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# IN MEMORIAM

## Fedor Andreevich Medvedev (1923–1993)

The prominent Russian historian of mathematics, Fedor Andreevich Medvedev, died on February 5, 1993. For more than three decades, he made important and extensive contributions to the history of function and set theory, functional analysis, and the foundations of mathematics. His last years revealed his ability to tackle philosophical problems in mathematics including the background of nonstandard analysis and the infinite in mathematics. Unfortunately, due to financial problems within the Russian Academy of Science, some of his last works were not published.

Medvedev was born on February 18, 1923, in the region of Kozelsk, an old Russian town known for its heroic resistance to Mongol invasion in the 13th century. In 1952, after graduating from the Pedagogical School of Kaluga, he began his career as a teacher of mathematics in a little rural school. When, in the summer of 1955, a doctoral program in the history of science and technology was announced at the Moscow Institute for the History of Science, he became one of its first graduate students. In 1963, after eight years of hard work, during which he studied not only mathematics and its history, but a number of foreign languages and philosophy, he completed his dissertation on the history of function and set theory in Russia, a subject motivated by his adviser, A. P. Yushkevich (1906–1993). Two years later, in 1965, Medvedev's first masterpiece, *The Development of Set Theory in the 19th Century* [11], was published. This was neither a mere phenomenological description of a step-by-step development nor an adroit scissors-and-paste compilation. Rather, in this book, Medvedev demonstrated his own powerful and original method of exposition and analysis: he took a very limited range of problems of key importance and then treated them with such a degree of precision and accuracy that they required neither addition nor revision. In his first work, in particular, he broke down a traditional view of the history of set theory, as emerging solely out of G. Cantor's concerns with trigonometrical series, and argued for the existence of a second source, namely, R. Dedekind's works on algebra and the foundations of mathematics.

In 1974, Medvedev published his second monograph, entitled *The Development of the Notion of the Integral* [22]. There he dealt with the origins of integral methods from antiquity up to the modern treatment of the subject in functional analysis. The integral in its relation to measurement and measure, and not necessarily to differentiation, formed the central idea of this book.



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The years from 1974 to 1976 were among his most productive. In 1975, he published *Essays on the History of Real Function Theory* [29] (the English translation of which appeared in 1991 as *Scenes from the History of Real Function Theory*) [63], and in 1976, his *French School of Function and Set Theory at the End of the 19th—the Beginning of the 20th Century* [30] appeared. Both works stressed the continuity in the development of the subject from the 18th century up to the 1930s, contradicting some then current claims that its origins were no earlier than Dirichlet's papers. Medvedev included a suggestive chapter in [30] on what is now called "the social history of mathematics," dedicated to the comparison between trends in mathematics, as promoted at the École polytechnique and the École normale supérieure during the 19th century.

The 1980s marked a shift of emphasis in Medvedev's work. During this period, he paid closer attention to the minute logical analysis of hidden presuppositions which lay behind theoretical mathematics. His book of 1982, *Early History of the Axiom of Choice* [39], resulted from this new research focus and appeared concurrently with publications on the same subject by G. H. Moore (1982) and J. Cassinet and M. Guillemot (1983).

Medvedev then turned in 1985 to the work of G. Cantor and provided translations of his works on function and set theory into Russian with thorough commentaries (see [48]). An accurate study of Cantor's biography and treatises provoked his suspicion as to the impact of theological ideas on Cantor's activity as a mathematician. In a series of subsequent papers, he strongly opposed this point of view (for example, [49; 51]).

Medvedev's last papers on the infinite in mathematics, although not well known to historians, are worthy of mention since they exemplify his original treatment especially of ancient mathematics. According to Medvedev, the notion of the finite could not be logically separated from that of the infinite, and consequently, the latter was, in fact, implicitly used by the Greeks in mathematical reasoning, while they avoided any reference to its actuality.

Not only Medvedev's written records but also his lectures delivered during congresses and conferences contributed largely to the history of mathematics. His gentle and friendly comments were always highly appreciated by colleagues working alongside him at the Institute and at Moscow University. From 1989, he served on the editorial board of *Historia Mathematica*.

In his writings as well as in personal conversations, Medvedev often spoke of the crucial role of practice in the development of mathematical notions and methods. However, practice itself was conceived by him in a somewhat Platonic way, that is, as shaping material objects according to the laws of order and harmony, of which the laws discovered by mathematicians were explicit manifestations. A passionate lover of nature, who spent his sabbaticals on long walks in Russian forests, Medvedev devoted his scientific activity to trying to understand how the order and harmony he observed in nature entered into mathematics.

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Abbreviations used: *TIIEiT, Trudy Instituta Istorii Estestvoznaniya i Tekhniki* [*Proceedings of the Institute for the History of Science and Technology*]; *IMI, Istoriko-Matematicheskie Issledovaniya* [*Studies on the History of Mathematics*]; *IiMEN, Istoriya i Metodologiya Estestvennykh Nauk* [*History and Methodology of Sciences*]; *VIEiT, Voprosy Istorii Estestvoznaniya i Tekhniki* [*Problems in the History of Science and Technology*].

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