Some Syllogisms with Individual Concepts
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This talk is concerned with Noun Phrase (NP) arguments of verbs like *rise*, *fall* and *change* and with a puzzle involving the Temperature Paradox and Gupta's syllogism.

The Temperature Paradox in illustrated by Partee's sentences in (1)-(3). The (apparent) paradox is that, intuitively, despite the equation in (1), the truth of the predication in (2) does not guarantee the truth of the predication in (3).

(1)   The temperature is ninety.

(2)   The temperature rises.

(3)   Ninety rises.

Montague's (1974) analysis of these sentences is the following. The verb *rise* expresses a property of individual concepts, i.e., a property of functions of type <s,e> from indices (a combination of world and time) to individuals. For *rise* to be true of one such function $x_{<s,e>}$ at a given index i, we need to compare the value of $x_{<s,e>}$ at i with the value of x at earlier and/or later indices. Equative *be* expresses a two-place property of individual concepts. But, crucially, for *be* to be true of $x_{<s,e>}$ and $z_{<s,e>}$ at index i, it suffices that $x_{<s,e>}(i) = z_{<s,e>}(i)$. That is, *be* does not require that the values of $x_{<s,e>}$ and $z_{<s,e>}$ be identical at any earlier/later indices. This analysis derives the invalidity of the syllogism.

Now consider Anil Gupta's syllogism (4)-(6), cited in Dowty, Wall and Peters (1981:284ff). [(4) can be understood as the elliptical version of e.g. *Necessarily, the temperature in degrees Fahrenheit is the price in cents of a can of Coke* (Nathan 2005).] Intuitively, this is a valid syllogism. However, as Gupta noted, if we apply Montague's analysis with *be* equating values to the new sentences, we do not obtain a valid argument.

(4)   Necessarily, the temperature is the price.

(5)   The temperature is rising.

(6)   The price is rising.

Hence, the puzzle. Partee's syllogism is invalid and, to ensure its invalidity, we need *be* to equate values, and not to equate <s,e>-functions. The second syllogism is valid, but, if we use the same analysis with the sole addition of the meaning of *necessarily*, we wrongly predict the second syllogism to be invalid. To yield the correct result for the second syllogism, we would need to treat *be* not as equating values, but as equating <s,e>-functions.

Lasersohn's (2005) proposes a unified analysis of the two syllogisms in which the key ingredient is the Fregean treatment of definite descriptions. In this talk, I will show that, although Lasersohn derives the desired result for the examples so far, the puzzle can be reconstructed for variants of these syllogisms where his solution cannot apply. I will then propose a new unified

analysis of the two syllogisms capitalizing on the temporal interpretation of the main predication in the first premises.

References

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