Chapter 3

The legacy of Professor Jan Stanisław Lipiński for the sake of the development of mathematics in Gdańsk (1969 - 1998)

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In the post-war years, mathematics in Gdańsk was concentrated at the Technical University. The professors who pioneered the development of mathematics there were Eustachy Tarnawski and Wacław Pawelski, and a little later they were joined by Piotr Besala and Marian Kwapisz. Then at the beginning of the 1960's, the development of mathematics slowly began at the School of Teacher Education. The first titular professor at WSP (School of Teacher Education) was Ryszard Bitner, and by the mid-1960's an intensive effort was undertaken to establish a university. Great achievements in this effort were due to Professor Janusz Sokołowski, then Rector of WSP, and later Rector and Honorary Rector of the University of Gdańsk. In order to establish a firm foundation for the new university, the authorities in charge identified certain key disciplines and created significant incentives to attract strong researchers in those disciplines to work at WSP. One of those key disciplines was mathematics and in the years from 1964-1970 many strong researchers were recruited for the newly emerging center at Gdańsk. Among them were Professors Kazimierz Gęba, Andrzej Granas, Andrzej Włodzimierz Mostowski and Jan Stanisław Lipiński.

Professor Lipiński had been a professor at the University of Łódź until he joined the School of Education in Gdańsk as a professor on 1 May, 1969. Fourteen months later, on 1 July, 1970, three universities, the School of Education, the School of Economics and the Education Teachers College merged to form the newly minted Gdańsk University. It was here where Professor Lipiński spent the remainder of his rich professional career until he retired in 1998.

In this paper we focus on the scientific, educational and organizational aspects of the legacy of Professor Jan Stanisław Lipiński during his years in Gdańsk from 1969 until 1998. The period of his career at the University of Łódź before 1969 was also remarkably fruitful, but those contributions are the subject of a separate chapter.

Immediately after his employment and in his capacity as head of the Department of Numerical Methods, Professor Jan Stanisław Lipiński began fostering the development of mathematics in Gdańsk. But, in 1970 with the establishment of the University of Gdańsk, it became clear that the faculty of mathematics would need to be radically reorganized. This reorganization resulted in the establishment of the Institute of Mathematics and the clear choice for its first director was Professor Jan Stanisław Lipiński who led the Institute from 1 July 1970 to 30 September 1972. This was an extraordinarily busy and exciting period, marked by the establishment of dynamic new faculties of mathematics, physics and chemistry. Later these faculties were reorganized into two divisions, namely, the Faculty of Mathematics, Physics and Computer Science and the Faculty of Chemistry.

It is impossible to overestimate the role of Professor Lipiński played in this process. His leadership and energy were so integral to the developmental process that it is difficult to separate the achievements of the Institute from those of Professor Lipiński. Calling on his experience at the University of Łódź, he was able to anticipate and circumvent many of the problems inherent with a fast growing institution and his patience and experience proved invaluable in solving those substantive issues that did arise. Among his many other duties, he was named head of the Department of Probability Theory on 1 October 1970 and continued to serve in that capacity through the transformation of that department to the Department of Real Functions and Probability Theory in 1973 up until his retirement on 30 September 1991.

An outstanding specialist in the theory of real functions and the theory of measure and integration himself, he instilled his intellectual excitement and interest in a large active group of young mathematicians in Gdańsk. Within the workings of the Institute, he delivered a weekly research seminar that was attended by mathematics students and researchers from Łódź, Częstochowa and Słupsk as well as those from Gdańsk. The remarkably rich mathematical environment and high level of activity at Gdańsk directly resulted in four of the doctorates supervised by Professor Lipiński:

- Mieczysław Gutowski, On the derivative of functions with infinite jump, 1973,

- Zbigniew Grande, Measurability of functions defined on product spaces, 1974,
- Stanisław Wojtan, Convergence of sequences of open functions, 1974,
- Grzegorz Krzykowski, Homeomorphisms preserving Zahorski classes, 1983.

Moreover, although these four PhDs were clearly inspired by the high level of research fostered by Professor Lipiński, they only represent a small portion of the effect of that seminar on the mathematical community. For example, the Ph.D. thesis of Stanisław Wojtan contains the first correct proof of an early result of A. M. Bruckner in which Professor Lipiński discovered a significant error. While in Slovakia, Professor Lipiński in collaboration with Professor L. Misik initiated a broad study of the measurability of functions of two and several variables. These joint results quickly generated a flurry of activity by a good many mathematicians, both Polish and foreign. Among these are R. O. Davies, J. Dravecky, M. Laczkovich, and Z. Grande. Professor Z. Grande, a pupil of Professor Lipiński supervised three doctoral theses in this subject area. The first, in 1982 was written by Włodzimierz Ślęzak at the University of Poznań. The second thesis, entitled "Measurability of real functions defined on the product of metric spaces" was written by Grażyna Kwiecińska in 1984 at the University of Gdańsk, and in 2003, Professor Grande supervised the Ph.D. thesis of Katarzyna Chmielewska at the Technical University of Łódź.

The school of scientific inquiry led by Professor Lipiński has included a widely aclaimed list of senior research real analysts. Among these are Professors: Zbigniew Grande, Janina Ewert, Tomasz Natkaniec, Grażyna Kwiecińska, Aleksander Maliszewski and a host of others all inspired by the love of real functions and measure theory they experienced in Professor Lipiński's seminar at the University of Gdańsk. Not only did his practiced ability and penchant to inspire and train budding mathematicians have a major influence on the development of mathematics in Gdańsk, but also in Bydgoszcz and Słupsk. Of particular note, was his influence and contributions to the Ph.D. thesis work of Tadeusz Lipski and Zygmunt Wojtowicz.

In the main, Professor Jan Stanisław Lipiński's scientific work focused on real function theory and the theory of measure and integration. Throughout his entire tenure in Gdańsk, he taught his classes and conducted his seminars on these subjects. His scientific output encompasses more than 50 scientific papers, and he has written on such diverse topics as derivatives of real functions, continuous and approximately continuous functions, function sequences and series, approximate derivative, functions enjoying the Bolzano-Darboux property, and properties of sets associated with such functions. One highlight of Professor Lipiński's professional career is connected with the problem of

Caratheodory superposition measurability. In a series of papers and in collaboration with Canadian mathematician, K. Garg and Czech mathematician, D. Preiss he studied global and local properties of different classes of functions. Then, in 1978, and in collaboration with Zbigniew Grande, he constructed a non-measurable function that is measurable in the Caratheodory superposition sense. This example caused quite a stir in the mathematics community and is sufficiently important that it gained the permanent name as the "Polish monster". The most extensive work of Professor Lipiński's is the article, "Elements of the general theory of measure and integration," IKN, Math workbook 1, 1977.

Professor Lipiński has served on a number of Ph.D. and habilitation committees as well having served as a professional referee for several candidates for Professorships. Professor Lipiński has taught and lectured extensively at the invitation of universities in the United States, Canada, and the United Kingdom and he has served as a plenary speaker at several international and national conferences devoted to the subject matter in which he both loved and excelled. His professional colleagues abroad are and his adherents in Poland include the leaders of mature schools of real analysis, especially notable are Władysław Wilczyński in Łódź, Zbigniew Grande in Bydgoszcz and Tomasz Natkaniec in Gdańsk. Professor Lipiński's scientific achievements are widely recognized in our country and abroad and are widely cited in the professional literature. It is beyond question that in honoring Professor Jan Stanisław Lipiński we are honoring a world renowned mathematician who has made important contributions to the internationally esteemed Polish school of real functions initiated by Wacław Sierpiński, Zygmunt Zahorski and Roman Sikorski.

Professor Jan Stanisław Lipiński was a great teacher. He regarded teaching as a very important part of his activities. Students took a lot of interest in his lectures and they also highly praised them. He was very kind and understanding for students. He conducted- practically every two years- new MA seminars. The work prepared under his supervision is always characterized by being scientifically flawless. He supervised over 70 Masters. An important initiative of Professor Lipiński was to open the mathematical class in Nicolaus Copernicus Secondary School in Gdańsk. The existence of this class almost immediately increased the number of participants of Mathematical Olympiads. Many graduates of this class studied mathematics at the Gdańsk University and had the best students. Consequently some of them are well known researches working in Mathematical Institute of Gdańsk University

It is worth mentioning Professor's all-embracing university-related activities and the awards he was bestowed with at the University of Gdansk. In

1977 he obtained the title of full professor. He has worked in numerous departmental and university committees. He was an active member of the Polish Mathematical Society and the Gdańsk Scientific Society. Between 1979-1983 he was President of Gdańsk Department of the Polish Mathematical Society. He worked actively on the agenda of Polish Academy of Sciences and the Ministry of National Education. He was several times winner of the Minister of National Education and the Rector of the University of Gdańsk awards. He was awarded with the Knight's Cross of the Polish Order of Polonia Restituta and the Medal of the National Education Commission.

To celebrate the 80th birthday anniversary of Professor Lipiński at Faculty of Mathematics, Physics and Computer Science at the University of Gdansk there took place on 4 December 2003, a celebrative academic session. University of Gdańsk, together with the Polish Mathematical Society published on this occasion a commemorative booklet devoted to the life and legacy of Professor Jan Stanisław Lipiński. The contribution of Professor Jan Stanisław Lipiński to the organization of mathematics as a discipline of study and to ensuring a high level of science cannot be overestimated. Thanks to Professor, the Institute of Mathematics at the University of Gdansk has an important and eminent Real Function and Probability Theory Department. Professor Jan Stanisław Lipiński belongs to the eliterian group of mathematicians from Gdańsk, who marked his contribution to the development of this discipline and field of study. The mentioned contribution is now a historical event in itself.

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