Stripping in
Temporal Adverbial Constructions

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

- **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).
  - \( \overline{\text{A}} \)-Movement of a single remnant and subsequent vP-ellipsis.

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

  (5) I saw Kim [ after Op1 she said \( t_1 \) [ she would leave \( t_1 \) ]].
  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 \( t_1 \) ] ⟩.
  b. [ afterP after \( \lambda_1 \) Joe did [ leave \( t_1 \) ] \( \lambda_2 \) Sue [ vP left \( t_2 \) ]]

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

(7)

(8) a. [ AC ]^p = \( \exists t \). Kim met Sue at \( t \)
  b. [ PD ]^f = \{ \( p : \exists r \). Kim met \( x \) at \( t \) \mid x \in D_e \}
  c. [ AC ]^p \in [ PD ]^f for any \( g \), 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).

\[ \text{AC } \text{Kim met } \text{Sue} \text{ after } \text{PD } \text{SAM1 } \langle x \text{ met Sue} \rangle \]
\[ [\text{AC}] = [\text{PD}] = \{ p : x \text{ met Sue} \mid x \in D_e \} \]

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

I took him1 to Sue before
a. Joe’s boss2 (take him1 to Sue)
b. *Joe’s boss2 (I take him1 to Sue)

And phrasal TACs necessarily take scope below root negation.

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

Complex-NP Constraint
I met [DP someone who knows Russian]1 (meet x)
a. *Russian1 (I meet [DP someone who knows x])

Left-Branch Extraction
Tom read Kim’s book after
a. DP Ann’s book1 (Bob read x)
b. *Ann1 (Bob read [DP Ann’s book])

- **Restructuring and Low-Adjunction in TACs**

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

You should cook the dumplings before eating them.
The dumplings were eaten after being cooked.

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

Tom didn’t leave after his boss.

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

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

| adjunction | antecedent | TAC | VPE |
|------------|------------|-----|-----|
| embedded   | matrix     | *   | *   |
| matrix     | embedded   | *   | ✓   |

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

- **Not ATB-Movement** (*Johnson 2009*). ATB-movement is restricted to coordinations (Postal 1993, but cf. Munn 1992).

- **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. IP

   ![Diagram](image)

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

(24) a. \([ AC^1 ]^{o} = \exists r . \text{Sue left at } t\)
   b. \([ PD ]^{f} = \{ p : \exists r . x \text{ hear Sue leave at } t \mid x \in D_r \}\)
   c. \([ AC^1 ]^{o} \notin [ PD ]^{f}\) for any \(g\), ellipsis is not licensed
• **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 (\texttt{v}P \texttt{leave})

b. [\texttt{AC}\textsubscript{2}]

\begin{align*}
\text{VP} & \quad \lambda_1 \text{after} \text{PD} \\
\text{IP} & \quad \text{Kim} \text{heard} \text{CP} (\text{that}) \text{Joe} (\texttt{v}P) \\
\text{v}^{\circ} & \quad \text{Sue left} \\
\end{align*}

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

(26) a. \([\text{AC}\textsubscript{1}]^{\circ} = \text{Sue left}\)

b. \([\text{PD}]^f = \{ p : \exists t. x \text{ leave at } t | x \in D_t \}\)

c. \([\text{AC}\textsubscript{1}]^{\circ} \notin [\text{PD}]^f \) 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).

• **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**

\begin{align*}
\text{Kim heard [ (that) Sue had left] after Joe had (\texttt{leave})}. \\
\text{‘After Joe had left, Kim heard that Sue had left.’}
\end{align*}

• **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\textsuperscript{o}-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 police\textsubscript{1} do (\texttt{x} find \texttt{them}).

b. *The photos must be found before the police\textsubscript{1} (\texttt{x} find \texttt{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$_1$ should be \( \langle \text{emptied} \rangle \).
   b. *The recycling should be emptied before the trash$_1$ being \( \langle \text{emptied} \rangle \).

• **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 \( [CP \text{ (that) Sue had } vP \text{ left }] \) after Joe had \( \langle vP \text{ left} \rangle \)

   ![Diagram](image)

• **Parallelism.** Ellipsis parallelism can be satisfied.

(33) a. \( [\text{AC}]^\circ = \text{Sue left} \)
   b. \( [\text{PD}]^f = \{ p : x \text{ left} \mid x \in D_e \} \)
   c. \( [\text{AC}]^\circ \in [\text{PD}]^f \) for any \( g \), ellipsis is licensed

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**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 \( [\text{that Sue had left after Joe heard that she had left }] \).
   b. *Kim heard \( [\text{that Sue had left after Joe (did) } \langle \text{hear that Sue had left} \rangle] \)
      ‘Kim heard that, after Joe heard Sue had left, Sue had left.’

Thus, these example does not directly test the ability to embedded 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 \( [\text{left}] \) 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 \( [\text{after Op} \_1 \text{ Sue made } t_1 \text{ [Joe leave } t_1 ]] \).
   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 \(\{vP \text{ left}\}\) after Sue made Joe \(\langle vP \text{ leave} \rangle\) |
| b. | IP |
|     | Kim |
|     | FP |
|     | AC |
|     | afterP |
|     | vP \(\lambda_1\) after |
|     | PD |
|     | vP |
|     | IP |
|     | vP |
|     | VP |
|     | vP |
|     | IP |
|     | Sue |
|     | vP |
|     | VP |
|     | Sue |
|     | FocP |
|     | made |
|     | Joe |
|     | \(\langle vP \rangle\) |
|     | vP |
|     | VP |

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

\[(37)\]

| a. | \([AC]^g = \exists r. \text{Kim left at } t\) |
| b. | \([PD]^f = \{ p : \exists r. \text{Sue made } x \text{ leave at } t \mid x \in D_r \}\) |
| c. | \([AC]^g \notin \|PD\|^f\) for any \(g\), ellipsis is not licensed |

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