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Variables and Compositionality

In recent years, a couple of writers have attacked the language of classical predicate logic (LCPL) via the theory of compositionality. In this talk, I address their critique.

The semantics of LCPL does not proceed by defining meanings for expressions, but by a definition of truth in a model relative to an assignment of values to variables. If you want to assess whether this semantics is compositional, in the sense that the meaning of every complex expression of the language is determined by the meanings of its immediate constituents and how they are put together, you first have to say what its expressions, their constituents, meanings, and modes of compositions are and then provide a reconstruction of LCPL in these terms. My talk centers on two such reconstructions.

According to the standard reconstruction, expressions are identified with strings and semantic values are defined to be functions from assignments to classical denotations, including truth-values in the case of formulas. It is easily feasible to provide a semantics based on such semantic values that has the form of a compositional semantics. Nevertheless, the reconstruction fails to achieve its aim because the semantic values do not deserve to be called meanings.

I therefore propose, based on a general theory of expressions as structured entities, a second reconstruction of LCPL in terms of things that do, namely the classical denotations themselves. Perhaps not surprisingly, on this reconstruction, LCPL turns out to be non-compositional, the culprit being the semantics of variable binding. But what the reconstruction shows is that there is a recursive semantics for LCPL based on a proper definition of meaning, and this is really all we should ask for.

Klein, U. and W. Sternefeld (2017). Same same but different: An alphabetically innocent compositional predicate logic. *Journal of Philosophical Logic* 46(1), 65–95.

Wehmeier, K. F. (2018). The proper treatment of variables in predicate logic. *Linguistics and Philosophy* 41(2), 209–249.