

The Eliminative Effect of Ellipsis on the Distribution of Temporal Adverbs

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DRAFT: 2019 December

Abstract: The first goal of this manuscript is to argue that phrasal Temporal Adverbial Constructions (TACs) like *Al left before Pat* are derived via ellipsis from an underlying clausal source. The second goal is to demonstrate and account for the restricted distribution and interpretation of phrasal TACs relative to their clausal counterparts and TACs targeted by VP-ellipsis. The proposed analysis supports models of ellipsis licensing that allow the identification of an antecedent within the phrase structure representation of the elliptical utterance.

Keywords. temporal adverbs, phrase structure, ellipsis licensing, verb phrase ellipsis, stripping

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1 Introduction

Temporal Adverbial Constructions (TACs) introduced by the connectives *before* and *after* come in both full clausal (1a) and reduced phrasal forms (1b).

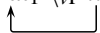
- (1) a. Al left [before Pat left]
 b. Al left [before Pat]

A question, which is familiar from the literature on comparative constructions (see Kennedy 1999 and Lechner 2004), concerns the status of the phrasal TAC in (1b). One possibility is that *before* and *after* can combine directly with either clausal complements or nominal complements. A less obvious possibility is that phrasal TACs are derived from a clausal counterpart through a reduction mechanism such as ellipsis. In this scenario, the phrasal TACs in (1b) is more accurately represented as in (2).

- (2) Al left [before Pat ~~left~~]

The goal of the first half of this paper is to argue that at least some phrasal TACs in English are derived from a clausal source. This argument is partially in response to arguments presented in Penka & von Stechow 2011 against this approach to phrasal TACs. I show that several of the arguments in Penka & von Stechow 2011 do not hold up to closer scrutiny and instead provide support for an elliptical analysis. I also present additional diagnostics that converge on the idea that phrasal TACs in English can have an underlying clausal source.

That phrasal TACs are reduced from a clausal source has been gestured at by Geis (1970) and pursued by both Larson (1987) and Thompson (2005). However, I argue that these exact implementations suffer from technical shortcomings and fail to adequately account for the full range of facts regarding phrasal TACs. The facts to be presented lead us to an alternative reduction analysis for phrasal TACs that I refer to as TAC-stripping, shown in (3).

- (3) [_{VP} [_{VP} Al left] [_{beforeP} before [_{FocP} Pat₁ [_{VP} ~~left~~]]]]
- 

Phrasal TACs on this account are low-adjoined on the verbal spine and contain a truncated complement to the temporal connective, roughly an extended *v*P. Their internal syntax is likened to stripping constructions as proposed by Depiante (2000). A single remnant can be generated by \bar{A} -movement to a focus position outside the elided *v*P. This analysis is similar in spirit to Pancheva's (2009) analysis of Slavic comparatives and Weir's (2014b) analysis of *Why*-stripping.

The second half of this paper demonstrates and accounts for a puzzle presented by the restricted distribution of reduced phrasal TACs relative to their clausal counterparts, as well as TACs that contain a VP-ellipsis site. The empirical generalization that underlies this puzzle is stated in (4).

- (4) *No Asymmetric Embedding*

A TAC-stripping site and its antecedent must be at the same level of embedding.

This generalization captures the fact that, while TACs can generally be adjoined to various positions on the verbal spine, phrasal TACs with a reduced clausal source cannot be adjoined to a predicate that does not resolve its interpretation. As will also be discussed, behavior similar to that described by (4) has been observed in gapping and other bare argument ellipses (Hankamer 1979, Rooth 1992b, Lechner 2004, Johnson 2019). However, I argue that available accounts for these effects in other domains do not lend themselves to a treatment of TACs.

I present an account of the generalization in (4) that treats the restricted distribution of phrasal TACs as a symptom of the inability to satisfy a focus-based licensing condition on ellipsis (Rooth 1992a). In this way, ellipsis is found to be eliminative with respect to phrase structure representations. Certain phrase structure representations are blocked as a result of irreparable antecedent-containment. In other representations, the syntax-semantics of TACs as temporal relative clauses, as motivated by Geis (1970) and Larson (1990), means that the TAC-stripping site will fail to find an appropriate antecedent that contains a parallel operator-variable dependency. This approach will be motivated by the implausibility of stating the identity condition on TAC-stripping over a salient question meaning in the discourse (e.g., AnderBois 2011, Barros 2014, Weir 2014a).

This analysis is very much inspired by the one that Takahashi (2008) provides for under-applications of VP-ellipsis in other environments identified by Hardt & Romero (2004). However, I will argue that an account of the differing distributions of VP-ellipsis and TAC-stripping requires giving up the precise implementation in Takahashi 2008. I will argue that VP-ellipsis targets a constituent that is smaller than what is possible for TAC-stripping. The effect is that VP-ellipsis is able to identify antecedents that are not available to TAC-stripping. Thus, the differences between VP-ellipsis and TAC-stripping are also reduced to the ability to license ellipsis. This approach requires a rethinking of the data that motivated Takahashi's (2008) analysis. I will suggest that these may be related to the failure of a TAC to address a salient question meaning in the discourse.

In section 2 I present the argument that at least some phrasal TACs are derived from a clausal source by way of ellipsis. In section 3 I present and motivate the basic syntax of the TAC-stripping operation that generates these phrasal TACs. In section 4 I present the restricted distribution of phrasal TACs relative to their clausal counterparts. In section 5 I present a slightly more articulated syntax for TACs and an account of the data from the previous section. In section 6 I demonstrate and account for the fact that TACs that have been targeted by VP-ellipsis have a slightly wider distribution than those targeted by TAC-stripping. I conclude the manuscript in section 7.

2 The Clausal Status of Phrasal TACs

Relative to clausal and phrasal comparative constructions, like those in (5), discussion about the relationship between clausal and phrasal TACs in (6) is sparse.

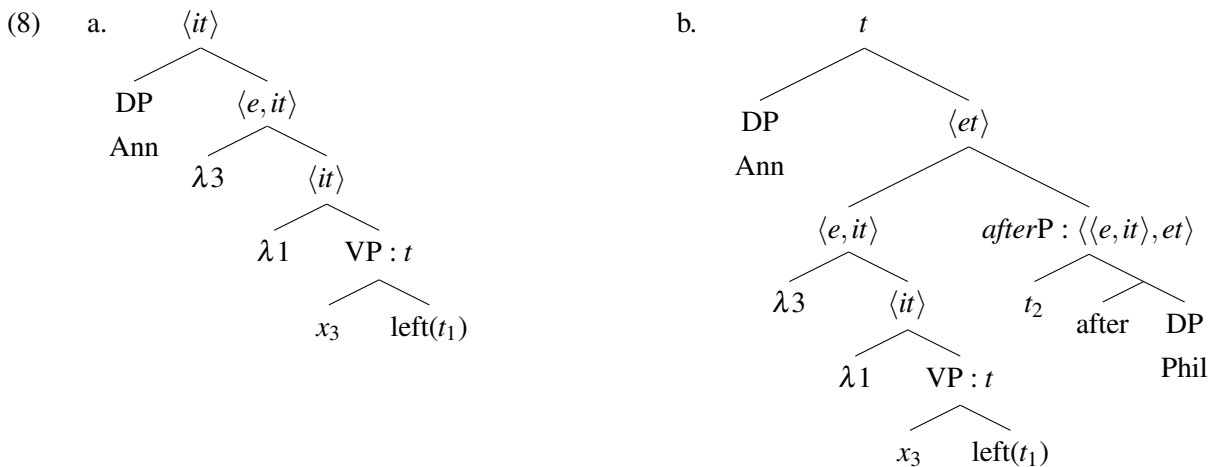
- (5) a. Ann left later [than Phil left] (6) a. Ann left [after Phil left]
 b. Ann left later [that Phil] b. Ann left [after Phil]

Nevertheless, the expected approaches are represented. One analysis asserts that the string in (6b) belies the syntax. In this kind of “direct phrasal” analysis, the temporal connective combines directly with a phrasal complement. A straightforward implementation of this idea would assign phrasal TACs structures like in (7).

- (7) Ann [VP left [_{afterP} after [DP Phil]]]

The challenge for direct analyses is to assign this representation the appropriate interpretation wherein *Phil* is also construed to have left.

Penka & von Stechow (2011) present a slightly more articulated syntax for phrasal TACs to do exactly this. Abstracting away from the precise details of the lexical semantics of the temporal connective, which are modeled on Heim’s (Heim 1985) treatment of comparatives, they suggest that the sentence in (7) is paired with an LF representation like in (8b), where entities are of type *e*, times are of type *i*, and propositions are of type *t*.¹



This representation is generated first by an application of Quantifier Raising (QR) that moves the DP *Ann* out of the VP; see (8a). The phrasal adjunct is then counter-cyclically adjoined to the verbal spine in a position below the landing site of QR, similar to what Nissenbaum 2000 proposes for clausal adjuncts with parasitic gaps. The result, shown in (8b), is the adjunction of a TAC containing a temporal variable and the nominal element *Phil*. The semantics of the temporal connective ensures that the root clause predicate is applied to the TAC-internal DP.

An alternative analysis, which suggests that the phrasal TAC is reduced from a clausal source, is pursued by both Larson (1987) and Thompson (2005). We will consider the details of these

¹This example is adapted from Penka & von Stechow 2011:sec.5.

“reduced phrasal” analyses in the following sections. For the time being, it is enough to note that these authors have representations like (9) in mind.

(9) Ann left [_{afterP} after [Phil ~~left~~]]

The nominal element *Phil* in the representation above is the remnant of an ellipsis operation rendering the rest of the embedded clause unspoken.

The substantive difference between these two families of analyses is the amount of linguistic material proposed to be inside the TAC. Therefore, they make different predictions with respect to whether this material can be detected. Direct analyses predict that a phrasal TAC will not show evidence of additional linguistic material beyond the nominal constituent—and possibly a temporal variable—inside the TAC. Reduced analyses predict that there will be evidence of clausal linguistic material inside the TAC that shares some identity with the material of the root clause.

Penka & von Stechow (2011) present a number of diagnostics for both English and German as evidence for the direct syntax of phrasal TACs. In the remainder of this section I will review the arguments that speak directly to the syntax of phrasal TACs in English.² Where we are able to make conclusions, I will argue that the data are consistent with or actually support the availability of a reduced analysis of phrasal TACs in English. I will also present some additional data sets that also point toward a clausal source for English phrasal TACs. Before examining these arguments, it will be worthwhile to consider a prosodic property of phrasal TACs.

2.1 Focus Sensitivity

Like stripping and other bare argument ellipses, there is a general preference for placing the nominal constituent in a phrasal TAC in contrastive focus with a correlate in the root clause.³ The pair of examples in (10) demonstrate the point with a pronominal remnant.

- (10) a. Kim met SUE before THEM.
b. *Kim met SUE before 'em.

The strong pronominal *them* in (10a) serves as an acceptable remnant while the weak, unstressed *'em* in (10b) is ungrammatical.

²Penka & von Stechow (2011) present arguments for a direct phrasal analysis on the basis of the restricted category and number of elements inside a phrasal TAC. Concerning the first of these, the observation is that phrasal TACs, unlike other reduced clausal constructions, do not embed categories other than DPs. A relevant pair of examples is provided in (i).

- (i) a. Kate spoke to Nate {earlier than / before} Frank.
b. Kate spoke to Nate {earlier than / *before} to Frank.

At present, I am unable to provide a satisfactory account of this constraint, which is a priori unexpected under a reduced phrasal analysis. I hope that future research will be able to shed light on this puzzle. Regarding restrictions on the number of remnants, I will defer discussion of the relevant observation until section 3.2.3 and footnote 8, when we will have a more explicit picture of the proposed syntax of reduced phrasal TACs.

³I will use SMALL CAPS to indicate the pitch accent associated with contrastive focus.

Moreover, it was observed as early as Geis (1970) that phrasal TACs that modify a transitive predicate, like in (11) below, are ambiguous. Rooth (1992b) notes further that the placement of focus in the root clause serves to disambiguate these configurations.

- (11) a. KIM met Sue before TOM.
 ‘Kim met Sue before Tom met Sue.’
 b. Kim met SUE before TOM.
 ‘Kim met Sue before Kim met Tom.’

When the root clause subject carries a pitch accent in (11a), *Tom* is interpreted as the subject of another meeting event. A pitch accent on the root clause object in (11b) indicates that *Tom* should be interpreted as the object of another meeting event.

This observation does not rule out a direct analysis, but it is arguably expected under an analysis where *Tom* is the remnant of a clausal ellipsis operation. Assuming Rooth’s (1992b) theory of focus interpretation, focus placement in the root clause presupposes that the focus semantic value of the root clause includes the ordinary semantic value of the embedded clause ($\llbracket \text{Emb} \rrbracket^o \in \llbracket \text{Root} \rrbracket^f$).

- (12) a. $\llbracket \text{Root KIM met Sue} \rrbracket$ before $\llbracket \text{Emb TOM}_1 \langle \text{met Sue} \rangle \rrbracket$
 $\llbracket \text{Emb} \rrbracket^o = \text{Tom met Sue} \in$
 $\llbracket \text{Root} \rrbracket^f = \{ p : x \text{ met Sue} \mid x \in D_e \}$
 b. $\llbracket \text{Root Kim met SUE} \rrbracket$ before $\llbracket \text{Emb} \langle \text{Kim met} \rangle \text{TOM}_1 \rrbracket$
 $\llbracket \text{Emb} \rrbracket^o = \text{Kim met Tom} \in$
 $\llbracket \text{Root} \rrbracket^f = \{ p : \text{Kim met } x \mid x \in D_e \}$

When the root clause subject has a pitch accent there will be a presupposition that the the embedded clause is a member of the set of focus alternatives derived from the root clause. As shown in (12), this requires interpreting *Tom* as the subject of the embedded clause. A similar explanation can be provided for when *Tom* is interpreted as the object.

2.2 Binding Connectivity

Recall that direct and reduced analyses of phrasal TACs make different predictions with respect to the ability to detect unspoken linguistic material in the TAC. Building on Lechner (2004) and Bhatt & Takahashi (2011), we can probe for the existence of elided linguistic material in phrasal TACs by investigating the binding relationships of the remnant. If there is additional, unspoken linguistic material in the phrasal TAC, the remnant should be sensitive to the binding properties of that material.

Penka & von Stechow (2011) present the contrast in (13) as evidence that phrasal TACs involve directly combining the temporal connective with a DP. They point out that (13a) is acceptable on a subject interpretation of the remnant.

- (13) a. ?Mary saw Peter₁'s sister [before him₁].
 b. *Mary saw Peter₁'s sister [before he₁ saw Peter₁'s sister].

(Penka & von Stechow 2011:443, (35)–(36))

The claim is that the lack of a disjoint reference effect in (13a) indicates that the phrasal TAC does not have a clausal source. If it did, the Condition C effect found in (13b) would be expected.

There is confound in this experiment that undermines the intended conclusion, however. A known property of ellipsis configurations is that they fail to display expected Condition C effects. A relevant example is provided in (14).

- (14) Mary saw Peter₁'s sister [before he₁ did ~~see Peter₁'s sister~~].

This is one effect of what Fiengo & May (1994) refer to as Vehicle Change. Regardless of the exact source of Vehicle Change effects, the lack of a Condition C violation in (13a) could equally signal the need for a direct analysis or a reduced analysis for this phrasal TAC.⁴

If we are indeed observing Vehicle Change effects in (13a), then we correctly expect to observe a disjoint reference effect in minimally differing examples like (15a) below. A subject interpretation of the remnant induces a Condition B violation, as illustrated by the clausal version in (15b).

- (15) a. *MARY praised Peter₁ [before HIM₁].
 b. *MARY praised Peter₁ [before HE₁ praised him₁].

These facts together support a reduction analysis of this phrasal TAC, which displays a characteristic property of ellipsis. A potential concern about the data in (15a) could be that it is actually the DP *Peter* in the root clause that is triggering the Condition B violation. This would undermine the conclusion that the phrasal TAC contains unspoken linguistic material. The example in (16) shows that this is not the case.

- (16) Mary₂ praised Peter₁ [before HE₁ praised HER₂].

When the Condition B configuration in the TAC is resolved, the resulting string is grammatical. Thus, the root clause object cannot be held responsible for the disjoint reference effects in (15).

Penka & von Stechow (2011) also provide the paradigm in (17) in support of a direct analysis for phrasal TACs.

⁴Concerning the source of Vehicle Change effects, Fiengo & May (1994) build on a suggestion by Kitagawa (1991) to argue that R-expressions can be reconstructed as pronominals in the ellipsis site. Merchant (2001) suggests that the identity condition on ellipsis is semantic entailment, making an R-expression and a coreferent pronoun equivalent for the purposes of ellipsis licensing. Drummond & Shimoyama (2014), building on Hestvik (1995) suggest, that VC-effects are fed by QR of the R-expression in the antecedent, which allows LF-copying of the resulting trace into the ellipsis site where it is replaced with a pronoun. A recent evaluation of available analyses of Vehicle Change effects as they pertain to Condition C obviation appears in Hunter & Yoshida 2016 in light of an additional constraint on their application.

- (17) a. *Mary saw him₁ [before Peter₁'s sister].
 b. Mary saw him₁ [before Peter₁'s sister saw him₁].
 c. Mary saw him₁ [before Peter₁'s sister did].

(Penka & von Stechow 2011:443–444, (40)–(41))

They point out that the ungrammaticality of (17a) is not expected under a reduction analysis of phrasal TACs. If the reduced phrasal TAC had a reduced clausal structure, then it would pattern with the grammatical examples (17b) and (17c). Instead, the argument goes, the ungrammaticality suggests that the phrasal TAC induces a Condition C violation.

The example in (17a) is also not obviously consistent with a direct phrasal analysis of this TAC. For (17a) to induce a Condition C violation, the direct object of the root clause *him* would c-command *Peter's sister*. However, this would presumably also be true in (17b) and (17c), leading incorrectly to the expectation that these examples would also incur Condition C violations. Note that a similar point can be made about the examples below in (18) and (19a), where a direct object again fails to trigger a disjoint-reference effect associated with Condition C.

That being said, the judgement in (17a) is one that neither I nor several other English speaking linguists who I have consulted share. The shared intuition is that (17a) is grammatical. To the extent that (17a) is odd to my ear, this is intuitively an effect of the backwards anaphora that is involved, which persists across the entire paradigm. Any contrast that exists between (17a) and the other two examples is intuitively a result of the potential ambiguity regarding the grammatical role of *Peter's sister*, which is resolved in (17b) and (17c). That is, the latter two sentences only have a grammatical parse on which *Peter's sister* serves as the embedded subject. As we saw in the previous subsection, the string in (17a) theoretically permits an interpretation of *Peter's sister* as either a subject or object. This effect tends to be alleviated by placing a pitch accent on *Mary*.

Given the variability in the judgments regarding the paradigm in (17), we can also consider the following ditransitive structure, which has been adapted from Bhatt & Takahashi (2011).

- (18) Jane took him₁ to Sue [before Joe₁'s boss took him₁ to Sue].

The first thing to note about this example is that the pronominal direct object of the root clause predicate does not trigger a disjoint reference effect with *Joe* in the TAC. Knowing this, it is revealing to find that the subject/object ambiguity for a remnant, familiar from section 2.1, is missing from the examples in (19). Specifically, the remnant *Joe's boss* can receive a subject interpretation, but a disjoint-reference effect disrupts an indirect object interpretation.

- (19) a. JANE took him₁ to Sue [before Joe₁'s BOSS < ~~took him₁ to Sue~~]
 b. *Jane took him₁ to SUE [before < ~~Jane took him₁ to~~ > Joe₁'s BOSS]

The observation that a disjoint reference effect is a function of the interpreted grammatical role of the remnant is exactly what is expected from the assertion that there is additional linguistic material inside the phrasal TAC. A trace of *Joe's boss* is c-commanded by an elided instance of the

coreferential pronoun only when interpreted as the indirect object in (19b).

Importantly, we see in (20) that an indirect object interpretation for the remnant is otherwise available.

- (20) a. JANE took Joe₁ to Sue [before his₁ BOSS \langle ~~took him₁ to Sue~~ \rangle]
b. Jane took Joe₁ to SUE [before \langle ~~Jane took him₁ to~~ \rangle his₁ BOSS]

By swapping the positions of the spoken pronoun and R-expression, the relevant ambiguity emerges. Again, this is expected under a reduction analysis. The elided material in the matrix clause no longer induces a Condition C violation under either the subject or indirect object interpretation of the remnant *his boss*.

2.3 Quantifier Phrases

Penka & von Stechow (2011:444–445) also investigate the behavior of quantificational DPs in phrasal TACs. They argue that a quantificational DP would be expected to interact freely with quantificational elements in the root clause if a phrasal TAC had a direct syntax. This would not be possible given a reduced clausal source seeing as “quantifier scope is generally clause bounded.” A relevant test sentence, which is adapted from Penka & von Stechow (2011:445, (44)), is provided in (21).

- (21) A secretary cried after each executive.
a. $\exists > \forall$: ‘There is some secretary x such that, for each executive y , x cried after y cried.’
b. $\forall > \exists$: ‘For each executive y , there is some secretary x such that x cried after y cried.’

As indicated, this example permits both a surface-scope and inverse-scope interpretation of the quantificational DPs *a secretary* and *each executive*.

One issue with this experiment relates to the stated premise that quantifier scope is clause-bounded. The consensus that has emerged from the literature seems to be that quantifier scope is generally finite-clause bounded, but non-finite clauses tend to be transparent for quantifier scope (e.g., May 1985, Larson & May 1990, Kennedy 1997). Thus, the argument in favor of a direct analysis relies on the additional unsupported premise that the clausal ellipsis site in a phrasal TAC could only be a finite clause. As I will argue in the following section, there is in fact reason to believe that a phrasal TAC with a reduced clausal source contains a small clause complement.

This experiment also suffers from a confound, which is acknowledged by Penka & von Stechow (2011) and calls into question any conclusions regarding the status of a phrasal TAC. The example in (22) illustrates the observation—credited to Artstein (2005)—that quantificational DPs embedded in clausal TACs also seem to interact with quantifiers in the matrix clause.

- (22) A secretary cried after each executive resigned.
- a. $\exists > \forall$: ‘There is some secretary x such that, for each executive y , x cried after y resigned.’
 - b. $\forall > \exists$: ‘For each executive y , there is some secretary x such that x cried after y resigned.’ (Penka & von Stechow 2011:445, (44))

Given the lack of contrast between the data points above, the behavior of quantifiers inside phrasal and clausal TACs does not obviously help us choose between these analyses.

A more telling diagnostic can be found in the behavior of quantificational DPs in the root clause. Consider the difference in the available interpretations for the string in (23).

- (23) Dale read a book after May.
- a. *specific* : ‘Dale read a certain book after May read the same book’
 - b. *non-specific* : ‘Dale read a book after May read a different book.’

On the specific interpretation, it is possible to interpret the TAC to mean that May read the same book that Dale read. On the non-specific interpretation, May can be understood to have read a different book than the book that Dale read. This contrast can be understood, first, by asserting that the phrasal TAC in (23) in fact has an underlying clausal source that has been reduced by ellipsis. This makes it possible to model the ambiguity by proposing different material in the ellipsis site in the way shown below:

- (24) Dale read a book ...
- a. *specific* : [_{afterP} after [May ~~read it~~]]]
 - b. *non-specific* : [_{afterP} after [May ~~read a book~~]]]

The specific interpretation arises as part of the Vehicle Change family of effects discussed by Fiengo & May (1994). More concretely, we can propose that the ellipsis site contains an E-type pronoun that can be counted as equivalent with respect to ellipsis licensing to the existentially quantified *a book* in the root clause. The non-specific interpretation arises when there is an independent instance of *a book* present in the ellipsis site (Elliot et al. 2014). This is not a result that is obviously expected from a direct phrasal analysis of the TAC, however. Under that analysis, there is a single instance of a predicate *read a book* that is applied both to the matrix subject and the TAC-internal DP. Thus, only the specific interpretation is expected.

A reduction analysis of (23) also leads us to expect that the relevant ambiguity will not be observed with other connectives that do not involve clausal ellipsis. It is not immediately clear that this prediction is borne out. The following sentence contains a comitative *with*-PP, which has no plausible clausal counterpart, and is compatible with either a scenario in which Dale and Mary read a single book or a scenario in which they each read a different book.

(25) Dale read a book with May (*read it/a book).

There is evidence suggesting that this is a false-positive. Whatever the source of the vagueness in (25) is, it is arguably not a result of ellipsis.

The evidence can be drawn from the missing antecedent effects introduced by [Grinder & Postal \(1971\)](#) and employed by [Hankamer & Sag \(1976\)](#). The observation is that existential quantifiers under negation fail to introduce an antecedent for pronouns. This is demonstrated by the inability for *it* to refer to *a camel* in (26). The fact that *it* finds an antecedent given the elliptical construction in (27), is taken by [Hankamer & Sag \(1976\)](#) to support the presence of linguistic material in an ellipsis site. The reasoning is that *it* is provided an antecedent by an instance of *a camel* in the ellipsis site.

(26) *Ivan has never ridden a camel and it stank horribly.

it = a camel that Ivan has ridden (adapted from [Hankamer & Sag 1976:404](#), (25))

(27) I've never ridden a camel but Ivan has ~~< ridden a camel >~~ and it stank horribly.

it = a camel that Ivan has ridden (adapted from [Hankamer & Sag 1976:403](#), (23b))

In light of these data, consider the minimal pair of examples below. The intended antecedent for *it* is missing from the surface structure in (28), which contains a phrasal TAC. Nevertheless, the specific interpretation is possible. In contrast, *it* fails to find the intended antecedent in the comitative *with*-PP in (29).

(28) Dale didn't write an abstract [after May ~~< wrote an abstract >~~] because it was so good.

it = the abstract that May wrote

(29) *Dale didn't write an abstract [with May] because it was so good.

it = the abstract that May wrote

A straightforward way to understand this contrast, which is also illustrated in these examples, is through the claim that the phrasal TAC contains elided linguistic material that provides the missing antecedent. Because the *with*-PP in (29) is not derived from a clausal source, the antecedent for *it* is missing. The result is the observed ungrammaticality.

2.4 Island Effects

In addition to the claim that phrasal TACs can be generated by way of ellipsis, the analysis sketched in section 1 asserted that the remnant undergoes an instance of \bar{A} -movement out of the elided constituent. To the extent that the DP contained in a phrasal TAC is sensitive to island conditions, both of these positions would find support (e.g., [Merchant 2004](#)).

Among the relevant island conditions are the Complex-NP Constraint and the Left-Branch Condition, both catalogued by [Ross \(1967\)](#). The examples in (30) and (31) show respectively that the phrasal TACs are sensitive to both the Complex-NP Constraint and the Left-Branch Condition.

- (30) a. They hired someone who knows a BALKAN language
 before they hired [DP someone [CP who knows a SLAVIC language]]
- b. They hired someone who knows a BALKAN language
 before [DP someone [CP who knows a SLAVIC language]]₁ < ~~they hired x_T~~ >
- c. *They hired someone who knows a BALKAN language
 before a SLAVIC language₁ < ~~they hired [DP someone [CP who knows x_T]]~~ >
- (31) a. Abby₂ read Fran's book after she₂ read [DP Greg's book]
- b. Abby₂ read Fran's book after [DP Greg's book] < ~~she₂ read x_T~~ >
- c. *Abby₂ read Fran's book after Greg₁ < ~~she₂ read [DP x_T's book]~~ >

The (a) variants of the examples above provide the unreduced clausal version of the TAC. The (b) variants present a phrasal TAC with remnants that contain the island environment. Note that in both cases the contrastively focused element can grammatically appear inside the island environment. The (c) variants demonstrate that the contrastively focused element cannot on its own act as the remnant of a phrasal TAC on the intended interpretation.

These paradigms suggest that the formation of the remnant of a phrasal TAC is sensitive to island environments. This is expected under a reduction analysis along with the additional assumption that the remnant is \bar{A} -extracted from the ellipsis site.

2.5 Section Summary and Discussion

The data that have been presented in this section collectively support the claim that phrasal TACs can be derived via ellipsis from a clausal source. The results from the previous subsection suggest, moreover, that the remnant is extracted from the elided constituent. The following section will present additional data to motivate a particular picture of the internal architecture of these phrasal TACs.

Note that the claim here is only that phrasal TACs can be reduced from a clausal source by ellipsis, not that they all must be. There are examples such as those in (32) and (33) that would intuitively resist a reduction analysis. To the extent that such examples have a clausal counterpart, this would look as shown in parentheses. The content of the TAC and the root clause in those cases do not fit any definition of identity that would be expected to license ellipsis.

(32) Kim left after the movie (ended).

(33) Tom was happier before the semester (started).

In the absence of a plausible elliptical source, such examples may be amenable to the kind of direct phrasal analysis that [Penka & von Stechow \(2011\)](#) propose. Alternatively, given the intuition that *the movie* and *the semester* are DPs with an inherent run time, it could be that the NPs provides an implicit time variable, (e.g. [Champollion 2011](#)). The picture that is emerging from this study,

therefore, is that English has both direct phrasal as well as clausal TACs, the latter of which may surface in a form reduced through the instance of ellipsis to be investigated below.

This is a conclusion also reached by Larson (1987:261) as well as Thompson (2005:76–77), and may not necessarily be seen as a surprising (cf. Geis 1970 and Penka & von Stechow 2011). First, this makes phrasal TACs a counterpart to comparative constructions, which Lechner (2004) argues have both reduced clausal and direct phrasal forms—more on this in section 3.2.3. Additionally, other languages show similar treatments of their TACs and seem to overtly distinguish direct phrasal TACs and reduced phrasal TACs. For example, Larson (1987:260, fn.20) observes that full and reduced clausal TACs in Spanish are distinguished from their direct phrasal counterparts by the presence of the complementizer *que* ‘that.’ The same is true of Catalan. True direct phrasal TACs like in (34), which do not have a plausible clausal source, embed complements that are necessarily introduced by *de* ‘of,’ and cannot contain *que* ‘that.’ Full clausal complements of temporal connectives, on the other hand, are necessarily introduced by *que* ‘that,’ as shown in (35).⁵

- (34) En Ricard va marxar [després de (*que) la conferència]
 the Ricard AUX leave.PAST.3S after of that the lecture
 ‘Ricard left after the lecture.’
- (35) En Ricard va marxar [després (%de) *(que) l’ Elena marx’es]
 the Ricard AUX leave.PAST.3S after of that the Elena leave.PAST.3S
 ‘Ricard left after Elena left.’

In a way similar to the construction we have investigated in this section, a reduced version of (35) is possible and can be found in (36).

- (36) En Ricard va marxar [després (%de) *(que) l’ Elena]
 the Ricard AUX leave.PAST.3S after of that the Elena
 ‘Ricard left after Elena.’

Of particular interest is that the complementizer *que* ‘that’ is again obligatory. This is a fact that can be understood if (36) is treated, not as a direct phrasal TAC, but a phrasal TAC that has been reduced from a clausal source.

While various language apparently have strategies for reducing clausal TACs, the claim made in this section is also not that this is necessarily possible in all languages. As an anonymous reviewer points out, there is compelling evidence suggesting that, while German has both phrasal and clausal TACs, the latter do not have reduced forms. Like Catalan, German also distinguishes overtly between phrasal and clausal TACs, but does so by way of the choice of temporal connective (Penka & von Stechow 2011:440–441). Phrasal TACs like (37) are introduced by the temporal connectives *vor* ‘before’ and *nach* ‘after,’ which necessarily assign dative case. Clausal TACs like in (38) are introduced by the temporal connectives *bevor* ‘before’ and *nachdem* ‘after.’

⁵Non-standard dialects of Catalan permit *de que* ‘of that’ in both clausal and reduced phrasal TACs (pers. comm. Ricard Viñas de Puig).

(37) Peter trank den.ACC Whiskey [vor/nach dem.DAT Abendessen]
 Peter drank the whiskey before/after the dinner
 ‘Peter drank the whiskey before/after dinner.’
 (adapted from Penka & von Stechow 2011:440, (24c))

(38) Peter trank den.ACC Whiskey [bevor/nachdem er das Bier getrunken hatte]
 Peter drank the whiskey before/after he the beer drunk had
 ‘Peter drank the whiskey before/after he had drunk the beer.’
 (adapted from Penka & von Stechow 2011:440, (24a))

The anonymous reviewer also presents the contrast in (39). Like other embedded finite clauses, finite clausal TACs appear post-verbally in non-V2 environments; see (39a). As (39b) shows, there is no reduced version of this TAC that is comparable to English and Catalan, and this is regardless of the case on the TAC-internal DP.

(39) a. weil sie das Haus verließ, [bevor ich es verlassen hatte]
 because she the.ACC house left before I it.ACC left had
 ‘because she left home before I left it’
 b. *weil sie das Haus verließ, [bevor mir/ich]
 because she the.ACC house left before me.DAT/I
 ‘because she left home before me’

Interestingly, there is a phrasal treatment available for this TAC, which is provided by the reviewer in the form of (40). In this example, the TAC appears with the temporal connective *vor* ‘before’ and a single DP in its dative form. Moreover, the TAC patterns with PPs in that it appears in a pre-verbal position.

(40) weil sie das Haus [vor mir.DAT] verließ
 because she the.ACC house before me left
 ‘because she left home before me’

Collectively, these data suggest that German does not have reduced clausal TACs. Instead, what appear to be candidates for such treatment in (40) pattern with PPs with respect to word order and with true phrasal TACs with respect to the temporal connective and case properties of the TAC-internal DP.

These observations reveal a rich vein of future research. For those languages that show evidence for a clause reduction strategy for TACs, like Catalan and English, we should ask properties they share. For languages that do not have a clause reduction strategy for TACs, like German, we should ask what contributes to the difference between these two sets of languages. In the remainder of this manuscript, I turn to providing an account of reduced clausal TACs in English and, as we will see, their restricted distribution relative to other TACs.

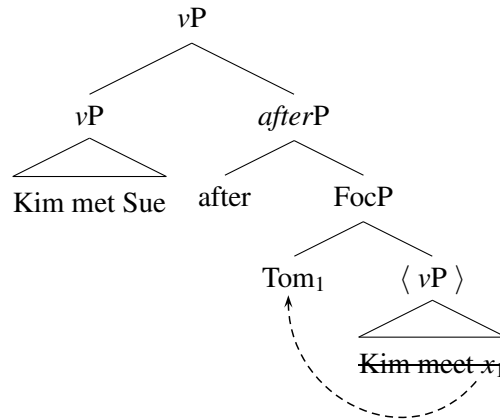
3 TAC-stripping

Assuming that we have correctly diagnosed at least some phrasal TACs as having a clausal source that is reduced by ellipsis, we turn to providing a syntactic analysis for them. I will first present and motivate the basic internal and external syntax of phrasal TACs targeted by ellipsis. For convenience I will refer to this particular application of ellipsis as TAC-stripping. I will then present several previous and alternative analyses along with the challenges they face.

3.1 Low-adjoined Small Clauses

The basis for the analysis to be proposed here comes from the treatment of canonical stripping provided by [Depiante \(2000\)](#). The basic picture, which I am referring to as TAC-stripping, is sketched in the partial representation provided in (41).

- (41) a. Kim met Sue after Tom.
 b.



TAC-stripping involves \bar{A} -movement of the remnant to a Focus phrase (FocP) outside of the elided constituent.⁶

⁶It is worth acknowledging that TAC-stripping, as presented here, employs movement into the left periphery of the phrasal TAC. This is prima facie at odds with Hooper & Thompson's (1973) claims about what is possible in clausal TACs. Future research will hopefully reconcile these facts by appealing to the truncation account being provided. While unreduced clausal complements to temporal connectives lack a sufficiently articulated left periphery, as argued for by [Sawada & Larson \(2004\)](#) and [Haegeman \(2006\)](#), the hypothesis is that small clause complements contain the relevant structure to allow this movement.

An anonymous reviewer inquires about the exact nature and motivation for such a position. One possibility is that this is the same position employed by instances of Heavy-NP Shift (HNPS) like (i), identified originally by [Ross \(1967\)](#).

- (i) Kim bought x_1 for her friends — some coffee₁.

There is a body of literature arguing that HNPS targets a relatively low position on the verbal spine, specifically under negation and at the edge of the edge of the predicate ([Bresnan 1976](#), [Stowell 1981](#), [Johnson 1985](#), [Nissenbaum 2000](#), [Overfelt 2015](#)). Evidence that constituents in this position display focus effects can be found in [Rochemont 1986](#), [Rochemont & Culicover 1990](#) and [Ward & Birner 1996](#). A relevant data set from [Rochemont & Culicover \(1990:24\)](#) is adapted below.

- (ii) Q: What₁ did John purchase x_1 for his wife?
 A: John purchased x_1 for his — a brand new fur coat₁.

The evidence to be presented suggests that the constituent being deleted is an extended projection of the predicate, which I will identify as ν P. This ν P is part of a truncated complement of a necessarily low-adjoined temporal connective.⁷

3.1.1 Small Clause Analysis

The reduced size of the elided constituent makes this analysis very similar to the treatment of Slavic comparatives by [Pancheva \(2009\)](#) and to the treatment of *Why*-stripping in English by [Weir \(2014b\)](#). The following examples are intended to demonstrate that the temporal connectives *before* and *after* are capable of embedding verbal small clauses.

(42) You should cook the dumplings [before eating them].

(43) The dumplings were eaten [after being cooked].

In these sentences, an embedded main verb in (42) and the passive voice morpheme in (43) appear in their gerundive form in the absence of the progressive auxiliary *be*. This suggests an absence from these examples of the tense, modal, or aspectual structure that is normally taken to appear above the ν P in finite clauses. The reasoning is that the gerundive morphology in these examples is the default morphology that results from the absence of I^0 , which (44) shows do not seem to otherwise license gerundive morphology, at least outside of nominalizations (see [Abney 1987](#)).

(44) *Sue leaving.

The impossibility for modals in these constructions, as shown below, also indicates that I^0 and its

-
- (iii) Q: For whom₁ did John purchase a brand new fur coat?
A: #John purchased x_1 for his wife — a brand new fur coat₁.

The observation about these examples is that the “new” or “non-given” information represented by the answer constituent *a brand new fur coat* in (ii) can appear in the peripheral HNPS position. This suggests that this position can host elements with focus properties. [Rochemont & Culicover \(1990\)](#) take this one step further to claim that this peripheral HNPS position is in fact reserved only for elements with focus properties. This assertion provides an account for the infelicity of (iii). As part of the question material, *a brand new fur coat* is backgrounded and, therefore, cannot appear in the peripheral HNPS position.

What is relevant for the purposes of the analysis is the manuscript is that constituents with focus properties can appear at the periphery of the ν P. A word is in order, however, regarding the difference in the type of focus being explored. For [Rochemont & Culicover \(1990\)](#), the peripheral constituent shows presentational focus properties by way of solely and directly providing the answer to a question. The analysis presented in the manuscript hypothesizes that the remnant of TAC-stripping is interpreted with “contrastive” focus. Moreover, I will provide evidence in section 4.3 that the content of a TAC, with respect to the Question Under Discussion (QUD), is not-at-issue (e.g., [Tonhauser 2012](#)). Therefore, the remnant will not be interpreted with presentational focus such that it solely and directly provides an answer to a question. This discrepancy in how focus is interpreted could be made to follow from a more articulated theory of the interpretation of focus as a function of the anaphoricity of focus marking, roughly in terms of [Rooth 1992b](#). It could be that, when focus marking cannot be anaphoric to the QUD, as is the case when focus marking appears in QUD-not-at-issue content such as a TAC, focus cannot be interpreted as presentational and will necessarily be contrastive. Fully exploring and developing such an idea is outside the scope of this manuscript, however, and must be left for future research.

⁷[Lechner \(2004\)](#) proposes that gapping, stripping (as a type of gapping), and Right Node Raising all serve as potential reduction mechanisms for generating phrasal comparatives. I will provide evidence suggesting that, in the context of TACs, only the proposed stripping operation is available.

associated projections are missing from the clausal gerunds that can be embedded in TACs.

- (45) a. *Sue left [before Kim might leaving]
b. *Sue left [before Kim mighting leave]

Next, a portion of the research on gapping has suggested that those constructions at least can involve low coordination in the phrase maker, making the conjuncts relatively small constituents. Taking Lin (2002) and Johnson (2009) as representative cases, it has been argued that it is VPs or *v*Ps that are coordinated. These analyses have been motivated in part by observations from Oehrle (1987) and Siegel (1987) that sentential negation and modals resist being interpreted in the gapped constituent.

We can observe similar behavior with phrasal TACs. Looking at the scope of modals first, consider the example in (46).

- (46) Stan can leave after Phil.
a. = ‘Stan can leave at a time *t* that is after a time *t'* that Phil leaves at.’
b. \neq ‘Stan can leave at a time *t* that is after a time *t'* that Phil can leave at.’

This example has an interpretation whereby Stan is able to leave after whatever time it is that Phil actually leaves at. That is, this sentence is true in a context where Phil is not allowed stay on his own, so Stan is required to stay until after Phil leaves. Missing from this sentence is the interpretation expected to arise if it were possible to interpret the ellipsis site with an instance of *can*. That is, (47) is not a possible way of understanding (46).

- (47) Stan can leave after Phil can leave.

The interpretation missing from (47) then, is one where the time that Stan is permitted to leave at leave is later than the time that Phil is permitted to leave at. This interpretation is expected to be missing given the assertion that the deleted constituent in a phrasal TAC is not large enough to host modal auxiliaries, like in (45).

Similar effects arise with sentential negation. The TAC-stripping site in (48) resists an interpretation that would signal the presence of negation in the ellipsis site.

- (48) Pam didn't leave after Beth.
a. = ‘Pam left, but it's not the case that she did so after Beth left.’
b. \neq ‘Pam left, but it's not the case that she did so after Beth didn't leave.’

This sentence is true in a context where Pam left but this did not happen after the time at which Beth left. Among other interpretations that are missing for the string in (48) is one that describes a situation in which Pam left and it is asserted that this did not happen after an event in which Beth stayed, Pam in fact left before Beth didn't leave. In other words, it is not possible to interpret negation inside the phrasal TAC. Note that the absence of this interpretation from a phrasal TAC does not reflect an absence of this interpretation generally. The unreduced clausal TAC below is

expected to produce exactly this interpretation, though this is admittedly an odd way of expressing it.

(49) Pam didn't leave after Beth didn't leave.

The inability to interpret negation in the ellipsis site of a phrasal TAC is consistent with the claim that the elided constituent is no larger than a νP plus a focus projection to catch the remnant. Why this should be the case will be considered below.

3.1.2 Low-adjunction

The interaction of sentential negation and phrasal TACs also provides evidence that TAC-stripping only targets TACs that are adjoined relatively low to the verbal spine. In order to appreciate this, let us first observe that clausal TACs can be interpreted at various positions on the verbal spine. This is evidenced by the scopal ambiguity of *after*-phrases with respect to sentential negation, as shown in (50).

- (50) Pam didn't leave after Beth left.
- a. $\textit{afterP} > \neg$: 'After Beth left, it's not the case that Pam left.'
 - b. $\neg > \textit{afterP}$: 'Pam left, but it's not the case that she did so after Beth left.'

The high-scope interpretation of the TAC in (50a) could be uttered in a context where, after Beth's departure, Pam decided not to leave and instead stayed. When the TAC is interpreted within the scope of negation in (50b), the sentence could be uttered in a context where Pam left, but this in fact occurred before Beth left.⁸

It is interesting, in light of this general ambiguity, to find that a phrasal variant of the example above, provided in (51), only has the low-scope interpretation for the TAC.

⁸It is a curious property of *before*Ps that they do not display the same type of ambiguity with respect to sentential negation that we find with *after*Ps. This is shown in (i).

- (i) Pam didn't leave before Beth left.
- a. $\textit{*beforeP} > \neg$: 'Before Beth left, it's not the case that Pam left.'
 - b. $\neg > \textit{beforeP}$: 'Pam left, but it's not the case that she did so before Beth left.'

The precise nature of this asymmetry is likely to be orthogonal to the discussion at hand. Although, this makes *after*Ps crucial to the experiments with negation that are being run in the subsection.

It is possibly interesting to note, however, that the QR-based treatment of TACs adopted in section 5.1 plus some naïve lexical entries for the temporal connectives (Anscombe 1964; cf. Beaver & Condoravdi 2003) may also help us understand the fact that *before* is not ambiguous with respect to negation.

- (ii) a. $\llbracket \textit{before} \rrbracket = \lambda P \lambda Q. \forall t [P(t) \rightarrow \exists t' [Q(t') \wedge t' < t]]$
 b. $\llbracket \textit{after} \rrbracket = \lambda P \lambda Q. \exists t [P(t) \wedge \exists t' [Q(t') \wedge t' > t]]$

The resistance to scoping over sentential negation that *before*Ps show could be understood as an instantiation of the dispreference that universally quantified expressions have for scoping over sentential negation (e.g., Beghelli & Stowell 1997, Mayr & Spector 2010).

- (51) Pam didn't leave after Beth.
- a. **afterP* > \neg : 'After Beth left, it's not the case that Pam left.'
 - b. \neg > *afterP*: 'Pam left, but it's not the case that she did so after Beth left.'

This sentence is only true in a context where Pam left, but she did so before Beth left (51b). It lacks the interpretation wherein it was following Beth's departure that Pam stayed (51a). The fact that the high-scope interpretation is not available suggests that phrasal TACs must be interpreted relatively low on the verbal spine.

With that said, it is also telling to consider again briefly true direct phrasal TACs like the one in (52).

- (52) Kim didn't leave after dinner.
- a. *after* > \neg : 'After dinner time, Kim didn't leave.'
 - b. \neg > *after*: 'Kim left, but it's not the case that she did so after dinner time.'

This example presents an interesting contrast with the reduced phrasal TAC above. Direct phrasal TACs are ambiguous with respect to sentential negation in the same way observed for unreduced clausal TACs. This can be taken as further evidence that not all phrasal TACs are made equally. With respect to their syntactic distribution, phrasal TACs that show evidence for being reduced from a clausal source show a different syntactic distribution than true direct phrasal TACs.

Again, the analysis being proposed for reduced phrasal TACs is that a species of stripping is possible in these subordinated environments. This is contrary to the usual generalization about where stripping—and IP-ellipsis more generally—can be found, according to [Lobeck \(1995\)](#). As shown in (53), canonical stripping, which targets clausal material and may preserve the remnant and a polarity item, is possible in coordinations, but not in phrasal TACs.

- (53) Kate read the article {but/*after} not Pat.

It is possible to think about this contrast in a way that provides evidence for the analysis of TAC-stripping being assembled here.

Assume first that in stripping configurations negation does not form a constituent with the remnant, but instead has its own source in the elided constituent. Assume further that the source position of negation is outside the *vP* constituent that is able to appear in phrasal TACs. A relevant representation is provided in (54).

- (54) Kate read the article but [not₂ Pat₁ [IP x_1 y₂ [~~vP read the article~~]]]
-

The analysis being constructed here makes it possible to assert that there will simply not be the appropriate amount of structure to host the base-position of *not* in a phrasal TAC. Consider the representation provided in (55).

(55) Kate read the article [_{afterP} after (*not) [_{FocP} Pat₁ [_{IP} ~~x₁ read the article~~]]]

As per the argumentation in section 3.1.1, sentential negation cannot be interpreted in the elliptical material of phrasal TACs. It was argued that this is the result of the complement of the temporal connective being too small to include negation. Similarly, it can be said here that negation cannot be moved out of the phrasal TAC in (55) because the structure to generate its base-position cannot be accommodated.

What remains to be demonstrated is how a representation like (56) or its derivation is blocked.

(56) *Kate read the article [_{afterP} after not₂ [_{FocP} Pat₁ [_{IP} x₁ y₂ ~~read the article~~]]]

In this representation the phrasal TAC contains the structure required to catch the remnant as well as a full IP. This representation would presumably provide the requisite structure to host negation, just as in canonical stripping. The question, then, is why a phrasal TAC must embed a small clause complement.

The conclusion reached above that phrasal TACs are necessarily interpreted relatively low on the verbal spine—specifically in some position lower than IP—provides part of an answer. Similar to a suggestion by Thompson (2005), the effect is that the IP node targeted for ellipsis in a phrasal TAC will necessarily be antecedent-contained. Thus, the ungrammaticality (56) is the result of not being able to license the ellipsis operation. In section 5.2 we will extend this idea further to make sense of the observation that the distribution of phrasal TACs is even more restricted than just what we have seen here.⁹

3.2 Alternative Reduction Analyses

The analysis presented in the previous subsection proposed that phrasal TACs involve \bar{A} -movement of a remnant out of the elided small clause complement to a low-adjoined temporal connective. This is not the first analysis to propose that phrasal TACs are derived from a clausal source via ellipsis. We will look here at some alternatives made available in the literature with a focus on some issues they encounter and how the present proposal avoids them.¹⁰

⁹There remains the question why phrasal TACs must be adjoined and interpreted in the low positions in which we find them. Recall that in (51) the phrasal TAC was necessarily interpreted below negation. This is not something that the analysis presented here or below obviously provides an answer to. Providing an understanding this property of TAC-stripping and reduced phrasal TACs must be left for future research.

¹⁰An anonymous reviewer points out that the data and analysis presented in the previous section share a number of similarities with what can be found in Yoshida 2013. Yoshida (2013) is interested sets of examples like those in (i).

- (i) a. Michael must not dance like Fiona
- b. Michael must not dance like Fiona danced.

Like we have done with TACs above, this set of examples can be subjected to an investigation of the nature of the phrasal *likeP* in (ia). On the basis of several of the diagnostics that appear in this manuscript and several others, Yoshida (2013) argues that phrasal *likePs* are reduced from a clausal source. Part of this argument includes the observation that it is

3.2.1 Larson 1987

Larson (1987) suggests that phrasal TACs represented by the string in (57a) arise from a derivation that circumvents an antecedent-contained deletion (ACD) configuration.

- (57) a. John [\bar{I} arrived [before Max $\langle \bar{I} e \rangle$]]
- b. [before Max $\langle \bar{I} e \rangle$]₁ [John [\bar{I} arrived t_1]]
- ↑----- QR -----↓
- c. [before Max $\langle \bar{I}$ arrived \rangle]₁ [John [\bar{I} arrived t_1]]
- ↑----- LF-Copying -----↓
- (adapted from Larson 1987:(47), 262)

The TAC is generated with an \bar{I} constituent containing an empty category, as in (57a). Assuming that TACs are adjoined VP-internally, resolving the identity of the empty category requires the application of Quantifier Raising (QR) shown in (57b). This places the TAC in a position outside of its containing \bar{I} . In this position, the ellipsis site can be resolved through LF-copying of the root \bar{I} -constituent into the TAC; see (57c).

The first issue to observe with this analysis is that the ellipsis resolution process targets an \bar{I} node, a non-phrasal constituent. This runs counter to what seems to be the modern consensus that ellipsis deals in phrasal constituents. The analysis of TAC-stripping that was proposed above asserts ellipsis of a phrasal constituent.

The second issue concerns whether movement of the TAC here actually resolves the supposed antecedent-containment problem. This is similar to a point made by Larson & May (1990) in response to the analysis of relative clause ACD configurations proposed by Baltin (1987). Examining the representation in (57c) we find that movement of the TAC leaves behind a trace in the root \bar{I} constituent that is not matched by a similar variable in the proposed ellipsis site. The ellipsis site and its antecedent, therefore, do not satisfy the usual identity constraints that licenses ellipsis.

Suppose, then, that the root \bar{I} constituent is faithfully copied over following QR. This will produce the LF representation in (58), to be contrasted with (57c).

- (58) [before Max $\langle \bar{I}$ arrived $t_1 \rangle$]₁ [John [\bar{I} arrived t_1]]

possible to interpret modals and negation in the phrasal *likeP*, but only when the *likeP* can be interpreted higher than these projections on the verbal spine, namely at TP.

This observation, in particular, leads to an analysis of phrasal *likePs* that involve movement of the remnant out of an elided TP. When the *likeP* is interpreted in a position above modals and negation, the ellipsis site can contain the modals and negation of the antecedent and can be deleted under satisfaction of Merchant's (2001) e-GIVENness. When the *likeP* is interpreted at the edge of the VP, however, the result is antecedent-containment of the TP targeted for ellipsis. The claim is that antecedent-containment is resolved by a last resort condition that allows the elided TP to find a smaller constituent to serve as an antecedent satisfying e-GIVENness. The VP of the root clause presents such a constituent, but it will be incapable of licensing ellipsis of a TP that contains modals or negation (Yoshida 2013:sec.4).

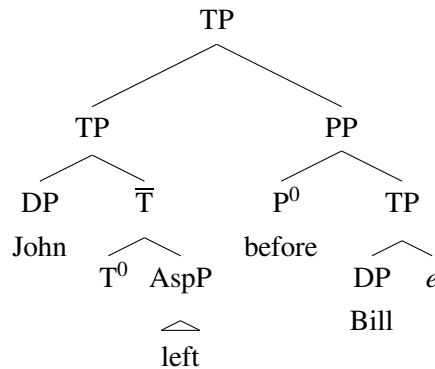
Choosing between the analysis in Yoshida 2013 and the analysis presented in this paper, both for phrasal *likePs* and phrasal TACs, must be left for a future occasion. Although, it is worth keeping in mind that, alongside the assumption that phrasal *likePs* can only contain TPs, the primary motivations for the analysis in Yoshida (2013) include the observations that phrasal *likePs* can be interpreted at various positions on the verbal spine and that it is possible to interpret modals and negation in the deletion site. These are all things that section 2 argued are not properties of reduced phrasal TACs.

This does not solve the issue, however. In (58), the elliptical \bar{T} constituent contains an unbound movement trace. At best, this trace might be interpretable as a free variable. However, it seems to be a constraint on ellipsis that variables in the ellipsis and antecedent sites must be bound from parallel positions or otherwise co-referent in the case that both are free (e.g., Sag 1976, Heim 1997, Fox 2000). Because neither of these conditions are met in (58), it is not expected that ellipsis will be licensed in this representation.¹¹

3.2.2 Thompson 2005

Thompson (2005) proposes an analysis of phrasal TACs that avoids the issue of variables. In this analysis, ellipsis resolution involves LF-Copying, but the TAC is base-generated as an adjunct to TP.

- (59) a. John left before Bill *e*
 b.



(adapted from Thompson 2005:77, (45))

Thompson (2005:77) suggests that the ellipsis site is resolved by “copying (the lower segment of) TP into the ellipsis site.” Copying the lower segment of the TP generates the representation in (60).

- (60) John left [_{PP} before [_{TP} Bill [_{TP} John left]]]

It is not clear that this would be a legitimate representation. Seeing as it leaves *Bill* uninterpreted as an argument in the embedded clause, it would not obviously generate the intended interpretation, which is that John left and this happened before Bill left. It seems that on this analysis it must be asserted instead that the root \bar{T} must be copied into the ellipsis site. Like Larson (1987), this analysis must assume ellipsis of a non-phrasal constituent and, for this reason, should be dispreferred to the analysis of TAC-stripping being presented.

A significant issue for both the analysis in Thompson 2005 and the analysis in Larson 1987 comes from the observation in section 2.1 that the remnant of a phrasal TAC may be ambiguous

¹¹An alternative for dealing with (57c) could be to assert that movement of the TAC does not leave behind a trace. Baltin (1987) argues that this is an option when relative clauses are moved to avoid ACD configurations. We will see in the remainder of the manuscript that there is significant explanatory power in asserting that TACs undergo QR and do leave traces.

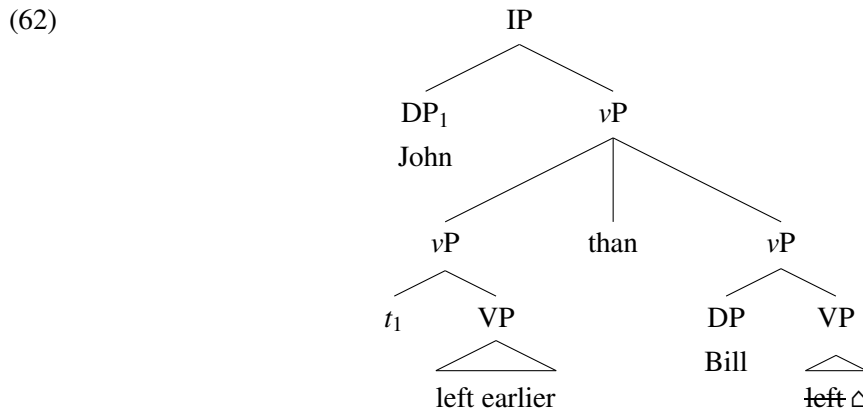
given a transitive predicate. The example from (11) is provided again in (61).

- (61) a. KIM met Sue before TOM.
 ‘Kim met Sue before Tom met Sue.’
 b. Kim met SUE before TOM.
 ‘Kim met Sue before Kim met Tom.’

This ambiguity is not expected if truncated TACs are derived only by ellipsis of an \bar{I} -constituent as proposed by Larson (1987) or a \bar{T} -constituent as required for Thompson (2005). No material other than what appears in the grammatical subject position or higher would be expected to survive ellipsis. However, this is an expected property in the analysis of phrasal TACs presented above. The interpreted grammatical role of the remnant is a consequence of its base-generated position within the elided clausal material.

3.2.3 Conjunction Reduction

The analysis presented in Larson (1987) is motivated in part by the idea that it is possible to think of TACs as counterparts to comparatives like *earlier* and *later*. This can in fact be traced as far back as Geis (1970:ch.4), who noted a number of syntactic and interpretive similarities between these constructions. An alternative implementation of this idea could build from Lechner (2004), who argues that phrasal comparatives have a clausal source and are derived coordination configurations, as in (62).



The argumentation that Lechner (2004) provides for this derived conjunction analysis is based on the conclusion that comparative constructions can be targeted by across-the-board movement, gapping, stripping as a form of gapping, and right node raising. The reasoning is that these reduction processes only target conjunctions, therefore, comparative constructions at least can be conjunctions at a point in the derivation when these mechanisms apply.

This approach to phrasal TACs would reject the claim that they involve subordination configurations. Instead, they would similarly be treated as (derived) coordinations that are possibly reduced

via gapping, right node raising, or across-the-board movement. As we will see presently, there are considerations that speak against this type of approach. TACs cannot be targeted by the full range of reduction mechanisms available to comparatives, they fail to display properties expected of coordinations, and the temporal connectives *before* and *after* show non-characteristic properties of comparatives.

Concerning the reduction mechanisms, it has been argued that across-the-board movement and right node raising do not exclusively appear in coordination configurations (see, for instance, the literature on parasitic gaps; Munn 1992, Postal 1993, 1994, Nunes 2004). On the other hand, gapping has relatively uncontroversially been assumed to be impossible outside coordinations (Jackendoff 1971, Hankamer 1979). Therefore, the availability of gapping seems to be the strongest argument for a coordination treatment of comparatives and potentially for TACs. However, as pointed out by Lobeck (1995) and Penka & von Stechow (2011), only a single remnant is possible within the TAC. A relevant paradigm is provided in (63).

- (63) a. Kim read the article and Sam ~~read~~ the book.
b. Kim read the the article earlier than Sam ~~read~~ the book.
c. *Kim read the article before Sam ~~read~~ the book.

This paradigm can be taken to teach us two things. The first is that TACs do not tolerate gapping, unlike coordinations and comparatives. This is consistent with the claim that these phrasal TACs are derived via clausal given that they are subordination configurations (cf. Penka & von Stechow 2011:441). Second, following Lechner's (2004) reasoning, the failure for gapping to target TACs can be interpreted as evidence that TACs should not be treated on par with either coordination or comparative configurations.

Additional facts speak against equating TACs and coordinations, including their differing ability to appear clause-initially in (64).

- (64) a. *And he read the magazine, Tim read the book.
b. After he read the magazine, Tim read the book.

To the extent that phrasal TACs require treatment as coordinations, the expectation is that they, too, should resist appearing clause-initially. Instead, we find that phrasal TACs can appear clause-initially. This is shown in (65), which suggests that phrasal TACs are not coordinations.

- (65) After the magazine, Tim read the book.

Moreover, if phrasal TACs required treatment as coordination, we would expect that it is not possible to extract from only the first conjunct. Assuming that the moved element does not come to bind a variable in the second conjunct, the result demonstrated by the clausal examples in (66) would be a violation of the Coordinate Structure Constraint (Ross 1967, Ruys 1992).

- (66) a. *I know what₁ Kim read x_1 and she read the magazine.
 b. I know what₁ Kim read x_1 after she read the magazine.

This expectation is not borne out. The sentence in (67) shows that phrasal TACs behave like subordination structures with respect to extraction.

- (67) I know what₁ Kim read x_1 after the magazine.

Despite their actual and intuitive similarities, there is also reason to think that *before* and *after* are not counterparts to the comparatives *earlier* and *later*. For example, a seemingly ubiquitous property of comparatives is their ability to license negative polarity items (NPIs), like *anyone* in (68). However, it has been known at least since Geis 1970 that, while *before* licenses NPIs, *after* does not. The contrast is shown in (69) for both clausal and phrasal variants.

- (68) a. Meg left later than anyone else (left).
 b. Bob ate earlier than anyone else (ate).
 (69) a. *Meg left after anyone else (left).
 b. Bob ate before anyone else (ate).

To this we can add the asymmetry between *after* and *before* with respect to their scope relative sentential negation. Section 3.1.2 demonstrated that clausal *after*Ps may be interpreted either above or below sentential negation. It was observed in footnote 8, however, that clausal *before*Ps strongly resist being interpreted above sentential negation. Comparatives, on the other hand, are generally thought to be scopally inert with respect to negation (e.g., Heim 2000).

Finally, Geis (1970:143–146) observes what he refers to as the Verb-Verb Constraint, which describes the dispreference for mismatched verbs in the comparative and root clauses in (70).

- (70) a. ??Joe left later than he ate.
 b. ??Joe left earlier than he ate.

No account is provided for this constraint. Although my intuition, and that of several linguists and non-linguists, is that (71) can be improved by placing a pitch accent on the verbs. This may be taken to suggest that (70) is a case of comparative subdeletion. Regardless, the relevant observation is that no such oddity arises in the TACs in (71). The verb of the root clause and TAC can mismatch without any particular prosodic licensing.

- (71) a. Joe left after he ate.
 b. Joe left before he ate.

In sum, both clausal and phrasal TACs display properties indicating that they are syntactically distinct from more usual instances of comparatives and coordinations. These conclusions will guide the remainder of the paper as we attempt to account for the distribution of phrasal TACs under the analysis of TAC-stripping presented in this section.

4 The Eliminative Puzzle of TAC-stripping

In this section we turn to constraints on the distribution of phrasal TACs. As we will see, phrasal TACs have a restricted distribution that can be described by the constraint in (4), repeated in (72).

(72) *No Asymmetric Embedding*

A TAC-stripping site and its antecedent must be at the same level of embedding.

This constraint encompasses the idea that, given an analysis of TAC-stripping, the interpretation of a phrasal TAC cannot be resolved to any other predicate than the one it modifies. The next two subsections will establish this empirical generalization. The third subsection acknowledges the resemblance this constraint shares with observations made in the literature regarding gapping and various Bare Argument Ellipses. I will argue that available approaches for those constructions are not suited for TACs, given their resistance to being treated as coordinations.

4.1 The Distribution of Clausal Temporal Adverbs

As is commonly thought to be the case for other adjuncts, utterance-final clausal TACs may be ambiguous with respect to their point of adjunction on the clausal spine in multi-clausal constructions. The string in (73) provides a relevant example.

(73) Kim heard that Sue left after Joe left.

On one bracketing of the string in (73), the TAC *after Joe left* is a constituent of the embedded clause. This constituency generates an interpretation whereby the TAC modifies the event of Joe leaving. This is shown in (74), which we will refer to as the *embedded interpretation*.

(74) *Embedded interpretation*

Kim heard [_{CP} that Sue left after Joe left]

‘Kim heard that, after Joe left, Sue left.’

On an alternative bracketing, the TAC is a constituent of the embedding clause. The interpretation is one where the TAC modifies the event of Kim hearing about the fact regarding Sue, as shown by (75). We will refer to this as the *matrix interpretation*.

(75) *Matrix interpretation*

Kim heard [_{CP} that Sue left] after Joe left.

‘After Joe left, Kim heard that Sue left.’

That these interpretations indeed correspond to the proposed bracketings is supported by basic constituency diagnostics. Replacing the embedded clause with a proform would presumably remove the structure that hosts the clausal TAC and the embedded interpretation should become unavailable. This expectation is realized in the following example.

- (76) Kim heard it after Joe left.
 ≠ ‘Kim heard that, after Joe left, Sue left.’
 = ‘After Joe left, Kim heard that Sue left.’

A structural account of the observed ambiguity also predicts a correlation between the interpretation of the TAC and bound-variable interpretations of pronouns inside the TAC. The matrix reading of the TAC should not permit a variable in the TAC to be bound by the embedded subject on account of being interpreted outside the scope of the embedded subject. The example in (77) is provided to show that this prediction is borne out.

- (77) Kim heard that no one₁ left after his₁ boss left.
 a. = ‘Kim heard that, for no person x , after x ’s boss left, x left.’
 b. ≠ ‘After x ’s boss left, Kim heard that, for no person x , x left.’

We are also lead to the expectation on this account that either reading will be available if it is the matrix subject that binds a pronoun in the TAC. The example in (78) is provided to show that this prediction is borne out.

- (78) No one₁ heard that Kim left after his₁ boss left.
 a. = ‘For no person x , x heard that, after x ’s boss left, Kim left.’
 b. = ‘For no person x , after x ’s boss left, x heard that Kim left.’

These observations support what is likely to be the unsurprising conclusion that the height of adjunction of a TAC determines its modification relationship.

4.2 *The Distribution of Phrasal Temporal Adverbs*

We have already seen one way in which the distribution of phrasal TACs differs from their clausal counterparts in section 3.1.2. We will see here that the non-overlapping distribution of clausal and phrasal TACs is even more general.

The previous subsection considered strings like in (79a), observing that the clausal TAC is ambiguous with respect to its point of adjunction on the verbal spine. The string in (79b) differs minimally in that it now contains a phrasal TAC.

- (79) a. Kim heard that Sue left after Joe left.
 b. Kim heard that Sue left after Joe.

The string in (79b) is not ambiguous in the same way as its counterpart in (79a). The phrasal TAC can be paired with the embedded interpretation, which we expect to arise from the bracketing in (80) along with the application of TAC-stripping that is illustrated.¹²

¹²Here and in the following sections I will represent the ellipsis site in these examples with the finite form of the predicate, contra the claims made in section 3. This is purely to help ease the comparison of these examples with their non-reduced counterparts when the latter is not explicitly provided.

- (80) Kim heard [_{CP} (that) Sue left after Joe \langle _{VP} left \rangle]
 = ‘Kim heard that, after Joe left, Sue left.’

Missing from this string, however, is the matrix-level interpretation that is illustrated in (81).

- (81) *Kim heard [_{CP} (that) Sue left] after Joe \langle _{VP} left \rangle .
 ≠ ‘After Joe left, Kim heard that Sue left.’

This is not to say that a phrasal TAC must adjoin to an embedded position or that TAC-stripping cannot target an embedded TAC. As shown in (82), matrix-level modification of a phrasal TAC is possible when the meaning of the TAC-stripping site is resolved to the matrix predicate.

- (82) Kim heard [_{CP} (that) Sue left] after Joe \langle _{VP} ~~heard that Sue left~~ \rangle .
 = ‘After Joe heard that Sue left, Kim heard that Sue left.’

The contrast between the examples in (81) and (82) is rather telling. It seems to suggest that a matrix-adjoined adjoined TAC can be targeted for TAC-stripping, but the TAC-stripping site is necessarily resolved to the clause that it modifies. It is possible to provide a similar description of the contrast between (80) above and the example in (83) below.

- (83) *Kim heard [_{CP} (that) Sue left after Joe \langle _{VP} ~~heard that Sue left~~ \rangle].
 ≠ ‘Kim heard that, after Joe heard that Sue left, Sue left.’

The intended interpretation of this string, which is unavailable, is one in which the TAC modifies the embedded predicate but the TAC-stripping site is resolved to the matrix predicate.

That this is the correct description of the facts is corroborated by the example in (84).

- (84) Kim heard [_{CP} (that) Sue left after Joe heard that Sue left].
 = ‘Kim heard that, after Joe heard that Sue left, Sue left.’

This string provides the clausal variant of the example in (83) and is grammatical on the intended interpretation. This suggests that it is not the bracketing itself that results in the ungrammaticality observed in (83). Instead, it is the phrasal TAC—and presumably the particular application of TAC-stripping—that is disallowed under this bracketing.

4.3 Section Summary and Discussion

The discussion in the previous two subsections is summarized by Table 1, which shows the available interpretation of a TAC-stripping site as a function of the point of adjunction of the phrasal TAC.

		<i>antecedent</i>	<i>TAC-stripping</i>
<i>adjunction</i>	matrix	matrix	✓ (82)
	matrix	embedded	* (81)
	embedded	matrix	* (83)
	embedded	embedded	✓ (80)

Table 1: Possible source of antecedent for TAC-stripping as a function of adjunction site.

A way to understand these facts is that the ellipsis site in a phrasal TAC is necessarily resolved to the ν P that it directly modifies.

This behavior is reminiscent in certain ways to effects observed for gapping and stripping.¹³ It has been recognized since Hankamer 1979 that the antecedent for gapping resists being embedded relative to the gapped site. The following example is adapted from Johnson 2009.

- (85) *She’s said [_{CP} Peter has eaten his peas] and Sally ate her green beans.
(Johnson 2009:300, (29a))

The following example, which has been adapted from Lobeck 1995, demonstrates the same for stripping.

- (86) *Geoff said [_{CP} that Jane likes to study rocks], and ~~Jane likes to study~~ geography too.
(Lobeck 1995:27, (68))

¹³It is possibly tempting to analogize the data investigated in this section also with the familiar constraints against embedding a gapping or stripping site under another predicate (Hankamer 1979, Lobeck 1995, Johnson 2019), which have been counter-exemplified by Weir (2014a) and Wurmbrand (2017). The relevant example in (i) is adapted from Johnson 2009.

- (i) *Some had eaten mussels and [she claims [that others shrimp]]. (Johnson 2009:293, (15b))

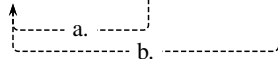
The puzzle being presented in the manuscript is slightly different. We are interested in the inability to embed a phrasal TAC inside the predicate that resolves its meaning.

That said, one could consider examples like (ii) to investigate the generalization being considered here. The verbal small clause complement to the light verb *make* would not be antecedent-contained but still fails to undergo deletion.

- (ii) *Kim left [after Sue made [Joe ~~leave~~]]
 a. ≠ ‘After the time such that, at that time, Sue made Joe leave, Kim left.’
 b. ≠ ‘After the time such that Sue made Joe leave at that time, Kim left.’

Looking ahead slightly, the ungrammaticality of this sentence, under either interpretation, is the expected result of non-parallel variable binding, as discussed in section 5.3. There is a confound in this experiment, however. In the unreduced version of this sentence in (iii), there seems to be an independent lack of the Geis-ambiguity, which introduced in section 5.1.

- (iii) Kim left [after Op_1 Sue made t_1 [Joe leave t_1]].



- a. ‘After the time such that, at that time, Sue made Joe leave, Kim left.’
 b. *‘After the time such that Sue made Joe leave at that time, Kim left.’

The absence of the interpretation in (iiib) suggests that, for reasons currently unknown to me, temporal operator movement out of this small clause is unavailable, independent of ellipsis. Thus, it is not possible at this point to confidently claim that the ungrammaticality of (ii) can be entirely contributed to an application of ellipsis.

The exact nature of this restriction on gapping and stripping is not entirely clear at this point.¹⁴ Johnson (2009) proposes that an inability to embed the antecedent of gapping is a property one would expect if gapping involved coordination of vPs and across-the-board (ATB) extraction of VPs, a proposal given slightly more substance in Johnson 2019. In a response to Johnson (2009), Toosarvandani (2016) proposes that a requirement for conjoined vPs to have parallel focus structures is the source of gapping’s apparent inability to identify an antecedent in an embedded clause.

Setting the precise details of these proposals aside, neither of them is suited to be applied to constraints on TACs. Recall from section 3.2.3 that neither clausal nor phrasal TACs are amenable to treatment as coordination structures. Thus, any constraint on conjoined vPs, as in Toosarvandani (2016) will not be applicable. Additionally, Postal (1993) catalogs a significant amount of evidence that ATB extraction is not possible in subordination structures and, moreover, that only nominal constituents can license parasitic gaps such structures. These observations, if correct, preclude an analysis of phrasal TACs that employs VP extraction, ATB or otherwise, as in Johnson (2009).

An alternative idea entertained by Johnson (2019) is to make these constraints follow from models of ellipsis licensing that require antecedence to a possibly implicit question meaning in the discourse, such as can be found in AnderBois 2011 and Barros 2014 for sluicing and Weir 2014a for fragment answers, which arguably resemble stripping configurations at a certain level of abstraction. Again, details aside, there is reason to disprefer this type of account for TAC-stripping. Speaking in terms of the Question Under Discussion (QUD) for concreteness (Büring 2003, Roberts 2012), diagnostics presented in Tonhauser 2012 suggest that the content of TACs is not-at-issue with respect to the QUD.¹⁵

For example, Tonhauser (2012:sec3.2) proposes that QUD-not-at-issue content cannot solely address the QUD. In (87), the QUD is proffered explicitly. Under standard theories of question-answer congruence (e.g., Rooth 1992a, Roberts 2012), a felicitous answer would have the form of a proposition in $\{p : x \text{ left} \mid x \in D_e\}$. A proposition of the appropriate shape is provided in the content of the TAC by B, but it fails to felicitously provide this as an answer. In comparison, when an appropriate answer appears in the root clause, as is the case in the response from B’, the utterance provides a felicitous answer, modulo Quantity and Relevance implicatures perhaps.

- (87) A: Who left?
B: #Tom started reading before Sue left.
B’: ?Sue left before Tom started reading.

In a related diagnostic, Tonhauser (2012:3.3) proposes that not-at-issue content cannot determine the relevant set of alternatives for the QUD. The polar question in (88) cannot be interpreted

¹⁴The claim that gapping and stripping cannot find an embedded antecedent in English has been counter-exemplified by Toosarvandani (2016) and Lobeck (1995), respectively.

¹⁵Following the discussion in Simons et al. 2010 this could be seen as another way of saying that the content of a TAC is “weakly” presupposed (e.g., Abrusán 2011). This is a claim that can be traced back to Hooper & Thompson (1973), who cite Keenan (1971) for the same observation.

as a request for answers of the form {*Sue left, Sue didn't leave*}. This is evidenced by the infelicity of providing a positive answer with the corresponding positive alternative, as done by B. The response from B' shows that the content of the root clause, on the other hand, can felicitously provide the form of the alternatives for the question.

- (88) A: Did Tom start reading before Sue left?
B: #Yes, she left.
B': ?Yes, he started reading.

These differences shown by the content of a TAC relative to the content of the root clause suggest that the content of a TAC has a different status in the discourse. Specifically, the content of a TAC is QUD-not-at-issue content.¹⁶ Thus, it is not clear that defining ellipsis licensing conditions on TAC-stripping that require antecedence to a salient question meaning is a desirable way of modeling ellipsis here. This in turn casts doubt on the ability for such a condition to derive the facts summarized in Table 1. Therefore, the following section will turn to providing an alternative analyses of these observations.

5 Ellipsis Bleeds Phrase Structure Representations

The analysis presented in this section attempts to attribute the observations in Table 1 to the ability to license ellipsis. This account builds on what is found in Takahashi 2008. However, as we will come to see, the accounts generate different predictions which ultimately favor the approach presented here. I will start by making more explicit the proposed treatment of TACs. I will then introduce the ellipsis licensing condition to be adopted and demonstrate its use in vanilla instances of TAC-stripping. The remainder of this section shows how these assumptions correctly rule out those instances of TAC-stripping that violate the No Asymmetric Embedding constraint.

5.1 TACs and Ellipsis Licensing

That analysis to follow capitalizes on a more articulated treatment of TACs proposed by Geis (1970). Geis observed that certain TACs, including those introduced by *before* and *after*, are potentially ambiguous with respect to the events they order. The example in (89), for instance, might order Joan's *leaving-time* before Harry's *telling-time* (90a) or before the *leaving-time* that Harry provided (90b).

¹⁶It is worth noting that the claim is not that the TAC as whole cannot be or be part of some larger at-issue-content. That this is possible is reflected by the fact that a full or reduced clausal TAC is one way to provide an answer to a question like in (i).

- (i) A: When did Matt leave?
B: Matt left before Phil (left).
B': Matt left before dinner.

The suggestion, again, is that the content embedded inside the TAC is QUD-not-at-issue.

- (89) Joan left [_{beforeP} before $\lambda 1$ Harry told t_1 [her to leave t_1]].
-
- a. ‘Kim left before t such that Harry told her at t to leave.’
 b. ‘Kim left before t such that Harry told her to leave at t .’ (Geis 1970:127, (42))

I will refer to this as the Geis-ambiguity. For Geis (1970), following similar suggestions by Ross (1964), this ambiguity revealed that TACs are effectively relative clauses for unexpressed nominal constituents. We will take a similar path and model this ambiguity by asserting the presence of a null-operator chain within the TAC, as in Larson 1990. This operator is base-generated local to the predicate it modifies, moves to the edge of the TAC embedded clause, and leaves behind a variable (t_n). This is sketched for each interpretation of (89).

Among the reasons to think that these examples are derived via movement is the sensitivity of the Geis-ambiguity to the presence of island boundaries, as pointed out by Geis (1970). The example in (90) is similar to (89) but now separates the temporal connective *before* from the predicate *leave* by a Complex-NP boundary.

- (90) Joan left [_{beforeP} before $\lambda 1$ Harry told t_1 her of [his desire [for her to leave t_1]]].
-
- a. = ‘Kim left before t such that Harry told her at t of his desire for her to leave.’
 b. \neq ‘Kim left before t such that Harry told her of his desire for her to leave at t .’
 (Geis 1970:129, (55))

While the sentence in (90) has an interpretation where Joan left before the time at which Harry expressed his desire, it lacks an interpretation whereby Joan left before the time for her to leave that Harry desired. In other words, the embedded interpretation is missing. This can be understood as an effect of the Complex-NP Constraint violation induced by movement of the postulated null-operator.

Regarding the base-position of the temporal operator, Takahashi (2008) asserts that it is low enough on the verbal spine that it is contained in the elided constituent in instances of VP-ellipsis like (91).¹⁷

- (91) Sue left [_{afterP} after $\lambda 1$ Joe did \langle leave t_1 \rangle].
-

Without saying more, however, it is not clear that VPE should be licensed in this example. The elided constituent in this representation contains a bound variable that has no correlate in any available antecedent. This is something that is well-known to disrupt ellipsis-licensing, as (92) shows.

- (92) *Kim walked Anne’s dog and Paul₁ did \langle walk his₁ dog \rangle too

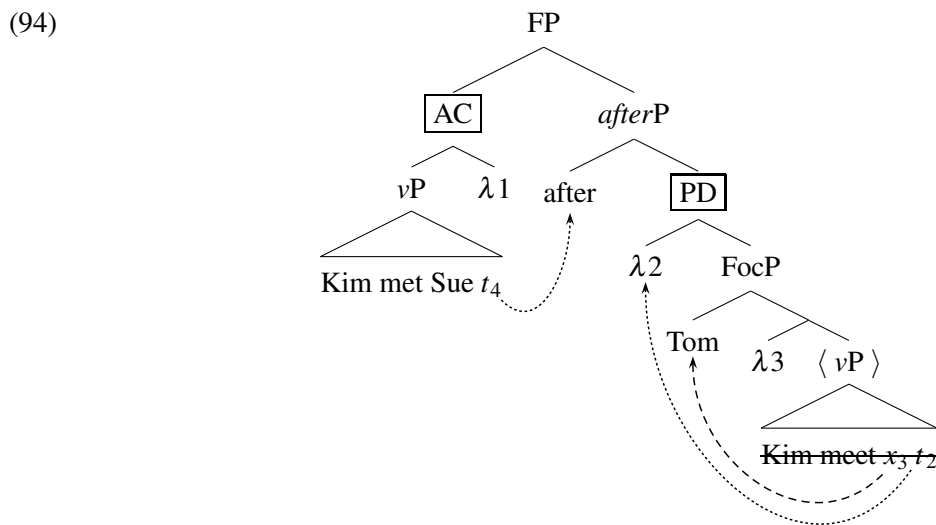
Recognizing this problem, Takahashi (2008) adopts a proposal, made independently by Fox & Nissenbaum

¹⁷It is this assertion that we will take issue with in section 6, arguing that the base-position of the temporal operator is inside the constituent targeted by TAC-stripping but is outside the constituent targeted by VP-ellipsis. This will be argued to be an effect of VPE targeting a constituent smaller than the constituent targeted by TAC-stripping.

(2003) and Larson (1987), that TACs themselves undergo QR within their root clause. As shown in (93), the effect is the introduction of a temporal variable that creates a possible antecedent constituent for the ellipsis site.

(93) $[\text{afterP after } \lambda 1 \text{ Joe did } \langle \text{leave } t_1 \rangle] \lambda 2 \text{ Sue } [\text{left } t_2]$

Incorporating these pieces into our account of phrasal TACs gives the representation in (94). The TAC undergoes an instance of covert movement that targets some functional projection (FP) outside the root vP . In accordance with the data presented in section 3.1.2, we can assume that this is still a relatively low position on the verbal spine.



To understand how ellipsis is licensed in this representation we will adopt the ellipsis licensing condition in (95). This is a slightly modified version of what can be found in Rooth 1992a and Takahashi & Fox 2005.

- (95) Ellipsis of some XP is licensed only if:
- i.) there is a parallelism domain (PD) that contains XP,
 - ii.) there is an antecedent constituent (AC), and
 - iii.) $\llbracket \text{AC} \rrbracket^o \in \llbracket \text{PD} \rrbracket^f$ for any variable assignment function g .

In prose, (95) says that a constituent (XP) may be elided on the condition that it is contained within some constituent (PD) whose focus semantic value, given any assignment function g , contains as a member the ordinary semantic value of some antecedent constituent (AC). As per the discussion in 4.3, the AC must be found in the overt syntax because TACs do not have access to implicit question meanings. The focus semantic value of a constituent is the set of alternatives that are derived by replacing focus marked constituents—which include at least the remnant in a phrasal TAC—with their type-matching alternatives.

In (96) we can see how to apply the ellipsis licensing condition in (95) to the example in (94).

- (96) a. $\llbracket \text{AC} \rrbracket^o = \lambda t. \text{Kim met Sue at } t$
 b. $\llbracket \text{PD} \rrbracket^f = \{ p : \lambda t. \text{Kim met } x \text{ at } t \mid x \in D_e \}$
 c. $\llbracket \text{AC} \rrbracket^o \in \llbracket \text{PD} \rrbracket^f$ for any g , ellipsis is licensed.

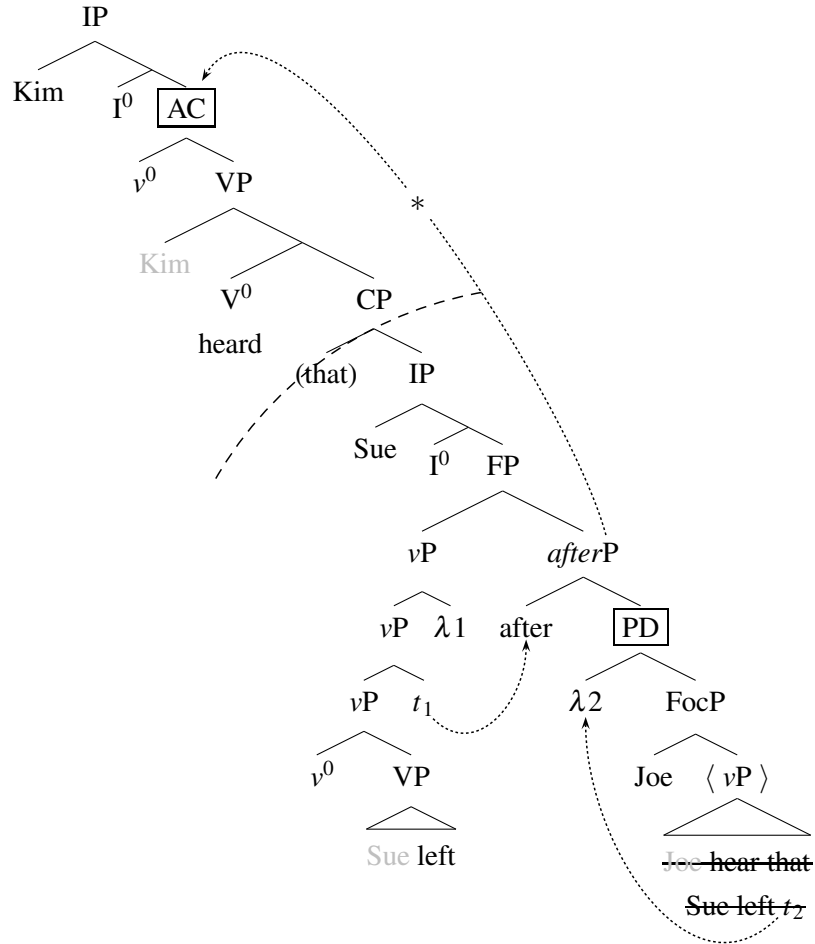
Given the presence of bound variables in the elided $\langle \nu\text{P} \rangle$, it will be necessary to define the PD as the node directly dominating the binder $\lambda 2$, which contains the binders for both elided variables. Only this will guarantee that an antecedent can be identified that, under any variable assignment function, is a member of the computed alternative-set. The constituent that contains the binder $\lambda 1$ for the trace of the TAC provides an appropriate AC. Therefore, ellipsis of the $\langle \nu\text{P} \rangle$ node is licensed and a TAC-stripping configuration emerges.

5.2 Antecedent-contained TAC-stripping

We are now prepared to turn to the analysis of the data summarized in Table 1. Let us start by considering the interpretations available to phrasal TACs that are adjoined to embedded clauses. As per the No Asymmetric Embedding constraint, the interpretation of the phrasal TAC cannot be resolved to the matrix predicate. The relevant example is repeated in (97) along with its proposed representation.

(97) a. *Kim heard [_{CP} (that) Sue had left after Joe \langle _{vP} ~~heard that Sue had left~~ \rangle]

b.



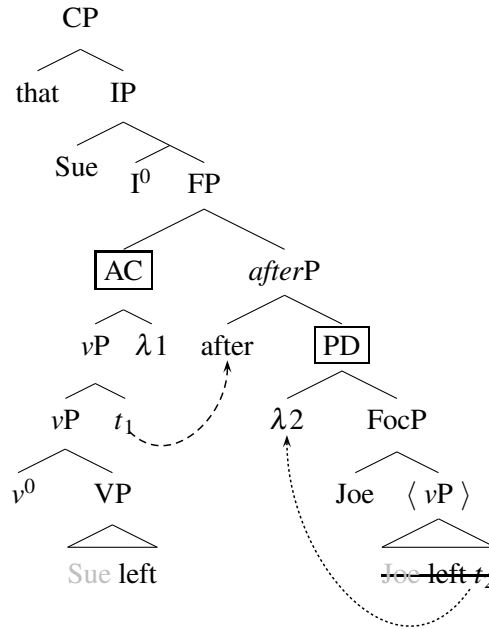
Given an ellipsis-based analysis of phrasal TACs, the ungrammaticality of this example can be understood straightforwardly as an instance of irreparable antecedent-containment that precludes the licensing of ellipsis. The general finite-clause boundedness of QR means the phrasal TAC in (97) will be trapped in the embedded clause and unable to escape the attempted antecedent. As (98) shows, the calculation of ellipsis licensing is expected to fail.

- (98) a. $\llbracket \text{AC} \rrbracket^o = \text{Kim heard that Sue left at some } t \text{ after Joe heard that Sue left at } t'$
 b. $\llbracket \text{PD} \rrbracket^f = \{ p : \lambda t. x \text{ hear Sue leave at } t \mid x \in D_e \}$
 c. $\llbracket \text{AC} \rrbracket^o \notin \llbracket \text{PD} \rrbracket^f$ for any g , ellipsis is not licensed.

The intended AC is not something that can be derived by replacing focused marked elements in the PD with their alternatives.

The available interpretation for the string under consideration is one in which the ellipsis site is resolved to the embedded predicate. The relevant example is provided again in (99) along with a partial representation that includes just the embedded clause.

- (99) a. Kim heard [_{CP} (that) Sue left after Joe _{<vP left>}]
 b.



The present analysis predicts the contrast on account of the fact that it is possible to identify an AC in this representation that does not contain the PD containing the elided constituent. The calculation of the licensing of ellipsis is provided in (100).

- (100) a. $\llbracket \text{AC} \rrbracket^o = \lambda t. \text{ Sue left at } t$
 b. $\llbracket \text{PD} \rrbracket^f = \{ p : \lambda t. x \text{ left at } t \mid x \in D_e \}$
 c. $\llbracket \text{AC} \rrbracket^o \in \llbracket \text{PD} \rrbracket^f$ for any g , ellipsis is licensed.

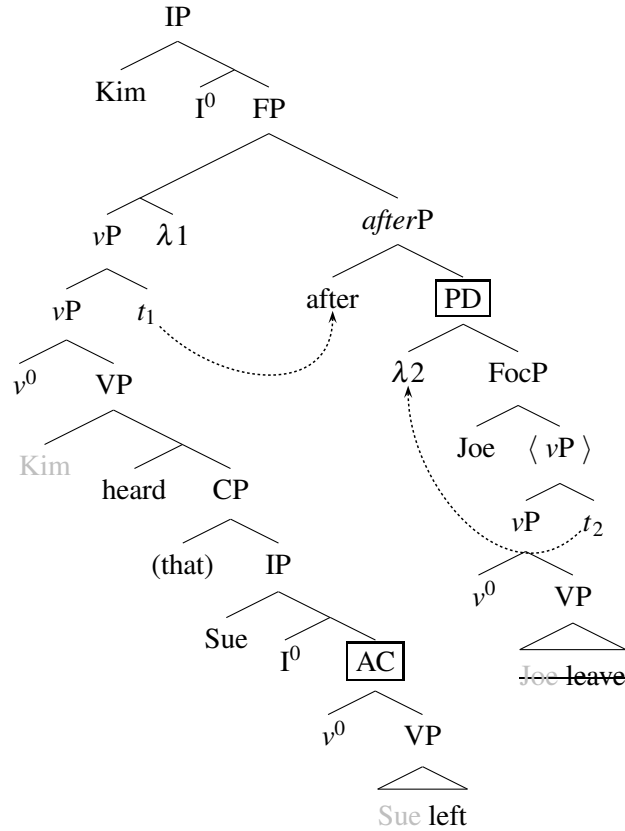
As in section 5.1, the PD will be required to contain the binder for the temporal operator variable inside the TAC. Unlike what we saw in (97), an acceptable AC can be identified that is a member of the set of focus alternatives that can be derived from the PD. Consequently, ellipsis is licensed.

5.3 Nonparallel Variable Binding

We turn now to the interpretations available to phrasal TACs that are adjoined to the matrix clause. In (101) is the proposed representation for the attempt to modify the matrix vP with a phrasal TAC and resolve the ellipsis site to an embedded vP.

(101) a. *Kim heard [CP (that) Sue had left] after Joe \langle vP ~~leave~~ \rangle

b.



The ungrammaticality of (101) is not obviously expected. On any theory of ellipsis licensing the ungrammaticality could not be attributed to antecedent-containment of the ellipsis site or a constituent containing the ellipsis. As noted in the previous section, several analyses have attempted to tie similar effects in other domains something besides the ability to license ellipsis. I propose that, in the case of phrasal TACs, the ungrammaticality observed here is in fact an instance of unlicensed ellipsis. What does the work here—similar to [Takahashi 2008](#)—is the temporal operator-variable relationship that we have seen is present in the TAC. Because the TAC serves to modify the matrix predicate, it will be generated in a position adjoined to a projection of the matrix predicate. The relevant effect is that there will be not be a parallel temporal operator-variable relationship in the matrix predicate. It is the absence of this operator-variable chain that disrupts the calculation of ellipsis licensing.

The necessary PD for licensing ellipsis will be the same as we just saw above. An antecedent must be found for a constituent that contains the binder for the trace of the temporal operator. Because of the absence of a parallel operator-variable relationship in the embedded clause, however, there is no appropriate AC in the representation provided in (101). As shown in (102), the nearest possible AC that can be identified is not a member of the set of focus alternatives derived from the

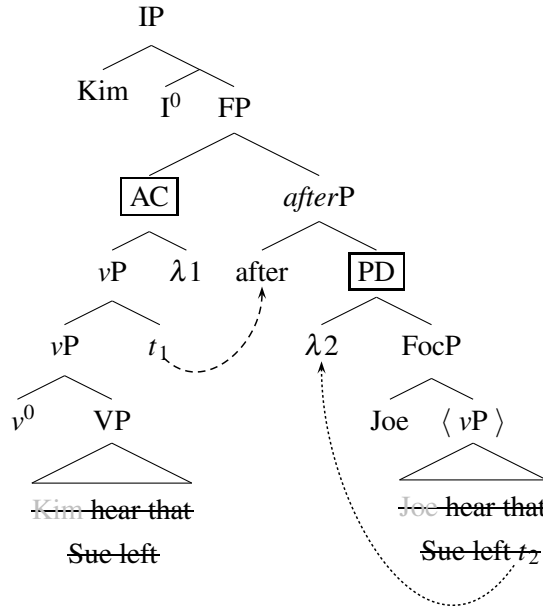
PD for the elided constituent.

- (102) a. $\llbracket AC \rrbracket^o = \text{Sue left}$
 b. $\llbracket PD \rrbracket^f = \{ p : \lambda t. x \text{ leave at } t \mid x \in D_e \}$
 c. $\llbracket AC \rrbracket^o \notin \llbracket PD \rrbracket^f$ for any g , ellipsis is not licensed.

Again, the linear string under consideration is not unavailable. As per Table 1, the available interpretation is one in which the ellipsis site is resolved to the matrix predicate. This example with its representation is provided in (103).

- (103) a. Kim heard $[_{CP} (\text{that}) \text{ Sue left}]$ after Joe $\langle \nu_P \text{ heard that Sue left} \rangle$

b.



The PD for which an appropriate AC must be found must still contain the binder for the elided temporal variable. However, the focus alternatives derived from this constituent, given the shape of the elided content, will now contain as a member the AC that is shown in (103). As shown in (104), it is determined that ellipsis is licensed on the intended interpretation.

- (104) a. $\llbracket AC \rrbracket^o = \lambda t. \text{ Kim heard at } t \text{ that Sue left}$
 b. $\llbracket PD \rrbracket^f = \{ p : \lambda t. x \text{ heard at } t \text{ that Sue left} \mid x \in D_e \}$
 c. $\llbracket AC \rrbracket^o \in \llbracket PD \rrbracket^f$ for any g , ellipsis is licensed.

At this point we can appreciate a specific prediction that this analysis makes with respect to the effect of TAC-stripping on the Geis-ambiguity. The requirement for parallel operator-variable binding that the ellipsis licensing condition in (95) enforces leads us to expect that TAC-stripping will also have an eliminative effect on the point of adjunction for the temporal operator inside the TAC and, therefore, on its possible interpretations. More plainly, this analysis predicts that the temporal operator cannot be generated as a modifier of the *leaving*-event within the TAC in (103). As shown below in (105), the resulting nonparallel binding chains in the PD and AC are expected

to disrupt ellipsis licensing.

- (105) a. $\llbracket \text{AC} \rrbracket^o = \lambda t. \text{Kim heard at } t \text{ that Sue left}$
 b. $\llbracket \text{PD} \rrbracket^f = \{ p : \lambda t. x \text{ heard that Sue left at } t \mid x \in D_e \}$
 c. $\llbracket \text{AC} \rrbracket^o \notin \llbracket \text{PD} \rrbracket^f$ for any g , ellipsis will not be licensed.

This prediction is borne out. To see this, let us first convince ourselves that we observe the Geis-ambiguity in the kind of TAC under consideration. This is demonstrated in the slightly simplified example in (106) wherein Sue's *leaving*-time is ordered after either the time at which Joe heard something or the time of Sue's leaving that Joe heard about.

- (106) Sue left $[_{\text{afterP}} \text{ after } \lambda 1 \text{ Joe heard } t_1 [_{\text{CP}} \text{ (that) she left } t_1]]$.
-
- a. = 'Sue left after t such that Joe heard at t that she left.'
 b. = 'Sue left after t such that Joe heard that she left at t .'

Consider again the example in (103), which is provided below with the relevant interpretations.

- (107) Kim heard $[_{\text{CP}} \text{ (that) Sue left }] [_{\text{afterP}} \text{ after } \lambda 1 \text{ Joe } \langle_{\text{VP}} \text{ heard } t_1 [_{\text{CP}} \text{ that she left } t_1] \rangle]$.
-
- a. = 'After Joe heard at t that Sue left, Kim heard at t' that Sue left.'
 b. \neq 'After Joe heard that at t Sue left, Kim heard at t that Sue left.'

As indicated, the embedded interpretation for the temporal operator in the phrasal TAC in (107) is unavailable, as expected. This supports the proposed analysis of TAC-stripping as an instance of ellipsis. It also provides further support for the treatment of the No Asymmetric Embedding constraint as a the symptom of unlicensed ellipsis caused by nonparallel temporal operator chains.

6 The VP-ellipsis Puzzle

Having taken an ellipsis approach to accounting for the restricted distribution of phrasal TACs, we turn now to a second, yet still familiar puzzle. As has been observed previously, VP-ellipsis (VPE) is not subject to the No Asymmetric Embedding constraint. This distinguishes it from gapping and stripping, and now from the TAC-stripping operation that has been identified in phrasal TACs. It is also not obviously a result that is expected from the analysis presented above or the analysis of TACs presented in [Takahashi 2008](#). After establishing this extended paradigm, I will argue that the data reflect the fact that VPE targets a smaller constituent for ellipsis than does TAC-stripping.

6.1 The Extended Paradigm

Let us consider first the interpretations available to a VPE site inside of a TAC that is adjoined to an embedded clause.

- (108) *Kim heard [_{CP} (that) Sue left after Joe did \langle ~~hear that Sue left~~ \rangle].
 ‘Kim heard that, after Joe heard that Sue left, Sue left.’
- (109) Kim heard [_{CP} (that) Sue left after Joe did \langle ~~left~~ \rangle].
 ‘Kim heard that, after Joe left, Sue left.’

As (108) shows, this configuration does not allow the VPE site to be resolved to the matrix predicate. It is possible, on the other hand, for the VPE site to be resolved to the embedded predicate, as in (109). This pattern mirrors what we saw in the previous section for TAC-stripping and is not necessarily a surprising finding. The structure and interpretation in (108) is expected to be unavailable as another instance of irreparable antecedent-containment. If, on the other hand, an antecedent is pulled from the embedded predicate, as in (109), it should be possible avoid antecedent-containment and license ellipsis.

The puzzle arises from the observation that a TAC adjoined to the matrix clause allows for a wider range of interpretations for a VPE site than we observed for a TAC-stripping site. The relevant data points are provided below.

- (110) Kim heard [_{CP} (that) Sue left] after Joe did \langle ~~hear that Sue left~~ \rangle .
 ‘After Joe heard that Sue left, Kim heard that Sue left.’
- (111) Kim heard [_{CP} (that) Sue left] after Joe did \langle ~~left~~ \rangle .
 ‘After Joe left, Kim heard that Sue left.’

In (110) we see that the VPE site in this configuration can be resolved to the matrix predicate, which we also saw is possible in the context of TAC-stripping. It is the grammaticality of examples like (111) that distinguish VPE from TAC-stripping. In this example, the VPE site is contained in a TAC adjoined to the matrix clause and is resolved to the embedded predicate. The state of affairs is summarized in Table 2.

		<i>antecedent</i>	<i>TAC-stripping</i>	<i>VPE</i>
<i>adjunction</i>	matrix	matrix	✓ (82)	✓ (110)
	matrix	embedded	* (81)	✓ (111)
	embedded	matrix	* (83)	* (108)
	embedded	embedded	✓ (80)	✓ (109)

Table 2: Possible source of the antecedent TAC-stripping and VP-ellipsis as a function of adjunction site.

As pointed out above, the similarities between TAC-stripping and VPE in embedded environments are expected and understood under an ellipsis-based account of these phenomena. What is unexpected is the ability for a VPE site in a matrix-modifying TAC to find an embedded antecedent. Recall that section 5.3 blocked this possibility in the context of TAC-stripping by asserting that the

presence of a temporal operator chain in the TAC, which is not paralleled by a similar relationship in the embedded clause, precludes the identification of an appropriate AC. The same should be true in the context of VPE if, as suggested by [Takahashi \(2008\)](#), VPE also targets a constituent that contains the trace of the temporal operator in the TAC.

I will argue in what follows that we should no longer maintain the idea that the VPE site contains the trace of the temporal operator variable. The effect we will see is that, in the context of VPE, it is possible to search for a smaller AC, which the embedded clause is able to provide.

6.2 *VP-ellipsis v. TAC-stripping*

The asymmetry identified above can be made to follow, I argue, from the assertion that VPE is ellipsis of a smaller constituent than what is elided in TAC-stripping. The basic idea finds support from a number of asymmetries between the two ellipsis operations.

The first is relatively familiar from the recent literature regarding the size of VPE relative to other instances of ellipsis (e.g., [Merchant 2013](#)). The voice feature that is interpreted in a VPE site can differ, under certain circumstances, from the voice feature that is present in the antecedent constituent. Representative examples are provided in (112).

- (112) a. ?The photos must be found before the police do $\langle_{VP} \text{find them} \rangle$.
 b. ?The camera can still be used after the photographer does $\langle_{VP} \text{use it} \rangle$.

In minimally differing examples that involve TAC-stripping in (113), the same kind of mismatch is not tolerated to the same degree.

- (113) a. *The photos must be found before the police₁ $\langle_{VP} \text{x}_T \text{find them} \rangle$.
 b. *The camera can still be used after the photographer₁ $\langle_{VP} \text{x}_T \text{uses it} \rangle$.

The contrast can be taken to indicate a difference in the size of the elided constituent. As [Merchant \(2013\)](#) suggests, VPE elides a constituent below the head responsible for voice properties of a predicate. Thus, the voice features in the root clause predicate and the TAC are not subject to any kind of identity constraint and can vary in the way shown above. TAC-stripping, on the other hand, we can assert is ellipsis of a constituent that does contain the relevant voice head. Therefore, the TAC-stripping site must find an antecedent with a matching value for voice.

Second, note that when both the antecedent and ellipsis site are passive, as in (114), the passive auxiliary can escape VPE.

- (114) a. The photos must be found before the documents must (be) $\langle_{VP} \text{found x}_T \rangle$.
 b. The trash should be emptied after the recycling₁ should (be) $\langle_{VP} \text{emptied x}_T \rangle$.

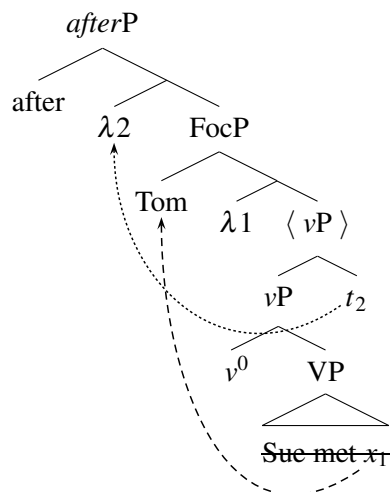
This can be taken to reveal that VPE may in fact target various different kinds of constituents, including one that does not contain the passive auxiliary (e.g., [Sailor 2014](#)). However, we do not find the same kind of variability with TAC-stripping. The examples in (115) show that it is not

possible for the passive auxiliary to escape the ellipsis site.¹⁸

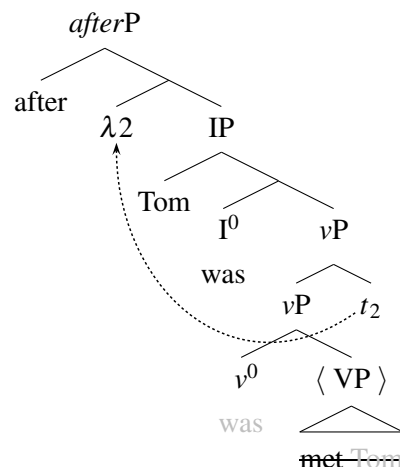
- (115) a. The photos must be found before the documents must (*being) $\langle_{vP} \text{found } x_T \rangle$.
 b. The recycling should be emptied before the trash₁ (*being) $\langle_{vP} \text{emptied } x_T \rangle$.

The contrasts above can be understood by modeling VPE and TAC-stripping as ellipses operations that target different size constituents, as shown in (116) and (117).

(116) TAC-stripping



(117) VP-ellipsis



TAC-stripping is intended to be ellipsis of at least the argument structure of the predicate, the functional structure that introduces voice, and the trace of the temporal operator. Following Merchant (2013), VPE is ellipsis of the argument structure of the predicate to the exclusion of the functional structure that introduces voice.¹⁹

¹⁸These examples can be compared to the data point in (46) where we find that TACs otherwise embed passive verbal small clauses.

¹⁹Providing an analysis of the difference between TAC-stripping and VPE that is consistent with all of the properties of VPE identified by (Sailor 2014) is beyond the scope of this manuscript and must be left future research.

However, we are in a position now to comment on one of the remaining arguments from Penka & von Stechow (2011) against a reduced analysis of phrasal TACs. They point out that phrasal TACs cannot contain more than one constituent in addition to the temporal connective, as in (i).

- (i) *Mary drank the beer after Peter ~~drank~~ the whiskey. (adapted from Penka & von Stechow 2011:441, (27a))

As we saw in section 3.2.3, this is equivalent to the observation made by Lobeck (1995) that gapping is not possible in TACs. The argument presented in Penka & von Stechow (2011) is that this contrasts with phrasal comparatives, which do allow multiple remnants or, in other terms, permit gapping (Lobeck 1995, Lechner 2004). On the reduction account of phrasal TACs being proposed, this should follow from whatever disallows gapping in subordination structures (sec. 3.2.3). To the extent that pseudo-gapping is suspected to generate additional remnants (e.g., Jayaseelan 1990, Lasnik 1999, Takahashi 2004), we can understand why it fails to do so in reduced TACs. Object Shift could be assumed to be too local to escape the ellipsis operation. Assuming that the remnant of TAC-Stripping is generated by HNPS, a second remnant will also be ruled out by whatever is responsible for the constraint against multiple HNPS; see (ii).

- (ii) a. Kim gave her friends x_1 this morning — some coffee₁.
 b. *Kim gave y_2 x_1 this morning — her friends₂ some coffee₁.

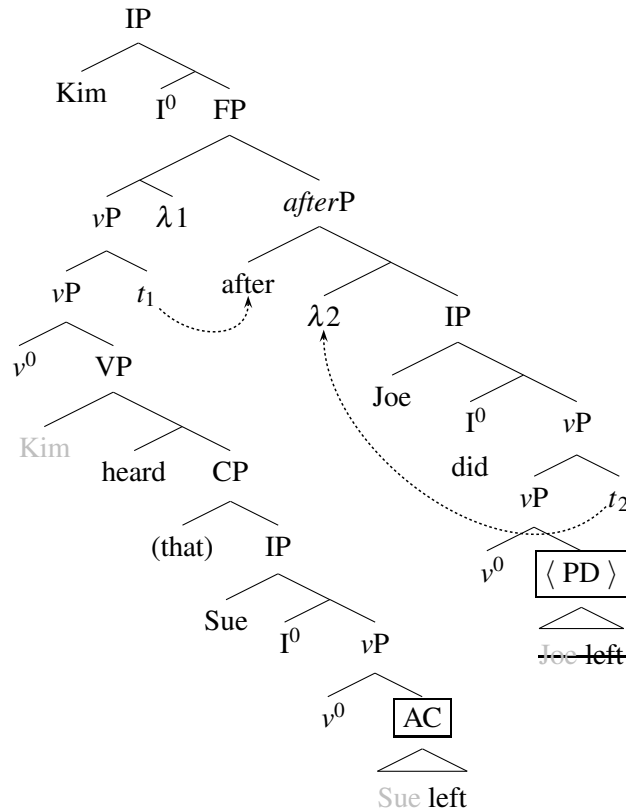
6.3 The Puzzle Solved

Most relevant for the puzzle at hand is the assertion that VPE is ellipsis of a constituent that does not contain the trace of the temporal operator. Given our condition on ellipsis-licensing in (95), not including the trace of the temporal operator in the VPE site makes it possible to search for a smaller AC than is necessary for TAC-stripping. This is because, in the case of VPE, there will be no bound variables in the ellipsis site.²⁰

To see this, consider the proposed representation for the case of a matrix-adjoined TAC with a VPE site that is resolved to the matrix predicate. This is provided in (118) and should be contrasted with (101).

(118) a. Kim heard [_{CP} (that) Sue [_{VP} left]] after Joe did <_{VP} left >

b.



As argued in section 6.2, VPE is ellipsis of a constituent smaller than the constituent that contains the trace of the temporal operator. This means that it will not be necessary to identify a PD any larger than the deleted constituent. Because the deleted constituent does not have to find an AC with a trace of a temporal operator, the embedded VP now provides a possible antecedent. As shown in (119), the result is that ellipsis is licensed in this representation and the sentence is grammatical.

²⁰This requires that we adopt the position that neither A-movement nor X⁰-movement introduce variables that require extending the PD (Messick & Thoms 2016, Overfelt to appear, cf. Hartman 2011).

- (119) a. $\llbracket \text{AC} \rrbracket^o = \text{Sue left}$
 b. $\llbracket \text{PD} \rrbracket^f = \{ p : x \text{ left} \mid x \in D_e \}$
 c. $\llbracket \text{AC} \rrbracket^o \in \llbracket \text{PD} \rrbracket^f$ for any g , ellipsis is licensed.

In sum, the wider distribution of VPE relative to TAC-stripping can be understood as a function of the ability to license ellipsis given the additional claim that both phenomena involve ellipsis but target different size constituents.²¹

7 Conclusion

This manuscript has argued that phrasal TACs can be derived by an ellipsis operation that targets the truncated complement in a low-adjoined *before*P or *after*P. It was argued that the elided constituent is larger than what is targeted in standard VP-ellipsis, but smaller than the elided constituent in genuine stripping (Pancheva 2009, Weir 2014b). I referred to this constituent as ν P. The single remnant in a phrasal TAC was argued to be generated by \bar{A} -movement to a focus position outside the elided constituent, as Depiante (2000) has proposed for canonical stripping.

We also adopted an articulated syntax-semantics mapping that involved covert movement of and within the TAC (Geis 1970, Larson 1987, Takahashi 2008). These pieces together provided a way to account for the observation that phrasal TACs have a more constrained distribution than either their clausal counterparts or VPE. Put simply, trying to identify an antecedent that is a constituent other than the ν P that the phrasal TAC directly modifies will necessarily fail. This was the result of creating an irreparable antecedent-containment configuration (section 5.2) or requesting an antecedent that lacks a binding relationship parallel to the temporal operator-variable relationship in the ellipsis site (section 5.3). The differing distribution of TAC-stripping and VPE was argued to be an effect of VPE eliding a smaller constituent that does not include the TAC's temporal operator-variable relationship. This made it possible in the case of VPE, but not in TAC-stripping, for a constituent that also lacked this relationship to serve as a licensing antecedent (section 6).

What we are led to with respect to the constraints on ellipsis is that the identity condition is stated semantically over variable syntactic domains, as per Rooth (1992a). Recall that this was motivated in part by the observation in section 4.3 that TACs are not-at-issue with respect to the QUD and, thus, could not obviously be anteceded by the QUD. Moreover, the licensing constraint that was adopted made it possible to identify different syntactic constituents as the antecedent for different ellipses. This is how VPE and TAC-stripping were distinguished in a way that captured their differing distributions.

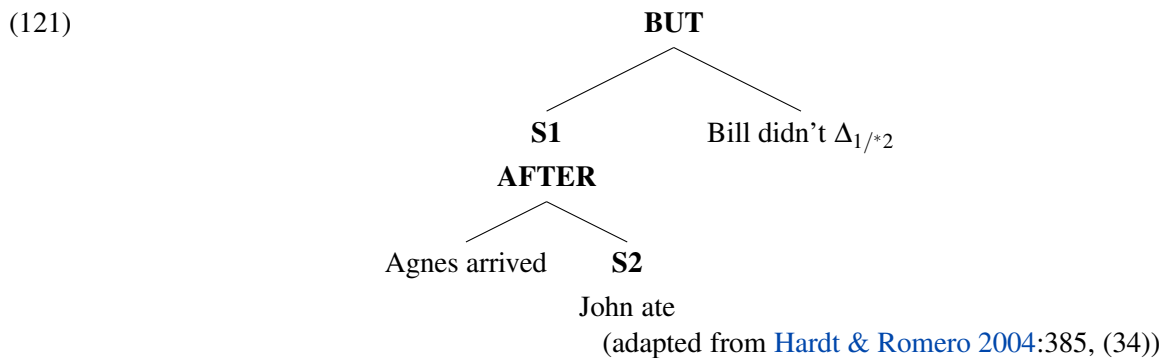
²¹At this point, one should wonder why something like VPE is not possible in a phrasal TAC such as (101). If a smaller constituent that did not contain the trace of the temporal operator were elided, the problem of non-parallel binding would not arise. Two possibilities come to mind for why this is not possible: (i) the relevant head that licenses ellipsis of VP is not present as a result of truncation or (ii) the focus movement involved in TAC-stripping induces a MAXELIDE-type effect that forces ellipsis of the larger ν P (e.g., Merchant 2008). Choosing between these options must be left for future research.

We can conclude by pointing out that, in taking this approach, we have lost the ability to account for the ungrammaticality of examples like (120), from [Hardt & Romero 2004](#), which formed part of the empirical domain for [Takahashi \(2008\)](#).

(120) Agnes $[_{VP_1}$ arrived after John $[_{VP_2}$ ate t]], but Bill didn't $\Delta_{1/*2}$.
([Hardt & Romero 2004:384](#), (34))

The relevant observation is that, while the VP_1 can, the VP_2 in the TAC in the first conjunct cannot serve as an antecedent for the VPE site in the second conjunct. For [Takahashi \(2008\)](#), the presence of a temporal operator trace in the embedded VP_2 rendered it unavailable as an antecedent for the elided VP, which lacks a counterpart to this temporal operator. However, I argued in section 6 that VPE is not sensitive to these types of operator variable relationships. Recall that this was formalized by treating VPE as ellipsis of a constituent smaller than that elided in TAC-stripping. Thus, while [Takahashi \(2008\)](#) incorrectly predicts (111) to be ungrammatical, the analysis presented here seems to incorrectly predict that VP_2 should provide an antecedent to the VPE site in (120).

For [Hardt & Romero \(2004\)](#), (120) is a symptom of a discourse-accessibility condition on ellipsis. In short, they propose that a constituent must be discourse accessible in order to serve as an AC. To be discourse accessible, the potential AC must c-command in the discourse representation tree what we have called the PD. Asserting that (121) is the discourse representation tree for (120), the constituent S1 does, but the constituent S2 does not c-command the constituent that contains the ellipsis site. Thus, S2 cannot serve as an AC for ellipsis licensing.



[Hardt & Romero \(2004\)](#) do not discuss in detail the discourse representation for embedded complement clauses. Therefore, it is unclear to me exactly what predictions this analysis makes with respect to the data discussed in sections 4–6. Future research could attempt to extend this analysis in such a way as to help us understand the available facts. Alternatively, one might pursue a discourse-accessibility condition on ellipsis licensing that defines discourse-accessible as being at-issue with respect to the QUD. While TACs are not at-issue with respect to the QUD, as we saw in section 4.3, at least some embedded complement clauses are. Therefore, it could be possible to tie the ability of a constituent to serve as an antecedent to its status as at-issue or not-at-issue in the discourse.

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