Zygmunt Zahorski – An Obituary

Professor Zygmunt Zahorski passed away on 8 May, 1998 in Gliwice (Silesia, Poland) after a long illness. He is survived by his wife, Janina, daughter, Elżbieta and son Jan.

Zygmunt Zahorski was born on 30 April, 1914 in the small village of Szubina (about 40 miles north of Łódź). His father died when he was only 7 years old and from that time forward the entire family (mother, younger sister and he) suffered from the lack of basic necessities. In spite of this fact, Zygmunt Zahorski finished secondary school in 1932 and started his studies in Warsaw. At first he worked at the aeronautic faculty of the Warsaw Technical University (because he knew that these studies were close to mathematics) where he studied for about two years. Next he studied at the mathematical faculty of the University of Warsaw. During that time he even spent six weeks in a shelter for the poor and unemployed, because he didn't have enough money to pay for dormitory space. He finished his mathematical studies in 1938. Beginning in 1937 he was employed as an assistant at the Military College of Aeronautics in Warsaw. At that time he worked on a doctoral dissertation under the direction of Professor S. Mazurkiewicz. But when the Second World War broke out his position at the college and the possibility of earning a doctorate vanished. In September 1939 Zygmunt Zahorski moved to Lwów, where the University was still functioning (as a Polish University before 17th of September and as Soviet one thereafter) and he became an assistant to S. Banach. At the outbreak of the German - Soviet war in 1941 he worked at the Philips radio engineering factory. In 1942 he contracted a very severe case of tuberculosis. He underwent a serious surgery which, at that time, was the only medical treatment for tuberculosis and, according to the surgeons, his chances of survival were almost zero. However, he improved very slowly and even managed to work on mathematical problems during his hospitalization. His scientific work in the period 1939-45 was so important that, soon after the war (February 1946), he earned a doctorate in mathematics under Professor T. Ważewski at Jagiellonian University in Cracow presenting a different thesis than the one he wrote before the war, and in December 1947 he finished his habilitation. (Unfortunately, this dissertation was not published in its entirety.) In 1948 Zygmunt Zahorski received the title of an extraordinary professor and moved to Łódź, where he worked until 1970. He became a full professor in 1960 after proving the Kolmogorov hypothesis on permutation of trigonometric series (although the authorities of University of Łódź had recommended him for this title six years earlier). In 1970 he moved to Gliwice as professor at the Silesian Technical University. He retired in 1984.

His scientific activity was connected with real and complex analysis and trigonometric series. He attacked mainly very difficult problems. Among his results the most widely know and most frequently quoted is the paper, "Sur la premiere derivee", Trans. Amer. Math Soc., **69**, No. 1, p. 1–54, where he introduced a hierarchy of classes of sets M_k, $k = 0, 1, ..., 5$ and a related hierarchy of classes of functions $\mathcal{M}_k$, $k = 0, 1, ..., 5$ in an attempt to characterize the Lebesgue sets for derivatives of continuous functions (i.e., sets of the form $\{x : f'(x) > a\}$ and $\{x : f'(x) < a\}$). Among his important publications concerning derivatives is the paper, "On the set of non differentiability points of a continuous function" (in Russian), Mat. Sbornik **9**, 1941, p. 487–510. Other remarkable results are contained in "Sur les ensembles des points de divergence de certaines integrales singulieres", Ann. Soc. Pol. Math. **19** (1946), p. 66–105. Zygmunt Zahorski was really proud of one result; the permutation theorem (formulated by Kolmogorov in 1927 without proof) presented in "Une serie de Fourier permutee d' une function de classe L_2 divergente presque partout", Compt. Rend. de l' Acad. des Scien. Paris **251**, 1960, p. 501–503. He used to say that he was able to find a suitable permutation although A. M. Garsia in "Monotonicity of certain functions under rearrangements" Ann. Inst. Fourier Grenoble, **24** (1974) proved that the probability of finding such a permutation is zero.

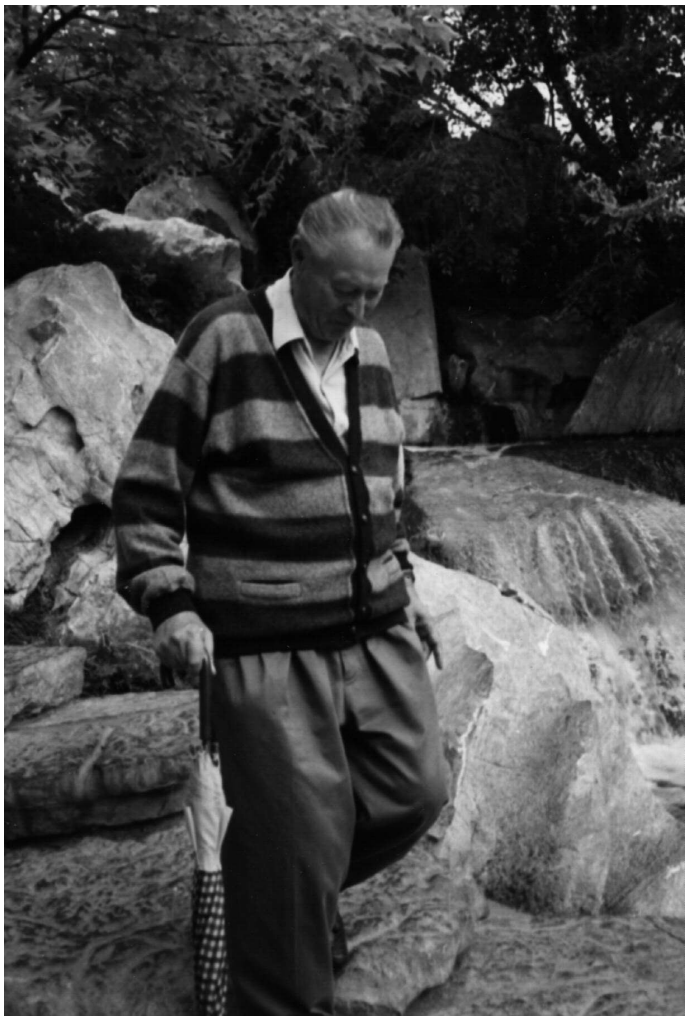
Zahorski also established some very interesting results concerning Jordan curves, among other special curves, with tangent lines assuming all directions on every arc as well as results on spherical indicatrix (unpublished).

Zygmunt Zahorski's main goal in his mathematical career was to prove the Lusin hypothesis, that the Fourier series of a square integrable function converges almost everywhere. Even after the positive solution of L. Carleson (1966) he didn't cease his own efforts to prove the theorem using his methods. Now we know he will never succeed.

As he put it, doing mathematics was an addiction to him. He was overwhelmed that from basic and commonly understandable expressions like "if P, then Q" or "P or not P" it was possible to construct beautiful arguments and theorems. This is similar to the fact that from plain stones and bricks people constructed the Pantheon and St. Peter's Basilica or that the Iliad, the Divine Comedy and Faust consist of aesthetically indifferent syllables.

It is difficult to overestimate his influence on contemporary real analysis and also on mathematicians at Łódź, where he spent 22 years of his creative professional life. He was continually working on his great mathematical purposes, but he always had time to discuss mathematics with pupils and colleagues. These discussions were often fruitful for those involved. Consequently it is rather ironic that he never wrote a joint paper.

The University of Łódź, with the sponsorship of Professor Władysław Wilczynski, conferred on Professor Zygmunt Zahorski an honorary doctorate degree (doctor honoris causa). He was an extraordinary man who contributed much to mathematics and to those who were fortunate enough to have known and worked with him. He will be missed by all who are familiar with his work but especially by those who knew him personally.



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