

# A Conversation with Boris Vladimirovich Gnedenko

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**Abstract.** Boris Vladimirovich Gnedenko, Member of the Academy of Sciences of the Ukrainian SSR, and Head of the Department of Probability Theory at the Moscow State University, turned 80 on January 1, 1992. He is internationally acclaimed as one of the outstanding mathematicians in the field of Probability Theory. He was a graduate student under the direction of A. Ya. Khinchin and A. N. Kolmogorov, with whom he also developed a close personal friendship. In the spring of 1991 he visited George Washington University and the University of North Carolina at Chapel Hill. The following interview, about his life and mathematical work, took place in Washington, D.C., on May 25, 1991. Apart from Gnedenko himself, present were Nozer Singpurwalla, of George Washington University, Richard Smith, from Chapel Hill, Gnedenko's son Dimitri, who is also a probabilist at the Moscow State University, and Igor Ushakov from Moscow, visiting George Washington University.

The following material on Gnedenko's contributions to statistical science has been abstracted from tributes paid to Gnedenko on his 50th, 60th and 70th birthdays respectively, by Belyaev, Gikhman, Kolmogorov, Korolyuk and Solov'ev, and published in *Uspekhi Math Nauk* [English translation: *Russian Mathematical Surveys*].

In 1937, under the influence of Khinchin and Kolmogorov, Gnedenko became interested in limit theorems for sums of independent random variables. In the subsequent years, drawing upon results of de Finetti, Kolmogorov and Lévy, for the class of infinitely divisible distributions, he derived a series of results in the above topic that are now regarded as his most important contributions to the theory of probability. Gnedenko's research into limit theorems were summed up in a (1949) monograph with Kolmogorov, entitled *Limit Distributions for Sums of Independent Random Variables*. This monograph was awarded the Chebyshev prize in 1951 and was translated into many languages, English, German, Polish, Hungarian and Chinese, to name a few. This monograph resolved the classic problems of limit theorems for sums of independent random variables, begun by Chebyshev, Lyapunov and Markov.

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During 1940-1943, he published several papers on limit distributions for the maximum term of a series of random variables, where he obtained the most definitive results on the necessary conditions of convergence and the domains of attraction of each of the possible limit laws. His work was the first mathematically rigorous treatment of the fundamental limit theorems of extreme value theory. In its influence on the probabilistic theory of extremes, the paper set the agenda for the next 30 years.

In 1941 he published a paper, "Geiger-Muller Counters," in the *Journal of Experimental and Theoretical Physics*. This paper is a landmark in what is now known as the theory of reliability. Gnedenko's contributions to the development of this subject and his role in evolution of the Soviet school of reliability are covered by Professor Igor Ushakov's postscript at the end of this interview.

In 1950, Gnedenko's interest turned to problems in mathematical statistics. Kolmogorov and Smirnov had proved the first theorems establishing the limit distributions for the maximum deviation of an empirical distribution function from the theoretical and for the maximum difference of empirical distributions from two independent samples. Gnedenko succeeded in devel-