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PAUL LÉVY, 1886–1971

In 1919, at the age of 33, Paul Lévy was asked to give three lectures on Calculus of Probabilities at the Ecole Polytechnique. This began the heroic period in Probability throughout which Paul Lévy was at the center of the stage: During the following twenty years, "Calculus of Probabilities"—which consisted mainly of a collection of small computational problems—became "Probability theory," a full-fledged branch of mathematics, partaking of and contributing to the torrent of twentieth century mathematics, with concepts, problems and results constantly born from its own intuitive background.

In 1919, Paul Lévy was already a renowned mathematician, with over twenty publications between 1905 and 1914, a period interrupted until 1918 by the war, which he spent in the French artillery. Born in Paris in 1886, son and grandson of mathematicians, he received the usual—in France—scholastic honors for the exceptionally gifted: Prix du Concours Général in greek and also in mathematics, Prix d'Excellence at Lycée Saint Louis in mathematics and also in physics and chemistry, first at the Concours d'entrée of Ecole Normale Supérieure and second at the Concours d'entrée of Ecole Polytechnique; he entered the latter, published in 1905 his first paper—on semiconvergent series—and finished in first place. He spent a year doing his military service and three years at Ecole des Mines. During these three years, 1907 to 1910, he followed courses at the Sorbonne by Darboux and by Picard and at the College de France by Humbert and by Hadamard. In 1910, influenced by Hadamard, he began research on Functional Analysis of Volterra and on Green functions, his main mathematical preoccupation between 1910 and 1914, and from 1919 to 1922. He obtained his Docteur ès sciences degree in 1912 and his thesis became the core of his 1922 book *Leçons d'Analyse fonctionnelle*, which in turn formed the core of his book *Problèmes concrets d'Analyse fonctionnelle* published in 1951.

In 1913 he was appointed Professor at Ecole Nationale des Mines and from 1920 to 1959 he was Professor of Analysis at Ecole Polytechnique. In 1964 he was finally elected to the Académie des Sciences. Beginning in 1905 and continuing almost to the time of his death on December 15, 1971, he published 10 books and over 270 papers, of which over 150 are in Probability theory. Here we shall limit ourselves to some of the highlights of his probabilistic thought.

Paul Lévy was a painter of the probabilistic world. Like the very great painting geniuses, his palette was his own and his paintings transmuted forever our vision of reality. Only a few of his paintings will be described here—some of those which are imprinted indelibly on the vision of every probabilist. His three main, somewhat overlapping, periods were: the limit laws period, the great period of additive processes and of martingales painted in pathtimes colors, and the Brownian pathfinder period.

The three lectures of 1919 were requested to be on "notions of Calculus of Probabilities and the role of Gaussian law in the theory of errors." The books consulted by Paul Lévy were those by Bertrand, by Borel and, especially, by Poincaré; the results of the Russian school—by Tchebichev, Liapounov and Markov, were not even mentioned therein. A glance at Poincaré's book shows how its critical reading