

100 YEARS OF THE POLISH STATISTICAL ASSOCIATION

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1. The origins of statistics in Poland

The beginning of statistics in Poland is connected with the following facts:

- first estimates and population censuses;
- first publications in the field of statistics ;
- initiation of statistical literature;
- formation of statistical administration;
- first lectures in statistics.

The first ever estimations of population of Poland were supplied by a number of authors: Józef Wybicki estimated the number of population in 1777 at the level of 5 391 364 people; Aleksander Busching in 1772 gave the number of 8.5 million, Stanisław Staszic in the year 1785 provided the estimated number of 6 million; Fryderyk Moszyński in 1788 r. produced the number of 76 3544 620 people.

2. Statistical Institutions

The beginnings of statistical activities on the Polish territories coincide with the proceedings of the so-called Four Year Parliament Session, i.e. the years 1788-1792. The Parliament adopted a resolution on carrying out in 1789 the first national population census combined with smoke registration. The census results were to help the Parliament to pass a law on a new tax, which was supposed to provide money towards expenses on a permanent, one hundred thousand army. The author of the statistical tables of the 1789 census and a statistical method of the military tax calculation was the deputy Fryderyk Józef earl Moszyński (1737-1817).

In 1864 an organizational unit of the Warsaw Municipal Council called the Statistical Section was established. Until the year 1876 its primary objective was to prepare materials which would appear in an annual publication entitled: „Obzor goroda Warszawy”. Since 1877, after the Section had increased the range of its statistical activities, it started to act as a statistical office of the city of Warsaw. Since its foundation the Statistical Section was headed for over 30 years by an

economist and a statistician Professor Witold Załęski. His scientific output related to the development of the statistical thought includes the following works: „An Outline of the Theory of Statistics” (1884), „Remarks on the Theory of Statistics” (1888), „The Kingdom of Poland – a statistical approach” (1900-1901), „On Comparative Statistics of the Polish Kingdom” (1908). Załęski’s handbook „An Outline of Theory of Statistics”, encompasses five chapters: *Statistics as a method and science*, *The history of statistics*, *The history of administrative statistics*, *Congresses of statistics*, *Statistics organization*. The book can be considered the first Polish handbook of statistics.

In 1866 in National Department a project was conceived on establishing a statistical office in Galicia. The project was presented by Mieczysław Marasse (1840-1880) the author of, among others, a dissertation entitled „On Conception and Aim of Statistics” (Kraków, 1866), which was the first Polish publication devoted to the theory of statistics. The author defines there the tasks of statistics, which is subdivided into general and detailed, describes methods of statistics and presents three ways of statistical data compiling: tabular, graphic and descriptive.

A few years later in 1873 the National Statistical Office for Galicia was set up in Lvov and its activity continued until 1918. The founding father and the long-term head of the office was Tadeusz Pilat (1844-1923), a Professor of statistics and administration at the University of Lvov; also he was a co-founder (1885) and the first Pole among 100 members of the International Statistical Institute. Pilat was the first statistician who used estimations in statistical analysis and statistical inference.

The Cracow Municipal Statistical Office was set up in 1884. Its founder was Józef Kleczyński (1841-1900), a Professor of statistics and administrative law at the Jagiellonian University who had worked in the National Statistical Office in Lvov in the years 1875-1880.

J. Kleczyński published in „Polish Review” a lengthy article entitled „International Statistical Institute”, one of the earliest publications devoted to this institution. In 1891 he became the second Polish citizen to become a member of ISI. Kleczynski, who exerted a significant influence on the development of Polish statistics, published the following papers: „On calculating population number between censuses” (1879), and „Municipal Statistical Offices”.

Another scholar who made a great contribution to the development of Polish statistical thought was a philosopher and an economist Augustyn Cieszkowski (1814-1894). He participated in the Second International Statistical Congress in 1855 r. in Paris as the only Polish representative and the speaker of one of the sections.

During the Congress a statistics of „foresight and future protection” was introduced. This was meant to assist people in making savings and insuring them against consequences of unfortunate events in future. The Congress awarded, among others, the following institutions: Savings Banks, Provident Societies, Pension Funds and Insurance Funds.

The first statistician who clearly defined the tasks of statistics was Ignacy Franciszek Stawiarski (1776-1835). He perceived statistics as the science which „includes all the wishes, demands and expectations of politicians and political economists, and using all available ways and methods provides a detailed description of the country's physical and moral powers. Moreover, using comparisons, calculations and probabilities draws conclusions aimed at improvement in the country's general well-being". „Statistics of Poland", following the example of "*Statistique generale de la France*" (1806), was to be published in three volumes. Although the book was not completed, the tasks of statisticians described almost 200 years ago, remain basically the same.

Before the World War I a bold initiative of a group of Polish scientists was launched almost simultaneously in Cracow and Warsaw. The initiative was aimed at compiling a statistical publication which would be thematically, methodologically and organizationally independent of the partitioning countries: Russia, Prussia and Austria. The publication, which would encompass the whole territory of the partitioned Poland, was to be published in Cracow. For that purpose the first professional association of statisticians – Polish Statistical Association was established in 1912. The President of the Association became Juliusz Leo (1861-1918) – Professor of finance at the Jagiellonian University, and at the same time the Mayor of Cracow.

In 1915 Polish Statistical Association published „Statistics of Poland" edited by Professor Adam Krzyżanowski (1872-1963) and Professor Kazimierz Władysław Kumaniecki (1880-1941). The publication was the first comprehensive study which presented socio-economic development of the Polish territories from the beginning of the 19th century until the outbreak of the World War I. Kumaniecki, who was one of the founders of the Association and its Secretary, wrote "Studies in Migration Statistics" (1912), „Probability in Statistics" (1910), and many other works.

In the years 1915-1916 Professor of geography and cartography of Lvov University - Eugeniusz Romer (1871-1954), carried out works on compiling „Geographic and Statistical Atlas of Poland". The atlas, published in Vienna in 1916 in three languages: Polish, French and German, contained 32 tables and 69 maps related to geography, history, demography, industry, agriculture, education and administrative and political entities. Moreover, abundant statistical material collected by Romer during his work on the atlas enabled him to edit, in cooperation with Ignacy Weinfeld, another important statistical publication entitled "Polish Yearbook. Statistical Tables" (Cracow 1917). The book, which came out in Polish, German and French, was comparable in size to Krzyżanowski and Kumaniecki's „Statistics of Poland" as it presented in numerical approach the economic situation and social life in three sectors of the partitioned Poland from the turn of the centuries until World War I.

Statistical yearbooks, „Geographic and Statistical Atlas of Poland” as well as other statistical and historical studies published in wartime proved to be extremely useful for the delegation representing Poland during peace negotiations in Paris (1919) and in Riga (1921).

3. Association of Polish Economists and Statisticians.

The Association of Polish Economists and Statisticians was founded in Warsaw in 1917. The activities of the Association were divided into five sections: economic theory, finance, statistics, economic policy and social policy.

The initial meeting of the Statistics Section was held on 14 January, 1918. The entire board of the Section consisted of the following members: the chairman – Professor Ludwik Krzywicki, the deputy – Professor Edward Grabowski, and the secretary – Stefan Szulc, MSc.

In 1921 the Association Council acknowledged the quarterly “The Economist” to be the official organ of the Association of Polish Economists and Statisticians. Therefore, “The Economist” can be assumed the first Polish statistical periodical with an economic angle.

In August 1929 Warsaw was hosting the 18th Session of the International Statistical Institute. The fact that Polish scholars were entrusted with the task of organizing the session was a sign of recognition for the role that Polish statistics played on the international arena.

The activities of thematic sections of the Association were put into a halt in the years 1929-1932. However, on May 29, 1933 the following sections were reactivated: theory of economics, economic policy, statistics and agriculture economics. The Statistics Section consisted of 14 members: Jan Derengowski, Michał Kalecki, Ignacy Krautler, Ludwik Landau, Zygmunt Limanowski, Stefan Moszczeński, Jerzy Splawa-Neyman, Jan Piekalkiewicz, Franciszek Piltz, Edward Strzelecki, Edward Szturm de Sztrem, Stefan Szulc and Jan Wiśniewski.

4. Further activity of Polish Statistical Association.

The Statistics Section working within the framework of Association of Polish Economists and Statisticians was dissolved in December 1937 due to re-establishing of the Polish Statistical Association. The members of the Statistics Section of SPES became the founding members of the PSS.

The resolution on establishing of the Polish Statistical Association was adopted during a meeting of the Statistics Section of SPES held on December 16, 1936. The activity that PSS was engaged in at that time was very intense and

fruitful. Polish Statistical Association published two periodicals: „Statistical Review” and „Statistics in Business”. Its activities were carried out by four regional branches: Silesia-Dąbrowa – most active, Poznan, Vilnius and Lvov. Moreover, there were four sections: Mathematical Statistics, Statistics in Business, Economic Statistics and Population Statistics. In 1938 three volumes of “Statistical Review” came out together with five volumes of „Statistics in Business” and some other publications. The members of the board of the PSS included the following eminent scholars: Professor Stefan Szulc, Professor Edward Szturm de Sztrem, Professor Ludwik Krzywicki, Professor Edward Grabowski, assistant Professor Jan Wiśniewski, Professor. Jan Czekanowski and Jan Derengowski, MSc.

Within the framework of PSS there were two Scientific Commissions working: for the statistical terminology and for devising a guidebook of statistical sources. The latter one worked under the supervision of Waław Skrzywan and succeeded in preparing a detailed plan and contents of the guidebook. Unfortunately, the effect of the commission’s work was destroyed as a result of the outbreak of war.

In 1939 two volumes of „Statistical Review” came out in print and a number of materials were gathered for subsequent volumes. Also, two volumes of „Statistics in Business” were published. In Volume II of the „Statistical Review” a list of PSS members was included (as of June 15, 1939) and it comprised, 291 names of full members and 30 names of supporting members.

Numerous members of PSS who were not killed as a result of war activities, were deprived of the possibility of performing their normal scientific and professional duties. They got engaged in clandestine education activities and carried on some research getting ready for the after-war period. Many studies which were written by PSS members at that time were unique and had a lasting value e. g. „The Chronicles of War and German Occupation Years” by Ludwik Landau. Other members, who found employment in Statistical Office of the Governor General in Cracow, managed to save research materials of the Central Statistical Office.

After the war Professor Stefan Szulc, the head of the Central Statistical Office, undertook the task of re-activating the Polish Statistical Association, which took place in 1947. He was elected the Chairman of the Association. Despite increasingly unfavourable conditions resulting from political situation, PSS managed to continue its activities up to the end of 1950. In 1949 Volume III of the „Statistical Review” was published. In the years to follow (1953-1981) there was a long break in the existence of a separate organization of statisticians after PSS had been dissolved. Between 1953 and 1980 Polish statisticians conducted their activities in the Statistics Section of the Polish Economic Society.

The highlight of the period was the year 1975 when Polish statisticians were given a task of organizing 39th Session of International Statistical Institute.(ISS).

5. Reactivation of the Polish Statistical Association.

Another initiative aimed at reactivating the organization of Polish statisticians was taken in 1980 by a group of workers of the Central Statistical Office. At the initial stage a team responsible for carrying out the task was selected. The team was led by Doctor Jan Kordos and Professor Leszek Zienkowski, and the team members were: Lucjan Adamczuk, Kazimierz Latuch and others. The founders' meeting was held on 16 of April 1981 and was attended by 40 statisticians from Białystok, Lublin, Łódź, Olsztyn, Poznań, Rzeszów, Szczecin, Toruń, Warsaw and Wrocław. The resolution on establishing Polish Statistical Association was passed unanimously.

Polish Statistical Association strengthened its position on the international arena and since 1994 it has been affiliated with the International Statistical Institute. It has also achieved a prominent position at home and it is seen as a very active organization whose activities influence both scientific and social environment. Every year the Association is the organizer of two or three scientific conferences attended by members of international statistical community. PSS has a long tradition of organizing seminars and conferences devoted to discussing problems important for both statisticians and local communities. The papers presented at conferences are subsequently published in periodicals issued by the Polish Statistical Association and the Central Statistical Office: „Statistics in Transition”, „Statistical News”, „Statistical Quarterly” or in special monothematic volumes. At present the main activities of the Association are often supported by assistant bodies: Historical Section, Classification and Data Analysis Section, Mathematical Statistics and Bureau of Statistical Research and Analysis.

In 1990 Taxonomy Section, which later changed its name into Classification and Data Analysis Section of PSS, originated and since then it has organized its annual conferences. The most important results of scientific research presented during the conferences were published in 17 volumes entitled “Classification and Data Analysis – Theory and Application”.

Classification and Data Analysis Section organized in 2002 in Cracow was one of those conferences, i.e. „The Eighth Conference of the International Federation of Classification Societies” - (IFCS).

In 2006 Polish Statistical Association was the co-organizer of 26th European Meeting of Statisticians, which took place in Toruń. Since 1980 PSS has been organizing jointly with The University of Łódź the international conference „Multivariate Statistical Analysis – MSA”. The conference proceedings have been published in 20 volumes of “Acta Universitatis Lodzianensis”. PSS also cooperates with the Economic University of Katowice on organizing international conference „Survey Sampling in Economic and Social Research”.

Bureau of Statistical Research and Analysis plays an important role in the activity of Polish Statistical Association. It is an independent research unit which carries out statistical research commissioned by various scientific institutions and institutions of higher education. The profits generated by the Bureau go towards organizational and programme activities of the Polish Statistical Association. The financial means earned by the Bureau enabled the Association to undertake new tasks, improve the quality of audio-visual equipment, produce training films, organize scientific conferences, finance publications, etc.

6. Congress of Polish Statistics.

To celebrate the one hundredth anniversary of the Polish Statistical Association the Congress of Polish Statistics will be held on 18-20 April 2012 in Poznan, combining this event with the celebration of Polish Statistics Day in 2012.

The preliminary programme of the Congress comprises a number of thematic sessions, including the anniversary (historical) session, as well as others devoted to the methodology of statistical research, regional statistics, population statistics, socio-economic statistics, the problems of statistical data and the statistics of health, sport and tourism. The Congress will also host two panel discussions on: fundamental problems of statistics in the modern world, and the future of statistics.

7. Summary.

Let us now turn our attention to the most important achievements of two eminent members of the Polish Statistical Association, who played an active part in the scientific life of the Association - Jan Czekanowski (1882-1965) and Jerzy Neyman (1894-1981).

Researches aimed at finding a method in multi-feature analysis (1909) resulted in developing a diagraphic method (Czekanowski metod). The method enables to group and order a set of multi-feature individuals (each element is defined by a number of features). It includes two steps: 1) a matrix is introduced to the set of individuals, i.e. the distance between each two individuals of the set is calculated, which gives the distance table called Czekanowski table; 2) the numbers in Czekanowski table are replaced by correspondingly blackened fields, and columns and rows are moved in such a way as to get a diagram which would be possibly most blackened at the main diagonal. The obtained result is called Czekanowski diagram (J. Perkal, 1965).

This simple method of multi-feature analysis was used for over half a century to solve problems in anthropology, ethnography, psychology medicine, linguistics, musicology, botany and other fields. The method offers a number of variations (mean differences, features hierarchy) for distance calculation. Thanks

to this method Czekanowski became a renowned biometrician. In 1904 he published an introduction to biometrics in anthropology handbook by R. Martin and in 1907 it came out in print as his doctoral dissertation. In 1913 Czekanowski wrote „An outline of statistical methods applied in anthropology”. It was the first Polish handbook on modern methods of compiling numerical data and interpretation of findings. It is worth noting here that G. U. Yule published his handbook of mathematical statistics entitled “An introduction to the theory of statistics” just two years earlier. In the years 1913-1941 Czekanowski was a Professor and the head of Chair of Anthropology at the University of Lvov.

Jerzy Neyman arrived in England in 1938 and after some time he settled in Berkeley, USA. At that time statistics was not in the centre of interest of Berkeley University, however Neyman was determined to set up a Department of Statistics, which he later developed and changed the name into Laboratory of Statistics. He organized famous Berkeley Symposiums and showed great interest in astronomy and advanced statistics in less developed countries. This contributed to intensive development in scientific contacts at international level and in the seat of ISI in Holland. The International Association of Statistics in Physical Sciences was founded (I.A.S.P.S.). In 1975 I.A.S.P.S. was dissolved and replaced by Bernoulli Association which constituted a section of ISI. Bernoulli Association absorbed as its sub-section two other major groups of statisticians: The European Meeting of Statisticians (in the USA based on the Institute of Mathematical Statistics), and the international group cooperating on the organization of Conference of Stochastic Processes. All the above mentioned activities aimed at development of statistical movement on an international scale were inspired by Neyman.

Jerzy Neyman became a Professor of Statistics at Berkeley University and his disciples can be met all over the world. His *magnum opus* was the Neyman-Pearson theory of testing statistical hypotheses.

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