Semantics of finite complement clauses and scope islandhood

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A counterexample to scope islandhood

- Finite complement clauses (**THAT-CP**s) of verbs like *make sure* and *ensure* do not seem to form scope islands for universal quantificational phrase (**QP**), in contrast to those of attitude reports, e.g. *believe* and *claim* (Farkas & Ginnaidou 1996; Barker 2022, a.o.), as shown in (1) & (2).

  (1) **Some student** <u>made sure/ensured</u> that **every speaker** had a ride.

      a. 'There exists a student x, such that x <u>V</u>ed that every speaker had a ride.'   ($\exists > \forall$)

      b. 'For all speaker y, there exists a student x such that x <u>V</u>ed that y had a ride.'   ($\forall > \exists$)

  (2) **Some student** <u>believed/claimed</u> that **every speaker** had a ride.

      ($\exists > \forall$; *$\forall > \exists$)

- Verbs other than *make sure* and *ensure* that have been reported to admit such long-distance scope effects include (**ENSURE-verbs** henceforth):
  - Greek: *frontizo* 'take care', *thelo* 'want', *kanonizo* 'make sure', ... (F&G);
  - English: *prove*, *confirm*, *establish* and *verify* (Palucci 2024).

  Question and proposal:

- How is the clausal complementation of ENSURE-verbs different from that of canonical attitude reports, e.g. *believe* and *claim*, so that the latter, but not the former, forms scope islands for universal quantifiers?

➤ This paper answers this question by deriving the following generalization.

> **Generalization:** Clause-embedding verbs that take **contentful** complements form scope islands for universal quantifiers (e.g. *believe*/*claim*), while those taking **eventive** complements <u>do not</u> (e.g. *ensure*).

  - Goal 1: proposing a new semantics of *ensure* and its THAT-CPs;
  - Goal 2: providing an explanation for the generalization.

Proposal overview

- **Ingredient 1:** dichotomy of THAT-CPs
  - THAT-CPs taken by attitude reports have been argued to denote **predicates of contentful individuals** (Kratzer 2006; Moulton 2009, 2015, Elliott 2020, a.o.), as shown in (3).

  (3) $[\![that_{CONT}\ Alys\ left]\!]^w = \lambda x_c.\text{CONT}(x_c)(w) = \{w' : \exists e[\text{Alys-left}(e)(w')]\}$

➤ I propose that THAT-CPs taken by *ensure* denote **predicates of events**, as shown in (4), assuming that the primitive types e for (non-event) individuals and v for events are distinct semantic types.

  (4) $[\![that_{EVENT}\ Alys\ left]\!]^w = \lambda e.\exists \langle w', e'\rangle \in f_{FACT}(e)(w)[\text{Alys-left}(e')(w')]$

  - The proposed dichotomy is in line with the proposals developed in Moltmann 2021 and Bondarenko 2022.

- **Ingredient 2:** effect of THAT-CPs' semantics on scope islandhood
  - I assume that inverse scope is derived via covert movement, i.e. QR, which proceeds successive-cyclically via each phase edge (Fox 1999; Nissenbaum 2000; Cecchetto 2004, a.o.).

➤ I propose that QR further obeys an interface condition related to strong Scope Economy (Fox 1999), as shown in (5).

  (5)   *Interpretability Condition*
  A QP that undergoes QR has to be interpretable at each of its landing site, including the intermediate ones.

➤ Given (5), an **eventive CP**, but not a contentful CP, **provides an escaping hatch for QR** at its edge, and hence, does not form a scope island.

Evidence for the dichotomy of THAT-CPs

- When attitude reports take DP complements, they select for DPs that denote **contentful individuals** (**CONTDP**s) (Moulton 2009, 2015; Elliott 2020; Bondarenko 2022, a.o.), as shown in (6).

  (6)   a. He believed the mean rumor.
      b. She claimed something false.   Moulton 2015: (25)

- Attiude reports cannot take **eventive nominals** (**EVENTDP**s) (Grimshaw 1990; Duffley 2003; Moulton 2014, a.o.), as shown in (7).

  (7)   a.*Peg believed [$_{DP}$ Sue's leaving].
      b.*Peg claimed [$_{DP}$ the <u>frequent</u> examination of the students].
      c.*Peg said [$_{DP}$ the observation of the patient <u>for several weeks</u>].

➤ By contrast, the selectional pattern of *ensure* is reversed: *ensure* does <u>not</u> select for **CONTDP**s (8), but selects for **EVENTDP**s (9).

  (8)   a.*He ensured the mean rumor.
      b.*Sue ensured something false/true.

  (9)   a. Peg ensured [$_{DP}$ Sue's leaving].
      b. Peg ensured [$_{DP}$ the <u>frequent</u> examination of the students].
      c. Peg ensured [$_{DP}$ the observation of the patient <u>for several weeks</u>].

Semantics of clausal complementation

Semantics of clause-embedding verbs

- Attitude reports take contentful individuals, instead of propositions, as their first argument (Kratzer 2006; Moulton 2009, 2015; a.o.), as shown in (10).

  (10) $[\![believe]\!]^w = \lambda x_c \lambda e.\text{believe}(x_c)(e)(w)$ $\langle e, \langle v, t\rangle\rangle$

➤ I propose that *ensure* takes events as its first argument, as shown in (11).

  (11) $[\![ensure]\!]^w = \lambda e_1 \lambda e.\text{CAUSE}(e_1)(e)(w)$ $\langle v, \langle v, t\rangle\rangle$

- The selectional pattern observed in (6)-(9) is expected under the proposed semantics, given that CONTDPs are of type e (12) and EVENTDPs are of type v (13) (Moulton 2014, 2015).

  (12) $[\![the\ rumor]\!]^w = \iota x_c[\text{rumor}(x_c)(w)]$

  (13) $[\![the\ frequent\ examination]\!]^w = \iota e[\text{freq.}(e)(w) \wedge \exists x[\text{exmn.}(x)(e)(w)]]$

Semantics of THAT-CPs

- THAT-CPs taken by attitude reports denote predicates of contentful individuals, instead of propositions (Kratzer 2006, 2013; Moulton 2009, 2015; Elliott 2020; Bondareno 2022, a.o.), as shown in (14).

  (14) $[\![that_{CONT}\ \exists\ [_{TP}\ Alys\ left]]\!]^w$ **CONTCP**

      $= \lambda x_c.\text{CONT}(x_c)(w) = \{w' : \exists e[\text{Alys-left}(e)(w')]\}$

      a. $\text{CONT}(x_c)(w) = \{w' : w'$ is compatible with the intensional content determined by x_c in $w\}$ (Kratzer 2013: (25))

      b. $[\![C_{CONT}]\!]^w = \lambda p_{\langle s,t\rangle} \lambda x_c.\text{CONT}(x_c)(w) = p$ (Moulton 2015: (19b))

➤ I propose that not all THAT-CPs involve the notion of "content": specifically, THAT-CPs taken by *ensure* denota predicates of events, as shwon in (15)

  (15) $[\![that_{EVENT}\ [_{TP}\ Alys\ left]]\!]^w$ **EVENTCP**

      $= \lambda e.\exists\langle w', e'\rangle \in f_{FACT}(e)(w)[\text{Alys-left}(e')(w')]$

      a. $f_{FACT}(a)(w) = \{\langle w', a'\rangle : w'$ is accessible from w and a' is a **counterpart** of a and $a' \leq_{part} w'\}$ (Kratzer 2013: (18))

      b. $[\![C_{EVENT}]\!]^w = \lambda p_{\langle s,vt\rangle} \lambda e.\exists\langle w', e'\rangle \in f_{FACT}(e)(w)[p(w')(e')]$

- THAT-CPs compose with the corresponding verbs via *Restrict*, where THAT-CPs modify the internal argument of the verbs (Kratzer 2006; cf. Moulton 2015; Bondarenko 2022). See <u>handout section 3.1</u> for compositional details.

Revisit of scope islandhood

- I adopt an eventive denotation for *every*, following Schein (1993), Kratzer (2003) and Ferreira (2005) among others, as shown in (16).

  (16) $[\![every]\!]^w = \lambda p_{\langle e,t\rangle} \lambda q_{\langle e,vt\rangle} \lambda e.\forall x[p(x)(w) \to \exists e' \in e[q(x)(e')(w)]]$

➤ I propose that in addition to proceeding successive-cyclically via each [Spec, CP] (Fox 1999; Cecchetto 2004, a.o.), QR obeys an interface condition (17).

  (17)   *Interpretability Condition*
  A QP that undergoes QR has to be interpretable at each of its landing site, including the intermediate ones.

  - (17) can be seen as a prerequisite of strong Scope Economy (Fox 1999), which requires that each step of QR be shown to create new scope relation.
  - Or it can be treated as an alternative to strong Scope Economy, which requires less looking-into the semantics than SE.

- Given (16), an *every*-QP is <u>interpretable</u> at the edge of an **EVENTCP** (18) (left), but <u>not</u> at a **CONTCP**'s edge due to type mismatch (18) (right); hence, successive-cyclic QR is only possible out of an **EVENTCP**.

  (18)
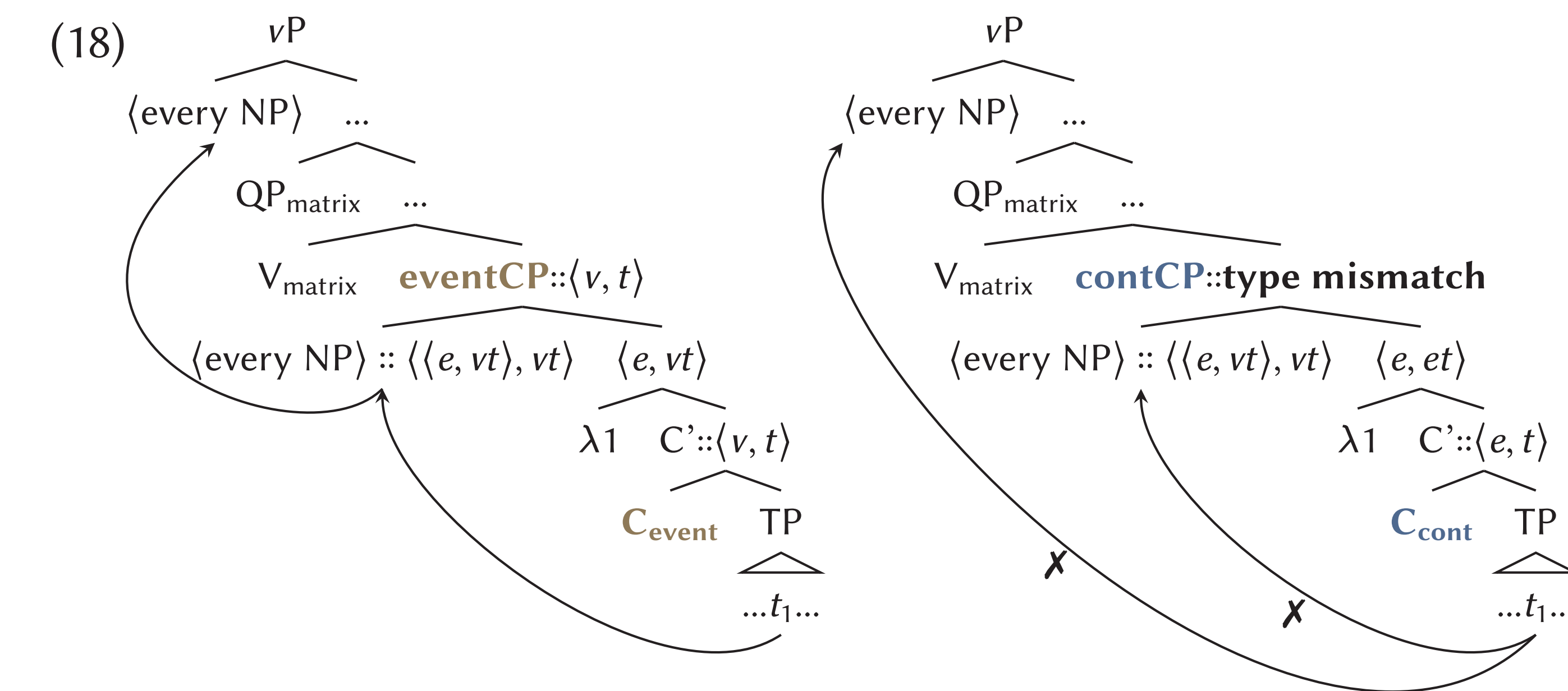
➤ As a result, attitude reports, which select for **CONTCP**s, form scope islands, while *ensure* selecting for **EVENTCP**s does not.

Extension: Actuality Entailment under *ensure*

- *Ensure* licenses an **Actuality Entailment** (**AE**) shown in (19), while (most) attitude reports do not, as shown in (20) and (21).

  (19)   Col <u>ensured</u> that the kids solved the puzzle.
      $\Rightarrow$ *The kids solved the puzzle.*
      a. *Non-cancellable*: (19), #but the kids didn't solve it.
      b. *Non-presuppositional*: Neg[(19)] $\not\Rightarrow$ *The kids solved the puzzle.*

  (20)   Col {believed/claimed} that the kids solved the puzzle.
      $\not\Rightarrow$ *The kids solved the puzzle.*   (no actuality inference)

  (21)   Col {knew/didn't know} that the kids solved the puzzle.
      $\Rightarrow$ The kids solved the puzzle.   (*factivity presupposition*)

- AEs under *ensure* is captured by the proposed semantics of **EVENTCP**s (15).
  - I argue that AEs result from counterpart-based modality, which guarantees the same event description across worlds, following Kratzer (2011).
  - *Ensure* licenses AEs because its complement's C_{EVENT} head encodes a counterpart-based modality (15). See <u>handout section 4.2.1</u> for details.

- Some attitude reports <u>do</u> license AEs, e.g. *be right/correct*, <u>prove</u>, <u>confirm</u>, *imply*, *inform*, *admit* etc. (Anand & Hacquard 2014) (**veridical assertives**).

※ Verbs other than *ensure* that have been reported to admit long-distance scope effects (e.g. in Palucci 2024) belong to this class, while other veridical assertives seem to form scope islands, e.g. *be correct*.

  - See <u>handout section 4.2.3</u> for a potential extension of the proposed analysis to capture the variation among veridical assertives.