15. *Axiom Systems of Aristotle Traditional Logic.* III

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In this paper, we shall give a new axiom system of Aristotle traditional logic. Some axiom systems have been obtained by J. Lukasiewicz [4], [5], I. Bochenski [1], N. Kretzmann [3], K. Iséki [2], and S. Tanaka [6]. K. Iséki has given a method to find its axiom systems. For the detail, see [2]. In this paper, we use the following notations. For the categorical sentences,

1) Aab: Every a is b,
2) Iab: At least one a is b,
3) Oab: At least one a is not b,
4) Eab: No a is b.

For the functors,

1) C: implication, 2) N: negation, 3) K: conjunction.

Then we have

$D1$. $Eab = NIab$,

$D2$. $Oab = NAab$.

For the moods and figures,

1) XY_1: $CXabYab$, 2) XY_2: $CXabYba$,
3) XYZ_1: $CKXabYcaZcb$, 4) XYZ_2: $CKXabYcbZca$,
5) XYZ_3: $CKXabYacZcb$,
6) XYZ_4: $CKXabYbcZca$.

Under these notations, the Lukasiewicz axiom system is written as follows:

$L1$. Aaa,

$L2$. Iaa,

$L3$. AAA_1,

$L4$. AII_3.

The following deduction rules $T1$, $T2$, $T3$ from the classical propositional calculus are used in our discussion.

$T1$. $CK\alpha\beta\gamma \rightarrow CK\beta\alpha\gamma$,

$T2$. $CK\alpha\beta\gamma, C\gamma\delta \rightarrow CK\alpha\beta\delta$,

$T3$. $C\alpha\beta \rightarrow CN\beta N\alpha$.

For the simplicity, we shall write these as

$T1$. $\alpha\beta\gamma \rightarrow \beta\alpha\gamma$,

$T2$. $\alpha\beta\gamma + \gamma\delta \rightarrow \alpha\beta\delta$,

$T3$. $\alpha\beta \rightarrow N\beta N\alpha$.

In our previous notes, K. Iséki and S. Tanaka have given some important