

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 is 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 $\langle s, e \rangle$ from indices (a combination of world and time) to individuals. For *rise* to be true of one such function $x_{\langle s, e \rangle}$ at a given index i , we need to compare the value of $x_{\langle s, e \rangle}$ 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 $x_{\langle s, e \rangle}$ and $z_{\langle s, e \rangle}$ at index i , it suffices that $x_{\langle s, e \rangle}(i) = z_{\langle s, e \rangle}(i)$. That is, *be* does not require that the values of $x_{\langle s, e \rangle}$ and $z_{\langle s, e \rangle}$ 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 $\langle s, e \rangle$ -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 $\langle s, e \rangle$ -functions.

Laserson'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 Laserson 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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