

Argument saturation and the syntactic status of embedded clauses

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Background. While embedded clauses are traditionally assumed to be syntactic and semantic arguments of attitude verbs (Hintikka 1969), much recent work has argued that at least some clauses embedded by verbs must act as modifiers, though whether clauses are arguments or modifiers may vary lexically by verb (Kratzer 2006, Hacquard 2006, Moulton 2015, Elliott 2017, Özyıldız 2020).

I argue that the syntactic status of embedded clauses is not entirely lexically specified, based on evidence that for some predicates embedded clauses can be arguments **or** modifiers, depending on whether the content argument slot of the predicate has been filled. I propose that whether or not an embedded clause is a modifier depends on whether the embedding verb takes a content argument: CPs can saturate content arguments, or they can modify predicates which either lack content arguments or have already had their content argument saturated by a nominal expression.

Data. Some English declarative-embedding verbs (1a) may also take direct object DPs with propositional content like *the rumor* instead of a clause (Vendler 1972, Ginzburg 1995, Uegaki 2016):

- (1) a. Stan believes/trust/denies/accepts that Fran is here.
- b. Stan believes/trusts/denies/accepts the rumor (that Fran is here).

A proper subset of these verbs (e.g. *believe* and *trust*) may also take non-content DPs (Djävrv 2019). Generally, these DPs denote an entity capable of communicating propositions, i.e., a sentient agent (*Fran*) or a media artifact (*the book*). Such a DP *x* can be paraphrased as a content DP *x*'s *claim*:

- (2) Stan believes/trusts Fran/the book. \approx Stan believes/trusts {Fran's/the book's} claim.

Notably, the content of this claim can be explicitly expressed with a CP following the direct object, despite the fact that these objects cannot ordinarily compose with propositional CPs:

- (3) Stan believes/trusts the dentist/the book that Fran is here.

This poses a puzzle: what does the embedded CP compose with, and by what mechanism? I propose that the embedded CP in (3) functions as a modifier of the verb *believe*, and this crucially differentiates it from the embedded CP in (1a), which is most plausibly an argument.

The CP does not modify the the nominal. Unlike content nominals like *the rumor*, non-content nominals like *Fran* cannot compose with propositional CPs. Standard tests of syntactic constituency, including fragment answers, clefts, and pseudoclefts, demonstrate that content DP objects, and only content DPs, can form a constituent with a following CP:

- (4) a. A: What/who does Stan believe?
 B: {*Fran/*the book/the rumor} that it's raining.
- b. It is {*Fran/*the book/the rumor} that it's raining that Stan believes.
- c. {*Fran/*the book/the rumor} that it's raining is what Stan believes.

The CP as a verbal modifier. When occurring under nominals like *believe*, embedded clauses are standardly analyzed as modifiers. While objectless *believe* patterns unlike *belief* with respect to non-clausal modifiers, *believe DP* tracks *belief*. *Believe DP* can occur with an *about*-PP, which are always modifiers (Rawlins 2013), and cannot occur with a clausal proform like *so*, which are always arguments (Moulton 2015). In short, *believe DP* behaves like *belief* with respect to the distribution of modifiers. Thus, if a *that*-clause with *belief* is modificational, we would expect the same to be true of a *that*-clause with *believe DP*.

- (5) a. Stan believes *(Fran) about the rain.
 b. Stan’s belief about the rain is troubling.
- (6) a. Stan believes (*Fran) so/it/that.
 b. *Stan’s belief so/it/that is troubling.

Analysis. I assume that *believe* has a Kratzerian (1996) denotation: it takes a contentful entity x_c and an eventuality s as arguments, and returns the proposition that there is a believing eventuality s with content x_c . This requires its DP object to be content-bearing. I propose, inspired by Uegaki (2016), that a non-content DP object like those in (2) is type-shifted by an operator CLAIM (7), which takes an entity y and returns an entity whose content is equivalent to what y has claimed, where \mathcal{F}_{cont} is a metalinguistic function which maps entities to their propositional content:

$$(7) \quad \llbracket \text{CLAIM} \rrbracket^w = \lambda y_e.x_c : \mathcal{F}_{cont}(x_c) = \mathcal{F}_{cont}(\mathbf{claim}(y)(w))$$

Any DP complement of *believe* saturates the verb’s content argument. Assuming that a *that*-clause may denote a predicate of eventualities (Rawlins 2013), the following CP may then modify the eventuality argument of *believe*: it will specify that the content of the believing eventuality is equivalent to the content of the clause. Because the content of the believing eventuality must have content equivalent to the DP’s claims as well as the content of the CP, we can conclude that the DP-entity made the claim expressed by the CP. A *believe*-VP with LF (8a) has the denotation (8b):

$$(8) \quad \begin{aligned} & \text{a. believe } \llbracket \llbracket \text{CLAIM Fran} \rrbracket \text{ (that it’s raining)} \rrbracket. \\ & \text{b. } \llbracket \llbracket (8a) \rrbracket^w = \mathbf{believe}(s)(w) \wedge (\mathcal{F}_{cont}(\mathbf{claim}(f)(w)) = \mathcal{F}_{cont}(s)(w) \wedge \mathcal{F}_{cont}(s)(w) = \\ & \quad \{w' : \mathbf{rain}(w')\} \end{aligned}$$

When embedded CPs are arguments. There is good evidence that the object DP in examples like (2) is a true argument of the verb. First, *believe* is obligatorily transitive unlike similar attitudes like *think* (9a). Second, VP-adjuncts cannot intervene between *believe* and this obligatory DP (9b).

- (9) a. Stan thinks/*believes.
 b. Stan believed {*last week/*in the garden} Fran.

Given that a contentful DP can saturate *believe*’s content argument, it is plausible that a declarative CP can do the same, since they have been argued to flexibly denote contentful individuals on independent grounds (Potts 2002). In addition to providing a parsimonious explanation for *believe*’s transitivity, this allows us to explain syntactic contrasts between *believe CP* and *believe DP CP*, such as that only in the latter is the CP an island:

- (10) What_{*i*} does Stan believe (??Fran) that she ate *t_i*?

Upshots. This proposal adds to a growing body of evidence that embedded CPs may be modifiers or arguments of attitudes, and suggests the method of composition depends, at least in part, on whether the embedding predicate has an unfilled content argument. Future work must address why non-content DPs are admitted under some attitudes which can take content DPs (*believe*) but not others (*deny*). Preliminary cross-linguistic evidence suggests that obligatorily transitive counterparts of *believe* in other languages behave similarly with respect to DP objects as English *believe*, whereas intransitives like *think* systematically disallow content DPs as objects. If this pattern proves robust, it indicates that the embedding behavior of attitude predicates may be derivable from deep properties of their lexical semantics.

Selected Bibliography. Djärv (2019). Factive and assertive attitude reports. • Elliott (2017). Elements of clausal embedding. • Kratzer (2006). Decomposing attitude verbs. • Moulton (2015). CPs, complements, and compositionality. • Rawlins (2013). About *about*. • Uegaki (2016) Content nouns and the semantics of question-embedding.