45. Axiom Systems of Aristotle Traditional Logic. II

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In this paper, we shall give new axiom systems of Aristotle traditional logic. Some systems have been obtained by J. Lukasiewicz ([4], [5]), I. Bocheński ([1]), N. Kretzmann ([3]), and recently K. Iséki ([2]).

K. Iséki has given a method to find axiom systems. For the detail, see [2].

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 functors,
- 1) C: Implication, 2) N: Nagation, 3) K: Conjunction. Then we have
- D1 Eab = NIab, D2 Oab = NAab. For moods and figures:
- 1) XY_1 : CXabYab,
- 2) XY_2 : CXab Yba,
- 3) $XYZ_1: CKXab YcaZcb$,
- 4) $XYZ_2: CKXab YcbZca,$
- 5) $XYZ_3: CKXab YacZcb,$
- 6) $XYZ_4: CKXabYbcZca.$

Under these symbols, the Lukasiewicz axiom system is written in the form of

- L1 Aaa,
- L2 Iaa,
- $L3 \quad AAA_1$,
- $L4 \quad AII_3.$

From theses of the classical propositional calculus, we have the following deduction rules T1-T7. We shall symbolize these rules as right sides.

T1	$CK\alpha\beta\gamma \longrightarrow CK\beta\alpha\gamma$: $\alpha\beta$	$\beta\gamma \rightarrow (i) \beta\alpha\gamma,$
	$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{C}}}}}} CK\alpha N\gamma N\beta$:	(ii) $\alpha N \gamma N \beta$,
	$\begin{array}{ccc} CK\alpha\beta\gamma \longrightarrow CK\beta\alpha\gamma & : \alpha\beta \\ & \swarrow CK\alphaN\gamma N\beta & : \\ & \swarrow CKN\gamma\beta N\alpha & : \end{array}$	(iii) $N\gamma\beta N\alpha$,
T2	$CKlphaeta\gamma, C\deltalpha \longrightarrow CK\deltaeta\gamma;$	$\alpha\beta\gamma+\delta\alpha\longrightarrow\delta\beta\gamma,$
T3	$CK\alpha\beta\gamma, C\delta\beta \longrightarrow CK\alpha\delta\gamma;$	$\alpha\beta\gamma+\delta\beta\longrightarrow\alpha\delta\gamma$,
T4	$CKlphaeta\gamma, C\gamma\delta \longrightarrow CKlphaeta\delta;$	$\alpha\beta\gamma+\gamma\delta\longrightarrow\alpha\beta\delta,$