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Antonín Špaček

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By

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ANTONÍN ŠPAČEK was born on October 11, 1911 in Bratislava, Czechoslovakia. There, very near to Vienna and Budapest, he spent his childhood, had his elementary schooling and acquired his first knowledge of the German and Hungarian languages.

Afterwards, his father moved to Bohemia and worked in the West Bohemian Kaolin factory at Horní Bříza. Therefore ŠPAČEK studied at a technical secondary school at Plzeň (Pilsen). After finishing this school in 1932 he rendered his army service and then he began to work in the same factory as his father, since it was nearly impossible for a worker's son to find funds for further studies.

However, his intense interest in study, together with his strong will, overcame even this difficulty: In the year 1935 he entered the faculty of natural sciences at the Charles University in Prague where he studied mathematics and physics without interrupting his work in the factory until the year 1939 when the Nazi occupation closed all Czechoslovakian universities.

During World War II, he remained in the employ of the West Bohemian Kaolin factory. However, he continued his studies by himself. During and despite the war he even wrote his thesis. After liberation he presented it under the title "On complete extension and covers of metric spaces with respect to a given set of metrics". After passing the doctor's examinations and defending his thesis, he became in February, 1946, "doctor rerum naturalium", RNDr.

ŠPAČEK is known to the mathematical community only as a mathematician. Nevertheless, his first works were devoted to technical sciences, in particular to radio-engineering. Already in October 1932, shortly after finishing his secondary studies, he applied for a patent for a "Tube amplifier" and even before World War II he was in negotiations with the Dutch firm Philips concerning his patents. Also in the kaolin factory he made several improvements in solving problems of heat-resistent materials. These solutions are closely connected with the grain structure of the ingredients used.

His interest in radio-engineering brought ŠPAČEK in the year 1946 to Tesla Electronic Corporation where he began to work on problems of wide-band amplifiers (cf. [*1*] and [*2*]). His deep knowledge of mathematics enabled him to obtain also other original results in radio-engineering, some of them patented.

Subsequently he turned to statistical quality control methods. In this connection he visited factories in order to help with the practical introduction of these methods; his theoretical work resulted in papers [*3*] through [*6*]. From statistical quality control he extended his interest to statistical decision functions and to the theory of games.

ŠPAČEK realized quite soon the importance of probabilistic methods in technical sciences. Therefore he concentrated his attention to abstract probability theory, in particular to stochastic processes and to problems of decision.

ŠPAČEK's importance for Czechoslovak probability theory lays not only in his theoretical contribution but also in his organization results. During his employment in Tesla Electronic Corporation and later in the Research Institute of Communication Engineering he succeeded in forming around himself a whole group of mathematicians working in probability theory. This group under his leadership spent the years 1955—1958 in the Institute of Radio-Engineering and Electronics of the Czechoslovak Academy of Sciences. When the Czechoslovak Academy of Sciences established in the year 1959 a new working place, the Institute of Information Theory and Automation, the whole group was transferred to this institute and ŠPAČEK was appointed the executive vicedirector.

To form a group was a great success, but it was much more difficult to find a new scientific program for it. However, ŠPAČEK did it. He lectured about his results and about his program at international meetings in Prague, Berlin and Wroclaw in the year 1954. The interest in these types of problems among the scientists assured him that his way was right, and suggested him to organize regularly international meetings in Czechoslovakia. This was accomplished under the sponsorship of the Czechoslovak Academy of Sciences. And thus the First Prague Conference on Information Theory, Statistical Decision Functions and Random Processes was held in 1956. There the program of ŠPAČEK's group was proclaimed and is contained in written form in the Transactions of the First Prague Conference. The Second Prague Conference was three years later and the Third Prague Conference which was again prepared under ŠPAČEK's leadership, was held the year after his death.

Let us briefly touch the problems ŠPAČEK worked on. Having been very well acquainted with applications of theoretical results in physics, he paid great attention to almost sure convergence and to conditions for almost sure validity of some properties (see [*10*], [*12*], [*15*], [*16*], [*17*], [*20*], [*21*], [*23*], and [*25*]). Another centre of his interest were decision problems of non-parametric type, when the statistician is faced many times with the same problem and thus can utilize his knowledge of previous results and improve in an efficient way his decision. To these problems, for which ŠPAČEK coined the name experience theory problems, he devoted a great part of his work (see [*9*], [*11*], [*13*], [*18*], [*19*], [*22*], and [*24*]). In order to be able to handle these problems in the general way, ŠPAČEK dealt also with random variables with values in abstract spaces. In the last years, ŠPAČEK worked on problems closely connected with cybernetics. And again, as it was for ŠPAČEK quite natural, he went his own way. He was very much fascinated by problems concerning the development of theories by "thinking machines". For this purpose he began to build a new theory, the main aspect of which was statistical estimation of provability. He was very optimistic about the further developments of this theory, however, succeeded only in writing three fundamental papers (see [*26*], [*28*], and [*29*]).

It is perhaps too soon to evaluate ŠPAČEK's contribution to mathematics and cybernetics. It is quite sure that his theoretical results will be in some years generalized and strengthened. Nevertheless, his priority of formulating important basic ideas will be appreciated forever. Being the "man of ideas", not the "man of new proofs of old results" or the "man of weakened assumptions", he stuck to papers with clear-cut problems. He had the rare sense of interpreting his ideas on quite simple examples, which read cursorily could sometimes seem to be oversimplified. One can penetrate into the depths of his thoughts only by very cautious reading of his papers. It may be sometimes very difficult to trace his great influence on all the members of his group, looking in the papers of his colleagues, but it can be witnessed by all of them.

ŠPAČEK's work was also appreciated by official circles. In the year 1960, he was elected corresponding member of the Czechoslovak Academy of Sciences and, several days before the insidious cancer tore him out from among us at an early age of 50 years, he was honored by the President of the Czechoslovak Socialist Republic with the Order of Labor.

During his short scientific life, ŠPAČEK met many mathematicians, foreign as well as Czech. He was very well liked by everyone who knew him. Transparently honest, sincere and deeply interested in other human beings, he possessed also a remarkable vitality and merry spirit which led him to make friends virtually at the very first encounter.

He was appreciated not only as an outstanding scientist but also as a gay companion who always contributed from his ceaseless source of gentle humour to the good mood of all. I am sure that those who met ŠPAČEK even only once will remember him forever.

With RNDr. ANTONÍN ŠPAČEK the whole world lost not only a good mathematician but also a man of pure character and a great fighter for peaceful friendship and collaboration between all people and nations.

List of papers by Antonín Špaček

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