Stripping in Temporal Adverbial Constructions

Jason Overfelt
University of Minnesota

1 Overview

- **The Empirical Domain.** Temporal Adverbial Constructions (TACs) have full clausal forms (1) and phrasal forms (2):

  1. Sue left [ after Joe left ]
  2. Sue left [ after Joe ]

- **TAC-Stripping.** At least some phrasal TACs have a clausal source involving movement of the remnant and ellipsis of a vP (e.g., Pancheva 2009).

  3. a. [vP [vP Kim met Sue] [afterP after [FocP Tom₁ ⟨vP Kim meet Sue⟩]]]
   b. [vP [vP Kim met Sue] [afterP after [FocP Tom₁ ⟨vP Kim meet Sue⟩]]]

- **Embedding Constraints.** Along with an articulated syntax-semantics for TACs, this provides an account for a surprising but familiar puzzle:

  4. *No Asymmetric Embedding*

  A phrasal TAC and its antecedent must be at the same level of embedding.

- **Re-binding and Parallelism.** Binding of temporal operators by and within TACs disrupts ellipsis licensing (cf. Takahashi 2008).

2 TAC-Stripping: The Basic Analysis

- **Ingredients.** TAC-Stripping is:
  - Low-adjunction of a TAC with an extended vP (e.g., Pancheva 2009).

- **Operator Movement.** Geis (1970) proposed movement of temporal operators (t₁) in TACs.

  5. I saw Kim [ after Op₁  she said t₁ [ she would leave t₁ ]] [a. ‘I saw Kim after the time of saying that she would leave.’]
  b. ‘I saw Kim after the reported time of leaving.’

- **Temporal Re-binding** The resulting re-binding is resolved via Quantifier Raising of the TAC (ACD; Takahashi 2008).

  6. a. Sue left after Joe did ⟨leave⟩
  b. [afterP after λ₁ Joe did ⟨leave t₁ ⟩ ] λ₂ Sue [vP left t₂ ]

- **Ellipsis Parallelism.** Ellipsis is licensed according to Rooth 1992a.

  7. \[
  \begin{align*}
  &\text{XP} \\
  &\text{AC} \\
  &\text{afterP} \\
  &\text{FocP} \\
  &\lambda₄ \\
  &\text{Sue} \\
  &\text{λ₃} \\
  &\text{Kim met x₃ t₄} \\
  &\text{λ₁} \\
  &\text{vP} \\
  &\text{λ₂} \\
  &\text{FocP} \\
  &\text{Tom} \\
  &\text{Kim meet x₁ t₂} \\
  \end{align*}
  \]

  8. a. \[ \text{[AC]}^o = \exists t. \text{Kim met Sue at } t \]
  b. \[ \text{[PD]}^f = \{ p : \exists t. \text{Kim met x at } t \mid x \in D_c \} \]
  c. \[ \text{[AC]}^o \in [\text{PD}]^f \text{ for any } g, \text{ ellipsis is licensed} \]
3 Movement and Ellipsis in Phrasal TACs

- **Focus Parallelism.** Like other ellipses, pitch accent in the matrix clause disambiguates the remnant (Rooth 1992b).

  \[ \text{[AC} \text{ Kim met Sue] after [PD TOM1 (x met Sue)]} \]
  \[\text{[AC]} = \text{[PD]} = \{ p : x \text{ met Sue} | x \in D_e \}\]

- **Binding Connectivity.** The remnant shows binding connectivity effects (Lechner 2004, Bhatt & Takahashi 2011).

  \[ \text{[AC} \text{ Kim met Sue] after [PD TOM1 (Kim met x)]} \]
  \[\text{[AC]} = \text{[PD]} = \{ p : Kim \text{ met x} | x \in D_e \}\]

- **Islands.** The remnant’s sensitivity to islands is consistent with movement (Merchant 2004).

  \[ \text{I took him} _1 \text{ to Sue before} \]
  \[a. \text{ Joe} _1 \text{’s boss} _2 (x \text{ take him} _1 \text{ to Sue}) \]
  \[b. \text{ *Joe} _1 \text{’s boss} _2 ( I \text{ take him} _1 \text{ to Sue}) \]

  \[ \text{I took Joe} _1 \text{ to Sue before} \]
  \[a. \text{ his} _1 \text{ boss} _2 (x \text{ take him} _1 \text{ to Sue}) \]
  \[b. \text{ his} _1 \text{ boss} _2 ( I \text{ take him} _1 \text{ to Sue}) \]

4 Restructuring and Low-Adjunction in TACs

- **Restructured Complements.** Phrasal TACs permit restructured complements.

  (15) You should cook the dumplings before eating them.

  (16) The dumplings were eaten after being cooked.

- **Scope of Negation.** Negation cannot be interpreted inside a phrasal TAC (e.g., Oehrle 1987).

  (17) Tom didn’t leave after his boss.
  
  a. \( \neg > \text{after} : \text{‘Tom left, but not after his boss didn’t leave.’} \)
  
  b. \( > \neg \text{after} : \text{‘After his boss left, Tom didn’t leave.’} \)

  And phrasal TACs necessarily take scope below root negation.

  (18) Tom didn’t leave after his boss.
  
  a. \( \neg > \text{after} : \text{‘Tom left, but not after his boss didn’t leave.’} \)
  
  b. \( > \neg \text{after} : \text{‘After his boss left, Tom didn’t leave.’} \)

- **Scope of Modals.** Epistemic modals resist being interpreted inside a phrasal TAC while circumstantial modals can be (cf. Siegel 1987).

  (19) a. \( \text{ *Kim might leave after Joe ( might leave ).} \)
  
  b. \( \text{ ?Kim can leave after Joe ( can leave ).} \)

- **Quantifier-Variable Binding.** A quantificational DP in subject position can bind a pronoun in a phrasal TAC (e.g., McCawley 1993).

  (20) No employee\(_1\) [ left [ after his\(_1\) boss ]].
5 The Eliminative Puzzle of TAC-Truncation

- **Embedding Constraints.** Phrasal TACs show the constraints against embedding the ellipsis site and antecedent observed with Gapping (Hankamer 1979) and other bare argument ellipses (Rooth 1992b), but not necessarily with VP-Ellipsis (VPE).

(21) *Embedded Adjunction; Matrix Antecedent*

a. Kim heard that Sue had left after Joe heard that she had left.

b. *Kim heard [ that Sue had left after Joe (did) ⟨ hear that Sue had left ⟩]

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

(22) *Matrix Adjunction; Embedded Antecedent*

a. Kim heard that Sue had left after Joe had left.

b. Kim heard [ (that) Sue had left ] after Joe *(had) ⟨ left ⟩.

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

<table>
<thead>
<tr>
<th></th>
<th>TAC</th>
<th>VPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>embedded</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>matrix</td>
<td>*</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 1: Possible source of antecedent as a function of adjunction site.


- **Not vP-Parallelism (Toosarvandani 2016).** Weakening vP-Parallelism to include TACs weakens it beyond utility.

- **Not Complementizers (Wurmbrand 2017).** The presence of a complementizer (i) does not affect the status of an embedded ellipsis site and (ii) is not relevant for an embedded antecedent site.

6 Re-binding and Parallelism

- **Embedding the Ellipsis Constituent.** Resolving the ellipsis site to the matrix predicate results in irreparable Antecedent-Containment (Larson & May 1990, Fox 2002).

(23) a. *Kim heard [CP that Sue had left after Joe ⟨vP heard that Sue had left ⟩].

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

- **No Parallelism.** Ellipsis in PD cannot be licensed under containment.

(24) a. \[ [AC^1]^o = \exists t. \text{Sue left at } t \]

b. \[ [PD]^f = \{ p : \exists r. x \text{ hear Sue leave at } r \mid x \in D_r \} \]

\[ [AC^1]^o \notin [PD]^f \] for any g, ellipsis is not licensed

Jason Overfelt 3 overfelt@umn.edu
**Embedding the Antecedent Constituent.** The locality of QR forces high-generation of the TAC. This precludes the presence of a relevant temporal trace in the embedded clause.

(25)  a. *Kim heard [CP that Sue had left] after Joe ⟨vP leave⟩

b. 

![Tree Diagram]

**No Parallelism.** No AC is generated that allows licensing of ellipsis.

(26)  a. [AC1]o = Sue left
b. [PD]l = { p : ∃ r. x leave at t | x ∈ Dr }
c. [AC1]o ≠ [PD]l for any g, ellipsis is not licensed

**Why Can VPE Not Target TACs?** Focus movement of the remnant induces re-binding that triggers a MAXELIDE effect (Merchant 2008, Messick & Thoms 2016).

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**Appendix A: Embedding and VPE**

**VPE Is Not Eliminative.** Standard VP-Ellipsis allows a matrix adjunct to contain an ellipsis site with an embedded antecedent.

(27)  **Matrix Adjunction; Embedded Antecedent**
Kim heard [ that Sue had left] after Joe had ⟨leave⟩.
‘After Joe had left, Kim heard that Sue had left.’

**Different Ellipses.** This is a result of the fact that TAC-Stripping is ellipsis of a constituent larger than standard VPE.

(28)  **TAC-Stripping**

(29)  **VP-Ellipsis**

Neither A-movement nor X°-movement can induce re-binding (cf. Hartman 2011, Messick & Thoms 2016).

**Voice Mismatches.** The voice of truncated TACs must match the voice of the matrix clause. This is not so for VPE.

(30)  a. ?The photos must be found before the police1 do ⟨x find them⟩.
b. *The photos must be found before the police1 ⟨x find them⟩.
• The Passive Auxiliary. The passive auxiliary cannot escape TAC-Stripping but it can escape VPE.

(31) a. The recycling should emptied before the trash\textsubscript{1} should be (emptied \textsubscript{x}).
   b. *The recycling should be emptied before the trash\textsubscript{1} being (emptied \textsubscript{x}).

• Embedding the VPE Antecedent. The ability to identify a smaller deletable constituent results in a smaller EC that is able to find an AC.

(32) a. Kim heard \[CP (that) Sue had [vP left] \] after Joe had \(vP \text{ left}\)

b. \begin{itemize}
   \item[1.] \begin{itemize}
   \item a. Kim heard \(\lambda_1\) \[CP (that) Sue had [vP left] \] after Joe had \(vP \text{ left}\)
   \item b. *Kim heard \(\lambda_2\) [that Sue had left after Joe heard that she had left]
      \end{itemize}
   \end{itemize}

Thus, these examples do not directly test the ability to embed the ellipsis site as a function of re-binding.

• Parallelism. Ellipsis parallelism can be satisfied.

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

Appendix B: Embedding the Ellipsis Site?

• An Objection. The examples from (21) are ruled out as irreparable antecedent-containment, independent of re-binding.

(21) Embedded Adjunction; Matrix Antecedent
   a. Kim heard \[that Sue had left after Joe heard that she had left] \]
   b. *Kim heard \[that Sue had left after Joe (did) (\text{ hear that Sue had left})] \]
      ‘Kim heard that, after Joe heard Sue had left, Sue had left.’

Thus, the examples do not directly test the ability to embed the ellipsis site as a function of re-binding.

• A More Representative Experiment. The small clause compliment to light verbs is an embedded vP that would not be antecedent-contained.

(34) *Kim \[left\] after Sue made Joe \(\langle \text{leave} \rangle\).
   ‘After the time that Sue made Joe leave at, Kim left.’

It appears that this vP cannot be targeted for TAC-Stripping.

• A Confound. The absence of the Geis ambiguity in (35) suggests that temporal operator movement out of a small clause is not even possible.

(35) Kim left \[after Op_1 \text{ Sue made } t_1 [\text{Joe leave } t_1]]\).
   a. ‘Kim left after the time of Sue making Joe leave.’
   b. *‘Kim left after the time of Joe leaving.’

The source structure for (34) may be independently unavailable as a result of some constraint on the relevant operator movement, not necessarily re-binding.
- **Correct, Regardless.** The relevant operator movement is expected to induce re-binding that would be expected to disrupt ellipsis-licensing.

(36) a. Kim [VP left] after made Joe ⟨VP leave⟩

b. AC afterP

\[
\begin{array}{c}
\text{Kim} \\
\text{IP} \\
\text{FocP}
\end{array}
\]

\[
\begin{array}{c}
\text{VP} \\
\lambda_1 \text{after} \\
\lambda_2 \text{IP}
\end{array}
\]

\[
\begin{array}{c}
\text{VP} \\
\text{VP}
\end{array}
\]

- **No Parallelism.** No AC is generated that allows licensing of ellipsis.

(37) a. \[\left[ \text{AC} \right]^{\circ} = \exists t. \text{Kim left at } t\]

b. \[\left[ \text{PD} \right]^{f} = \{ p : \exists t. \text{Sue made } x \text{ leave at } t \mid x \in D_{\text{F}} \} \]

c. \[\left[ \text{AC} \right]^{\circ} \notin \left[ \text{PD} \right]^{f}\] for any \(g\), ellipsis is not licensed

**References**


**Acknowledgments** Thank you to Dustin Chacón, Tom Ernst, Kyle Johnson, Brian Reese, Hooi Ling Soh, Ricard Viñas de Puig, members of the Minnesota Syntax and Semantics Reading Group, and the audience at the University of Minnesota Institute of Linguistics Colloquium Series for helpful comments. All errors belong to me.

Jason Overfelt 6 overfelt@umn.edu