Stefan Drobot (1913 – 1998)

Stefan Drobot was born in Cracow on August 7th, 1913. He obtained his M.S. degree in mathematics in 1938 from the Department of Philosophy at the Jagiello University in Cracow. His dissertation was titled "On the mathematical theory of struggle for survival". At the same time, he got a Certificate of Completion of Studies in physics, and "Half-a-Diploma" from the Engineering Department of the Warsaw Polytechnic. During the years 1937-1938 he was working as a high school teacher in Rabka-Zdroj, and in 1939 he became an assistant at the Department of Theoretical Mechanics at the Lwow Polytechnic. After the Red Army entered Lwow, he was deported in the summer of 1940 to Stalinsk in the Kuznetsk Province, where he worked at the Metallurgical Institute, first as a lab assistant, then as a senior lecturer, and finally as a full time docent (associate professor, tr.) in the Department of Theoretical Mechanics.

During the years 1941-1943 he was working as an engineer in the design bureau of the Kuznetsk Metallurgical Steel Plant. He spent the academic year 1943/44 in Moscow, on a research assignment at the Institute of Mechanics of the Soviet National Academy of Sciences in Moscow.

He returned to Poland in 1946 and began his career as an adjunct professor at the Institute of Theoretical Mechanics of the University and the Polytechnic in Wroclaw. In March 1947 he got his Ph.D. from the University of Wroclaw in the field of theoretical mechanics.

From 1949, simultaneously with his position at the Wroclaw Polytechnic, he was working as a researcher in the Technology Group A of the State Institute of Mathematics. Beginning with 1951, he was the director of that group and the chief administrator of the Wroclaw Section of that Institute.

In 1951 he became an Assistant Professor and then, in 1954, an Associate Professor in the Department of Mathematics of the Wroclaw Polytechnic. During the years 1957-59 he was the Chairman of that department.

Stefan Drobot belonged to a narrow group of mathematicians, the kind one seldom meets now a days, who were able to combine their thorough education in many abstract fields of mathematics and mechanics, especially in the theories of elasticity and hydromechanics, with actual applications in many varied areas. These applications were crowned by establishing several original methods of measurements, applied in the field of metallurgy.

According to a testimonial of Prof. Wladyslaw Slebodzinski, the Chairman of the Department of Mathematics, delivered at the departmental meeting in March 1956, the fundamental accomplishments of Stefan Drobot during the years of his scientific work in Poland were as follows:

1. Proof of the uniqueness of the solutions of differential equations in abstract spaces, a fundamental result in the operator theory (jointly with Prof. Jan Mikusinski).

2. Establishing the mathematical foundations of the Dimensional Analysis. He solved some of the fundamental problems of this theory, by constructing a very clever, and logically completely correct, algebra. (The relevant paper was published in 1954.)

In addition to mathematical papers, Stefan Drobot had several very interesting results in the field of theoretical mechanics. In particular, he was the originator, together with Prof. W. Nowacki, of investigations in the field of elasticity (years 1946-1952). As one of the first in the post-war Poland, he was studying the dynamics of mechanical systems, discovering several numerical methods of analysis of twisted rods. One should add that the students and collaborators of Stefan Drobot continued these investigations, initiated by him, especially in the area of technical applications.

Thus, for example, Professors Adam Rybarski and Bertold Lysik, collaborating with groups of academic instructors and engineers – representatives of technical sciences, succeeded in creation of strong research groups studying the dynamics of mechanical systems (Professors R. Iwankiewicz and M. Kulsiewicz), in particular the studies of vibrations resulting from random impulses, and the classification of dynamical systems (items [3] and [4] from the list "Some papers . . .").

Stefan Drobot's investigations in the field of dimensional analysis are continuing until today in the Wroclaw's mathematical center. Among the results obtained were: (i) the generalization of Theorem II to composite functions [1], (ii) establishing of the so-called technique of multi-step identification, which allows the reconciliation of empirical models with the equations of the theory, (iii) a test for verifying the hypothesis of completeness of the arguments of the dimensional function [1, 5], and finally, (iv) a theorem about a function, invariant with respect of the group 0 [3], and dimensionally invariant [2].

Stefan Drobot was also an exceptionally gifted and admired lecturer and expositor, and his opinions on the subject were respected among the specialists in the area. During his lectures and seminars, he gave many illustrations and examples of applied mathematics and concrete technical problems. These attracted attention of students and engineers, motivating them to study mathematics, and impregnated many of the listeners with ideas and problems, which quite often led to successful accomplishments for several years to come. He was a man of wide horizons, a rarely occurring humanist in the technical circles – a philosopher, who had original views on many subjects, and who was able to see humor in many sacred cows. He valued clarity and depth of thought, and cared about the purity and beauty of the Polish language.

His original mind and sharp wit brought him admirers as well as detractors among the people he had contact with, both professionally and socially. Stefan Drobot's witticisms, aphorisms, and retorts are part of the legend of the Mathematical Seminar of the Wroclaw's University and Polytechnic, the birthplace of many future mathematical institutes at these institutions. Stefan Drobot was an active member of the Polish Mathematical Society. He served many functions in that organization: He was a member of the Editorial Board of the Annals of the PTM; a member from 1953, and during the years 1957-1957 the chairman, of the Commission for the Popularization of the Main Directorate of the PTM. (Polish Mathematical Society tr.) He gave very interesting lectures dealing with popularization and history of science; he also published several papers on the subject. One should mention, in particular, his excellent translations, for the Scientific Publishers PWN, of the texts by G. Pietrowski, "Ordinary differential equations", and, in collaboration with A. Goetz and T. Wazewski, the text by W. Stiepanow, "Ordinary differential equations".

In the year 1959 Stefan Drobot immigrated with his family to the United States. He was continuing his scientific work there, mainly in the field of applied mathematics, in particular calculus of variations, relativity theory, and the theory of elasticity. However, in comparison with his Wroclaw period, he published relatively little. His lectures at the University of Chicago (1959-1960), University of Notre Dame (1960-1963), and Ohio State University (1963-1982) attracted many students, and his seminars many Ph.D. students. During the year 1975 he spent one year in Australia at the Melbourne University.

He gave a lot of heart and efforts to his 8 Ph.D. students, whom he guided to successful defenses during the years 1963-1979: Leonard Sulski (1963), Benjamin Playbon (1968), Kenneth Kimble (1969), Konrad Heuvers (1969), John Logan (1970), Daniel Mayer (1974), Robert Johnson (1975), and William Huffman (1979). All of these, except the first who was at Notre Dame, were at the Ohio State University.

In December 1982 Stefan Drobot suffered a health setback from which he never recovered. He died in California on September 29th, 1998.

Waclaw Kasprzak
Roscislaw Rabczuk

Ph.D. students of Stefan Drobot

1. Adam Rybarski, University of Wroclaw, 1957
2. Leonard Sulski, University of Notre Dame, 1963
3. Eugene Santos, The Ohio State University, 1965
4. Benjamin Plybon, The Ohio State University, 1968
5. Konrad Heuvers, The Ohio State University 1969
6. Kenneth Kimble, The Ohio State University, 1969
7. John Logan, The Ohio State University, 1970
8. David Mayer, The Ohio State University, 1974
9. Robert Johnson, The Ohio State University, 1975
10. William Huffman III, The Ohio State University, 1979

List of publications of Stefan Drobot

1. *Special relativity in observer's time*. J. Math. Anal. Appl. 95 (1983), no. 2, 575-596.
2. *On Cosserat continua*. Zastos. Mat. 12 (1971), 323--346.
3. Mathematical models of elastic shells and rods. Z. Angew. Math. Mech. 51 (1971), 527—541
4. (Editor, with P. A. Viebrock) *Mathematical Models in Physical Sciences*, Proceedings of the conference at the University of Notre Dame, Prentice Hall, Englewood Cliffs, N.J., 1964
5. *Real numbers*. Prentice-Hall, Inc., Englewood Cliffs, N.J. 1964 vii+102 pp.
6. A note on continued fractions. Proc. Amer. Math. Soc. 14 1963 197--198.
7. (with Rybarski, A.) *A variational principle of hydromechanics*. Arch. Rational Mech. Anal. 2 1958/1959 393--410
8. (with Mikusinski, J) *On the displacement operator and its application to the statics of beams*. (Russian) Uspehi Mat. Nauk (N.S.) 13 1958 n2(80),73--92.
9. (with J. Bonder) *Critical remarks on the so called "Rational theory of turbulent flow"*, Archiwum Hydrotechniki 4 (1) (1950) 85-94
10. *The work of Jan Sniadecki in the mathematical and natural sciences*. (Polish) Wiadom. Mat. (2) 1, (1955). 95—111
11. (with T. Huskowski and W. Ślebodzinski) *Mathematics* (in Polish) A handbook for students, Wroclaw 1955
12. *Model and original* (in Polish) Problemy 12/105 (1954) 814-820
13. (with S. Turski) *Mathematische Methode der modern Technik*. Die Hauptreferate des 8. Polnischen Mathematikkongress, Warschau 1953. Deutcher Verlag der Wissenschaften, Berlin 1954.
14. (editor) *Collected works of Jan Śniadecki*. (in Polish) Introduction and commentary, Ossolineum, Wroclaw 1954
15. (with Warmus, M) *Dimensional analysis in sampling inspection of merchandise*. (in Polish) Zastos. Mat. 2, (1954). 1—33
16. *L'oeuvre scientifique de M. H. Huber*, Colloquium mathematicum III(1) 1954, 63-72

17. *On dimensional analysis*. (Polish) Zastosowania Mat. 1, (1954). 233—272
18. *On applications of operational calculus to statics*. Archives de Mechanique Appliquee, IV(2) (1954) 93-100
19. (with Warmus, M.) *Dimensional analysis in sampling inspection of merchandise*. Rozprawy Mat. 5, (1954). 54 pp
20. L'oeuvre scientifique de M. T. Huber (4. I. 1872--9. XII.\ 1950)
21. *On the foundations of dimensional analysis*. Studia Math. 14, (1953). 84--99
22. *The scientific work of M. T. Huber*. (Polish) Zastosowania Mat. 1, (1953)
23. *On calculations in technology*. (in Polish) Matematyka 5/52 (1952) 8-25
24. *N. Żukowski and modern aerodynamics*. (in Polish) Problemy 12/69 (1951) 811-816
25. *On torsional vibrations of a shaft*. (Russian) Arch. Méc. Appl., Gda\'nsk 3, (1951). 127--146
26. (with Mikusinski, J) *Sur l'unicité des solutions des quelques equations différentielles dans les espaces abstraits. II*. (French) Studia Math. 11, (1949). 38--40.
27. (with Mikusinski, J) *Sur l'unicité des solutions des quelques equations différentielles*. Transactions of the joint 3rd congress of the Checo-Slovak Mathematical Society and the 7th Congress of the Polish mathematicians in Prague, (1949) 183-184
28. *On the equations of elasticity*. (in Polish) Proceedings of the Wroclaw Scientific Society 3 (1949) 139-140
29. *Les equations generalisees de l'elasticite*. Comptes Rendus de la Societe des Sciences et Letters de Wroclaw 3 III (1948)
30. *Sur les equations de la theorie de l'elasticite*. Colloquium Mathematicum I (1) (1947) 38-39