Variable Binding in Temporal Adverbial Clauses: Evidence from Ellipsis

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1. Introduction

It has been claimed that ellipsis is licensed only when certain requirements are satisfied (see e.g., Johnson 2001 for discussion). Among others, there is a requirement that the discourse must contain a constituent which does not dominate an elided constituent (EC) and has a meaning identical to that of a constituent containing the EC (modulo certain material whose properties I will discuss below). Due to this property of ellipsis, it has often been employed as a useful devise to uncover the LF representations of various types of sentences (see Fox 2000, among others).

In this paper, I will make use of this property of ellipsis to investigate the structure of temporal adverbial clauses (TACs). A primary empirical concern is the fact that a VP within TACs cannot serve as an antecedent of an elided VP (see Hardt and Romero 2004 for this observation and Frazier and Clifton 2005 for relevant discussion). This fact is illustrated by using *while* in (1) and *after* in (2). VP-ellipsis is ungrammatical in the answers to Sally's question in (1)b and (2)b even though their counterparts without VP-ellipsis in (1)a and (2)a are impeccable.

(1)   Context: Shoichi works at a day care with three babies, John, Bill, and Jesse, each of whom has a certain problem. John always tries to get out of the window. Bill sometimes refuses to eat. Jesse is a loud crier.

       Sally: How was your day at work?

    a. S1:   A nightmare!!! Lots of things went wrong. John kept getting closer to the window while I ate lunch. Bill didn't eat lunch. Jesse cried for three hours.

    b. S2:   A nightmare!!! Lots of things went wrong. John kept getting closer to the window while I ate lunch. *Bill didn't <eat lunch>. Jesse cried for three hours.

                                  (modeled after Hardt and Romero 2004)

(2)   Context: Shoichi works at a day care with three babies, John, Bill, and Jesse, each of whom has a certain problem. John only has good digestion when Agnes feeds him. Bill sometimes refuses to eat. Jesse is a loud crier.

       Sally: How was your day at work?

    a. S1:   A nightmare!!! Lots of things went wrong. Agnes arrived after John ate lunch. Bill didn't eat lunch. Jesse cried for three hours.

    b. S2:   A nightmare!!! Lots of things went wrong. Agnes arrived after John ate lunch. *Bill didn't <eat lunch>. Jesse cried for three hours.

                                   (adapted from Hardt and Romero 2004:385)

In contrast to (1)b and (2)b, a VP within non-TACs, such as ones headed by *although*, can be taken as the antecedent of an elided VP, as shown in (3)a and (3)b.

(3) a. John kept getting closer to the window although his father scolded him.
        But, his mother didn't <scold him>.
     b. John kept getting closer to the window although his father scolded him.
        So, his mother also did <scold him>.

Given the property of ellipsis discussed above, the ungrammaticality of VP-ellipsis in (1)b and (2)b can be taken as revealing that there is a structural piece in the complement of temporal adverbials, such as *while* and *after*, which is not present in root clauses (e.g., *Bill didn't eat lunch*) and has an effect on ellipsis licensing. On the other hand, the facts in (3) suggest that there is no such difference between non-TACs and root clauses. Together with the facts that I will discuss, I argue that the additional structural component in TACs is a variable binding dependency created by operator movement. In section 3, I present arguments in favor of the claim that the presence of this dependency is the source of the ungrammaticality of VP-ellipsis in (1)b and (2)b. In section 4, I will discuss antecedent-contained deletion in TACs (adverbial ACD) where we will see that there should also be a variable binding dependency in clauses that TACs modify, just like within TACs. I will suggest one possible approach to establishing such a dependency in those clauses.

2. Proposal
2.1 Ambiguity in TACs: Evidence for operator movement

In this section, I discuss a certain ambiguity exhibited by TACs when there is more than one clause in the complement of temporal adverbials. This phenomenon deserves some discussion not only because it has been taken as evidence for the presence of operator movement in TACs (Geis 1970 and Larson 1990a), but also because it will set the stage for making an argument in favor of the proposed analysis of (1)b and (2)b (see section 3.1). This ambiguity can be observed in the *before*-clause in (4), in which the TAC can be interpreted as expressing two kinds of time descriptions; the time of Mary's making the claim that she would arrive (a high reading in (4)a) and the time that Mary claimed was her arrival time (a low reading in (4)b).

(4) I saw Mary in New York before she claimed that she would arrive.
     a. high: I saw Mary in NY before the time of her making the claim that she would arrive.
     b. low: I saw Mary in NY before the time that she claimed was her arrival time.

Geis (1970) proposes that the ambiguity is captured by postulating two representations embodying different movement dependencies, which, following Larson (1990a), I assume are formed by operator movement. In order for structures involving operator movement of this sort to be interpreted compositionally, I adopt von Stechow's (2002) idea that the operator is generated in the complement of a covert preposition AT (see von Stechow 2002, among others, for a semantic analysis of TACs). As shown in (5), the two readings can be derived by base-generating the operator in two different clauses.[1]

(5) a. high reading: … [$_{PP}$ before [$_{CP}$ OP λt. [$_{TP}$ she claimed AT t [$_{CP}$ that she would arrive]]]]
     b. low reading: … [$_{PP}$ before [$_{CP}$ OP λt. [$_{TP}$ she claimed [$_{CP}$ that she would arrive AT t]]]]

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[1] Geis (1970) and Larson (1990a) argue that *while*-clauses do not exhibit this sort of ambiguity. One may take this fact as indicating that there is no operator movement in *while*-clauses (Larson 1990a). However, another possible interpretation of this fact is that operator movement is available even in *while*-clauses, but it is constrained in a different way than in other TACs. In fact, Johnson (1988:586) argues that the ambiguity is sometimes observed, based on the sentence *Mikey denounced the Soviet Union (only) while Joyce insisted that the party members should*. (I have no analysis that distinguishes Geis' and Larson's cases from Johnson's one. Furthermore, I have to discuss how the high reading in Johnson's case is derived under the current approach on another occasion. See section 4 for discussion about this type of sentences.) If my analysis below is successful, it would also provide an argument in favor of the claim that operator movement is present in *while*-clauses.

Geis (1970) and Larson (1990a) argue for the movement analysis on the basis of the observation that a low reading becomes unavailable if a lower clause is embedded within an island, as in (6).

(6)   I saw Mary in New York before she made the claim that she had arrived.   (high; *low)

Under the movement analysis, the absence of the low reading in (6) is straightforwardly explained because operator movement necessarily violates the island condition in order to produce that reading.

In contrast to TACs, this kind of ambiguity is missing in non-TACs, as discussed in Larson (1990a). Larson argues that if the *although*-clause in (7) were ambiguous in a way analogous to TACs, we would expect that it could be interpreted the ways described in (7)a and (7)b. Based on this fact, Larson argues that operator movement does not exist in the complement of *although*, which I follow here (but, see fn. 1 for Larson's claim that certain TACs do not involve operator movement, either).

(7)   I still respect John although he claims that he killed his mother.   (Larson 1990a:173)
      a.   high: I still respect John despite his claiming that he killed his mother.
      b.   *low: I still respect John despite what he claims, namely, that he killed his mother.

The facts above, taken together, support the claim that only TACs involve operator movement in their complement clause. In the next section, I will demonstrate how this structural difference between TACs and non-TACs helps us explain VP-ellipsis in (1)-(3).

2.2 The analysis

To set the stage for my analysis, I need to introduce certain details about the theory of ellipsis and the syntax of TACs. First, I adopt a licensing condition on ellipsis along the lines of Fiengo and May (1994) and Rooth (1992). A particular formulation of this condition taken from Takahashi and Fox (2005) is given below.

(8)   For ellipsis of EC to be licensed, there must exist a constituent, which reflexively dominates EC, and satisfies the parallelism condition.[2]

Takahashi and Fox (2005) call constituents of this sort Parallelism Domains (PDs). Given this, the parallelism condition can be stated as (9).

(9)   PD satisfies the parallelism condition if PD is semantically identical to another constituent AC, modulo focus marked constituents.

      PD is semantically identical to AC modulo focus marked constituents, if there is a focus alternative to PD, PD_{Alt}, such that for every assignment function, g, $[\![PD_{Alt}]\!]^g = [\![AC]\!]^g$.

      PD_{Alt} is an alternative to PD if PD_{Alt} can be derived from PD by replacing focus marked constituents with their alternatives.

In order to investigate whether we can find a PD in (1)-(3), it is necessary to know what the EC is that has undergone VP-ellipsis. Here, I adopt Johnson's (2004) claim that what is elided in VP-ellipsis is *v*P (see Johnson 2004 for supporting evidence). (Despite this assumption, I will continue to use the term "VP-ellipsis.") Finally, I assume that the covert PP headed by AT is a VP adjunct.[3]

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[2]   XP reflexively dominates YP if XP dominates YP or XP = YP.

[3]   It seems difficult to find evidence that pins down the exact position of AT and I can only offer an indirect argument that might suggest its possible positions. In section 4, I will suggest that AT is also generated in clauses modified with TACs, together with the operator, and TACs get interpreted right above the moved operator. Here, I assume that the base-generated position of AT in clauses modified with TACs is the same as that of AT within TACs. Given the contrast in (i), the position at which TACs are interpreted at LF is below the subject, which suggests that the base-generated position of AT is also below the subject.

With this background, let us check whether the licensing condition is satisfied in (10)b and (10)c, which are the structures of the TAC in the antecedent clause and of the ellipsis clause in (10)a, respectively. (Focus marked material is written in capital letters in LF representations.)

(10) a. John kept getting closer to the window while I ate lunch. *Bill didn't <eat lunch>.
      b. Antecedent Clause:
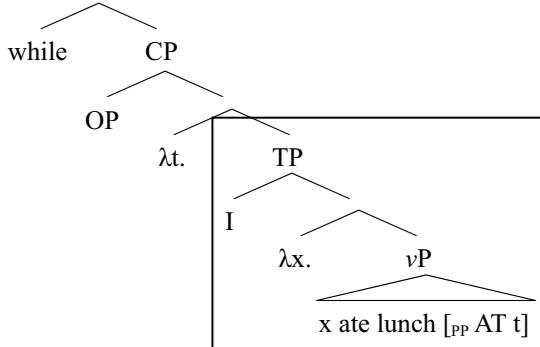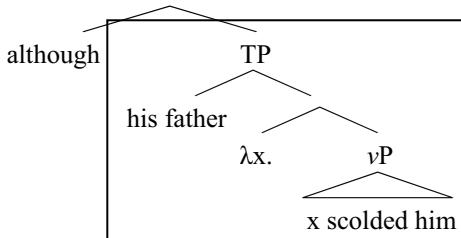

      c. Ellipsis Clause:
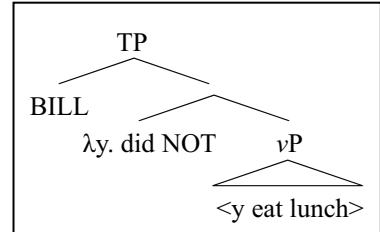
Since the covert PP is only present in (10)b, we cannot find a PD here. The two boxed TPs are not semantically identical, modulo the focus marked constituents. Consequently, VP-ellipsis in (10)a is not licensed. In contrast, we have seen that operator movement does not exist in non-TACs. This allows us to postulate the structures in (11)b and (11)c for the non-TAC in the antecedent clause and the ellipsis clause in (11)a, respectively.
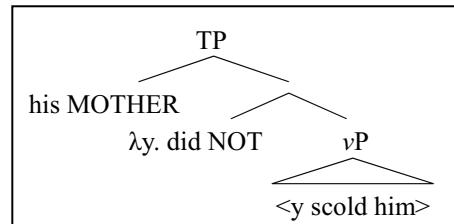
(11) a. John kept getting closer to the window although his father scolded him.
          But, his mother didn't <scold him>.
      b. Antecedent Clause: c. Ellipsis Clause:

Due to the absence of operator movement, the two boxed TPs are semantically identical, modulo the focus marked material, which licenses VP-ellipsis in (11)a.

To sum up, the contrast between (1)-(2) and (3) follows straightforwardly from the theory of ellipsis, together with the independently motivated structural difference between TACs and non-TACs.

3. Further arguments
3.1 Absence of operator movement in both clauses

In this section, I present some arguments in favor of the claim that the presence of the additional variable binding dependency in TACs has a consequence for ellipsis licensing. The proposed analysis predicts that a constituent within TACs should be able to serve as an antecedent of an elided vP under

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(i)   a. The chairman hit him$_i$ on the head before [the lecturer]$_i$ had a chance to say anything.
      b. *He$_i$ was hit on the head before [the lecturer]$_i$ had a chance to say anything.   (Reinhart 1983:34, 37)

For concreteness, I assume that AT adjoins to VP in clauses modified with TACs and hence, within TACs, as well. Nothing hinges upon this particular choice. Even though the base-generated position of AT is some other position below the subject (e.g., the lowest possible position within VP, see Larson 1988, 1990b), the facts in (1) and (2) would be explained the way I will propose, as long as vP is an EC in VP-ellipsis.

certain circumstances. One such circumstance is when TACs contain a clause in which a relevant dependency is not present. We have seen that the covert PP does not have to be generated in every clause within TACs. More specifically, when TACs have a high reading, a relevant dependency is established in a higher clause and the structure of the lower clause can be isomorphic to that of the root clause. Thus, we predict that VP-ellipsis should be legitimate in such environments. The facts in (12) and (13) bear this prediction out.

(12) John kept getting closer to the window while his father was arguing that the Patriots would win. In fact, they did <win>.

(13) John kept getting closer to the window while his father was arguing that the Patriots would win. But, his mother denied that they would <win>.

The TAC in (12) and (13) describes the period during which John's father was making a certain argument (i.e., a high reading). Thus, the structure in (14)a, in which the covert PP is base-generated in the higher clause, can be postulated for the TAC in (12) and (13).

(14) a. Ant. Cl.: [while OP λt. [$_{TP}$ his father was arguing AT t [$_{CP}$ that [$_{TP}$ the Patriots would win]]]]
    b. Ellipsis Clause in (12):   [$_{TP}$ they DID <win>]
    c. Ellipsis Clause in (13):   [$_{TP}$ his mother denied [$_{CP}$ that [$_{TP}$ they would <win>]]]

Because of this structural aspect, the underlined TP within the TAC in (14)a is semantically identical to the TPs in (14)b and (14)c (modulo the focus marked material), which licenses ellipsis in (12) and (13). These facts support the argument that the ungrammaticality of VP-ellipsis in (1)b and (2)b is caused by the presence of the additional structural component in TACs, which is missing in root clauses.[4]

3.2 Presence of operator movement in both clauses

Another circumstance in which the proposed analysis predicts that a constituent within TACs should be able to serve as an antecedent of an elided vP is one in which a relevant variable binding dependency is present both in the antecedent and the ellipsis clauses. Here, I will discuss two cases which demonstrate that this prediction is borne out. First, VP-ellipsis of the relevant sort can be licensed if an elided vP is also within a TAC, as shown in (15).

(15) Bill got healthy after Sue went to the hospital, but Eri got sick after Mai did <go to the hospital>.

Since the covert PP is present in both clauses, the underlined λ-predicate can be taken as a PD in (16)b, which licenses ellipsis in (15).

(16) a. Antecedent Clause: [after OP λt_1. [$_{TP}$ Sue went to the hospital AT t_1]]
    b. Ellipsis Clause: [after OP $\underline{\lambda t_2.}$ [$_{TP}$ MAI did <go to the hospital AT t_2>]]

An analogous configuration can be obtained in a different environment. One such case is given in (17), in which two TPs, one of which dominates an elided vP, are coordinated within the TAC.

(17) John kept getting closer to the window while his father was reading a book and his mother also was <reading a book>.

As illustrated in (18), the operator undergoes across-the-board movement here. Thus, the two underlined TPs are semantically identical, modulo the focus marked material.

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[4] Hardt and Romero's (2004) discourse condition on ellipsis licensing correctly explains the ungrammaticality of (1)b and (2)b without recourse to the consequence of the extra structural piece in TACs. However, their analysis predicts that VP-ellipsis in (12) should also be ungrammatical.

(18) [OP λt. [[his father was reading a book AT t] and [his MOTHER was <reading a book AT t>]]]

4. Adverbial ACD
4.1 An operator movement analysis

I have argued that VP-ellipsis of the type considered here is legitimate only when both the antecedent and the ellipsis clauses involve a relevant dependency (as in (15) and (17)) or neither clause does (as in (12) and (13)). Given this, the grammaticality of VP-ellipsis like (19)a appears to suggest that there is also a relevant dependency in the clause modified with the TAC. While there are several ways to create such a dependency, one straightforward approach is to assume that operator movement also takes place in the matrix clause and a TAC adjoins to a position right above the moved operator, as shown in (19)b.[5, 6] (For ease of presentation, the TAC is adjoined leftward, instead of rightward and the operator moves to a position above the subject, despite the fact in fn. 3.)

(19) a. John left before Bill did <leave>.
   b. [[before OP λt$_1$. BILL did <leave AT t$_1$>] OP λt$_2$. [John left AT t$_2$]]

Notice that under this approach, TACs are not represented within a VP of the clause that they modify. Independent evidence for this aspect of the analysis comes from adverbial ACD discussed in Fox and Nissenbaum (2003:7). In (20), the TAC modifies the embedded clause, yet the matrix *v*P can be reconstructed into the elided *v*P within the TAC, making this an instance of ACD.[7]

(20) Context: A hotel manager is trying to coordinate a dinner schedule and utters the sentence below.
   Room 1 wants to have dinner before Room 2 does <want to have dinner>.

Fox and Nissenbaum appeal to QR to resolve the antecedent-containment relation in (20). As shown in (21), which is derived by QR of the TAC, the underlined λ-predicate can be regarded as a PD.

(21) [[before [OP λt$_1$. <u>R. 2 does <want to have dinner AT t$_1$>]]] λt$_2$. [R. 1 wants to have dinner AT t$_2$]]

However, the QR approach comes into conflict with the well-motivated copy theory of movement, as pointed out by Fox (2002) in the discussion of nominal ACD, such as *John visited every city Bill did <visit>*. The same problem emerges in the present context, as well. If QR of the TAC leaves a copy, unlike in (21), there would be no constituent that can be taken as a PD, as shown in (22).

(22) *[[before [Room 2 does <want to have dinner>]]
          [Room 1 wants to have dinner [before Room 2 does <want to have dinner>]]]

The operator movement analysis can avoid this problem. As can be seen from the representation in (19)b, this approach derives a structure that is very close to (21) from the viewpoint of ellipsis licensing because only the operator is base-generated within the VP in the embedded clause.[8]

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[5] This idea was suggested by Rajesh Bhatt (personal communication).
[6] I suggest that the adjunction site of TACs in the matrix clause follows from the semantics of temporal adverbials. If TACs adjoined to different positions, an output representation would end up being uninterpretable.
[7] There is another interpretation in (20) in which the elided material is understood as *have dinner*.
[8] In the WCCFL talk, I suggested an alternative analysis of adverbial ACD, which makes crucial use of a theory of counter-cyclic merger advocated in Takahashi (2006) and Takahashi and Hulsey (2007) (see also Bhatt and Pancheva 2004). I argued that only a temporal adverbial is base-generated in the complement of AT and its complement clause is merged with it after it undergoes QR, as shown in (i).

(i)   a. [R. 1 wants to have dinner AT [before]] → **QR of *before***
     b. [[before] [R. 1 wants to have dinner AT [before]]] → **Counter-cyclic Merger**
     c. [[before [OP λt$_2$. [R. 2 does <want to have dinner AT t$_2$>]]] [R. 1 wants to have dinner AT [before]]]

4.2 A correlation between the size of ellipsis and scope

Adverbial ACD, like (20), should potentially be able to receive several interpretations, due to the ambiguity of the size of the EC (*have dinner*; *want to have dinner*) and the scopal possibilities of the TAC. (*want>before*; *before>want*). However, a certain combination of the two factors is actually not attested, as noted in Fox and Nissenbaum (2003). This fact is one instantiation of the generalization that emerges from facts in nominal ACD. After illustrating this point, I will demonstrate how the facts in adverbial ACD are captured by the operator movement analysis.

To set the stage, let me first discuss the correlation between the size of an EC and the scope of a QP that contains that EC in ACD (Larson and May 1990 and Sag 1976).

(23) ACD-Scope Generalization:
     A QP dominating an elided *v*P must take scope over the antecedent of the elided *v*P.

This generalization is illustrated by (24). The ACD sentence in (24) does not have the interpretation in (24)b because the QP does not take scope over the matrix *v*P, which is a putative antecedent of the EC.[9]

(24) Sue wants to visit every city you do.
     a.   *want*>∀, EC = *visit*: Sue has a desire that she visits every city that you visit.
     b.   **want*>∀, EC = *want to visit*: Sue has a desire that she visits every city that you want to visit.
     c.   ∀>*want*, EC = *visit*: Every city that you visit is a city that Sue wants to visit.
     d.   ∀>*want*, EC = *want to visit*: Every city that you want to visit is a city that Sue wants to visit.

Let us now move on to adverbial ACD. The sentence in (25) lacks the interpretation in (25)b, as discussed in Fox and Nissenbaum (2003). Notice that the unavailable reading involves the same combination of the size of an EC and scope as the unattested one in (24)b. Thus, the fact that (25)b is missing is an instance of the generalization in (23).[10]

(25) Sue told John$_i$ to meet Sally before his$_i$ sister did.
     a.   *tell>before*, EC = *meet Sally*
          Sue told John: Meet Sally before your sister meets her.
     b.   **tell>before*, EC = *tell John to meet Sally*
          Sue told John: Meet Sally before your sister tells you to meet her.
     c.   *before>tell*, EC = *meet Sally*
          Sue told John: Meet Sally at 4:00pm; his sister met Sally at 5:00pm.
     d.   *before>tell*, EC = *tell John to meet Sally*
          Sue told John: Meet Sally at 4:00pm; his sister told him: Meet Sally at 5:00pm.

The ACD-Scope Generalization has been taken as indicating the relevance of QR of a QP dominating an EC to the resolution of the antecedent-containment relation in nominal ACD (Fox 2002 and Larson and May 1990). When the QP takes narrow scope relative to *tell* in (24), it just undergoes QR within the embedded clause. Ellipsis of the larger *v*P is not allowed under this scopal relation, due to a failure to satisfy the licensing condition. The fact that (23) also holds in adverbial ACD suggests that an operation assigning scope to TACs plays an important role in resolving the antecedent-containment relation, as discussed in Fox and Nissenbaum (2003). The operator movement analysis allows us to implement this idea analogously to the QR approach. To derive the narrow scope

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The independently needed procedure to interpret copies (Fox's 2002 Trace Conversion) converts a lower copy of *before* to a syntactic object that receives the same semantic interpretation as that assigned to a contentless trace. Thus, this approach can achieve the same result as the operator movement analysis. Indeed, I have not found any evidence that can tease apart the two analyses. I present the operator movement analysis in this paper just because I can avoid introducing certain assumptions that are not immediately relevant for our main concern here.

[9] Hardt and Romero (2004) argue that the interpretation in (24c) has an intermediate grammatical status. See Hardt and Romero (2004) for a possible analysis of this fact.

[10] There is another factor that yields further ambiguity in (25) and in the facts that we will see below; whether the TAC modifies the matrix clause or the embedded clause. Here, I confine myself to discussing readings in which the embedded clause is modified with a TAC.

of the TAC in (25), the operator moves only within the embedded clause, as in (26)a and (26)b. Ellipsis of the matrix vP is not permitted under this scopal relation because there is no PD in (26)b.[11] On the other hand, the operator moves to a position above the matrix vP when the TAC receives wide scope. Thus, both the matrix vP and the embedded vP can be the antecedent of an EC, as in (26)c and (26)d.

(26) Sue told John$_i$ to meet Sally before his$_i$ sister did.
- a. *tell>before*, EC = *meet Sally*
  [Sue told John$_i$ [[before OP λt_1. his$_i$ sister did <meet Sally AT t_1>] OP λt_2. [PRO to meet Sally AT t_2]]]
- b. **tell>before*, EC = *tell John to meet Sally*
  [Sue told John$_i$ [[before OP λt_1. his$_i$ sister did <tell John$_i$ to meet Sally AT t_1>] OP λt_2. [PRO to meet Sally AT t_2]]]
- c. *before>tell*, EC = *meet Sally*
  [[before OP λt_1. his$_i$ sister did <meet Sally AT t_1>] OP λt_2. [Sue told John$_i$ [PRO to meet Sally AT t_2]]]
- d. *before>tell*, EC = *tell John to meet Sally*
  [[before OP λt_1. his$_i$ sister did <tell John$_i$ to meet Sally AT t_1>] OP λt_2. [Sue told John$_i$ [PRO to meet Sally AT t_2]]]

In the next section, I will present evidence in favor of the claim that in adverbial ACD, only the operator is base-generated within the VP of the clause that a TAC modifies.

4.3 Interaction with Condition C

I have argued that the antecedent-containment relation in adverbial ACD is resolved by merging a TAC right above the moved operator, which takes scope over the vP that is reconstructed into the EC. Since a TAC is not represented within the VP of the clause that it modifies, we predict that in adverbial ACD, no constituent within a TAC should be c-commanded by anything that is dominated by a vP that takes narrow scope relative to the TAC. This prediction is borne out by (27) (see Fiengo and May 1994 and Fox 2002 for related facts of nominal ACD). Since the TAC takes narrow scope relative to *tell* in (27)a and (27)b, Condition C is violated there. ((27)b is also excluded by a failure to meet the licensing condition, as we saw above.[12]) However, the coreference relation between the pronoun and the R-expression is possible if the TAC takes scope over *tell*, as in (27)c and (27)d.

(27) Sue told him$_i$ to meet Sally before John$_i$'s sister did.
- a. **tell>before*, EC = *meet Sally*
  Sue told John: Meet Sally before your sister meets her.
- b. **tell>before*, EC = *tell him$_i$ to meet Sally*
  Sue told John: Meet Sally before your sister tells you to meet her.
- c. *?before>tell*, EC = *meet Sally*
  Sue told John: Meet Sally at 4:00pm; his sister met Sally at 5:00pm.
- d. *before>tell*, EC = *tell him$_i$ to meet Sally*
  Sue told John: Meet Sally at 4:00pm; his sister told him: Meet Sally at 5:00pm.

The fact that a violation of Condition C is circumvented under wide scope of the TAC is explained by

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[11] This analysis is reinforced by the fact that the reading in (25)b becomes available if the problem of ellipsis licensing is avoided by eliding the smaller constituent in (i) (see Bhatt and Pancheva 2004 for relevant data).

(i) Sue told John$_i$ to meet Sally before his$_i$ sister told him$_i$ to.
- a. *tell>before*; Sue told John: Meet Sally before your sister told you to meet her.
- b. *before>tell*; Sue told John: Meet Sally at 4:00pm; his sister told him: Meet her at 5:00pm.

[12] Since the reading in (27)b is also ruled out by a Condition C violation, this reading does not become available even if the smaller constituent is elided, as in (i). See fn. 11 for relevant discussion.

(i) Sue told him$_i$ to meet Sally before John$_i$'s sister told him$_i$ to.
- a. **tell>before*: Sue told John: Meet Sally before your sister told you to meet her.
- b. *before>tell*: Sue told John: Meet Sally at 4:00pm; his sister told him: Meet her at 5:00pm.

the proposed approach because only the operator is generated in the clause which the TAC modifies and the TAC itself adjoins to a position above the matrix vP, as illustrated in (28)a and (28)b.

(28) a. *before>tell*, EC = *meet Sally*
      [[before OP λt_1. John$_i$'s sister did <meet Sally AT t_1>] OP λt_2. [Sue told him$_i$ [PRO to meet Sally AT t_2]]]

  b. *before>tell*, EC = *tell him$_i$ to meet Sally*
      [[before OP λt_1. John$_i$'s sister did <tell him$_i$ to meet Sally AT t_1>] OP λt_2. [Sue told him$_i$ [PRO to meet Sally AT t_2]]]

If a TAC was base-generated in the VP of the clause which it modifies, it is not clear to me how the obviation of a Condition C violation in (27)c and (27)d would be explained. Thus, I argue that the fact in (27) lends support to the analysis suggested here (and the alternative approach discussed in fn. 8).

5. Conclusion

We have seen that a vP within TACs can serve as an antecedent of an EC when both the antecedent and the ellipsis clauses bear a variable binding dependency created by operator movement (sections 3.2 and 4) or when neither of them does (section 3.1). We have also seen that if operator movement takes place only in the antecedent clause, VP-ellipsis is not licensed (section 1). These facts, taken together, yield the implication that the variable binding dependency created by operator movement should be embodied in LF representations in a way that has a consequence for ellipsis licensing.

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