J. Neyman

JERZY NEYMAN

(1894 - 1981)

Jerzy Neyman* was born on April 13, 1894, in Bendery in Russia. Both his grandfathers were landowning gentry. For their participation in the Polish Uprising of 1863 their lands were confiscated by the tsarist authorities and the families sentenced to exile in Siberia and Tashkent. He graduated from a secondary school and the University of Kharkov. In 1921, after the World War I, he moved to Poland where he resided in Warsaw until 1934.

In Warsaw, in the twenties and thirties, measure theory and set theory were receiving exciting developments. The dominant figure in mathematics was Wacław Sierpiński whose outstanding research aroused Neyman's interest in pure mathematics. After receiving his Ph. D. degree in mathematics from the University of Warsaw, Jerzy Neyman lectured on statistics at the University of Warsaw, at the Jagiellonian University in Cracow, and at the Warsaw Agriculture University.

The range of his scientific interests was already very broad. He was interested in problems related to social insurance, in socio-economic problems, and also in the application of statistical methods to the solution of certain problems facing the chemical industry. He cooperated with the Central Statistical Office and with various agricultural institutes. He developed especially lively activity as the head of the Statistical Laboratory of the M. Nencki Institute of Experimental Biology. Many of his works were devoted to statistical research of bacteria and viruses as well as statistical methods in agriculture experiments.

During this period, Neyman's contacts with the English School of Statistics immensely influenced his scientific research. Starting from 1924, when Neyman received a Polish Government scholarship, he visited London many times. In the decade 1928-1938, Jerzy Neyman engaged with E. S. Pearson in joint studies aimed at building a mathematical theory of testing statistical hypotheses. This cooperative study resulted in a number of fundamental papers in mathematical statistics. Jerzy Neyman, who had a strong contact with pure mathematics, and E. S. Pearson, who had great feelings of essence of statistical problems, supplied the statistical theory with mathematical rigour

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* While staying in Poland, Neyman used his full surname – Spława-Neyman.

so that statistical problems could be formulated as certain mathematical extremal problems. This opened up a new chapter in mathematical statistics and outlined the trends for its further development in the following decades.

In 1934 Jerzy Neyman left Poland. At first, he settled in London where he lectured at the University College, and next, in 1938, he moved to the United States to Berkeley, California. Since 1930's mathematical statistics in the United States went through a period of spectacular growth. These conditions let Jerzy Neyman develop his research activities on a grand scale — the possibility he had neither in Poland nor in England. In Berkeley, he created the Department of Statistics and the famous Statistical Laboratory. Neyman has been the Director of this Laboratory since 1938 until his death.

He gathered a faculty of various nationalities including D. Blackwell, L. Le Cam, F. N. David, E. Lehmann, M. Loeve, H. Scheffé, E. L. Scott and distinguished visitors from all continents. The Department he created became the leading one and the largest centre of statistical research and teaching, and is so up to day.

During the American period, the favourite research of Jerzy Neyman, which could be best described as model building, leads — using his own words — "to fathom the chance mechanism of phenomena in the empirical world". His interest in model building started from a practical problem of the distribution of the number of larvae on small plots of an experimental field and eventually led to the idea of clustering. This idea appears many times, always creatively used for a number of purposes such as cosmology, carcinogenesis or epidemiology. In its abstract formulation, it leads to the development of a class of stochastic processes, known today as the *Neyman-Scott processes*. When constructing various statistical models of empirical phenomena Neyman was perhaps, more than others, concerned with checking their validity against empirical data. For instance, he spent many hours at the Lick Astronomical Observatory inspecting the astronomical data. He also designed experiments to get data needed for the verification of models of carcinogenesis and weather modification.

Jerzy Neyman had a big influence on the planning and organization of statistics. The unique achievement of Neyman was the organization of the six Berkeley Symposia on Mathematical Statistics and Probability held during the period 1945-1971. Jerzy Neyman gave also the main impulses to the creation of the International Association for Statistics in the Physical Sciences in 1963, which was transformed twelve years later into the present Bernoulli Society — the world wide society of probabilists and statisticians.

His papers on philosophy of sciences, in which he strongly advocates for probability to be treated as a mathematical idealization of relative frequency, have taken a permanent place in literature.

Jerzy Neyman was also known throughout the world as a magnificent teacher and a great friend of young people. He invited to Berkeley young

scientists from various parts of the world providing opportunities for them to deepen their knowledge and to arouse their enthusiasm and fondness for research.

Polish scientists are greatly indebted to Jerzy Neyman for his deep interest in the development of statistics in Poland during his whole scientific career. At first, as a result of his twelve years of efforts, he created in Warsaw a modern department of statistics, but its activity came to an end with the second world war. After the war, Neyman made repeated visits to Poland, lecturing on statistics at various universities and institutions. In the early 60-ties he was considering to accept a position of a professor of statistics at the Jagiellonian University in Cracow (the first offer of a professor-ship by the Polish authorities was made to him in 1938).

Due to his personal efforts a number of Polish scientists and graduate students were able to do research work in statistics in Berkeley, and to participate in all but the first Berkeley Symposia. Neyman has encouraged us to organize the Journal of Probability and Mathematical Statistics, emphasizing the influence it may have on the development of statistics and probability in Eastern Europe.

One of the scholars, who fascinated and inspired Neyman mostly, was the great Polish astronomer N. Copernicus. To celebrate the 450-th anniversary of Copernicus' birth, Neyman, being still in Poland, gave a talk in the Bydgoszcz opera. 50 years later, in the United States, to celebrate the 500-th anniversary of Copernicus' birth, he edited a book — *The Heritage of Coperni-cus: Theories "Pleasing to the Mind"*.

Although Jerzy Neyman has devoted his life fully to the scientific research, he was also deeply involved in the social and political issues of our times. He was totally convinced of the importance of intellectual activity and advocated that the international intellectual community played a more decisive role in the world affairs. He never hesitated himself to take the risk and responsibility to express his views in private or in public.

Jerzy Neyman's scientific achievements received a general recognition. He was given five honorary doctorates: from the University of Chicago, University of California in Berkeley, University of Stockholm, University of Warsaw, and the Indian Statistical Institute. He was Honorary Fellow (and also medalist) of the Royal Statistical Society (London) and of the London Mathematical Society as well as of the Polish Mathematical Society. Jerzy Neyman was a member of the International Astronomical Union and Honor-ary President of the International Statistical Institute. He was a member of the U.S. National Academy of Sciences and Foreign Member of the Swedish and Polish Academies of Sciences. In 1968 Jerzy Neyman received the U.S. National Medal of Sciences.

Witold Klonecki and Kazimierz Urbanik