Propositional Attitudes

Ling 406/802

Read: Chierchia and McConnell-Ginet pp. 303-311, 324-328

Propositional Attitudes (Syntax)

- According to the possible worlds approach, verbs taking *that* clauses can be taken as expressing relations of individuals to sets of worlds.

(1) \[ \text{CP} \rightarrow \text{C TP} \]
\[ \text{VP} \rightarrow \text{V CP} \]
\[ \text{V} \rightarrow \text{believe, know, regret, …} \]
\[ \text{C} \rightarrow \text{that, …} \]
Propositional Attitudes (Semantics)

(2) For any \(<w, i>, V(\texttt{believe})(<w, i>) = \{<u, p>: u \text{ is an individual and } p \text{ is a proposition, and } p \text{ is true in all those } w', i', \text{ compatible with what } u \text{ believes in } w \text{ at } i\}

• The semantic value of \texttt{believe} is a function from world, time pairs to a relation between individuals and propositions.

• Each individual \(u\) is associated with a set of worlds that represents \(u\)'s beliefs (the set of doxastic alternatives for \(u\)).

• For \(u\) to believe \(p\) is for \(p\) to be true in all of \(u\)'s belief worlds.

(3) a. \([[\text{[CP that TP]}]]_{M,w,i,g} = p, \text{ where for any world } w' \text{ and any time } i', \text{ } p(<w',i'>) = 1 \text{ iff } [[\text{TP}]]_{M,w',i',g} = 1.

b. \([[\text{[VP believe CP]}]]_{M,w,i,g} = \{u: <u, [[\text{CP}]]_{M,w,i,g} > \in [[\text{believe}]]_{M,w,i,g}\}

De Dicto and De Re Readings Defined Scopally

(4) Bond believes that a student in that class is a spy.

a. \texttt{De re reading}:
   \([[\text{[a student in that class]}], [\text{Bond believes that [TP e is a spy]}]]

b. \texttt{De dicto reading}:
   \([\text{Bond believes that [TP [a student in that class]}, [\text{e is a spy}]]\]

(5) a. If \(\psi\) is a well-formed formula, \(\^\psi\) is a propositional term.

b. \([[\^\psi]]_{M,w,i,g} = p, \text{ where for any } w', i', \text{ } p(<w',i'>) = [[\psi]]_{M,w',i',g}

(6) a. \(\exists x[S(x) \land \texttt{BELIEVE(B, } \wedge \text{spy}(x))]

b. \texttt{BELIEVE(B, } \wedge \exists x[S(x) \land \text{spy}(x))}
• De re belief about a particular individual vs. de dicto belief about what is said.

• In both cases, the sentences express a relation between Bond and a proposition, but in the de re case it is a (Russellian) singular proposition about a particular individual.

• In the de dicto case, Bond may have no belief about which student is the spy.

Exercise:
(7) Mary believes that a professor was caught shoplifting.
   Context: Mary is in the main office. The secretaries are all talking together, and she overhears the sentence “The police have caught a professor who was walking out of Safeway with five tomatoes and no receipt.”

(8) Susan thinks that a Republican will be elected.
   Context: Susan lives in Southeast Asia. She doesn’t know much about American politics. In particular, she doesn’t know that there are two main parties: the Republicans and the Democrats. She is, however, interested in the presidential election and has read that he candidate who is leading is George Bush; she thinks he will win.

Substitution of Co-referring Terms

(9) a. Bond believes that the author of this letter is a spy.
    b. Bill is the author of this letter.
    c. Bond believes that Bill is a spy.

Under the de re interpretation only, (c) may be inferred from (a) and (b).

The Double-Vision Problem (Quine)

Ralph sees a man in a brown hat, named Ortcutt, and forms the opinion that he is a spy. He believes this de re of Ortcutt. Later he meets Ortcutt on the beach, hatless, and forms the belief that he not a spy. He doesn’t recognize that this is the same guy. So he believes de re of the same guy, Ortcutt, that he both is and is not a spy, which seems contradictory.

(Kaplan, etc.) How we enter into cognitive contact with an entity about which we form beliefs, expectations, desires, etc. makes a difference. It always happens from a certain point of view or under a certain guise, and this guise is an essential component of the beliefs we come to have about it. De re belief must be relativized to a guise.
A Problem with Scope Predictions

(10) a. Some politician will address every rally in John’s district.
b. Some politician thinks that he will address every rally in John’s district.

(11) a. $\exists x[\text{politician}(x) \land \forall y[\text{rally}(y) \rightarrow \text{address}(x,y)]]$
b. $\forall y[\text{rally}(y) \rightarrow \exists x[\text{politician}(x) \land \text{address}(x,y)]]$

(12) a. $\exists x[\text{politician}(x) \land \forall y[\text{rally}(y) \rightarrow \text{think}(x, \neg \text{address}(x,y))]]$
b. $\exists x[\text{politician}(x) \land \text{think}(x, \neg \forall y[\text{rally}(y) \rightarrow \text{address}(x,y)])$

(13) IMPOSSIBLE READING: $\forall y[\text{rally}(y) \rightarrow \exists x[\text{politician}(x) \land$

think (x, $\neg \text{address}(x,y)$)

Why is wide scope reading of an embedded universal quantifier over a c-commanding existential quantifier not possible?

The Problem of Logical Omniscience

(14) Mary believes that not everyone at the party ate and those who did ate only chicken.
(15) Mary believes that no one at the party ate anything other than chicken and some ate nothing.
(16) Mary believes that not everyone at the party ate.
(17) Mary believes that only chicken was eaten at the party.
(18) Only chicken was eaten at the party.
(19) No tofu or veal was eaten at the party.
(20) Only chicken and no tofu or veal was eaten at the party.

(21) Two plus two equals four.
(22) $19 \times 241 = 4579$.
(23) There are infinitely many prime numbers.

- The possible worlds account of propositions cannot discriminate among logically equivalent or content-synonymous propositions. It seems to imply a logical omniscience that humans notably lack.
Fine-Grained Meanings (Carnap 1947, Cresswell 1985)

- Introduce individuals, properties, propositions, etc. (in possible-worlds terms) as primitives and provide algebraic conditions to characterize their logical behavior.

\[(24) \quad \text{John runs.}\]

\[
\begin{array}{c}
\text{j} \\
\text{R}
\end{array}
\]

\[(25) \quad \text{John doesn’t run} \quad \neg \]

\[
\begin{array}{c}
\text{j} \\
\text{R}
\end{array}
\]

\[(26) \quad \text{It is not the case that John doesn’t run.} \quad \neg \neg \]

\[
\begin{array}{c}
\text{j} \\
\text{R}
\end{array}
\]

- These structured objects are arguably candidates for a characterization of the notion of sentence content.

- They can be compositionally specified, and the truth conditions of a proposition can be recovered from them.

- But taking propositional attitude verbs as relations to structured propositions gets us out of the problem of logical omniscience because, e.g. believing that (24) is not the same thing as believing that (26).

- Propositional attitudes are still relations involving objects, and thus de re interpretations can be accommodated.

- See the preceding section of the book for a discussion of viewing a propositional attitude as something like a relation between an individual and his/her mental representation of a situation (complete and accurate or not). The biases developed thus far in the course for a purely external semantics (i.e. the critical importance of real world ‘aboutness’) lead us to prefer a structured meaning account for solving the logical omniscience problem, but perhaps these biases are misplaced.