

De Re/De Dicto Ambiguity and Presupposition Projection

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This paper compares three theories of *de re/de dicto* ambiguity, namely, (i) the scope theory (Fodor 1970, Quine 1956), (ii) the intensional variable theory (von Fintel & Heim 2007, Keshet 2008, to appear, Percus 2000) and (iii) the presupposition projection theory (Geurts 1998, Maier 2006), and contends that of these three, the presupposition projection theory is the best in terms of the number of independent assumptions needed to prevent overgeneration. The arguments are therefore conceptual in nature. Note that we are concerned only with how and where *de re/de dicto* ambiguity is treated in the grammar, and do not discuss how the two readings should be appropriately described in a metalanguage (see Kaplan 1969, Maier 2006).

Scope theory: The scope theory, which is the oldest, treats the ambiguity as scope interaction with an intensional operator. However, it has been pointed out that this theory leads to the scope paradox of ‘narrow scope *de re*’ readings (von Fintel & Heim 2007, Fodor 1970, Keshet 2008, Percus 2000, a.o.).

- (1) If every man was a woman, John would be happy.
- *Every actual man x is s.t. $[x \text{ is a woman}] \square \rightarrow [\text{John is happy}]$.
 - # $[\text{Every man was a woman}] \square \rightarrow [\text{John is happy}]$.
 - The set of actual men X is s.t. $[\text{all } X \text{ are women}] \square \rightarrow [\text{John is happy}]$.

The most salient interpretation is (1c), but simple quantifying-in is unable to engender this reading. In a nutshell, what this shows is that the scope mechanism and the evaluation of the restrictor have to be dissociated somehow. From now on, the data are described by these two parameters, and we use *wide/narrow scope* for the former and *transparent/opaque* for the latter.

There are two ways to solve this puzzle while keeping intact the basic tenets of the scope theory. One is to use higher order abstraction (cf. von Fintel and Heim 2007).

- (2) a. The set of actual men X is s.t. $[\text{all } X \text{ are women}] \square \rightarrow [\text{John is happy}]$.
b. The set Q of sets containing all actual men is s.t. $[\text{WOMAN} \in Q] \square \rightarrow [\text{John is happy}]$.

However, this approach necessitates unmotivated assumptions in syntax, especially regarding the scope islands. Furthermore, its expressive power is too strong and needs the same independent constraints as the intensional variable theory, which are introduced below.

Another way to solve the problem is proposed by Keshet (2008). He abandons the rule of Intensional Functional Application and postulates the \wedge -operator in the object language.

- (3) $[[\wedge \alpha]]^{w,g} = \lambda w'. [[\alpha]]^{w',g}$

When something appears between the \wedge -operator and an intensional predicate like *think*, it receives a *de re* reading. Keshet claims that this approach is free from the complications regarding the scope islands, but we show that it undergenerates certain readings, and hence too weak.

Intensional variable theory: The intensional variable theory clearly dissociates the scope and the transparency mechanisms by fully intensionalizing the object language (cf. Ty2 of Gallin 1975). In this system, transparency is captured by the usual mechanism of semantic binding. For example, (1c) is analyzed as follows.

- (4) $\lambda s [\text{if } [\lambda s' \text{ every } [\text{semanticist-}s] \text{ did not exist-}s']] , \dots$

It is known that this theory is too powerful and certain binding possibilities have to be constrained by an external mechanism (Keshet 2008, to appear, Musan 1995, Percus 2000).

- (5) a. **Main Predicate Constraint:** No transparent readings on main predicates.
b. **Adverb Constraint:** No transparent readings on adverbs.
c. **Intersective Predicate Constraint:** Within a DP, intersective modifiers and the NP have to match in transparency.
d. **Presuppositional DP constraint:** Non-presuppositional DPs cannot be interpreted transparent.

In addition to these, we propose a new constraint:

- (6) **Nested DP Constraint:** When a DP is embedded inside another, the higher one has to be opaque, if the lower one is opaque.

In this configuration, there are four logical possibilities, but one interpretation is systematically absent. Suppose that Mary wrongly believes that there are unicorns, and further thinks that her neighbor owns one. This person happens to Bill, but Mary is under a false impression that her neighbor is a woman. The following sentence should be felicitous in this context, if the above binding was possible.

- (7) #Mary thinks that the man who owns the unicorn is a woman.

That is, if *man* could be transparent and *unicorn* opaque, the sentence would make a perfect sense. The following sentence demonstrates that the opposite combination is possible.

- (8) Mary thinks that the unicorn that the man owns belongs to a woman.

We also observe that the Nested DP Constraint interacts in an interesting way with indefinites.

Presupposition projection theory: The presupposition projection theory likewise posits two different mechanisms for scope and transparency. In particular, the transparency mechanism is presupposition projection, rather than semantic binding. More specifically, transparent readings are generated when presuppositions are globally resolved, while local resolution leads to opaque readings. The version of this theory presented in Geurts (1998) is implemented in Discourse Representation Theory with the Binding Theory of Presuppositions (BTP). While the flexibility of the presupposition projection mechanism available in BTP is crucial, we try to be neutral with respect to the technical framework here.

Since this theory uses two different mechanisms for scope and transparency, it can deal with narrow scope opaque readings. Moreover, the above five constraints needed in the intensional variable theory are straightforwardly accounted for. The Main Predicate and Adverb Constraints are expected since the natures of presuppositions involved in DPs and those involved in predicates and adverbs are different. In particular, the function of presuppositional DPs is to pick out something and add information about the very thing, while presuppositional predicates or adverbs do not do this and just add new information. The Intersective Predicate Constraint is also expected, since the meanings of the intersective modifier and the head noun are conjoined in the presupposition and cannot be separated. Needless to say, the Presuppositional DP Constraint is what this theory predicts. Furthermore, the Nested DP Constraint is explained by the mechanism of *trapping*. That is, the presupposition of the whole DP cannot be evaluated if the lower DP is opaque, since the lower DP's presupposition is needed to resolve the higher DP's. Thus, this theory is the most conceptually simple in that all four constraints follow from the same mechanism, whereas in the other two theories, they have to be stated independently in an ad hoc manner

However, one problem for this theory is indefinites and we will suggest a possible solution using the presupposition theory of wide scope indefinites.

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