

TOWARD THE RECONSTRUCTION OF THE EARLY HISTORY OF
PARACONSISTENT LOGIC:
THE PREREQUISITES OF N.A. VASILIEV'S IMAGINARY LOGIC[†]

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1. N.A. Vasiliev's imaginary logic (1908–1914) became a precursor of paraconsistent logic. His path to imaginary logic was steep and toilsome. The starting point of his development is to be found in youth animations and “vague sensations” of the future scholar related to the radically new treatment of contradiction and approach to logic.

At the present moment we are able to reconstruct the very early history of N.A. Vasiliev's imaginary logic and its formal or informal prerequisites and heuristic prompts. This is possible due to the discovery of the scholar's personal archive and of his works and letters, unknown before the early 1990s. Some Soviet scientists worked diligently but unsuccessfully to find the archives of the Vasiliev's family (for instance, prominent algebraists A.I. Mal'tsev and V.V. Morozov). I too engaged in this search, and I was fortunate to find two of his logical manuscripts and the “remains” of his archive (diary, letters, photographs, books with Vasiliev's annotations, etc.). This material enabled me to write a scientific biography of Vasiliev and to study his way to imaginary logic [1] and, in collaboration with V.A. Smirnov, to publish for the first time in the Soviet era the works themselves of N.A. Vasiliev [2]. Later some new documents and Vasiliev's unknown papers were found by me.

A close look at Vasiliev's life and work shows us that he is not only the founder of original non-classical logical theories, but a thinker with very wide interests —philosopher, ethician, psychologist, historian, poet and even skilled interpreter. All components of Vasiliev's intellectual activity are tied together.

2. What vague, uncertain and barely formulated analogies fed Vasiliev's pioneering work? To my mind they can be specified due to new findings:

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- 1) C.S. Peirce's logic of relatives, which Vasiliev learned when he was only seventeen;
- 2) the symbolist poetry that paid a great deal of attention to the subject of another world;
- 3) the special psychological standpoint, used for the critical analysis of Aristotelian logic;
- 4) Charles Darwin's ideas on the evolution of life;
- 5) the analogy with non-Euclidian geometry construction and method.

3. Soon (according to historical scale) after Kant wrote his Preface to *Kritik der Reinen Vernunft* the powerful movement in Aristotelian logic emerged, and resulted in eventual, drastic changes in logic. Assessing this movement Vasiliev names the following landmarks: Hegel's dialectical logic, Mill's inductive logic and his critical approach towards Aristotelian syllogistic, Sigwart's critique of the classical doctrine of modal judgments and, at last, the development of mathematical logic by Boole, Schroder, Poretsky, Peano, Frege, Russell.

The opening through the horizon of traditional logic, according to Vasiliev, has been taking place at several points. First of all, one of the cornerstone laws of Aristotelian logic—the law of contradiction—was severely criticized by the philosophers, who assigned themselves a dialectical trend. They were seeking contradictions realized in the world, and its reflection in human consciousness (N. Cusa, Gaman, Hegel, Banzen, Meinong).

These are the rational, formal, so to speak, prerequisites of imaginary logic—as Vasiliev assessed his predecessors. Nevertheless not only rational prompts fed the scholar's inspiration in 1908–1910 towards a new logic free of the laws of contradiction and excluded middle.

4. We may argue that in Ch. Peirce's logic of relatives (mid and late 1890s) Vasiliev perceived the evidence of the imperfection of Aristotelian logic, the narrowness of the traditional theory of judgments and its elements, and he realized the principal possibility of different ways of logical reasoning, and the non-absolute character of classical logic and its basic laws [3].

5. As a symbolist poet Vasiliev spoke not only about “another world” but endowed—unlike the rest of Russian symbolists—these worlds with contradictory features [1, p. 44–57].

6. Vasiliev's psychologism helped to propose a radically new—paraconsistent in essence—system of logic. In our world, Vasiliev affirmed, only “positive” sensations are possible, by which we can distinguish only contrary qualities. This is the basis of qualitatively different types of judg-

ments —affirmative and negative. If one imagines a world in which not only positive but negative sensations are possible, then such a world will indeed require a different logic and the introduction of supplementary qualitative judgments. As the imaginary world becomes more complex, logic becomes more complex too, and perhaps it will consist not of two dimensions (as in Aristotelian logic), but, generally speaking, of any number of dimensions [4].

7. According to Sigwart, Darwin's ideas created a revolution in logic. Vasiliev claims that his ideas have a direct impact on the foundations of logic. Aristotelian logic was implicitly based on the ontological assumption of the invariability of the world and of concepts. Darwin has shaken this conviction and opened the way to the new worldview [5].

8. "Imaginary logic is constructed by the imaginary geometry method ... In order to implement this method I have learnt non-Euclidian geometry... From all the non-Euclidian geometry systems, I have studied more intently the geometry of Lobachevsky, which I learned from his original works," so Vasiliev stated [6, p. 20–21]. Non-Euclidian geometry gave a powerful impetus to the imaginary logic construction [7].

9. Vasiliev's idea of the plurality of logical systems has been realized. "I am very well aware of the fact, —wrote Vasiliev in 1912,— that my idea of a new logic contradicts the millennial conviction of mankind..." Half a century had to pass before the ideas of imaginary logic revived like a Phoenix from its ashes; and we may evoke their fate in the words of Emile Verhaeren —the poet, beloved by Vasiliev: "Now comes the time for things / Which seemed a delirium yesterday."

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