24.400

Proseminar in philosophy I

Fall 2003

<u>A bit of "The Concept of Truth in Formalized Languages" in more modern notation</u>

The language of the "calculus of classes" is a first-order language L whose logical vocabulary is '$\forall$', 'v', '~', an infinite supply of variables 'x′', 'x″',…, and parentheses '(', ')'. The sole non-logical item of vocabulary is the two place predicate '$\subseteq$'. The quantifiers of L are stipulated to range over classes of individuals and '$\subseteq$' is interpreted as class inclusion.

A *formula* of the language of the calculus of classes is either a closed or open sentence. Thus '($\forall$x′x′$\subseteq$ x″)' and '~(x‴′$\subseteq$ x″)' are formulas of the language.

DEFINITION 22

An infinite sequence of classes S *satisfies the formula* ϕ, or ϕ is *true relative to* S, iff:

either:

(a) There are numbers *k* and *l* such that $\phi = \ulcorner \nu \subseteq \mu \urcorner$, where ν is the *k*th variable (i.e. the variable whose superscript has *k* strokes) and μ is the *l*th variable (i.e. ϕ is the formula consisting of the *k*th variable, '$\subseteq$', and the *l*th variable, in that order), and the *k*th member of S is a subset of the *l*th member of S

or:

(b) There is a formula ψ such that $\phi = \ulcorner(\sim\psi)\urcorner$ and S does not satisfy ψ

or:

(c) There is a formula π and a formula ψ such that $\phi = \ulcorner(\pi \vee \psi)\urcorner$ and either S satisfies π or S satisfies ψ

or finally:

(d) There is a number *k* and a formula ψ such that $\phi = \ulcorner(\forall \nu \psi)\urcorner$, where ν is the *k*th variable, and every infinite sequence which differs from S in at most the *k*th place satisfies ψ.