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 methodological aspects of analytical chemistry (including also analysis by physical methods, primarily emission spectroscopy). 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 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 only as they are necessary for an understanding of the methodological 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 methodological theory of analytical chemistry. I was especially interested in such problems as the possibility of internal laboratory comparison of the analyses made by the same method and those made by different methods in different laboratories.

The essential feature was to use 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 in chemical analysis, methods almost always precedes 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.

I feel that perhaps the success of the book is explained by the fact that a variety of concrete practical techniques are intertwined with theoretical explanations of methodological aspects, which allow 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 Interdepartmental Laboratory of Statistical Methods. That was an extra-dinary 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 scintometrics. The direct continuation of this book was the book devoted to mathematical methods for design of extremal experiments (together with V.I. Viner). 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, Andrew Sobhanow 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 Fidelav, 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. [ISI Press has published translations of four of his books.][1]