RESTORATION: S.A.YANOVSKAYA'S PATH IN LOGIC[*]

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Annotation

This article presents the story of S.A. Yanovskaya's (1896 – 1966) epiphany – particularly, her shift from hard-line communist orthodoxy and hostility towards "bourgeois minded" Soviet-Russian mathematicians to the vigorous support of mathematical logic. In light of this evidence, S.A. Yanovskaya may be considered as a spiritual leader and administrative founder of modern mathematical research and education in USSR/Russia.

At the First Soviet conference "Modern Logic: Theory, History and Applications", held in St. Petersburg (at that moment still called Leningrad) in May of 1990, the prominent logician I.N. Brodsky (1924 - 1994) told me that the task of reconstructing the history of logic in the Soviet Union was extremely important. This task, he added, should be fulfilled by a scholar of his generation, an observer and immediate participant in all the metamorphoses of logic in the USSR. This generation is dwindling: I.N. Brodsky has gone, and his close colleagues, the well-known logicians O.F. Serebryannikov (b. 1930) and D.P. Gorsky died in the same year as Brodsky. In 1996 V.A. Smirnov (b. 1931), the eminent Soviet/Russian logician also passed away. Perhaps the task of reconstructing the history of Soviet logic has been imparted to the pupils of a later generation (see for instance [Bazhanov 1995]).

The history of logic is not a popular field of research in contemporary Russia. Nevertheless, S.A. Yanovskaya's centenary celebration in 1996 and the tribute to the memory of the late V.A. Smirnov suddenly renewed interest in this topic (interest that was primarily manifested in conferences dealing with such issues).

It is hard to comprehend that S.A. Yanovskaya, whose role in the development of analytical philosophy and mathematical logic in the USSR is well acknowledged, was honored in Russia only by one bulky article [Bashmakova, Demidov, Uspensky 1996 b] published in a journal which was not very popular among Russia's philosophers[1]. In fact, Irving H. Anellis wrote much more about S.A. Yanovskaya than some Soviet/Russian scholars did (see: [Anellis 1987 a, 1987 b, 1996 a, 1996 b]).

However, even those articles which deal with Yanovskaya almost push aside a highly dramatic period of her life that is clearly characteristic of the Soviet Union's scholars. Philosophical journals and publications ignored the jubilee of an individual who had done much to awaken Soviet philosophy and logic from the lethargic dream of Marxist-Leninist primitivism. Only brief and general references are made to the fact that Yanovskaya was associated with the "red professors" at Moscow State University, or that during the time of the struggle against "yegorovism" and the "Luzin affair", many of her activities were seemingly incomprehensible. Also, unlike E. Kolman – Yanovskaya's co-author at the time – Yanovskaya never wrote direct or ideological denunciations. But even bibliographies do not include the names of publications that may shed light on the essence of some of Yanovskaya's "incomprehensible" deeds.

I assert that an unbiased approach to the history of science -- even in the jubilee articles -- demands not only mentioning the papers and acts that commend the scholar, but portraying

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[1] Incidentally, this article was also published a little bit earlier, under a different title, in an edition of MODERN LOGIC dedicated to the centenary of S.A. Yanovskaya [Bashmakova, Demidov, Uspensky 1996 a].

his/her creative evolution. The dark points should be presented along with the achievements so as to construct a more extensive panorama of events. We should also examine all of the nuances that offer the opportunity to feel the intellectual climate of the epoch and to recognize the courage of the scholar who dared to rise above this milieu and provide a breakthrough to a new era. The case of S.A.Yanovskaya is characteristic in this sense. The paper of Bashmakova, Demidov and Uspensky forces me to speak pointedly about the "incomprehensible" deeds in her life that occurred during the purges of the 1930's, and of the blank spots in her scientific biography.

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With the passing of Yanovskaya's centenary celebration, perhaps now is the appropriate time to raise the question: How is it that a scholar -- at the relatively late age of forty -- who was a zealot of Marxist-Leninist ideology in its most orthodox form, who in the 1930's rigorously branded ideological opponents and treated them as actual enemies, and who collaborated with E. Kol'man (mathematics' and logic's equivalent of biology's T. Lysenko), -- how did such a scholar suddenly change her stance, invert her worldview, and become the figure who launched and preserved the vigorous campaign for the restoration of mathematical logic? To what extent is the fate of Yanovskaya typical of Soviet scientists? Could we claim that her fate is correlated with the fate of science, philosophy or logic in the USSR? All these questions may be clarified through a thorough and extensive analysis of the history of logic in the Soviet Union. Here we present only the outline of the possible causes underlying the fate and intellectual evolution of S.A.Yanovskaya.

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It is well known that Yanovskaya studied mathematics at Novorossiisky University (Odessa). Her teachers were skillful and original mathematicians like S.O. Shatunovsky (who in 1901 - 1902 proclaimed that the law of excluded middle is not valid for infinite sets) and I.Yu. Timchenko (history of mathematics, especially history of the theory of analytical functions). She then worked as an instructor at the Odessa Region Communist Party headquarters -- largely ignoring mathematics. In 1924 Yanovskaya entered the Institute of Red Professors (established for persons from the lower classes) and two years after graduating (1931) she became a Full Professor without defending her doctorate (her degree was defended in 1935). Yanovskaya matured as a Party functionary working with academics, and she closely followed the purity of her colleagues' thoughts as well as their ideological devotion.

As an example, in 1930 she wrote: "If there is a low percentage of natural scientists sharing Marxist views, then among mathematicians this percentage is even lower... the Old Professorship from the so called "Moscow school", whose authority among the mathematical milieu was unshakable, made every effort to save mathematics from the malicious influence of materialistic philosophy, which did not hide its Party orientation and its class, proletarian character. Even the word "Comrade" was neither accepted at the Institute of mathematics and mechanics, nor at the Mathematical Society... in constrast, among the members of this Society, the percentage of white émigrés is rather high" [Yanovskaya 1930, p. 88, 94].

Both Moscow and Leningrad mathematicians, complained Yanovskaya, were not using the notion of "dialectics". In her view, were it not for the dates contained in the proceedings, the Mathematical Society meetings in 1929 would be indistinguishable from meetings in 1909. The Mathematical Department of the First Moscow State University in the early 1930's included only 2 Party members, 1 candidate to the Party memberships and 3 komsomolets (members of the Young Communist League), "all at the Fourth year" [Ibid. p. 90]. Hence, the main task in the development of mathematics was the problem of cadres - the cadres of Party mathematicians.

With the persecution of "Moscow school" Professors, the year of the "great turning point at the frontiers of mathematics" began. The cadre problem was resolved and, "the revolution at last reached the Institute of mathematics and mechanics. The management of the Institute radically changed" [Ibid. p.91]. This paper of Yanovskaya appeared in the May issue of the journal "Under the banner of Marxism". In the autumn of the same year the leader of the "Moscow

school", D.F. Yegorov, was exiled to Kazan, where he died a year later. Only one individual from the community of Kazan mathematicians dared to attend the funeral - Professor N.G. Chebotarev. Academician N.N. Luzin (who became an Academician not as a mathematician but as a philosopher) fell into disfavor in 1936; in the interim, the mathematicians from the lower ranks had been smashed.

"The current purge of the Leningrad Mathematical Society, where the idea of establishing a popular mathematical society was met with an organized rebuff by almost all mathematicians, demonstrates the complexity of the task at hand and shows that the goal of stratifying mathematicians and defining the truly Soviet components is a difficult and urgent problem. A problem that demands maximal vigilance... " [Ibid p. 94]. If "almost all" mathematicians were against the new society then what was the popular society mentioned by Yanovskaya? What were the methods of "purging" the Mathematical Society and how were the "truly Soviet components" to be defined? Now we can only guess how it was done - there were many scientists in the GULAG.

Frege, Russell, Couturat, and Cantor are, according to Yanovskaya, very close in their views to true idealism and mysticism ("the example of which is Platonism"). More generally speaking, asserts Yanovskaya, "bourgeois science in the imperialist era does not evolve from Hegel to Marx, Engels, and Lenin, but regresses". She proceeds: "The modern crisis of capitalism robs mathematics of materialistic tools and methods ([i.e.: intuitionism -- V.B.]), widens the gap between theory and practice, and aggravates its spontaneous and unplanned character" [Kol'man, Yanovskaya 1931, p. 118 - 119].

In the 1930's Yanovskaya strongly criticized idealism in mathematics, and unmasked "the bourgeois philosophy of mathematics". She speaks of the urgent problems of forming cadres of mathematicians -- members of the Communist Party. And even in her article from 1950 the ideas of Lobachevsky are evaluated as an instrument of struggle against idealism in mathematics. Nevertheless, already in 1943 she organized the mathematical logic seminar and ran it along with I.I. Zhegalkin and P.S. Novikov. In 1947 she translated into Russian and published D. Hilberts's and W. Ackermann's "Grundzüge der theoretischen Logik" (the first foreign mathematical logic book in the USSR), and in 1948, the "Introduction to logic and to the methodology of deductive sciences" by A. Tarski. From then on Yanovskaya promoted the publication of a large number of books dealing with mathematical logic in the USSR. She either edited or wrote the preface for many of these books. She zealously reinforced mathematical logic as a self-sufficient and respectable science having nothing to do with either idealism or fideism in mathematics or philosophy of mathematics (as was often charged in the 1930's and 1940's).

In the Preface to the Russian translation of D. Hilberts's and W. Ackermann's "Grundzüge der theoretischen Logik" Yanovskaya stressed that knowledge of mathematical logic is indispensable not only to mathematicians but to philosophers as well. She artfully noted: "ideological struggle with idealistic perversions of bourgeois science presupposes a command of techniques that enables one to swing the enemy's weaponry against himself". In the Comments to the "Introduction to logic and to the methodology of deductive sciences" by A. Tarski she called logical positivism (to which school Yanovskaya insisted that A. Tarski belonged) "the blatant type of philosophical conservatism". Thus Yanovskaya killed two birds with one stone: she paid tribute to the ideological requirements along with making accessible books of primary importance to the Soviet academics.

Surely, some relapses occurred even in the mid-1950's and later. In the "Logic" textbook published in 1956 (75,000 copies in circulation) she mentioned the "materialists" Lomonosov, Radishchev, and the "revolutionary democrats" Herzen, Belinsky, Chernyshevsky, Dobrolyubov etc. as great contributors to the development of logic (though many of those persons never touched logic at all). On the other hand N.A. Vasiliev – an original logician who is now considered to be a forerunner of paraconsistent (and rarely multi-valued) logic -- was called an idealist. N.A. Vasiliev's interpretation of the negative judgments (for details see [Bazhanov 1988] or [Vasiliev 1989]) was called "idealistic…mysticism and popovshchina (religious

superstition)" [Logic 1956, p. 95], but such accusations and arguments were being put forward less and less often (well trained logicians in the early 1960's were prone to accuse Vasiliev, even in the fundamental Philosophical Encyclopedia, as a Kantian -- a pretty grave accusation at that moment; see [Smirnov, Styazhkin 1960, p. 228]). Original research and textbooks took on a more serious character without any mentioning of recent ideological campaigns. The phenomenon of the "ideologized science" -- common for the totalitarian regimes -- was nearly dead in the USSR of the late 1950's - mid 1960's.

Yanovskaya did a lot for the demise of this phenomenon, for she taught students and colleagues to take the path of unbiased science -- the analysis of "acceptable" modes of reasoning and pursuit of truths rather than a quest for hidden followers of the bourgeois science.

After 1959 and until her death in 1966 Yanovskaya held the Chair of Mathematical Logic at Moscow State University (opened March 3, 1959). She did much to establish this position and eventually her efforts succeeded due to her high authority (both as an Party veteran and a logician). Despite the tragic life and fate of her mentally ill son, Yanovskaya paid much attention to her numerous pupils and fostered logical investigations in the USSR – apparently absolutely forgetting what she had intensively written and proclaimed only 15 years before. Most of the Soviet logicians who started their careers in the 1950's were indebted to her for support, education, and the opportunity to access knowledge about the achievements of Western colleagues concealed behind the dense iron curtain.

One can judge that due to her firm Party position and "glorious" Communist past, Yanovskaya got much more direct access to the "spetskhrans" (special collections of books open only to selected persons whose commitment to Communist ideas were indubitable)" than the rest of her colleagues. Her brilliant mathematical education that she received in Novorossiisky University, along with her desire and ability to acquire new ideas rather than casually discard them as "idealistic" -- all these tenets served as a sort of catalyst for the restoration Yanovskaya underwent in mid 1940's - 1950's, as well as the following revival of logic in the Soviet Union. Perhaps Yanovskaya was the first scholar who, according to V.N. Sadovsky [Sadovsky 1993, p.160], virtually pulled themselves out of the depths of Marxists dogmatism and, through vigorous self-education, dragged themselves up to the contemporary level of logico-philosophical research.

I do not know how Yanovskaya evaluated her 1930's works and activity -- likely not in the same vein as in her later years. Nevertheless, during her "second period of life" Yanovskaya did a great deal for the development of logic in the USSR, and her name will remain in the memory of grateful pupils and descendants (see [Trakhtenbrot, 1997]).

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