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A MODEL FOR LEŚNIEWSKI'S MEREOLOGY IN FUNCTIONS

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INTRODUCTION. Mereology, it may be recalled, is Leśniewski's system consisting of:

(1) A system of propositional logic, upon which is based

(2) A system for characterizing the meaning of 'is', upon which is based

(3) A system for characterizing the relation of 'part' to the 'whole'.

The partial system of mereology consisting of just (1) is called protothetic. The partial system consisting of (1) and (2) is called ontology.

Up to now, the models of mereology that have been constructed have given an interpretation for the terms 'part' and 'whole' of (3) but have left the term 'is' of (2) uninterpreted (see [3]). In this paper we give the first model for mereology in which 'is' is interpreted as well. In other words, based on ontology, we have a model of mereology that includes a model of ontology.

(2) consists of a primitive semantical category (logical type) called the category of names, a proposition forming functor, ε (read is), of two name arguments, an axiom system

0. $[Aa] \therefore A \varepsilon a . \equiv : [\exists B] . B \varepsilon A : [C] : C \varepsilon A . \supset . C \varepsilon a : [CD] : C \varepsilon A . D \varepsilon A . \supset . C \varepsilon D.$[1]

and two new rules, namely the rule of ontological extentionality

EO. $[\sigma\tau A_1 \ldots A_n] \therefore [A] : A \varepsilon \sigma\{A_1 \ldots A_n\} . \equiv . A \varepsilon \tau\{A_1 \ldots A_n\} : \equiv : [\varphi] : \varphi\langle\sigma\rangle . \equiv . \varphi\langle\tau\rangle$

and the ontological rule of definition

DO. $[A_1 \ldots A_n] : A \varepsilon \alpha(A_1 \ldots A_n) . \equiv . A \varepsilon A . \beta(A_1 \ldots A_n)$

1. Strictly speaking, in terms of the rules for protothetic, we should write $\varepsilon\{Aa\}$ instead of $A \varepsilon a$, but the form given in the axiom is easier to read.

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