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# The Logical Legacy of Nikolai Vasiliev and Modern Logic

 Springer

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# Preface

This volume grew out of the international workshop “Nikolai Vasiliev’s Logical Legacy and the Modern Logic” (Moscow, Russia, October 2013) co-hosted by the Department of Logic of the Faculty of Philosophy, Lomonosov Moscow State University, and the Institute of Logic, Cognitive Sciences and Development of Personality. The workshop focused on the impact of Nikolai Vasiliev, the outstanding Russian logician and philosopher, on modern logic and marked the centenary of his famous paper “Imaginary (Non-Aristotelian) Logic” (1912).

Nikolai Aleksandrovich Vasiliev (1880–1940), professor of Kazan University (Russia), was a seminal thinker, philosopher, rhyme maker, and logician, who outpaced his time and influenced the development of logical ideas far outside his own country (time and place). He is widely acknowledged for having pioneered logic with a consistent logical system in the form of syllogistics theory basing upon a contradictory ontology, thus having emerged as the father of paraconsistent logic. What is more, though short (four papers published in 1910–1913), his scientific legacy underpins fruitful ideas of modern logic. Some researchers also trace in his writings elements of the many-valued and modal logic as well. All of the above compels one to regard Nikolai Vasiliev along with Jan Łukasiewicz as one of the precursors of nonclassical logic.

It is his imaginary (non-Aristotelian) logic that attracts the most interest of modern researches. Since the seminal V.A. Smirnov’s paper and D. Comey’s review on it in the *Journal of Symbolic Logic*, there have been a lot of attempts to present formally imaginary logic. A. Arruda proposed a number of propositional calculuses of paraconsistent type whose language contains atomic formulas expressing contradictory statements. Though none of these systems cannot be considered as an adequate formalization of Vasiliev’s logic (because his original imaginary logic was constructed as a syllogistic type), they represent an initiatory step on the road to further development of Vasiliev’s ideas in modern symbolic logic. The task to formally reconstruct Vasiliev’s original syllogistic logic was set by Soviet logician V. A. Smirnov who started the work analogous to that executed by Łukasiewicz w.r.t. Aristotelian syllogistics. He proposed topological interpretation of propositions in imaginary logic. In so doing he formulated a translation of imaginary logic into first-

order language enriched with operators of closure, interior, and complementation and proposed a possible axiomatization of resulting theory as a syllogistic theory of a special kind built over a predicate calculus. This work was resumed by V. Markin, T. Kostyuk, and D. Zaitsev. They considered all the variants of imaginary logic (the main version, investigated by Vasiliev in detail, and three “interpretations” of imaginary logic with different sets of laws) and provided adequate axiomatizations for them. It was evident that Vasiliev was not only one of the first to propose a logical alternative to classical ones but that he also pointed out a manifold of nonclassical logical systems, formulated in the same formal language but with different sets of laws. It is his doubtless unrecognized merit.

The logical legacy of Nikolai Vasiliev can serve as a promising source for developing an impressive range of philosophical interpretations, as it marries promising technical innovations with challenging philosophical insights. Equally important is the fact that the novelty of his logical project has opened up prospects for modern logic as well as for nonclassical science in general. Thus, a volume containing a selection of papers written by prominent modern specialists in the field dealing with various aspects of Vasiliev’s logical ideas is presented.

The editors take this occasion to acknowledge with gratitude the support of Professor and Chair Otávio Bueno of the Department of Philosophy at the University of Miami who is also the editor in chief of *Synthese*.

Moscow, Russia  
Moscow, Russia

Dmitry Zaitsev  
Vladimir Markin

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