such as (51), are also subject to the Focused Remnant Requirement. Both the subject remnant, *others*, and the VP remnant, *drunk a cocktail*, contain a focus.

(51) (By the time I got there, who had done what?)
[SOME]$_F$ had [ordered MUSSELS]$_F$, and [OTHERS]$_F$ [drunk a COCKTAIL]$_F$. = (6a)

The focus on both remnants is obligatory. Removing the focus on the subject, as in (52a), is ungrammatical; and, removing the one on the VP, as in (53a), is also degraded, if not flat-out ungrammatical.

(52) (By the time I got there, what had Max done?)
a. * Max had [ordered MUSSELS]$_F$, and him [drunk a COCKTAIL]$_F$, (too).
b. Max had [ordered MUSSELS]$_F$, and he had [drunk a COCKTAIL]$_F$, (too).

(53) (By the time I got there, who had drunk a cocktail?)
a. ?? [MAX]$_F$ had drunk a cocktail, and [LIZ]$_F$ drunk a cocktail, (too).
b. [MAX]$_F$ had drunk a cocktail, and [LIZ]$_F$ had drunk a cocktail, (too).

Crucially, the parallel sentences without gapping, in (52b) and (53b), are both fully grammatical.

I cannot provide an explanation for the Focused Remnant Requirement here. In §7, however, I suggest that the remnants in gapping always contain a focus because of how they escape deletion.

5.2 Deriving the No Embedding Generalization

The No Embedding Generalization arises, I propose, from Low-Coordinate Parallelism, acting in concert with the Focused Remnant Requirement. Recall from (46) that Low-Coordinate Parallelism requires that the nonfocused material in each vP coordinate be semantically identical. It is clear that the gapping sentence in (6b), which has the structure in (54), satisfies this informal definition.

(54) had [[$_{vP_1}$ [SOME]$_F$ ordered [MUSSELS]$_F$] and [$_{vP_2}$ [OTHERS]$_F$ ~~ordered~~ [SWORDFISH]$_F$]] = (6b)

This is the same structure as in (38) above, except that the subject of the first coordinate has been returned to its base position for convenience. With a focus on each remnant and a focus on each correlate, all nonfocused material in vP_1 and vP_2 is indeed semantically identical.

5.2.1 A formal statement of Low-Coordinate Parallelism

To state Low-Coordinate Parallelism more precisely, I use Rooth's (1985, 1992) alternative semantics for focus. He represents the position of focus in a linguistic expression with a focus meaning that exists alongside the ordinary meaning given by the interpretation function $[\![\ ]\!]$. A focus meaning, given by the function *ALT*, is a *set of alternatives*—that is, a set of ordinary meanings derived by replacing a focus-marked constituent with every expression of that type. The focus meanings for the vPs in (54)—$ALT(vP_1)$ and $ALT(vP_2)$—are the same, then, since they have the same focus

structure. Both are the set of propositions of the form '*y* ordered *x*,' where *x* and *y* are individuals, i.e. $\{\mathbf{order}(x)(y) \mid x, y \in D_e\}$.

Using this alternative semantics for focus, I propose the more formal statement of Low-Coordinate Parallelism in (55). It requires that the coordinates in a low-coordination structure be alternatives to one another. All nonfocused material in each coordinate will consequently be semantically identical.

(55) *Low-Coordinate Parallelism (formal)*
For vPs α and β, if α and β are coordinated, $[\![\alpha]\!] \in ALT(\beta)$ and $[\![\beta]\!] \in ALT(\alpha)$.

This more formal statement of Low-Coordinate Parallelism is satisfied in (54). Since the focus structures of the two coordinates are parallel, $ALT(\text{vP}_1)$ and $ALT(\text{vP}_2)$ are the same set of propositions, and the ordinary meanings of both coordinates are in this set. The proposition that some ordered mussels is of the form '*y* ordered *x*', as is the proposition that others ordered swordfish.[18]

[18] A reviewer observes that the intonational contour of the first coordinate may not always transparently reflect its focus structure. Depending on what the preceding discourse is, the second correlate may lack a pitch accent:

(i) Q: Who loves you?
A: [MARY]$_F$ loves [me]$_F$, and [I]$_F$ [HER]$_F$.

(ii) Q: What does Mary think of you?
A: [MARY]$_F$ LOVES [me]$_F$, and [I]$_F$ [HER]$_F$.

In general, however, not all foci receive a canonical prosodic realization with a falling pitch accent. A so-called second occurrence focus, originally identified by Partee (1991:21), is a focus that must be present for semantic reasons but that does not bear a pitch accent (though it may be longer in duration and higher in intensity; Rooth 1996, Beaver et al. 2007). For instance, in the answer in (iii), the focus associated with *only* is not realized with a significant pitch excursion. Intuitively, this is because it is already given in the preceding discourse.

(iii) Q: Who only loves you?
A: MARY only loves [you]$_F$.

The unaccented correlates in (i) and (ii) look like second occurrence foci. By Low-Coordinate Parallelism, they must each contain a focus, but they do not bear a pitch accent. They are also already given in the preceding discourse.

There are two pieces of evidence that this account is on the right track. First, as Rooth (1996:217) and Büring (2008:7) describe, a focus is realized as a second occurrence focus when the nuclear pitch accent (the final pitch accent of the sentence) occurs somewhere before it. Since everything following the nuclear pitch accent is deaccented, the second occurrence focus, too, is not realized with a pitch excursion. This predicts that a matrix subject correlate will never be able to be lack an accent, since it can never follow the nuclear pitch accent. Indeed, as shown in (iv), even when the subject correlate is already given, it obligatorily bears a pitch accent.

(iv) Q: Who does Mary love?
A1: * [Mary]$_F$ loves [ME]$_F$, and [I]$_F$ [HER]$_F$.
A2: [MARY]$_F$ loves [ME]$_F$, and [I]$_F$ [HER]$_F$.

Second, Rooth (1996:213f.) proposes that weak pronouns in English, which are phonologically reduced clitics, cannot be a focus, even if this is a second occurrence focus. So, for instance, the focus associated with *only* in the answer in (v) cannot be the weak pronoun /=əm/, only the strong pronoun /ðɛm/.

(v) Q: Who only loves them?
A1: * MARY only loves[=əm]$_F$.
A2: MARY only loves [ðɛm]$_F$.

A reviewer points out that the constraint in (55) resembles Merchant's (2001) identity constraint on ellipsis (eGIVENness). When a constituent is deleted, it must be identical in some sense to its antecedent, so that the missing material can be recovered. While he puts it in slightly different terms, Merchant essentially requires that the deleted phrase and its antecedent be alternatives to one another. Low-Coordinate Parallelism is crucially a different kind of constraint, as it relates the focus structures of *low coordinates*, which in principle may or may not contain a deleted constituent somewhere inside them. In other words, it requires constituents of a certain size in a certain syntactic configuration to have parallel focus structures. This is conceptually very different from the identity constraint on ellipsis.[19]

5.2.2 Accounting for the data

To derive the No Embedding Generalization, Low-Coordinate Parallelism must account for two core pieces of data. First, there is the ungrammatical complex gap in (56), in which the correlates and the antecedent of the elided VP are embedded in the first coordinate. Second, there is the ungrammatical simple gap in (57), in which just the correlates are embedded.

(56) * She has said that [PETER]$_F$ has eaten [his PEAS]$_F$, and [SALLY]$_F$ ~~eaten~~ [her GREEN BEANS]$_F$. cf. (5a)
Intended: 'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

(57) * Mom has checked that [MAX]$_F$ has [eaten his PEAS]$_F$, and [DAD]$_F$ [drunk a BEER]$_F$. = (23a)
Intended: 'Mom has checked that Max has eaten his peas; Dad has drunk a beer.'

In each sentence, there is some nonfocused material present in the first coordinate that is not found in the second coordinate. Consequently, they both violate Low-Coordinate Parallelism and are ungrammatical.

To see this more clearly, first consider the structure for the complex gap in (56) (again, the subject of the first coordinate has been returned *in situ* for clarity):

(58) * has [[$_{vP_1}$ she said that [PETER]$_F$ has eaten [his PEAS]$_F$] and [$_{vP_2}$ [SALLY]$_F$ ~~eaten~~ [her GREEN BEANS]$_F$]] = (56)

(58) violates Low-Coordinate Parallelism because there is some nonfocused material in the first coordinate that is not present in the second coordinate. Consequently, the first coordinate is not an alternative to the second coordinate:

(59) a. $[\![\text{vP}_1]\!] = \textbf{say}(\textbf{eat}(\textbf{his-peas})(\textbf{peter}))(\textbf{she}) \notin$
$ALT(\text{vP}_2) = \{\textbf{eat}(x)(y) \mid x, y \in D_e\}$

(vi) Q: Who loves them?
A1: * [MARY]$_F$ loves[=əm]$_F$ and [THEY]$_F$ [HER]$_F$.
A2: [MARY]$_F$ loves [ðɛm]$_F$, and [THEY]$_F$ [HER]$_F$.

Similarly, in (vi), the correlate that does not bear a pitch accent in (vi) also cannot be realized as a weak pronoun, because it is by hypothesis a second occurrence focus.

[19] Low-Coordinate Parallelism more closely resembles the parallelism constraint that Rooth (1992:102–107) proposes to account for the fact that the interpretation of a gap can vary with the position of focus in the antecedent clause.

b. $[\![\, \text{vP}_2 \,]\!] = \textbf{eat}(\textbf{her-green-peas})(\textbf{sally}) \notin$
$ALT(\text{vP}_1) = \{\textbf{say}(\textbf{eat}(x)(y))(\textbf{she}) \mid x, y \in D_e\}$

To satisfy Low-Coordination Parallelism, the first coordinate would have to express a proposition of the form '*y* eats *x*'. But it does not, because it is the proposition that she said that Peter ate his peas. For the same reason, the second coordinate is not an alternative to the first coordinate.[20]

Changing the focus structure of the sentence in (56) does not make the string grammatical. There are some other focus structures that do satisfy Low-Coordinate Parallelism, but they are excluded by the Focused Remnant Requirement:

(60) a. * [SHE]$_F$ has [said that Peter has eaten his PEAS]$_F$, and [SALLY]$_F$ [~~eaten~~ her GREEN BEANS]$_F$.
b. * [She has said that Peter has eaten his PEAS]$_F$, and [Sally ~~eaten~~ her GREEN BEANS]$_F$.

These alternate focus structures count as parallel by the definition of Low-Coordinate Parallelism in (55). But they are ruled out by the Focused Remnant Requirement. In (60a), the second remnant fails to contain a focus, and in (60b) neither remnant contains a focus. Thus, there is no focus structure that can make the complex gap in (56) grammatical.[21]

Turning now to the simple gap in (57), it has the structure in (61); it is a low coordination without VP-ellipsis.

(61) * has [[$_{\text{vP}_1}$ Mom checked that [MAX]$_F$ has [eaten his PEAS]$_F$], and [$_{\text{vP}_2}$ [DAD]$_F$ [drunk a BEER]$_F$]] = (57)

It is clear that (61), too, violates Low-Coordinate Parallelism because there is some nonfocused material present just inside the first coordinate:

(62) a. $[\![\, \text{vP}_1 \,]\!] = \textbf{check}(\textbf{eat}(\textbf{his-peas})(\textbf{max}))(\textbf{mom}) \in$
$ALT(\text{vP}_2) = \{f(x) \mid x \in D_e \wedge f \in D_{\langle e,t\rangle}\}$
b. $[\![\, \text{vP}_2 \,]\!] = \textbf{drink}(\textbf{a-beer})(\textbf{dad}) \notin$
$ALT(\text{vP}_1) = \{\textbf{check}(f(x))(\textbf{mom}) \mid x \in D_e \wedge f \in D_{\langle e,t\rangle}\}$

Because there is a focus over the entire VP remnant in this simple gap, the first coordinate is an alternative to the second coordinate. The proposition that Mom checked that Max ate his peas is a proposition of the form '*x f*', where *x* is some individual and *f* is some property of individuals.

[20] One might worry that VP-ellipsis is impossible in (56) simply because the elided verb bears participial inflection, while its antecedent bears present tense inflection. But it is well known that ellipsis allows such mismatches in verbal inflection: e.g. *Their daughter went to Europe, and their son will, too*.

[21] There is one more focus structure to rule out. In (i), everything in each coordinate is focused, and the main verb of the second coordinate bears its own focus. There is no problem here with the Focused Remnant Requirement, since each remnant contains a focus.

(i) * [SHE]$_F$ has [said that Peter has eaten his PEAS]$_F$, and [SALLY]$_F$ ~~[eaten]$_F$~~ [her GREEN BEANS]$_F$.

This focus structure is plausibly ruled out by an independent ban on deleting an entire focus (Merchant 2001:179, Han and Romero 2004:199, Beaver and Clark 2008:176–180, Hartman 2011:371). It also fails to satisfy Low-Coordinate Parallelism, since the first coordinate is not an alternative to the second coordinate, i.e. $[\![\, \text{vP}_1 \,]\!] = \textbf{say}(\textbf{eat}(\textbf{his-peas})(\textbf{peter}))(\textbf{she}) \notin ALT(\text{vP}_2) = \{f(x)(y) \mid f \in D_{\langle e,\langle e,t\rangle\rangle} \wedge x, y \in D_e\}$.

But the second coordinate is not an alternative to the first coordinate, since it is not a proposition of the form 'Mom checked that *x f*'. Without this focus structure, then, the simple gap in (57) is ungrammatical.

Of course, if the embedding material in the first coordinate could be focused, the simple gap in (57) should become grammatical. This is indeed possible, as we already saw in (23b), repeated as (63) below. The correlates in the first coordinate can be the higher subject DP *Mom* and the larger VP *checked that Max has eaten his peas*, as if the sentence answered the question *Who has done what?*

(63) [MOM]$_F$ has [checked that Max has eaten his PEAS]$_F$, and [DAD]$_F$ Δ [drunk a BEER]$_F$. = (23b)
'Mom has checked that Max has eaten his peas; Dad has drunk a beer.'

(63) is grammatical with the interpretation that is missing in (56): Mom has checked that Max has eaten his peas, and Dad has drunk a beer.[22] This falls out from Low-Coordinate Parallelism. By shifting focus in this way, the embedding predicate in the first coordinate is contained inside a correlate, so that now there is no nonfocused material that is not semantically identical (in fact, there is no nonfocused material in either coordinate):

(64) has [[$_{vP_1}$ [MOM]$_F$ [checked that Max has eaten his PEAS]$_F$] and [$_{vP_2}$ [DAD]$_F$ [drunk a BEER]$_F$]] = (63)

To satisfy Low-Coordinate Parallelism, each coordinate must be of the form '*x f*.' It is easy to verify in (64) that this is indeed the case.

5.2.3 The contrast with pseudogapping

Low-Coordinate Parallelism derives the No Embedding Generalization by requiring that nonfocused material in low coordinations be semantically identical. By hypothesis, larger coordination structures are not subject to the same parallelism constraint. When pseudogapping occurs in a coordination structure at all, it must be at least a TP coordination because the finite element survives deletion. Consequently, pseudogapping allows its antecedent to be embedded, as in (65).

(65) She has said that [PETER]$_F$ has eaten [his PEAS]$_F$, and [SALLY]$_F$ has ~~eaten~~ [her GREEN BEANS]$_F$. cf. (5b)
'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

Clearly, in (65), the nonfocused material in the first TP coordinate is *not* semantically identical to the nonfocused material in the second TP coordinate.

[22] One reviewer observes that they do not find sentences like (63) particularly felicitous. This might reflect some variation in how readily speakers accept focus projection from a single pitch accent on the embedded object to the matrix verb phrase. With such a broad focus, it is possible for there to be additional pitch accents on the other major constituents inside it:

(i) [MOM]$_F$ has [CHECKED that MAX has eaten his PEAS]$_F$, and [DAD]$_F$ [drunk a BEER]$_F$.

To my ear, the intended interpretation is easier to get in (i). The additional pitch accents unambiguously identify a focus over the entire matrix verb phrase of the first coordinate.

That is not to say that pseudogapping can never have a parallel focus structure — see (2) for example. To the contrary, parallel focus structures are common outside of low coordinations. But then it is usually motivated by discourse considerations, rather than a grammatical constraint like Low-Coordinate Parallelism. In the famed 'two farmers' sentence in (66), for instance, there are two DPs with parallel focus structures.

(66) [$_{DP}$ An [AMERICAN]$_F$ farmer] was talking to [$_{DP}$ a [CANADIAN]$_F$ farmer].
(Rooth 1992:80)

But in a different discourse context, the subject and object DPs can be nonparallel. In B's response in (67), for instance, the nonfocused material in the DPs *an American farmer* and *a Canadian politician* is not semantically identical.

(67) A: What kind of farmer was talking to what kind of politician?
B: [$_{DP}$ An [AMERICAN]$_F$ farmer] was talking to [$_{DP}$ a [CANADIAN]$_F$ politician].

In fact, it is in precisely such a discourse context that the pseudogapping sentence in (65) is most felicitous. In B's second answer in (68), each coordinate is congruent to a different wh-question. They consequently must have nonparallel focus structures.

(68) A: Who has she said has eaten what, and (in fact) who has eaten what?
B1: * She has said that [PETER]$_F$ has eaten [his PEAS]$_F$, and (in fact) [SALLY]$_F$ ~~eaten~~ [her GREEN BEANS]$_F$. cf. (5a)
Intended: 'She has said that Peter has eaten his peas; Sally has eaten her green beans.'
B2: She has said that [PETER]$_F$ has eaten [his PEAS]$_F$, and (in fact) [SALLY]$_F$ has ~~eaten~~ [her GREEN BEANS]$_F$. cf. (5b)
'She has said that Peter has eaten his peas; Sally has eaten her green beans.'

In this context, the contrast with the gapping sentence in B's first answer is particularly striking. Even though the discourse favors nonparallel focus structures, gapping is still ungrammatical in (68). This is because, as we saw in §5.2.2, it violates Low-Coordinate Parallelism.

5.3 Another argument for Low-Coordinate Parallelism

This account of the No Embedding Generalization gets its explanatory power from the generality of Low-Coordinate Parallelism. We already saw in §5.2.2 that it applies to low-coordination structures that do not contain VP-ellipsis. In simple gaps, Low-Coordinate Parallelism is violated when the correlates are embedded.

More generally, we can see the effects of Low-Coordinate Parallelism even when nothing is embedded. In the gapping sentences in the first of B's utterances in (69–71), low-coordination structures are nonparallel in other ways, so that Low-Coordinate Parallelism is not satisfied.[23]

[23] A reviewer suggests that, if *too* is added after the first remnant in (71B1), the sentence improves:

(i) ?? [SALLY]$_F$ will [take a NAP]$_F$, and [JOE]$_F$, too, Δ [after LUNCH]$_F$.

To my ear, for (i) to be at all acceptable, there must be a long pause before *after lunch*. This suggests to me that this is actually stripping with a temporal adjunct tacked on by the speaker as a kind of afterthought. For this reason, I am not sure I would give it the same parse as the gapping sentence.

(69) A: Did the students check on what's in the oven?

B1: * The cupcakes were ready so they took them out, but (either) [JOHN]$_F$ didn't test [the CAKE]$_F$ or [MARY]$_F$ Δ [with a TOOTHPICK]$_F$.

B2: The cupcakes were ready so they took them out, but (either) [JOHN]$_F$ didn't test [the CAKE]$_F$ or [MARY]$_F$ did Δ [with a TOOTHPICK]$_F$.

(70) A: Who has donated to our charity this year?

B1: * [I]$_F$ have donated, and [my SPOUSE]$_F$ Δ [to UNESCO]$_F$.

B2: [I]$_F$ have donated, and [my SPOUSE]$_F$ has Δ [to UNESCO]$_F$.

(71) A: I can't keep up with kids! What are they going to be up to next?

B1: * Don't worry! [SALLY]$_F$ will [take a NAP]$_F$, and [JOE]$_F$ Δ [after LUNCH]$_F$.

B2: Don't worry! [SALLY]$_F$ will [take a NAP]$_F$, and [JOE]$_F$ will Δ [after LUNCH]$_F$.

In B1 in (69), for example, a focused constituent in the first coordinate, *the cake*, corresponds to material that is not focused and inside the elided VP in the second coordinate:

(72) * didn't [[$_{vP_1}$ [JOHN]$_F$ test [the CAKE]$_F$] or [$_{vP_2}$ [MARY]$_F$ ~~test the cake~~ [with a TOOTHPICK]$_F$]] = (69B1)

The vP coordinates do not satisfy Low-Coordinate Parallelism because they are not alternatives to one another. In particular, the proposition that Mary tested the cake with a toothpick is *not* a proposition of the form 'y tested x' — so, $[\![\text{vP}_2]\!] \notin ALT(\text{vP}_1)$.

Crucially, the comparable pseudogapping sentences in the second of B's answers in (69–71) are grammatical. In B2 of (69), the coordinates do not have parallel focus structures. But since TP coordinations are not subject to Low-Coordinate Parallelism, pseudogapping is expected to be grammatical.[24]

To sum up, I have argued that low coordinations have special information-structural properties. Low-Coordinate Parallelism requires that the focus structures of vP coordinates be parallel. In combination with the Focused Remnant Requirement, this constraint produces the No Embedding Generalization. We also saw the effects of Low-Coordinate Parallelism elsewhere. It rules out low coordinations that do not have parallel focus structures when the antecedent is not embedded — or even, where there is no antecedent because there is no VP-ellipsis. What remains now is to figure out why low coordinations are subject to such an information-structural constraint in the first place. I conjecture in §7 that it arises from more general considerations of question-answer congruence, but I leave a more definitive answer for the future.

6 Another potential problem for the ellipsis account

There is another potential problem that Johnson identifies for the ellipsis account. If additional material in gapping goes missing through VP-ellipsis, then even an elided VP should be able to serve

[24] A reviewer wonders whether B's second answer in (69) really is an example of pseudogapping, since the instrumental PP *with a toothpick* could be adjoined outside the VP that goes missing. But Stump (1977:4), who first identified the phenomenon, does take such examples with an adjunct remnant to fall under the pretheoretic rubric of pseudogapping.

as its antecedent. He argues that this is not possible, however, based on the following examples:

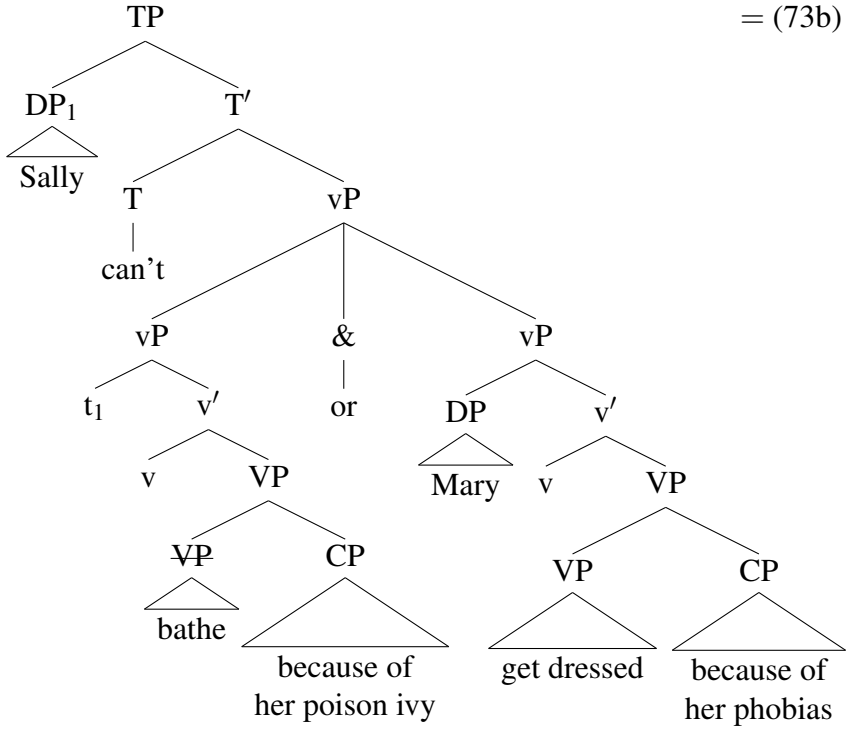
(73) a. John might bathe, but Sally can't get wet because of her poison ivy or Mary Δ get dressed because of her phobias, so we may as well give up.

b. * John might bathe, but Sally can't Δ because of her poison ivy or Mary Δ get dressed because of her phobias, so we may as well give up. (Johnson 2009:301f.)

We are interested in the last two clauses coordinated by *or* in (73a–b). The final coordinate contains a simple gap. When the VP of the medial coordinate is pronounced, as in (73a), the sentence is grammatical. But when this VP is elided under identity with the VP of the first coordinate, as in (73b), it becomes ungrammatical. In other words, gapping appears to destroy the environment for VP-ellipsis. Consequently, Johnson concludes (p. 304) that, '…VP-ellipsis cannot be what is responsible for eliding the main verb in gapping.'

In fact, I do not think the ungrammatical sentence in (73b) tells us anything about the proper analysis of gapping. The final coordinate contains a *simple gap*; only the T head goes missing. Consequently, both the across-the-board movement account and the ellipsis account assign the same low-coordination structure to (73b), in which no additional operation applies:

(74) John might bathe, but = (73b)



Therefore, the contrast in (73a–b) cannot be used to distinguish between the two accounts of gapping.[25]

[25] Johnson offers an explanation for the ill-formedness of (73b) that relies on certain assumptions about how VP-ellipsis is licensed. Namely, 'an elided VP must be located in the specifier of a licensing X' (p. 308), where X in English can be the Pred head. This is a way of implementing Lobeck's (1995) idea that VP-ellipsis is licensed by an inflectional head that is in construction with the elided phrase. With this assumption, the VP of the medial coordinate in (73b) cannot be elided, because it would have to raise out of just the first coordinate in violation of the Coordinate Structure Constraint. Johnson's assumption that VP-ellipsis is licensed through movement is not available to me,

It does still need to be explained, though. I would like to suggest that gapping destroys the environment for VP-ellipsis because of Low-Coordinate Parallelism. Consider again the final two clauses coordinated by *or* in (73b). I have repeated this coordination as B's utterance in (75); the antecedent of the elided VP in the first coordinate is contributed by A.

(75) A: John might bathe.
B: * [SALLY]$_F$ can't ~~bathe~~ [because of her poison IVY]$_F$ or [MARY]$_F$ [get DRESSED]$_F$ [because of her PHOBIAS]$_F$.

The elided VP in the first coordinate does not bear a focus. A focused element cannot be deleted, plausibly because it is not recoverable from the antecedent (Merchant 2001:179, Han and Romero 2004:199, Beaver and Clark 2008:176–180, Hartman 2011:371). As a consequence, Low-Coordinate Parallelism is not satisfied:

(76) can't [[$_{vP_1}$ [SALLY]$_F$ ~~bathe~~ [because of her poison IVY]$_F$] or [$_{vP_2}$ [MARY]$_F$ [get DRESSED]$_F$ [because of her PHOBIAS]$_F$]] = (75B)

The second vP coordinate is not an alternative to the first vP coordinate: $[\![\text{vP}_2]\!] = \textbf{get-dressed}(\textbf{mary}) \notin ALT(\text{vP}_1) = \{\textbf{bathe}(x) \mid x \in D_e\}$ (abstracting away from the reason clauses).

As Johnson observes (p. 311), (75) improves if the simple gap is replaced with a complex gap. Removing additional material in the second coordinate makes the sentence fully grammatical:

(77) A: John might bathe.
B: [SALLY]$_F$ can't ~~bathe~~ [because of her poison IVY]$_F$ or [MARY]$_F$ ~~bathe~~ [because of her PHOBIAS]$_F$.

Now the coordination in (77) satisfies Low-Coordinate Parallelism. The VPs in both the first and the second coordinate have been deleted under identity with the VP in A's utterance:

(78) can't [[$_{vP_1}$ [SALLY]$_F$ ~~bathe~~ [because of her poison IVY]$_F$] or [$_{vP_2}$ [MARY]$_F$ ~~bathe~~ [because of her PHOBIAS]$_F$]] = (77B)

As a consequence, all nonfocused material in vP_1 and vP_2 is semantically identical, and the sentence is grammatical.

This account of why gapping destroys the environment for VP-ellipsis finds support in other types of verb-phrase anaphora. Just like VP-ellipsis, the anaphoric verb phrase *do so* is degraded in the first coordinate:[26]

(79) A: John might bathe.
B: ?* [SALLY]$_F$ can't do so [because of her poison IVY]$_F$ or [MARY]$_F$ [get DRESSED]$_F$ [because of her PHOBIAS]$_F$.

The verb-phrase anaphor *do so* refers back to the VP of A's utterance. Because *do so* is given and is not focus-marked, this low-coordination also does not satisfy Low-Coordinate Parallelism and to my ear is severely degraded, if not ungrammatical. Just as with (75), the second vP coordinate is not an alternative to the first vP coordinate.

however, since then there would be no way for the additional material in gapping to go missing through VP-ellipsis. It would require the elided VP to move out of the second coordinate, violating the Coordinate Structure Constraint.

[26] I am grateful to Kyle Johnson (p.c.) for pointing this out.

7 Conclusions and further issues

I have argued that gapping is low coordination. When additional material besides T goes missing, it does so through VP-ellipsis. Because no movement is involved, nothing more needs to be said to derive complex gaps with object control verbs. This ellipsis account can derive many of the unique properties of gapping from the syntax of low coordinations. As Johnson (2009) originally proposes, if the T head goes missing through sharing with multiple vP coordinates, then gapping will only occur in coordinate structures and it will not be possible to embed the gap.

Johnson argues that the ellipsis account faces an insurmountable problem with the third property of gapping, the No Embedding Generalization. I proposed, however, that the correlates in gapping cannot be embedded because of an information-structural property of low coordinations, Low-Coordinate Parallelism. When vPs are coordinated, both coordinates must have parallel focus structures. Combined with the Focused Remnant Requirement, this rules out focus structures for gapping sentences in which the correlates are embedded in the first coordinate.

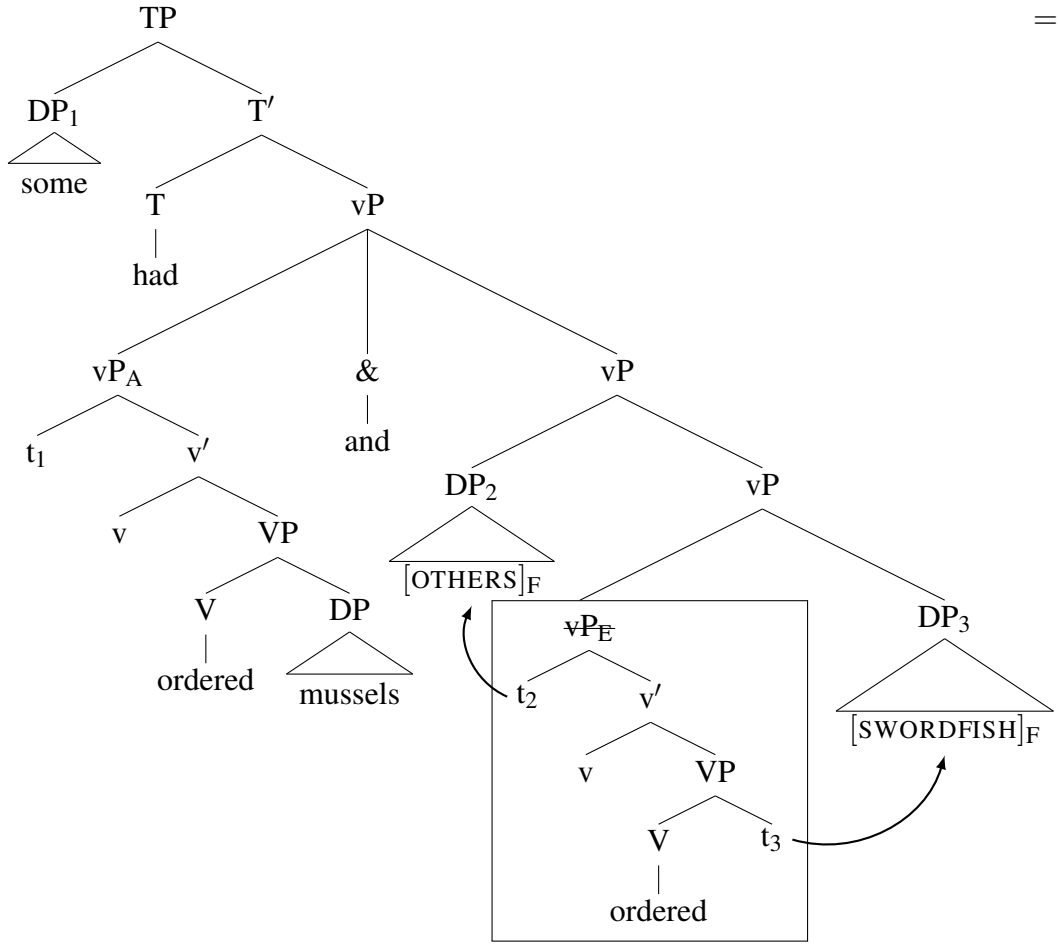
So far, I have defined the Focused Remnant Requirement and Low-Coordinate Parallelism and shown how they work together to derive the data. Below, I suggest some avenues for future research that would explain where these principles might ultimately come from. I conclude by discussing where gapping fits in the broader typology of ellipsis. If gapping really is low coordination plus VP-ellipsis, then it is not as special as we might have thought at first.

7.1 The Focused Remnant Requirement

Why must the remnants in gapping always contain a focus? An answer to this question might come from the way the remnants escape deletion. Here, I have followed Johnson (2009) in assuming that subject remnants originate outside of the elided constituent — which is just a VP — while objects remnants undergo an exceptional movement operation to escape it. This parallels pseudogapping, which only requires the object remnant to raise out of the deleted constituent (Jayaseelan 1990, Lasnik 1999a,b,c). The subject survives ellipsis through regular A-movement to Spec-TP.

If gapping is low coordination, however, subject remnants cannot raise to Spec-TP. It is not inconceivable, then, that they must undergo the same kind of movement that object remnants do to escape deletion. Suppose that the complex gap in (47) was derived by deleting the entire vP of the second coordinate. Then, both the subject and object remnants would have to raise:

(80) = (47)



Tentative work by Jayaseelan (2001) and Gengel (2007) suggests that this movement might be driven by information-structural considerations. It might be focus movement to the left-edge of the verb phrase, which is famously found in Hungarian (Horvath 1986:44–51, É. Kiss 1987:56–61). If so, then both the subject and object remnant would contain a focus, deriving the Focused Remnant Requirement.

7.2 Low-Coordinate Parallelism

Why do low coordinations require their coordinates to have parallel focus structures? I suspect that Low-Coordinate Parallelism might derive from basic considerations of question-answer congruence. TPs are full clauses that can stand on their own as the answer to a question. When TPs are coordinated, it is possible to calculate independently for each coordinate whether or not it is congruent to the question. And, as we saw in (68), each coordinate can stand in a congruence relation to a different question.

In contrast, vPs cannot stand on their own as complete utterances. Therefore, when vPs are combined in a low-coordination structure, it may be that congruence cannot be calculated independently for each coordinate. Consequently, if each coordinate in a low coordination must be congruent to the same question, they will necessarily have parallel focus structures. This is precisely what is dictated by Low-Coordinate Parallelism.

This raises a number of questions.[27] First, gapping seems to be possible in an embedded clause, as in (81). But if Low-Coordinate Parallelism arises from how low-coordination structures answer a question, does this mean that an embedded low-coordination structure must somehow answer a question? Or perhaps, embedded gapping does not exhibit the No Embedding Generalization at all?

(81) Do you think that Obama will win Ohio and Romney Δ Florida?
'Do you think that Obama will win Ohio and that Romney will win Florida?'

Second, Jackendoff (1971) observes that there is a gapping-like construction that operates inside DPs, as in (82).

(82) Bill's story about Sue and Max's Δ about Kathy both amazed me. (Jackendoff 1971:27)

Presumably, since DPs do not express propositions, they cannot be congruent to a question. If Low-Coordinate Parallelism derives from more general question-answer congruence, does this construction consequently not obey the No Embedding Generalization? In fact, Yoshida et al. (2012) argue that the gapping-like construction in DPs does not exhibit any of the unique properties of gapping that we have been dealing with.

7.3 The typology of ellipsis

One advantage of the ellipsis account is that it fills out a complete typology of VP-ellipsis. Canonical VP-ellipsis is found when no remnant survives deletion. When a remnant does escape deletionÊof VP in a full clause coordination, we call it pseudogapping. Finally, when two remnants escape VP-ellipsis in a low-coordination structure, we call it gapping. This syntactic conception of gapping differs from the superficial definition I opened the paper with. It suggests that there might be constructions that look like gapping on the surface but that do not involve either low coordination or VP-ellipsis. These would probably behave quite differently, because they would have neither the syntactic nor the information-structural properties of low coordination.

This is what I think is going on in (83). Like a canonical case of gapping, the finite element goes missing in the second coordinate, along with everything else, except for two remnants. However, such examples have long been taken to be problematic for accounts of gapping that appeal to low coordination because one of the remnants is a wh-phrase.

(83) Which books do you want to check out now, and which Δ next week?
(Hankamer and Depiante 2005:15)

If the first remnant is a wh-phrase that has raised into Spec-CP, how could this sentence involve the coordination of constituents as small as vPs? I would like to suggest that it does not, as (83) does not exhibit any of the unique properties of gapping:

(84) John won't tell me which books you want to check out now, because I won't tell him which Δ next week.

[27] I thank Kyle Johnson (p.c.) for raising these issues with me.

In (84), deletion takes place in a subordination structure, and both the deleted material and the correlates are embedded independently in their respective coordinates.[28] I suspect that despite its surface form (83) actually involves the coordination of full clauses and ellipsis of an entire TP. (Along similar lines, Farudi (2013) argues that the gapping-like construction in Persian always has this structure, since the language does not have low coordination. Just as we would predict, it also permits both the deleted material and its antecedent to be embedded.)

Clearly, there remains much work to be done to figure out where the Focused Remnant Requirement and Low-Coordinate Parallelism come from, and how gapping fits into a larger typology of ellipsis. But I hope to have shown that there is nothing wrong with an ellipsis account of gapping. VP-ellipsis derives the correct surface form for gapping, and once the syntax and information structure of low coordinations are taken into consideration, its unique properties as well.

References

Beaver, David, Brady Zack Clark, Edward Flemming, T. Florian Jaeger and Maria Wolters. 2007. When semantics meets phonetics: Acoustical studies of second-occurrence focus. *Language* 83:245–276.

Beaver, David I. and Brady Z. Clark. 2008. *Sense and sensitivity: How focus determines meaning*. Oxford: Wiley-Blackwell.

Büring, Daniel. 2008. Been there, marked that—A tentative theory of second occurrence focus. Ms., University of California, Los Angeles, URL http://semanticsarchive.net/Archive/jJlMThlZ/.

Coppock, Elizabeth. 2001. Gapping: In defense of deletion. *Chicago Linguistic Society (CLS)* 37:133–148.

Culicover, Peter and Ray Jackendoff. 2005. *Simpler syntax*. Oxford: Oxford University Press.

É. Kiss, Katalin. 1987. *Configurationality in Hungarian*. Budapest: Akadémiai Kiadó.

Farudi, Annahita. 2013. Gapping in Farsi: A crosslinguistic investigation. Ph.D. Dissertation, University of Massachusetts, Amherst.

Fiengo, Robert and Robert May. 1994. *Indices and identity*. Cambridge, MA: MIT Press.

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

Gengel, Kirsten. 2007. Focus and ellipsis: A generative analysis of pseudogapping and other elliptical structures. Ph.D. Dissertation, University of Stuttgart.

Haider, Hubert. 2006. Mittelfeld phenomena (Scrambling in Germanic). In *The Blackwell companion to syntax*, eds. Martin Everaert and Henk van Riemsdijk, volume 3, 204–274. Oxford: Blackwell.

[28] A reviewer points out the similar sentence in (i), whose first remnant is a wh-phrase. Interestingly, it exhibits all three unique properties of gapping, as shown in (ii).

(i) Who ate apples, and who Δ pears?

(ii) * John won't tell me who ate apples, because I won't tell him who Δ pears.

Perhaps even sentences with wh-remnants have diverse underlying structures. While some, like (83), involve larger coordination structures, some involve low coordination, such as (i). If so, the wh-phrase might be able to surface inside the second vP coordinate if it does not raise all the way to Spec-CP. It might, for instance, sit in a focus projection located at the left edge of the vP, as wh-phrases in Hungarian do (Horvath 1986:44–51, É. Kiss 1987:56–61).

Halliday, M. A. K. 1967. Notes on transitivity and theme in English, part 2. *Journal of Linguistics* 3:177–274.

Han, Chung-Hye and Maribel Romero. 2004. Disjunction, focus, and scope. *Linguistic Inquiry* 35:179–217.

Hankamer, Jorge. 1973. Unacceptable ambiguity. *Linguistic Inquiry* 4:17–68.

Hankamer, Jorge. 1979. *Deletion in coordinate structures*. New York: Garland Publishing.

Hankamer, Jorge and Marcela A. Depiante. 2005. Non-constituent ellipsis. Workshop on Identity in Ellipsis, University of California, Berkeley.

Hartman, Jeremy. 2011. The semantic uniformity of traces: Evidence from ellipsis parallelism. *Linguistic Inquiry* 42:367–388.

Hartmann, Katharina. 2001. *Right node raising and gapping: Interface conditions on prosodic deletion*. Amsterdam: John Benjamins.

Hinterholzl, Roland. 1999. Restructuring infinitives and the theory of complementation. Ph.D. Dissertation, University of Southern California.

Horvath, Julia. 1986. *FOCUS in the theory of grammar and the syntax of Hungarian*. Dordrecht: Foris.

Jackendoff, Ray S. 1971. Gapping and related rules. *Linguistic Inquiry* 2:21–35.

Jayaseelan, K. A. 1990. Incomplete VP deletion and gapping. *Linguistic Analysis* 20:64–81.

Jayaseelan, K. A. 2001. IP-internal topic and focus phrases. *Studia Linguistica* 55:39–75.

Johnson, Kyle. 2000. Few dogs eat Whiskas or cats Alpo. *University of Massachusetts Occasional Papers in Linguistics (UMOP)* 23:59–82.

Johnson, Kyle. 2004. In search of the English middle field. Ms., University of Massachusetts, Amherst, URL http://people.umass.edu/kbj/homepage/Content/middle_field.pdf.

Johnson, Kyle. 2008. How to be quiet. *Chicago Linguistic Society (CLS)* 40:1–20.

Johnson, Kyle. 2009. Gapping is not (VP-)ellipsis. *Linguistic Inquiry* 40:289–328.

Kehler, Andrew. 2002. *Coherence, reference, and the theory of grammar*. Stanford, CA: CSLI.

Kuno, Susumu. 1976. Gapping: A functional analysis. *Linguistic Inquiry* 7:300–318.

Lasnik, Howard. 1999a. A note on pseudogapping. In *Minimalist analysis*, 151–174. Oxford: Blackwell.

Lasnik, Howard. 1999b. On feature strength: Three minimalist approaches to overt movement. *Linguistic Inquiry* 30:197–217.

Lasnik, Howard. 1999c. Pseudogapping puzzles. In *Fragments: Studies in ellipsis and gapping*, eds. Shalom Lappin and Elabbas Benmamoun, 141–174. Oxford: Oxford University Press.

Lechner, Winfried. 2004. *Ellipsis in comparatives*. Berlin: Mouton de Gruyter.

Levin, Nancy S. 1986. *Main-verb ellipsis in spoken English*. New York: Garland Publishing.

Levin, Nancy S. and Ellen F. Prince. 1986. Gapping and causal implicature. *Papers in Linguistics* 19:351–364.

Lin, Vivian. 2002. Coordination and sharing at the interfaces. Ph.D. Dissertation, Massachusetts Institute of Technology.

Lobeck, Anne. 1995. *Ellipsis: Functional heads, licensing, and identification*. Oxford: Oxford University Press.

McCawley, James D. 1993. Gapping with shared operators. *Berkeley Linguistics Society (BLS)* 19:245–253.

Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford:

Oxford University Press.
Merchant, Jason. 2003. Remarks on stripping. Ms., University of Chicago, URL http://home.uchicago.edu/~merchant/pubs/stripping.pdf.
Merchant, Jason. 2008. Variable island repair under ellipsis. In *Topics in ellipsis*, ed. Kyle Johnson, 132–153. Cambridge: Cambridge University Press.
Merchant, Jason. 2012. Voice and ellipsis. Ms., University of Chicago, URL http://home.uchicago.edu/~merchant/pubs/voice.and.ellipsis.LI.rev.pdf.
Moltmann, Friederike. 1992. Coordination and comparatives. Ph.D. Dissertation, Massachusetts Institute of Technology.
Müller, Gereon. 1996. A constraint on remnant movement. *Natural Language and Linguistic Theory* 14:355–407.
Müller, Gereon. 2000. Shape conservation and remnant movement. *North East Linguistic Society (NELS)* 30:525–540.
Neijt, Anneke. 1979. *Gapping: A contribution to sentence grammar*. Dordrecht: Foris.
Oehrle, Richard T. 1987. Boolean properties in the analysis of gapping. In *Discontinuous constituency*, eds. Geoffrey J. Huck and Almerido E. Ojeda, volume 20 of *Syntax and semantics*, 201–240. San Diego, CA: Academic Press.
van Oirsouw, Robert R. 1987. *The syntax of coordination*. London: Croom Helm.
Partee, Barbara H. 1991. Topic, focus, and quantification. *Semantics and Linguistic Theory (SALT)* 1:159–187.
Romero, Maribel. 2000. Reduced conditionals and focus. *Semantics and Linguistic Theory (SALT)* 10:149–166.
Rooth, Mats. 1985. Association with focus. Ph.D. Dissertation, University of Massachusetts, Amherst.
Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75–116.
Rooth, Mats. 1996. On the interface properties for intonational focus. *Semantics and Linguistic Theory (SALT)* 6:202–226.
Ross, John Robert. 1970. Gapping and the order of constituents. In *Progress in linguistics*, eds. Manfred Bierwisch and Karl Erich Heidolph, 249–259. The Hague: Mouton de Gruyter.
Sag, Ivan A. 1976. Deletion and logical form. Ph.D. Dissertation, Massachusetts Institute of Technology.
Sag, Ivan A., Gerald Gazdar, Thomas Wasow and Steven Weisler. 1985. Coordination and how to distinguish categories. *Natural Language and Linguistic Theory* 3:117–171.
Selkirk, Elisabeth O. 1984. *Phonology and syntax: The relation between sound and structure*. Cambridge, MA: MIT Press.
Siegel, Muffy E. A. 1987. Compositionality, case, and the scope of auxiliaries. *Linguistics and Philosophy* 10:53–76.
Steedman, Mark J. 1990. Gapping as constituent coordination. *Linguistics and Philosophy* 13:207–263.
Stump, Gregory. 1977. Pseudogapping. Ms., Ohio State University.
Thráinsson, Höskuldur. 2003. Object shift and scrambling. In *The handbook of contemporary syntactic theory*, eds. Mark Baltin and Chris Collins, 148–202. Oxford: Blackwell.
Wilder, Chris. 1994. Coordination, ATB, and ellipsis. *Gröninger Arbeiten zur germanistischen Linguistik* 37:291–392.

Wilder, Chris. 1997. Some properties of ellipsis in coordination. In *Studies in Universal Grammar and typological variation*, eds. Artemis Alexiadou and T. Alan Hall, 59–107. Amsterdam: John Benjamins.

Williams, Edwin. 2003. *Representation theory*. Cambridge, MA: MIT Press.

Winkler, Susanne. 2005. *Ellipsis and focus in Generative grammar*. Berlin: Walter de Gruyter.

Yoshida, Masaya, Honglei Wang and David Potter. 2012. Remarks on "gapping" in DP. *Linguistic Inquiry* 43:475–494.

Zwart, C. Jan-Wouter. 1993. Dutch syntax: A minimalist approach. Ph.D. Dissertation, University of Groningen.

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