

**Nalimov V V.** *The application of mathematical statistics to chemical analysis.*  
 Oxford, England: Pergamon Press, 1963. 294 p. [Translation of: Nalimov V V.  
*Primenenie matematicheskoi statistiki pri analize veshchestva.* Moscow, USSR: Nauka,  
 1960. 430 p.]  
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The book deals with the application of the methods of mathematical statistics to chemical and physical methods of analysis. Numerous examples, including numerical calculations, are given. [The SCI® and SSCI® indicate that this book has been cited in over 955 publications.]

## Return from Exile

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This is my first book written after my return from exile. (I spent more than 18 years in Stalin's camps, prison, and exile.) While in exile I worked in laboratories of geological and metallurgical enterprises and paid special attention to the metrological aspects of analytical chemistry (including also analysis by physical methods, primarily emission spectroscopy).<sup>1,2</sup> I have accumulated vast experimental data and experience in treating it. On my return to Moscow in the mid-1950s, I decided to generalize the data and to apply theoretical interpretation to them. Earlier I made use of this material while preparing my thesis for the title of the Candidate of Science. The task was not easy to perform, since in our country the attitude towards application of probability and statistics was sharply negative then. Furthermore, it also had a philosophical flavor.

At the same time, the book emphasizes practical application. The principal theorems of mathematical statistics are not proved but explained with examples taken from research connected with chemical analysis. Theoretical problems are considered insofar as they are necessary for an understanding of the metrological aspect of the problem considered.

However, the work is not written in cookbook fashion. I attempted to show that it is possible to construct a single metrological theory of analytical chemistry. I was especially interested in such problems as the possibility of intralaboratory comparison of the analyses made by the same method and those made by different methods in different laboratories.

The essential feature was to me the use of experimental design and analysis of variance. It was important to show the nature of systematic errors and slips. I was aware of the fact that any application of mathematics always proceeds from some prior initial premises, and it was important for me to show to what degree premises developed in mathematical statistics by R. Fisher could be realistic when applied to the problems of analytical chemistry.<sup>3,4</sup>

I feel that perhaps the success of the book is explained by the fact that a variety of concrete practical techniques are intermittent with theoretical explanations of methodological aspects, which allows the reader to apply the techniques to other problems not included. I was glad the book was published so quickly in English, but I was also upset that it was not discussed with me, so I did not have a chance to correct misprints in the Russian text.

It is only natural that having been isolated from scientific work for a long time, I was eager to have the reaction of a well-known scientist. I contacted Professor A.N. Kolmogorov. He was laconic. But he invited me to join the staff of Moscow University as his deputy in the newly organized Intradepartmental Laboratory of Statistical Methods. That was an extraordinary proposal: I was an almost unknown figure, with a dubious political record.

It changed my life: I got a chance to go into serious scientific research. I worked there for 24 years, first being engaged in experimental design and the study of scientometrics. The direct continuation of this book was the book devoted to statistical methods for design of extremal experiments (together with N.A. Chernova). It has been cited in over 1,045 publications.

[Eugene Garfield: On his first visit to the US, Professor Nalimov and his wife, Zhanna Drogalina, visited Philadelphia as our guests. We had met many times before in Moscow, especially at the Moscow Book Fairs. During Nalimov's visit to the US, Andrei Sakharov was being honored at a reception at the Library of Congress. The Librarian, James H. Billington, who speaks Russian, graciously received the Nalimovs. During the library tour, I introduced the Nalimovs to Sakharov, much to the dismay of the interpreter. However they managed to share some reminiscences of old friends.

I have referred to Nalimov's works in many essays over the years, most comprehensively in a tribute to him published in 1982.<sup>7</sup> ISI Press<sup>8</sup> has published translations of four of his books.<sup>9-11</sup>]

- Friedrich K & Lassner E. Zur Bestimmung von Sauerstoff, Wasserstoff und Stickstoff in hochschmelzenden Metallen. II. Ermittlung optimaler analysenbedingungen für die Sauerstoff-Bestimmung in Molybdän nach dem Vakuumextraktionserfahren (Determination of oxygen, hydrogen, and nitrogen in high-melting metals. II. Study of optimal conditions for determinations of oxygen in molybdenum using a vacuum extraction process). *J. Less-Common Metals* 13:171-8, 1967. (Cited 5 times.)
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- Nalimov V V. *Faces of science.* Philadelphia: ISI Press, 1981. 246 p. (Cited 15 times.)
- \_\_\_\_\_. *Realms of the unconscious: the enchanted frontier.* Philadelphia: ISI Press, 1982. 320 p. (Cited 10 times.)
- \_\_\_\_\_. *In the labyrinths of language: a mathematician's journey.* Philadelphia: ISI Press, 1981. 246 p. (Cited 10 times.)
- \_\_\_\_\_. *Space, time, and life: probabilistic pathways of evolution.* Philadelphia: ISI Press, 1985. 110 p.

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