Philosophy 230

Wesleyan University
Fall 2014

Handout 8b

Identity

I. Is the following sentence valid?

If everyone helps someone else, then someone is helped by someone else.

II. The laws of identity:

A. $LI(1)$ $(\forall x)(x = x)$

B. $LI(2)$ $(\forall x)(\forall y)(x = y \supset Fx \equiv Fy)$, for any predicate letter $F①$

C. $LI(3)$ $(\forall x)(\forall y)[x = y \supset \Phi(x) \equiv \Phi(y)]$, for any open schemata $\Phi(①)$ (the indiscernibility of identicals)

III. Additional versions of the laws of identity:

A. $LI(1)$ $x = x$, for any variable x.

B. $LI(2)$ $x = y \supset Fx \equiv Fy$, for any variables x, y and predicate letter $F①$

C. $LI(3)$ $x = y \supset \Phi(x) \equiv \Phi(y)$, for any variables x, y and open schemata $\Phi(①)$.

IV. Examples of deductions with identity

A. "$(\forall x)(\forall y)(x = y \supset y = x)$" is valid.

B. "$(\forall x)(\forall y)(\forall z)(x = y.y = z \supset x = z)$" is valid.

C. "$(\forall x)(\exists y)(Hxy.x \neq y)$" implies "$(\exists y)(\exists x)(Hxy.y \neq x)$".

V. Is the following argument valid?

Everyone is liked by two people.

THEREFORE, Everyone is liked by someone else.