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NEW METHODS AND TECHNIQUES OF RESEARCH INTO ECONOMIC HISTORY IN CZECHOSLOVAKIA

In this paper I shall restrict myself to the application of quantitative methods and computers to the research into the economic history of Czechoslovakia and to papers which deal with the problems of methodology, method and technique in this field, which we might call economic historiometrics. I used the term historiometrics for the first time in 1962 in a report to the 1st Czechoslovak Cybernetics Conference in Prague. 1) The subject of historiometrics in this concept is the study of the measure of historical processes, i.e. the regularities of the development of the relation between their quantitative and qualitative determinations using specific historical, as well as mathematical methods. The name historiometrics seemed slightly unusual, however, it is suitable for two reasons in particular: it expresses the fact that historiometrics deal with a) the measurable aspect of historical processes, and b) the determination of their measure (metron). The term "histoire quantitative" is unilateral, because it only emphasizes the quantitative side without its association with the qualitative characteristic, the term "new economic history" stresses the novelty in the name directly, but does not say to what it pertains, the mythologically attuned term "cliometrics" is indicative of the Muse of History and of metrics, however, we are interested in the measure of historical processes themselves rather than in the vital statistics of Kleio, the Muse of History. One may, therefore, hope that the uniformly sounding international name historiometrics (in French: l'histoire quantitative, in German: die Historiometrik, in Russian: istoriometriya) in the sense mentioned above, will gradually become internationally recognized.

In the broader associations of investigating the stimuli which cybernetics and the theory of information provided towards the new orientation of history, I dealt with some of these questions already at the beginning of the sixties.2) In this treatise I pointed out that modern electronic computers will enable us to meet the call for historical analysis to be founded on the knowledge of all indisputable facts and of the relations between them (e.g., processing to taxation cadastres, references concerning censuses and other statistical data, history of prices, investigation of the trends of various aspects of economic and demographic development, testing the measure of probability of certain hypotheses, etc.). In connection with these deliberations I prepared a report on the dependence of the growth of the strike movement on the development of factory production in Bohemia and in Germany in the 2nd half of the 19th century, the abstract of which was presented at the 2nd Inter-
national Conference in Economic History in Aix-en-Provence in September of 1962. The mathematical model was expressed by an exponential-type equation and the coefficient of correlation between the development of the strike movement and factory production for Bohemia in the period 1850-1890 \( r = +0.97 \), and for Germany in the period 1840-1880 \( r = +0.96 \). In connection with graphical representation I utilized several new methods of quantitative analysis in analysing the structure and dynamics of the development of industry in Bohemia in the last quarter of the 18th century, and in 1962-63 in the cartographic processing of the contents of some maps, particularly concerning demographic conditions, in the Atlas of Czechoslovak History, making use of the computer centre of what was then the Central Administration of Geodesy and Cartography in Prague.

Several other papers in this field deal with the phase shift of the Industrial Revolution, the asynchronous diffusion of steam drive in industry in Europe, and the measuring of various cases of asynchronism using the asynchron unit, investigating the correlation between the development of the steam drive in industry and the indices of economic growth in Great Britain, France, Germany, Austria and Russia in the 19th century, and the development of the increment of the steam drive in industry as an index of fluctuation of economic cycles in the 19th century.

An international conference on the quantitative methods and the use of computers in studying history, "History and the Computer", at which I had the possibility of presenting a report dealing with the following problems in particular, was held at the university of Uppsala in Sweden in June 1973:

1. Historical information and historiometrics, cartographic information and historic-cartographic information.
2. Problems of representing information graphically.
3. The historical map as a product of topical cartography and the processing of historical data in map form.
4. Some examples of creating historical maps using computers, and international co-operation and co-ordination of research.

In this connection the problems of cartographic representation of events of economic history, encountered in preparing the Atlas of Czechoslovak History, were also mentioned.

However, let us revert to the first half of the sixties, when other articles, dealing with the problems of using computers in historical research, also concerning economic history in broader associations, were published, like J. Folta's information on Soviet treatise in this field and several articles of L. Nový and J. Folta on the use of mathematical methods in the history of sciences. Several treatises dealing with the
computer processing of information in archival and historical work and its prospects\cite{13} were also published in the middle of the sixties. New methods and techniques of processing references of a mass nature were pointed out by H. Poppová.\cite{14} J. Honc, who investigated the populational development of six generations of 125 Bohemian noble families between the beginning of the 16th and end of the 18th century,\cite{15} analysed the input data on prices and salaries for transferring them to punch cards and computer processing them,\cite{16} and deliberated upon the prospects of further exploitation of computers particularly in the field of historical demography,\cite{17} made use of modern computer equipment in this research work.

The articles of K. Berka,\cite{18} J. Řehák\cite{19} and J. Bouška\cite{20} contributed to the elucidation of several theoretical problems of measuring in the field of social sciences at that time. The importance of the system approach to processing data by computer was pointed out by J. Vlček,\cite{21} whose conclusions are also valid in the field of application of these progressive research methods to economic history.

At the end of the sixties work in this field also began to gain momentum in Slovakia, particularly in connection with the construction of the first computer centre in 1969, which is exclusively devoted to the research into the exploitation of computers in social sciences, and which is located at the Faculty of Philosophy of the Comenius University in Bratislava. At that time an article was published in a specialized journal, concerning the use of computers in social sciences,\cite{22} and a volume of translations of foreign papers was published, which reported on the use of computers and methods of higher mathematics in research into economic history in particular.\cite{23}

Most recently research in this field has expanded and become more elaborate. A team of scientists at the Faculty of Philosophy of the Charles University in Prague expanded upon the work of the Soviet scientists I.D. Koval'chenko and L.V. Milov and, using a computer, they analysed the relations between the price of corn in Bohemian towns in the 2nd half of the 18th century, thus contributing to the elucidation of some questions of the forming of the domestic market for agricultural products in Bohemia, particularly by determining a number of correlation coefficients between the evolution of these prices on various markets. In this connection, the authors assumed a certain balancing influence of the capital Prague as the marketing and of the Elbe Valley region as the production centre of Bohemia, and they stressed the importance of trade routes for modifying price relations. They emphasized the necessity for applying specialized aspects in selecting the towns for which the prices of the individual kinds of corn were determined and which were then correlated. In order to eliminate randomness in the occurrence of some high correlations between considerably distant towns, they adopted the method of computer correlating and comparing
M. Hroch and his collaborators recently pointed out new stimuli, emanating from present Soviet historiography, particularly from the papers of I.D. Koval'chenko, M.A. Barg, V.M. Lavrovskii, E.M. Zhukov, N.B. Sivachev, B.F. Porshnev, J. Kahk, A.N. Chistozvonov and others. A stimulating paper by R. Fišer on the processing of the data on a valuable source of foreign trade of the town of Levoca from the 2nd half on the 17th century, registra tricesima, by computer was also published last year. The author made use of co-operation with the Computer Laboratory of the Technical University in Brno and of the ASTI information programming system of the Institute of Scientific and Technical Information, which had been produced in 1966 and tested by 1968. The ASTI system can be combined with the STAT system of statistical operations which carries out statistical evaluation. There are two conversion programs between these two systems, ASTI-STAT and STAT-ASTI. Data on customs dues from the registra tricesima (i.e. tricesima registers) from the years 1656-1678 were analysed in detail here using a SAAB D21 computer. This involved a total of 1512 records of export and import of goods made by Levoca burghers, of which the following data were analysed: year, month and day of record, surname and name of trader, type of transaction (export-import), where to (with exports), customs due prescribed, kind and amount of cleared goods.

At the beginning of the deliberations on the technical revolution in historiography, generated by the use of modern computers, which will have far-reaching consequences as regards increasing its scientific standards in areas hitherto neglected, the following opinion was voiced:

"It is understandable that a historian, who is investigating astounding results, achieved in technical sciences, is impatient and would like to know the solution to the problems in his field which could not be solved so far for technical difficulties - it was not within the power of an individual or a team to manage too extensive complexes of referenced material. It is possible that these questions are still not on today's agenda. New methods are preferentially used in the natural and technical sciences. However, evolution is necessarily tending towards an increasingly wider use of these methods also in social sciences, particularly in various fields of national economy and history. It may seem that these deliberations are premature. However, the whistle of the first steam-driven trains was a warning to the teamsters. Revolution in transport had begun. Steam engines began to dash forwards unheadingly. It was necessary to become a trained engine driver." In the meanwhile man landed on the Moon and more and more sophisticated space ships and orbital systems have been launched into space. In historiography we must also leave the stage of the manufactory and, after the first swallows announcing the advent of a new epoch, welcome whole flocks of them. Only this will lead to a real technical revolution in historiography which will also change its theoretical, methodological and methodical bases.
Notes:


2) J. Purş, Historie a kybernetika (History and cybernetics), ČŠCH IX, 1961, p. 396-399.


11) J. Folta, K sovětským pracím z "matematické historiografie" (On Soviet papers in "Mathematical Historiography"), ČSCH III, 1964, No. 6, pp. 888-892.

12) J. Folta, L. Nový, Sur la question des méthodes quantitatives dans l'histoire des mathématiques, Acta historiae rerum

13) V. Pletka, Strojové zpracování informaci v archivní a historické práci (Computer processing of data in archival and historical work), doctor's thesis at the Faculty of Philosophy of the Charles University, Praha 1964, manuscript 424 + 96 pp.; Idem, Současný stav a perspektivy strojového zpracování etnografických a folkloristických materiálů v ČSSR (Present state and prospects of computer processing of ethno- graphic and folkloristic materials in the ČSSR), Česká literatura 51, 1964, No. 4, pp. 193-201; Idem, Možnosti využití strojního zpracování vědeckých informací v muzejní práci (Possibilities of exploiting computer processing of scientific information in museum work), Muzejní a vlastivědná práce, Vol. IV, 1964, No. 1, pp. 25-34; Idem, Mechanisace vědecké dokumentace k nejnovějším dějinám (Mechanization of scientific documentation relevant to the most recent history), "Vý- měna zkušeností", Vol. 5, Státní technická knihovna v Praze, 1965, pp. 54-107; Idem, Pokusy o mechanisaci vědeckoinformač- ních prací v archívech (Attempts at mechanizing scientific information work in archives), Sborník archivních prací XIV, 1965, No. 2, pp. 167-207; Idem, Strojové zpracování vědeckých informací (Computer processing of scientific information), Nová mysl, Vol. 1965, No. 1, pp. 56-64.

14) H. Poppová, Metody a techniky zpracování pramenů hromadné povahy (Methods and techniques of processing references of a mass nature), Slezský sborník 68, 1970, No. 1, pp. 62-68.


16) J. Honc, Vstupní data o cenách a mzdách na děrných štítcích pro elektronkové počítače (Input data on prices and salaries on punch cards for electronic computers), Praha 1971, (mimeo- graphed).

18) K. Berka, Kritické poznámky k pojetí měření v československé sociologii (Critical comments on the concept of measurement in Czechoslovak sociology), Sešity UFS ČSAV, Vol. 1971, No. 6, pp. 25-64.


20) J. Bouška, Úvaha o tendencích v ekonomicko-matematickém výzkumu (Deliberation on tendencies in economic-mathematical research), Ekonomicko-matematický obzor, Vol. 8, 1972, No. 4, pp. 361-368.


23) Strojové a výšší matematické metody práce v hospodářských a sociálních dejinách (Computer and high mathematical methods of work in economic and social sciences. An excerpt from the reports to the 5th International Congress on Economic History in Leningrad, August 1970), ed. A. Špiesz, Bratislava (mimeographed), s.d.


27) M. Fendrych, Popis informačního programového systému ASTI (A description of the ASTI Information Programming System), UVTEI Praha 1974. The ASTI system has been improved to enable its use with the TESLA 200 computer of Czechoslovak production (Tesla - TIPS).
CONFERENCE REPORT

SESSION OF THE NETWORK ON CRIMINAL JUSTICE AND DEVIANCE AT THE SSHA MEETING, COLUMBUS, NOV. 3-5, 1978

At the recent annual meeting of the SSHA in Columbus, Ohio, our network had a sponsored session and a network meeting. The session, "Theory and Practice in Criminal Justice", had three papers: Roger Lane (an historian), "Suicide as a Source of Nineteenth Century Social History"; Patricia O'Brien (an historian), "Agricultural Colonies for Juvenile Offenders in Nineteenth Century France"; Harold Pepinsky (a criminologist), "Social Historians: Write Your Criminologists". Ellen Dwyer and Eric Monkkonen commented.

Lane presented an analysis of sources showing that the suicide data of the Philadelphia coroner's office reflected suicidal reality accurately. He then demonstrated that the majority of suicides were white males and argued that the new urban-industrial occupations generated internal stress which led, in turn, to a greater proportion of workers in these occupational categories committing suicide. He concluded by suggesting that suicide statistics be utilized by historians for greater description and understanding of ethnic, racial, and gender groups.

O'Brien described the rise and decline of agricultural reform prisons in mid-nineteenth century France, showing how the contemporary theory that urbanization caused juvenile crime schooled the thinking which tried to turn juvenile offenders into agricultural workers. The ironic outcome of these efforts was that rather than de-urbanizing the young people, the agricultural schools reproduced, in greater intensity, the unhealthful social conditions of the urban setting in a rural place. Needless to say, the schools were not successful in their rehabilitative efforts.