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*Józef Dziechciarz*\*

## **PROFESSOR ZDZISŁAW HELLWIG (1925–2013) A GIANT IN THE RENAISSANCE STYLE**

On 8th November 2013 Professor Zdzisław Hellwig passed away. It was with great sadness that we said goodbye to our dear Teacher and Master.

### **1. PROFESSOR ZDZISŁAW HELLWIG – A MAN WITH A BIOGRAPHY**

Professor Zdzisław Henryk Hellwig was born on 26 May 1925 in Dokszyce, a small town in the Vilnius region, which was a part of the Polish Republic in the years 1922–1939. In Vilnius, in 1941, Professor Zdzisław Hellwig graduated from the King Augustus junior high school. For three years he worked as a deputy accountant in a state-owned farm in Dokszyce.

In 1944, he joined the underground Polish Army. As a soldier of IV Cavalry Brigade of the underground Polish Army, he served as lancer horse scout and later participated in the liberation of Vilnius. In January 1945, for the avoidance of joining the First Army of Polish troops, so called Berling Army, he was sent, as a prisoner-worker to the coal mines in the Donbas region in the South Ukraine. In November 1945 he returned to his homeland that no longer belonged to the Polish State but to the Soviet Union. In 1946 he was repatriated to the so-called Polish Regained Territories, and more specifically, to Wrocław.

In June 1947 he obtained a secondary school leaving certificate for adults. In the same year he began his studies at the Higher School of Economics (WSH). In 1952, he received a master's degree in economics from the Department of Commerce of the Warsaw School of Economics in Warsaw. At the beginning of the academic year 1953–1954, at the request of the Head of the Department of Statistics, Professor Jan Falewicz, MA Zdzisław Hellwig, served in the Department as an independent researcher. In 1958 he defended his candidate (PhD) thesis entitled *Linear regression and its application in economics*.

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After obtaining his doctor's degree Zdzisław Hellwig received a scholarship from the British Council and went as a visiting researcher to London and Cambridge. During his stay in England, he carried out research under the supervision of Sir Richard Stone, who later became the laureate of the Royal Bank of Sweden Prize in Economic Sciences in memory of Alfred Nobel in economics. During that time, Dr. Zdzisław Hellwig prepared His habilitation thesis entitled *Contribution to the theory of regression*. Based on the overall evaluation of his scientific achievements and the submitted dissertation, in 1962, Dr. Zdzisław Hellwig received *doctor habilitationem* degree from the Faculty of Finance and Statistics at the Warsaw School of Economics. In the same year he was nominated for an Associate Professor and was appointed head of the Department of Statistics at the Higher School of Economics (WSH) in Wrocław. He held this position until his retirement, i.e. to 1995. In 1967 He received the title of Associate Professor, and in 1973 the title of full professor.

Simultaneously, Professor Zdzisław Hellwig, in the years 1969–1995, functioned as the director of the Institute of Economic Account, and then after the reorganization, the Institute of Economic Cybernetics.

## **2. PROFESSOR ZDZISŁAW HELLWIG – A SCHOLAR – STATISTICIAN**

Professor Zdzisław Hellwig was a widely recognized, eminent scholar of international standing. The field of research of the Professor includes the theory and application of quantitative methods in economics. Hundreds of major publication written by the Professor have inspired and still inspire many researchers. The works of Professor Z. Hellwig were pioneering in the country and worldwide.

As early as 1959, he published a book entitled *Elements of probability and mathematical statistics*, which has become a basic textbook for many generations of economists. Its popularity proves that they lived to see as many as 13 editions.

An important position in the scientific achievements of Professor beside *Linear Regression and its applications in economics* was a monographic book *Stochastic approximation* published in 1965. In this book, Professor Zdzisław Hellwig introduced the concept of distance random variable. Equally important was the idea of spectrum and trace of random variable. Those idea accounted for inspiration for scientific research, not only for young researchers at home university, but also for research all over the world.

Professor Zdzisław Hellwig was also the instigator of research in the field of insurance statistics. He saw a great need for applications of probability theory,

mathematical statistics, the theory of random processes and demographics to assess underwriting risk, both in terms of life insurance as well as property insurance. Research in the field of insurance was initiated by Professor Z. Hellwig in the early nineties of the last century. The results of research in the field of actuarial mathematics and insurance risk estimation methods carried out at the Department of Statistics and Economic Cybernetics in Poland were the first publications which placed Wrocław University of Economics among leading business schools in Poland engaged in research of insurance statistics.

### 3. PROFESSOR ZDZISŁAW HELLWIG – A SCHOLAR – ECONOMETRICIAN

The remarkable scientific achievements in the field of econometrics of Professor Zdzisław Hellwig cover numerous studies dealing with the theory and application, in particular research areas as:

- Modeling of the socio – economic development,
- Economic forecasting,
- Multidimensional comparative analysis and taxonometrics.

The central problem, which appeared in all the work of Professor in the field of econometric modeling were issues connected with econometric model, its construction, the assessment of its quality and interpretation of its results. Professor Zdzisław Hellwig drew attention to the problem of the use of large number of variables in the econometric model. He was the pioneer in investigation of troublesome problem of variables selection to the econometric model. An important problem introduced and investigated by the Professor, and consequently by numerous followers is the so called issue of *variables coincidence*.

The most important publication in the field of econometrics was textbook *Outline of econometrics*, which was created on the initiative and edited by Professor Z. Hellwig.

Research related to economic forecasting, started in the seventies of the twentieth century, is still being continued and developed. The method proposed by the Professor – *crawling trend* – is one of the most commonly used methods of smoothing and time series forecasting, pioneering the exponential smoothing technique, which was proposed by R. Brown.

The greatest scientific achievements of the Professor include taxonomic methods and methods of multidimensional comparative analysis, today known under the term Multivariate Statistical Analysis. They are known not only in Poland, but also gained international recognition. In these works he drew attention to the real possibilities of application of taxonomic methods of linear order-

ing to economic issues. The synthetic measure proposed by him and based on the concept of the *development pattern* is commonly known as the *measure of economic development*. Along with linear ordering he developed algorithms for grouping objects to the relatively homogeneous subsets. Equally important is the breakdown of characteristics from the point of view of the type of their interpretation. Professor Zdzisław Hellwig introduced the idea of stimulants preferences and destimulants. This inspired the research of many scientists in various Polish research centers.

Introduced by Professor Zdzisław Hellwig the idea of *measure of the development*, along with statistical concept of *pattern of growth; development path* and *optimal trajectory of development* enriched with the concept of *potential information aggregate* measure are constantly being used in studies conducted by researchers and practitioners representing various disciplines.

#### **4. PROFESSOR ZDZISŁAW HELLWIG – A SCHOLAR – ECONOMIST**

Professor Zdzisław Hellwig is a precursor of research in the field referred to as sustainable development, the area that is now the subject of interest not only to the world of science. His 1963 work on predicting economic phenomena has become the basis for development of an early warning system for the national economy (code-named ALERT). Research in this field has been and still is the subject of interest of many scientists. As a result, many doctoral dissertations and monographs have been prepared. As early as in 1981, the Professor published two papers on the issues of sustainable development, namely: *The phenomenon of the oscillation at an accelerated economic development*; and *Economic balance. The concepts and controversies*. This stream of inspiration is continued, the research results in this area have been presented on the scientific conference *Quality of Life and Sustainable Development*, organized by the Department of Statistics at the Wrocław University of Economics.

#### **5. PROFESSOR ZDZISŁAW HELLWIG – A PIONEER OF COMPUTER SCIENCE**

On his initiative and under his editorship acclaimed collective works were published among others: *Automatic data processing* (1971), *Digital machines and their applications* (1975) and *Elements of economic calculus* (1976). These books have been frequently accounted for a primary source of knowledge on digital equipment which was used throughout the country.

His most significant achievement on the crossroads between scientific, educational and organizational field is undoubtedly the phenomenon, which is called today the computerization. In the early sixties of the last century, thanks to the initiative and extraordinary organizational skills of Professor Zdzisław Hellwig, at the Department of Statistics was established computing center, which was equipped with the computer Odra 1003, called electronic digital machine. The centre not only conducted research in the field of electronic computing technology but also topics that included teaching students and training in industrial plants. The curriculum students were almost all major programming languages. Students gained not only theoretical knowledge about computers but also practical skills in computer programming.

## **6. PROFESSOR ZDZISŁAW HELLWIG – A GLOBAL SCHOLAR**

Professor Zdzisław Hellwig was able to build teams not only within his Alma Mater. He organized study groups made up of scientists from many universities, in particular in collaboration with foreign scientists. Despite the harsh conditions he successfully interacted with scholars from all over the world. His openness, competence and polite manners meant that scholars from all over the world wanted to work with him personally, as well as with people recommended by Him. Professor Zdzisław Hellwig did not shut himself in the circle of the European culture. With equal ease he established cooperation with the most prominent scholars from Eastern Europe – Russia or Czechoslovakia, as well as with scholars from more distant regions such as Japan and America and more familiar environment of Germany, both East and West. Many of then established contacts are still kept up today in the years 1968–1974 he worked as a foreign expert for UNESCO in Paris. Professor Zdzisław Hellwig was active as a visiting professor in Lagos and University of Nigeria in Ibadan and at Tohoku University in Japan.

Initiated by Professor scientific contacts with the University of Marburg and with the Higher School of Economics in Prague, they are still being continued by the Department of Statistics. They shape the reputation of any university professors having academic achievements, having a vision of the development of scientific research and the education of students, and who know how to put them into practice. The shape of today's University of Economics in Wrocław and its importance in the scientific community in Poland and abroad is largely thanks to Professor Hellwig and his disciples.

## 7. PROFESSOR ZDZISŁAW HELLWIG – A TEACHER

Professor Zdzisław Hellwig was an outstanding teacher. His teaching skills became legendary, and students keep in their grateful memory his lectures and seminars. A material trace of these abilities are books written by him in person or by teams directed by him. They have not lost any of their relevance until now. A visionary way of thinking of Professor Zdzisław Hellwig manifested itself in initiating and developing courses and curricula with significant participation of quantitative methods. The first Major (master) study program called Data Processing Organization, then the master study program called *Econometrics* has become a mine of young researchers with great quantitative techniques methodical preparation.

## 8. PROFESSOR ZDZISŁAW HELLWIG – AN EDUCATOR

An extremely important feature of Professor Zdzisław Hellwig as a researcher and teacher was his altruism and lack of desire to concentrate exclusively on areas of his key scientific interests. He effectively inspired his colleagues to undertake research on new, hitherto unexplored fields. This has resulted in the successful creation of several strong research centers, for instance in the field of Econometrics; with Stanisława Bartosiewicz, Krzysztof Jajuga, Edward Nowak, Jerzy Jakubczyc, Marek Walesiak, Danuta Strahl and Józef Dziechciarz; in Operational Research and Logistics; with Władysław Bukietyński, Ewa Konarzewska Gubała, Stanisław Krawczyk and Juliusz Siedlecki; in Forecasting and Demography; Maria Cieślak, in Information technology; Elżbieta Niedzielska, Andrzej Gospodarowicz, Andrzej Baborski, Adam Nowicki, Jadwiga Sobieska Karpińska; in Corporate Finance; Wiesław Pluta, Adam Kopiński; in Socio-economic research; Zdzisław Pisz; Mathematical Economics; Stefan Forlicz; in Capital Markets; Krzysztof Jajuga; in Insurance; Stanisława and Walenty Ostasiewicz, Wanda Ronka Chmielowiec; in Managerial Accounting; Edward Nowak. This list may be complemented with several names of persons working for international and national universities. The group of students and colleagues of Professor Zdzisław Hellwig contributed to organization and success of the faculty in Jelenia Góra. Among pupils, and now, Very Important Persons in Jelenia Góra Faculty are among others, Professor Danuta Strahl, Professor Tadeusz Borys, and Professor Marek Walesiak.

The influence of Professor Zdzisław Hellwig meant that his colleagues and students are characterized by an important feature of the scholar: independence of thought, courage, creativity, organizational skills and a willingness to take up tough challenges and tasks, including organizational ones. This resulted in the

fact that among the Professor's co-workers we can find three Rectors (Presidents) of the Wrocław University of Economics; the Rector of another public university in Poland, several Rectors of non-state Higher Education Institutions; several Deans: five Deans of the Faculty of Management, Computer Science and Finance, as well as many vice-rectors, directors of institutes, heads of departments, including those that seemingly are far away from the core competences of the Institute.

Professor Zdzisław Hellwig contributed to the career advancement of many scholars from home and other universities. His activity in the central and regional institutions and scientific organizations, his work as a reviewer and initiator of many publications has resulted in the fact that a large group of people may call themselves the Professor's disciples..

## **9. PROFESSOR ZDZISŁAW HELLWIG – AN ORGANIZER**

Professor Zdzisław Hellwig was an outstanding organizer and one of the most meritorious employees of our university. He served three terms as the Vice-Rector for the university, responsible for Science (1962–1965, 1968–1970, and 1979–1981). He was the longtime director of the Institute of Economic Cybernetics and head of the Department of Statistics and Economic Cybernetics. In the wake of initiating new areas of research, He went creating numerous organizational units, the most important achievement in this field one must recognize the initiative, then the general contribution to the creation of the Faculty of Management and Computer Science. Professor Zdzisław Hellwig, apart from being initiator, was most important contributor to creation of scientific profile and teaching activity of the new Faculty. Creation of the Faculty of Management and Computer Science initiated the rapid development of many groups of researchers and gave the possibility of consolidating multiple teams of scholars. With his initiative and with the active participation, new Departments arise. Researchers from the Institute were those who formed the backbone of the Institute of Business Informatics. A strong representation derived from the Institute became part of the Jelenia Góra Faculty.

The fact which deserves emphasizing is that in 1964, together with Professor Zbigniew Pawłowski and Professor Kazimierz Zajac he established cyclical scientific conference known as South Poland Scientific Conference. In 2014 the fiftieth edition of this conference took place. The conference contributed to the fact, that the three schools of economics have become powerful scientific environment suitable for numerous Polish statisticians, econometricians, specialists of operations research, computer science, and other fields of research.

Listing the scientific achievements of Professor Zdzisław Hellwig should be supplemented with his commitment to publishing. He worked as secretary, and then editor-in-chief of the Scientific Series of the Wrocław Higher School of Economics (Wrocław University of Economics). He initiated the publication of numerous collective works, of which, in most cases, he was the scientific editor. Professor Zdzisław Hellwig was the originator and main organizer of today's Journal of Operations Research and Decisions, published jointly by Wrocław University of Economics and Wrocław University of Technology.

## 10. PROFESSOR ZDZISŁAW HELLWIG – RECOGNITION OF ACHIEVEMENTS

Achievements of Professor Zdzisław Hellwig were widely acknowledged, both in the home university, countywide and abroad. He received *honoris causa doctorate* from the University of Economics in Kraków (1985) and the Higher School of Economics in Prague (in 1994). He was the winner of the prestigious Prime Minister's Award for outstanding scientific achievements (in 1996). He received awards of Knight's Cross, Officer and Commander of the Order of the Rebirth of Poland. He was the honorary Professor of the Wrocław University of Economics. In recognition of many years of accomplishments in the field of research and teaching, personal commitment to the work of academic organizations and activities for institutions on a national and international level, the Senate of the Wrocław University of Economics awarded Professor Zdzisław Hellwig with the honorary title of Crystal Alumnus of the Wrocław University of Economics for lifetime achievements.

On 8 November 2013, at the ceremonial, funereal also mourning session of the Senate of the Wrocław University of Economics, the academic community honored the memory of Professor Zdzisław Hellwig – one of the largest Polish scientific authorities in the field of statistics and econometrics, the man of great mind and heart and a great educator. The Rector of the Wrocław University of Economics, Professor Andrzej Gospodarowicz described the profile of the late Professor Zdzisław Hellwig. Some friendly memories were recalled by professors Stanisława Bartosiewicz and Maria Cieślak. On behalf of former students and co-workers appeared professors Walenty Ostasiewicz, Jerzy Korczak; Czesław Domański (University of Lodz) and Andrzej Barczak (University of Economics in Katowice). Numerous letters of condolence were read.

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