Decomposing Attitude Verbs
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1. The hypothesis
The talk will explore the hypothesis that the roots of attitude verbs and verba dicendi (or verbs of communication) have two arguments, an eventuality argument\(^1\) and an individual argument referring to the content of the attitude or report.

(1) \(\lambda x \lambda s. \text{believe}(x)(s)\).

\[
\begin{array}{c}
\text{content argument} \\
\text{eventuality argument}
\end{array}
\]

I will assume (without explicitly argue for it here) that the verb’s external argument is not an argument of the verb root itself, but is introduced by a separate head in a neo-Davidsonian way. The content argument can be saturated by DPs denoting the kinds of things that can be believed or reported:

(2) a. I believe this story.
    b. He told me those lies.
    c. I am not assuming anything.
    d. I suspected this all along.

\(^1\) If cognate objects are related to a Davidsonian event position, then cognate objects in Hebrew show “that \(i\)-level predicates also have this position”. Mittwoch (1998), 314. Verbs like \textit{believe}, then, should have a Davidsonian argument.
2. Here are some points which I won’t have time to discuss, but which are still controversial:

- Does neo-Davidsonian argument association happen at logical-conceptual structure or in the syntax? If it happens in the syntax, then ‘valency’ is at least in part syntactically constructed.

- If the external argument is always neo-Davidsonian, why not the internal argument? Why this asymmetry?²

3. Here is the main obstacle to overcome:

- The proposal in (1) implies that the roots of verbs like believe do no longer introduce what has always seemed to be the crucial piece for the semantics of belief ascriptions: a set of doxastic alternatives, or rather, a set of doxastic alternatives for the believer. In other words, the job of introducing doxastic alternatives must now come from the embedded sentence or from the complementizer that.

- Plan: Present a semantics for attitude verbs without decomposition first. Then decompose.

4. **A standard semantics for attitude verbs**

   \[
   [[[\text{believe}]]] = \lambda p \lambda x \lambda w. \forall w' \left[ \text{DOX}_x(w) \rightarrow p(w') \right]
   \]

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². I don’t want to say that all direct objects are arguments of their verb. At least some kinds of objects should still be syntactically constructed.
5. Decomposing *believe*

(4) The verb *believe* has an internal argument referring to the kinds of things that can be believed, but no external argument
[[*believe*]] = $\lambda x \lambda s \lambda w. \text{believe}(x)(s)(w)$

(5) A possessive $\nu$
[[ [ *poss* ]] = $\lambda x \lambda s \lambda w. \text{possessor}(x)(s)(w)$

- What is the semantics of *that*-clauses now? How can we account for the fact that the doxastic alternatives depend on the believer?

6. Logophoric complementizers: one in a family of complementizers

(6) Logophoric complementizer
[[ *that* ]] = $\lambda p \lambda x. \forall w^\prime [\text{compatible}(x)(w^\prime) \rightarrow p(w^\prime)]$

- Logophoric complementizers have content arguments.

(7) Lucy believes that there are ghosts.

(8) Combining *believe* & CP via Restrict (Chung & Ladusaw (2004))

$\lambda x \lambda s \lambda w. \text{believe}(x)(s)(w) \oplus$
$\lambda x. \forall w^\prime [\text{compatible}(x)(w^\prime) \rightarrow \exists y \text{ghosts}(y)(w^\prime)] =$
$\lambda x \lambda s \lambda w. [\text{believe}(x)(s)(w) \& \forall w^\prime [\text{compatible}(x)(w^\prime) \rightarrow \exists y \text{ghosts}(y)(w^\prime)]]$

(9) $\lambda w. \exists x \exists s[\text{believe}(x)(s)(w) \& \text{possessor}(Lucy)(s)(w) \& \forall w^\prime [\text{compatible}(x)(w^\prime) \rightarrow \exists y \text{ghosts}(y)(w^\prime)]]$
7. **Unifying three constructions**

(10) Lucy believes that there are ghosts.

- Verb and CP combine via Restrict. The direct object argument of the verb is restricted, but not saturated.

(11) Lucy’s belief was that there are ghosts.

- The mode of composition is Predication. The property expressed by the CP is applied to the denotation of the subject, which could be $\mathbf{tx}$ $\exists s \left[ \text{belief}(x)(s)(w_0) \land \text{possessor}(Lucy)(s)(w_0) \right]$.

(12) Lucy’s belief that there are ghosts is not completely unjustified.

- Same mode of composition as in the verbal case. Existential Closure of the eventuality argument produces a standard NP denotation.

(13) Same behavior (from list 3 of Higgins (1973), 242 ff.):

- announce(ment), answer, assert(ion), assume/assumption, claim, comment, complain(t),
- conclude/conclusion, expect(ation), guess, hope, infer(ence), indicate/indication, infer/inference,
- judge/judgment, know/knowledge, object(ion), predict(ion), presume/presumption, pretend/pretence,
- promise, prophesy/prophesy, propose/proposal, reason(ing), report, rule/ruling, sense,
- speculate/speculation, state(ment), stipulate/stipulation, suppose/supposition, suspect/suspicion,
- think/thought, threat(en), understand(ing), worry.

9. **More action for complementizers**

(14) Factive complementizer

$$[[\text{that}_F]] = \lambda p \lambda e. \text{exemplifies } (p)(e) \lor \lambda p. \text{t} e \text{ exemplifies } (p)(e)$$
(15) Trivial complementizer

\[ [[that_T]] = \lambda p. p \]

10. Trying to explain the Higgins facts (Higgins 1973)

(16) a. John’s anger that he was not chosen…
   b. * John’s anger was that he was not chosen.
   c. John’s anger (about the fact) that he was not chosen….

- Anger is not a state that has content. Nor can it be identified with the fact or the proposition that he was not chosen. Nor is it a state that exemplifies the proposition that he was chosen.

(17) a. The result was that he suddenly disappeared.
   b. * The result that he suddenly disappeared …

- The fact that he suddenly disappeared can be a result. But a result can’t have information content. However, a result could be an event that exemplifies the proposition that he suddenly disappeared.

(18) a. The fact that he suddenly disappeared
   b. * The cause that he suddenly disappeared
   c. * The mystery that he suddenly disappeared
   d. * The event that he suddenly disappeared
   e. * The folly that he suddenly disappeared.

- Maybe factive that is really the fact that.

(19) a. The probability that she will return is low.
   b. * The probability is that she will return.
   c. The probability (of the proposition) that she will return is low.
• A probability isn’t a proposition nor an event.

To sum up: There is more action in complementizers than their appearance might suggest.

**Appendix: de se interpretations**

• What a standard (eventless) account of logophoric and attitude verbs might look like:

\[
[\text{believe } \alpha]^{g,c,o} = \lambda x \lambda w. \forall x' \forall w' [\text{DOX}(w, x)(w', x') \rightarrow [\alpha]^{g,c,x'}(w')]
\]

Shifting the origo parameter

• Doxastic alternatives are centered worlds, pairs consisting of an individual and a possible world.

• Special logophoric parameter o specifying an individual; Büring (2005), p. 64.

• Via the origo parameter, a believer’s individual doxastic alternatives can be ‘plugged in’ directly as values for de se pronouns. No property analysis is necessary for de se interpretations (“We are used to interpret all tensed, (or CP) clauses equally as propositions”, Reinhart (1990)).

\[
[[\text{self}]]^{g,c,o} = o
\]
Decomposing \textit{believe}

\[
[[\text{believe}]]^{g,c,o} = \lambda x. \lambda e. \lambda w. \text{believe}(x)(e)(w)
\]

(24) Logophoric complementizer
Where \([[[\alpha]]]^{g,c,o} \) is of type \(<st>: \quad [[[\text{that}_L \alpha]]]^{g,c,o} =

\[
\lambda y. \lambda e. \lambda w. \exists x \ [x = tz \ \text{origo}(x)(e)(w) \ \& \ \forall x' \ \forall w' \ [\text{Acc}_y(x,w)(x',w') \ \rightarrow [[[\alpha]]]^{g,c,x'}(w')]]
\]

(25) \[
\lambda y. \lambda e. \lambda w. \exists x \ [x = tz \ \text{origo}(x)(e)(w) \ \& \ \forall x' \ \forall w' \ [\text{Acc}_y(x,w)(x',w') \ \rightarrow [[[\alpha]]]^{g,c,x'}(w')]]
\]

Like logophoric verbs, logophoric CPs have an individual argument that refers to contents. It determines the accessibility relation: As far as \(y\) is concerned, the origo \(x\) in world \(w\) might be \(x'\) in world \(w'\).

Partial list of references
