

ATTITUDE REPORTS AND SEMANTIC THEORIES

HIROAKI HORIUCHI, HIROTO OHNISHI  
JUN ABE, KAZUHIKO TANAKA

We examined various semantic theories with respect to the treatment of attitude reports, such as believe, know, see/see that and hear/hear that. We will very briefly survey the semantic theories centering around this topic and point out some problems.

1. Fregean Semantics

Under the analysis of Fregean Semantics, an expression can be substituted for another if they have the same intension. Therefore we are confronted by a serious problem. See the following example.

- (1) a. John believes that Mary is a prostitute.  
b. John believes that Mary is a prostitute and Susie is a spy or not a spy.

Since  $P$  and  $P \wedge (Q \vee \neg Q)$  have the same truth-value in all possible worlds (i.e., they have the same intension), they are not formally distinguishable. But John's belief in (1a) is clearly different from that of (1b).

2. Jackendoff

According to a representation rule in Jackendoff (1983), the sentence in (2) should have the readings in (3a-b) if we assume that the verb see creates a #visual representation#. And we can not find any reason that we should not assume so:

- (2) John saw Mary steal the key.  
(3) a. Opaque reading:  
REP((MARY STOLE THE KEY)) IN JOHN'S SIGHT

## b. Transparent reading:

REP((TR(MARY)) STEAL THE KEY)) IN JOHN'S SIGHT

The 'See + Naked Infinitive', however, can not creat an opaque context. Notice that the following syllogism is valid.

- (4) John saw his neighbor on the right steal the key.  
 His neighbor on the right is Mary.  
 John saw Mary steal the key.

Further Jackendoff can not account for the epistemic difference between (3) and (5):

- (5) John saw that Mary stole the key.

## 3. Data Semantics (Landman)

This theory tries to account for the epistemic difference between (6) and (7):

- (6) a. John sees it rain.  
 b. I just heard on the radio a singer lose her voice.  
 (7) a. John sees that it rains.  
 b. I just heard on the radio that a singer  
 lost her voice.

According to Landman, the sentence (6a) expresses that John has a visual relation to a set of facts which contains the fact that it rains as its member. But in (7a) the set of facts that John is confronted with contains only the fact that it rains. In other words, John could isolate the fact. If we regard these sentences in this way, we can account for the epistemic difference between the a-sentences and b-sentences.

## 4. Our Proposal

Though the analysis proposed by Landman is attractive, it

seems that we can not explain other interesting phenomena such as opaque contexts. See the sentence below.

(8) John believes that the dead man is alive.

In the contradictory reading, John has a curious belief. But suppose that John is a mad man and does not know that what is dead can not be alive. Then the dead man is alive is a FACT for John. In light of this and other similar examples, we assumed the function AGT (i.e., agent), which yields facts for an agent, and showed that we can, in principle, analyze opaque contexts in the framework of Data Semantics.