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A new metatheoretic square and hexagon uniting empirical theories with a-priori ones, and uniting theories based on the classical logic with ones based on a nonclassical logic

The paper submits significant explicating and developing further the metatheoretic square and hexagon published originally in (Lobivikov, 2015; 2016) which square-and-hexagon is a new instantiation of the old idea substantially generalized and represented today as "geometrical logic" (Blanché, 1966; Béziau, 2012a; 2012b).

Let variable "t" stand for a theory having a recursively enumerable set of axioms. "Emp(t)" stands for the metatheoretic property "theory t as a whole is *empirical* one". "Apr(t)" stands for the metatheoretic property "theory t is a system of *a-priori* knowledge exclusively. "Cla(t)" – "theory t is based on the classical logic". "Con(t)" – "theory t is consistent". "Com(t)" – "theory t is complete". "Dec(t)" – "theory t is decidable".

Notions "Emp(t)" and "Apr(t)" are defined as follows. DF-1: Apr(t) $\leftrightarrow$ (Cla(t) & Con(t) & Com(t) & Dec(t)). DF-2: Emp(t) $\leftrightarrow$ ($\neg$Cla(t) $\vee$ $\neg$Con(t) $\vee$ $\neg$Com(t) $\vee$ $\neg$Dec(t)). Corollary-1: Apr(t) $\leftrightarrow$ ($\neg$Emp(t). Corollary-2: Emp(t) $\leftrightarrow$ $\neg$Apr(t)).

The system of logical interrelations among the metatheoretic notions is modeled graphically by the following square and hexagon.
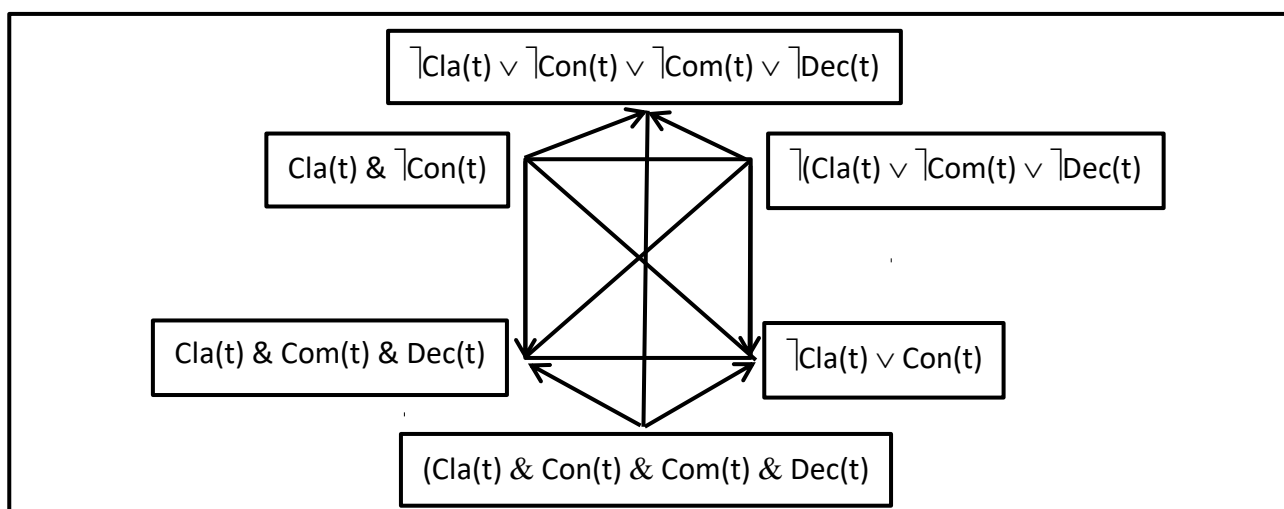

Fig.1. The metatheoretic square and hexagon uniting empirical theories with a-priori ones

References

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2) Béziau, J-Y. (2012b) The Power of the Haxagon, *Logica Universalis,* 6, No. 1-2, 1-43.
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5) Lobovikov, V. (2016) Submitting a Meta-theoretic Interpretation of the Logic Square and Hexagon of Opposition, *Aporia – Revista Internacional de Investigaciones Filosoficas [International Journal for Philosophical Investigations] / Santiago de Chile.* № 11, pp. 4-11.