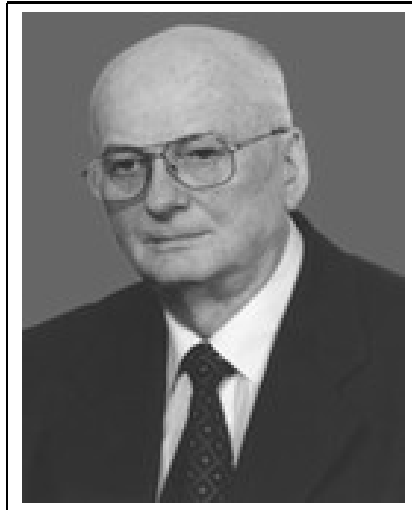


Professor Zdzisław Bubnicki in my memory



Zdzisław Bubnicki was born in 1938 in the then Polish city of Lwów (now Ukrainian L'viv). The family of Bubnicki was expelled in 1945 from Lwów and settled in Gliwice, in Polish Upper Silesia. Here, in 1951, he started to learn at the known V-th High School. Simultaneously, over many years, he would take private piano lessons. After having finished the high school he enrolled, in 1955, at the Faculty of Electricity of the Silesian Polytechnic in Gliwice. He graduated in 1960 at the then relatively new specialisation of *control theory and remote control*. In 1964 he was granted the Ph.D. degree in technical sciences at the University of Technology in Wrocław. The degree of Doctor of Sciences (habilitation) was conferred upon him at the same university in 1967. He earned the titles of professor and full professor in, respectively, 1973 and 1979. In 1985 he was elected as the corresponding member of the Polish Academy of Sciences. Thereafter, he became a full member of the Academy, the Chairman of the Committee for Robotics and Automatics of the Academy, the Chairman of the Wrocław Chapter of the Academy. In the years 1991-1998 he was the member of the Presidium of the Academy.

The scientific activity of Professor Bubnicki was associated from the very beginning, that is – the first publication of 1961, resulting from the student's investigations (“Analysis of the Ashby's homeostat as the multidimensional control system”, *Archiwum Automatyki i Telemekhaniki*, in Polish, **6**, 4, 1961), with control theory and technique, as well as their systems applications, in particular – for the complexes of operations, as exemplified by the discrete industrial processes. The natural development of the disciplines mentioned caused that the interests of Professor Bubnicki evolved in the recent decade towards the systems applications of computer-based character, like knowledge engineering, and especially the expert systems.

The most important of the scientific achievements of Professor Bubnicki include:

- Development of original methods of studying the dynamics of the control systems discrete in time. These studies led to formulation of new results concerning stability for these systems, especially under presence of stochastic disturbance. The results of the studies, published in the 1960s, were a pioneering work, given that the digital control systems, whose models are constituted exactly by the systems discrete in time, started to appear in the second half of the 1970s.
- Formulation and development of foundations for the theory of identification and recognition for complex systems. This stream of work was summarised in the monograph in Polish, entitled “*Identification of Control Plants*” (PWN, Warsaw, 1979). An extended version of the monograph was published under the same title in 1980 by Elsevier-North Holland. This monograph was for a time a sole handbook of identification in Polish literature. Attention should be paid to the fact that the work done by Professor Bubnicki in this domain found application in computer-based systems supporting medical diagnosing.
- Elaboration and deployment of the theory of control of operation complexes in probabilistic conditions, and its applications in the control of discrete industrial processes as well as computational-decision operations in computer systems.
- Elaboration and development of the logical-algebraic method for designing expert systems with logical knowledge base. The results of these investigations were presented in the monograph, in Polish, “*Introduction to Expert Systems*” (PWN, Warsaw, 1990). This work was continued thereafter and brought, in particular, the development of the original data mining methods in systems with logical and relational knowledge base.
- Conception and deployment of the theory of uncertain variables and its applications in expert systems for control of production operations, control of computational-decision operations in computer systems, and project management. A concise lecture on this theory, along with selected applications, was provided in the monograph “*Uncertain Logics, Variables and Systems*” (Springer, 2002).

- Elaboration of a modern handbook of control theory, in Polish (“*Control Theory and Algorithms*”, PWN, 2002), presenting a synthetic view on the most important contemporary methods of control theory. In the very quickly changing world of theory and techniques of control this kind of presentation is an invaluable help for students, and not only for them.

Publications of Professor Bubnicki (more than 250 items) appeared in the renowned scientific periodicals, such as *IEEE Trans. on Circuit Theory*, *IEEE Trans. on Automatic Control*, *Avtomatika i Telemekhanika*, *Mekhanika i Protsesty Upravlieniya*, *System Science*, *C.r. Acad. Sc. Paris*, *Artificial Life and Robotics*, *International Journal of Control*, *International Journal of System Science*, *Foundations of Computing and Decision Sciences*, *Systems Analysis, Modelling and Simulation*.

It should be emphasised that the two last books of Professor Bubnicki were published (their first editions!) about a year ago. These two were: “*Analysis and Decision Making in Uncertain Systems*” (Springer Verlag, Berlin-London, 2004) and “*Modern Control Theory*” (Springer Verlag, Berlin-London, 2005). And the previous books of his had appeared only a bit earlier! (“*Uncertain Logics, Variables and Systems*”, Springer Verlag, Berlin-London, 2002, and, in Polish, “*Control Theory and Algorithms*”, PWN, Warsaw, 2002). In just a couple of days after his premature death I obtained a copy of the ample and up-to-date volume, co-edited with Professors Roman Kulikowski and Janusz Kacprzyk entitled (in Polish) “*System and Computer-based Support of Knowledge Management*”.

Professor Bubnicki was the organiser, animator and for many years the director of the Institute of System Control and Technique (currently the Institute of Technical Information Science) at the Wrocław University of Technology. He was also the co-organiser of the faculty of Computer Science and management of the same University. In these organisational units Professor Bubnicki created an active scientific community: he was the promoter of 44 doctoral dissertations, and sixteen of his doctoral students occupy nowadays the positions of professors.

Zdzisław Bubnicki, having been the Chairman of the Wrocław Chapter of the Academy, a member of the Presidium of the Academy, the Chairman of the Committee of Automatics and Robotics of the Academy, for many years the Chairman of the Scientific Council of the Systems Research Institute, former Chairman of the Scientific Council of the Institute of Computer Science, both of the Academy, IKSAiP, during numerous terms member of the Central Commission for scientific title and degrees, a member of the supervising team at the Polish State Committee for Scientific Research in the years 1997-2000, brought a very significant contribution into the organisation of scientific life in the domain of the broadly conceived systems sciences, including control, robotic and computer sciences.

Professor Bubnicki was the initiator and a long-time organiser of an important international conference *Systems Science*. He was also the Editor-in-Chief of the journal “*System Science*”, the Chairman of the Editorial Board of

“*Archives of Control Sciences*” and of the Polish language series of “*Monographs of the Committee of Automatics and Robotics of the Polish Academy of Sciences*”, member of the editorial teams of the journals “*Control and Intelligent Systems*”, “*Systems Modelling and Simulation*”, “*Artificial Life and Robotics*” (Springer), “*Foundations of Computing and Decision Sciences*”, “*Control & Cybernetics*”, as well as the Springer monograph series “*Advances in Computing Sciences*”. He was for quite some time the representative of Poland in IFIP, the International Federation of Information Processing, and the member of the boards of the International Institute for General Systems Studies (IGSS) in the USA and the International Association for Science and Technology for Economic Development (IASTED) in Canada.

Zdzisław Bubnicki was the full member of the Russian Academy of Natural Sciences and the honorary member of the World Organisation of Systems and Cybernetic Sciences.

Professor Bubnicki was a representative of the (alas!) rare species of professors who write their books and the vast majority of publications alone, without assistance. Taking into account a high number of doctors he tutored one can hardly speak of an incidence in this case. This was, rather, an expression of a great intellectual potential of Professor Bubnicki.

Likewise, Zdzisław Bubnicki was a rare example of a scholar, who learns and develops incessantly new things, and goes along the unknown paths. His research activity was far from routine and narrow-mindedness. This was of a great significance for the community, within which he functioned. His activity, namely, was the constant source of inspiration and the standing challenge for this community. It was something that prevents stagnation in the ruts that lead to nowhere. It was reminding us all that it is perhaps not worth the time and energy of us and the young scientists to go along the paths already taken and to prove something that is not of sufficient value.

Finally, Zdzisław Bubnicki was an outstanding scientist who would not shut off himself in an ivory tower, but a highly active organiser and animator of scientific life. His organisational activity contributed to the establishment of a number of workshops of creative work for a wide group of young technical intelligentsia and to the attainment of a high, internationally recognised quality of these workshops.

Professor Bubnicki did not consider that intensive research and organisational work could justify the negligence in teaching duties, such as lack of up-to-date handbooks to accompany lectures. Since the beginning of the activity, Professor Bubnicki always took adequate care of the lecture notes for his teaching.

We live in an era, with its inclination to assigning too high significance to various collective bodies, and to underestimating individuals, in whose heads, after all, the original ideas arise, and whose energy puts in motion these collective bodies and gives them the impetus necessary for their proper functioning.

Professor Bubnicki was just such a personality. It was him, who reanimated, after a longer interval of non-existence, the institution of the National Conference of Automatics, and mobilised around this undertaking a group of professors, the members of the Committee for Automatics and Robotics of the Academy, so that the already defunct institution became alive again and had already three new editions in the new period of its life (in Opole in 1999, in Zielona Góra in 2002 and in Warsaw in 2005).

Professor Zdzisław Bubnicki was a great personality in the domain of scientific research. He played also an outstanding role as an organiser of scientific activity, that is – in the field that is not as visible, but very much needed for the quality and integrity of the scientific community and of its work.

His passing left a gap in our professional life and in the private life of all those, who were His Friends, that can really hardly be filled. He will occupy always a honorary place in our memory.

Antoni Niederliński