Chapter 3: Attitudes and Indexicals

Goal: to add technical resources for dealing with propositional-attitude constructions and indexicals to the semantics developed in Chapter 2.

3.1 Propositional Attitudes

Substitution of coreferring terms fails in intensional environments:

1. Max believes Judy Garland is a fine actress.
2. Max believes Frances Gummm is a fine actress.

If Max doesn’t know that Frances Gummm and Judy Garland are the same person, then (1) can be true while (2) is false, and vice versa. But precisely because “Judy Garland” and “Frances Gummm” both refer to the same individual, an extensional semantics will assign (1) and (2) exactly the same truth conditions.

Treating belief ascriptions and other propositional-attitude ascriptions as relations between individuals (e.g., Max) and syntactic objects (e.g., $[\text{NP} \text{Judy Garland}] [\text{VP} \text{is a fine actress}]$, $[\text{NP} \text{Frances Gummm}] [\text{VP} \text{is a fine actress}]$) resolves this problem, but introduces a new one.

3. Galileo believed that that moves. (uttered while pointing to the sun)
4. Galileo believed that that moves. (uttered while pointing to the moon)

(3) and (4) express the same relation between Galileo and a particular syntactic object ([NP that [VP moves]]), yet have different truth values. To resolve both problems simultaneously, we introduce a type of structure which has both extensional and syntactic components: the interpreted logical form (ILF).

Interpreted Logical Forms

(some material from Larson & Ludlow 1993)

According to the ILF theory, the semantic value of any VP-embedded clause, like the clausal complement of “believe” above, is its LF phrase-marker modified (“interpreted”) so that each node is labeled with an ordered pair $(x, y)$, where $x$ is the node’s syntactic category and $y$ is its semantic value.

ILF-theories are more “austere” than theories which treat the clausal complements of propositional-attitude ascriptions as sets of possible worlds, Russellan propositions, or Fregean senses “[b]ecause they eschew these resources” (p. 90).
Semantic Axioms for ILFs

(1) Axioms for clause-embedding verbs
Val((x, y), “believes”) iff x believes y
Val((x, y), “thinks”) iff x thinks y
Val((x, y), “claims”) iff x claims y

(2) Axiom for VPs containing embedded clauses
Val(x, [VP V S]) iff, for some y, Val((x, y), V) and y = ||S|| (where “||S||” means “the ILF of S”)

(3) A general inductive definition of ILFs
Let α be an S-structure phrase-marker with root S and let β be a sub-phrase-marker of α.

(i) If there is an x such that Val(x, β) is provable from Val(True, α) (under the axioms listed in “Example of a T-Theory,” Chapter 2), and:

(a) β is a terminal node, then ||β|| = ⟨β, x⟩
(b) β is [γ, δ1δ2...δn], then ||β|| = 〈γ, x〉 ||δ1|| ||δ2|| ... ||δn||

(ii) If there is no x such that Val(x, β) is provable from Val(True, α) (under the axioms listed in “Example of a T-Theory,” Chapter 2), and:2

(a) β is a terminal node, then ||β|| = ⟨β⟩
(b) β is [γ, δ1δ2...δn], then ||β|| = 〈γ〉 ||δ1|| ||δ2|| ... ||δn||

1Some new syntactic rules are necessary, too: VP → V S, V → believes, thinks, claims...
2Clause (ii) is meant to cover cases in which β is assigned no value by the semantics (as in “Pegasus”) or is assigned more than one value (as in quantification).
Intensional Environments without Overt Embedded Clauses

(5) John wants a donkey.

Sentences like (5) exhibit intensionality effects similar to those exhibited by sentences (1)—(4), but contain no embedded clauses. Thus, analyses of such sentences are unaffected by the ILF theory. The ILF theory will only be able to address these cases if it can be “argued through on standard syntactic grounds” that the LF representations of these sentences actually contain hidden embedded clauses:

(5’) John wants [PRO (to have) a donkey]. (p. 53)

Questions about ILFs

Are ILFs intended to mirror structures in the mind/brain? No; ILFs are meant to provide information to help the hearer (H) construct a theory of the behavior, knowledge, etc. of an agent (A) to whom propositional attitudes are being ascribed by the speaker (S). “Depending upon H’s interests, it is sometimes the referential component of an ILF and sometimes the syntactic component that will be important to the goals of ascription” (p. 55). “A system governing belief ascriptions” can be constructed along the lines of suggestions in Larson & Ludlow 1993.3

3.2 Indexicals

While the extensions of indexicals like “I,” “you,” “this,” “that,” “here,” and “now” vary with the identity of the utterer, his or her location in space and time, and his or her gestures and other pragmatic actions, some part of the meaning of these words remains stable. We might call it “character” (Kaplan), or “role” (Perry). Back to a question from Chapter 2: does sense/character/role play a part in determining truth conditions for indexical expressions, i.e., make it into the right hand sides of our T-theorems? If so, how?

Perry against allowing indexicality into the semantics. The “received view” is that it does not. Perry (1977) notes Frege’s observation (in The Thought) that in order to express the same thought (e.g., that I was hungry on September 28) twice (e.g., once on September 28 and again on September 29), we have to use different means of expression (e.g., “I’m hungry today” and “I was hungry yesterday”).

3We would like to be able to account for the fact that most speakers would take the embedded clauses in (6) and (7) to represent the same belief:

(6) Galileo believed the Earth moves.
(7) Galileo believed the Earth is nonstationary.

Larson & Ludlow (1993) attempt to sketch a theory that would allow us to explain “when two propositional attitude sentences can be used to report the same attitude” (p. 339). They suggest that such a theory would consist of “at least the following three components: (I) the theory of belief tacitly held by speakers; (II) the theory of the goals of belief ascription tacitly held by speakers; and (III) the theory of belief ascription ‘logistics’ tacitly held by speakers” (p. 339). Component I would state the common knowledge that speakers have about beliefs, their properties, their relations to other mental activities, etc.; component II would state how S determines H’s interests and how S determines which sort of belief ascription would be most useful to H; and component III would state which expressions ought to be used in which contexts to achieve which goals. The theory would predict that when, for example, H is interested in whether A will recognize Francis Gumm as the father of the famous actress, ILFs with distinct syntactic content (e.g., “Frances Gumm” vs. “Judy Garland”) will be treated as distinct; but that when H is interested in what information A has about, for example, her spatial location, objectual content will be more important and ILFs with distinct syntactic content are more likely to be treated as equivalent. (In general, when H is interested in predicting A’s behavior, the syntactic component will take priority, and when H is interested in information A has about the world, the objectual component will take priority (p. 341).)
Perry observes that if we identify thoughts with senses, then no two utterances that differ in which indexicals they contain can ever express the same thought. Analogously, if we identify truth conditions with senses, then no two utterances that differ in which indexicals they contain can ever have the same truth conditions (p. 61).

**Ludlow for allowing indexicality into the semantics.** Evans (1981) argues to the contrary that our ability to grasp or express a particular thought as we move through space and time actually requires us to change the mode in which we access or refer to it; “we must run to keep still” (Evans 1981, quoted on p. 61). This ability is similar to the (purported) ability of the belief ascription theory suggested in Larson & Ludlow (1993) to account for context-dependent equivalence of ILFs. If we extend the theory so that it answers questions not only about how equivalence is determined in cases of belief ascription but also about how equivalence is determined in indexical statements, and elucidates the (hopefully systematic) way in which indexical expressions of the same thought are in fact required to vary across space, time and individual identity, we will see that the ability of an individual to keep track of a single thought is merely a special case of a more general ability.

**Extending the Larson & Ludlow (1993) theory, and questions about the modest theory.** Extending the theory involves creating an account of how S’s and H’s mutual knowledge of each other’s spatiotemporal position determines the selection and interpretation of indexicals. When a single person is trying to grasp the same thought at two different times, he is simply (silently) expressing an indexical expression to himself—exactly how much “running in place” and of what sort is necessary should fall right out of the extended theory. Since the extended theory would cover the details of the knowledge and abilities that underlie our semantic competence and then tell us how the knowledge and abilities are hooked up to linguistic expressions, it would amount to the robust part of a fully robust semantic theory. “In the meantime, what would the modest semantical theory look like?” (p. 62). There are two possibilities: encode descriptive information in the truth conditions, as in (8); or put indexicals directly into the truth conditions, as in (9):

(8) An utterance of “I need a haircut” by S is true iff S needs a haircut
(9) “I need a haircut” is true iff I need a haircut

If we choose (9), there are two further possibilities: the T-theorems are used by the hearer to interpret an utterance by modeling the egocentric mental space of the utterer; or the T-theorems are amended “systematically” to account for the position of the utterer in space and time (e.g., “here” is replaced by “there”, “I” by “you”, etc.). The question of deciding between all of these possibilities will be taken up in later chapters.
Supplement: Kaplan’s Modality Argument

Kaplan (1977) argues against keeping sense in semantics by suggesting that certain undesirable consequences arise with respect to modality if we let it in:

(10) You are the person I’m addressing with this utterance.
(11) The person I’m addressing with this utterance is the person I’m addressing with this utterance.

(11) seems to express an obviously necessary statement, while (10) seems to express a contingent one. But if sense is incorporated into truth conditions, then the truth conditions for (10) and (11) are identical:

(10’) An utterance of “You are the person I’m addressing with this utterance” by S is true iff the person S is addressing with the utterance is the person S is addressing with the utterance.
(11’) An utterance of “The person I’m addressing with this utterance is the person I’m addressing with this utterance” by S is true iff the person S is addressing with the utterance is the person S is addressing with the utterance.

But what are we doing when we evaluate the modal status of a statement? We certainly can’t travel to another possible world and evaluate it there. What we’re really doing is creating a counterfactual and then evaluating it in this world (i.e., “counterfactual evaluation’ is in fact parasitic on our ability to evaluate corresponding modal sentences” (p. 60)). In other words, when we say that (11) is necessary, what we’re really saying is that (12) is false:

(12) It could have been that the person I’m addressing with this utterance is not the person I’m addressing with this utterance.

Now, if we take the definite description in subject-position (the x : x is the person I’m addressing with this utterance) “to have wide scope over the modal,” we expose an ambiguity:

(13) [the x : x is the person I’m addressing with this utterance] It could have been that x is not x.
(14) [the x : x is the person I’m addressing with this utterance] It could have been that x is not the person I’m addressing with this utterance. (p. 60)

(13) is certainly false, but (14) is clearly true. Now, if we read (11) as (14), (11) is contingent—like (10)—and Kaplan’s argument is no longer fatal.