THE SECOND SYMPOSIUM OF ECONOMIC CYBERNETICS
ROSTOCK — THE GERMAN DEMOCRATIC REPUBLIC
August 31 — September 6, 1981.

The bilateral meetings between the specialists of the Socialist Republic of Romania and the German Democratic Republic on economic cybernetics problems have started in 1979 within meetings of mutual briefing on the preoccupations and schooling in the two countries in this field and they have continued with the first symposium held in Bucharest, in May 1979.

The symposiums are organized every two year by the Bucharest Academy of Economic Studies and by the Wilhelm Pieck University of Rostock with the support of the Academies of Sciences and of the Ministries of Education of the two countries.

Through the second symposium held in Rostock between August 31 and September 6, 1981, on the subject "Cybernetic Modeling of Economic Processes", the bilateral cooperation started in Bucharest in 1979 was continued successfully.

Present at the symposium from the Socialist Republic of Romania were academic staff and researchers of the Academy of Economic Studies, the Bucharest University and the Ministry of Chemical Industry.

Present from the German Democratic Republic were scientists, academic staff and researchers from the main higher education institutions and research institutes: the Wilhelm Pieck University of Rostock, the Berlin Humboldt University, the Martin-Luther University of Halle, the higher education institutes in the economic and technical fields of Dresden and Leipzig, the VEB Metallurgical Enterprise of Leipzig, etc.

37 papers were presented at the symposium, 14 of which by the Romanian delegation.

The preoccupations of the participants in the field of economic-cybernetic modelling at a macroeconomic level focused on three main directions:

A first direction is referring to the used and improvement of certain types of classical models and techniques in economic cybernetics. In this sense, we can mention the use of input-output type methods at the level of the national economy and at an economic branch level (for example, in the field of machine-building and in that of raw materials, especially of the short ones), the application of the production functions at an industrial sector and enterprise level, the application of economic forecast models, etc.

Thus, for instance, a dynamic input-output type model was presented, used in improving activities in the raw materials industry. With the aid of this model, the input-output functions were defined as a generalization of the production and cost functions for the production systems. The model was used for establishing the efficient use of raw materials, of fixed assets and for eliminating strangulations in the technical-material supply.

The second important preoccupation which held an extremely important share at the symposium is referring to the use of simulation models in the management and educational activities.

Thus, the paper "The Modelling and Simulation of Production Process-Control" presented a system of programmes (SIMPROS) worked out on the basis of a production process mathematical modelling. The paper "Model for Computer-aided Simulation of the Evolution of Efficiency in an Enterprise" presents a simulation model based on input-output techniques. The model and the computation program permits to simulate the behaviour of the enterprise in point of its efficiency, in various situations which may appear in its practical activity.

As regards the use of the simulation method in the teaching activity and of managerial staff training, the paper "The Modelling of Economic Processes as a Hypothesis for Economic Didactic Experiments" was extremely interesting.

The paper "Theoretical Aspects of Using Simulation in Hierarchical Systems Control with Applications in Energetics" dwelt on the problem of hierarchical systems control in real time and on the use of the simulation method for preparing the necessary decisions in current and future control.

As regards the third direction manifested during the bilateral Romanian-German symposium, it focused on the identification of trends for improving the economic-cybernetic modelling methods and techniques, so as to extend as much as possible the applicative field of this science simultaneously with increasing efficiency in the application of these methods.

The whole debate which took place along this direction was strongly influenced by the synthesis work of Acedemician, Prof. Manea Mănescu: "Quantic Economy and Economic-Cybernetic Modelling", which was presented in the symposium plenum. The ideas contained in the monograph "Economic Cybernetics" by Academician, Prof. Manea Mănescu, under print in the German language as well, were also at the basis of the analysis of the trends along which the science of economic cybernetics will develop the way in which it can be most efficiently applied in economic practice.

Also of great interest was the synthesis paper presented by Prof. dr. G. Schultze in the plenum of the symposium, which reviewed the results of the studies made in the field of economic cybernetics in the German Democratic Republic, during the past few years.

The main trends which have been outlined in connection with the development of the science of cybernetics referred to key concepts, such as that of economic-cybernetic system, command, control, adjustment, selfadjustment, the analysis of the stability of the cybernetic-economic systems and the way of preventing or diminishing perturbations, the problem of economic information mainly the semantic and pragmatic aspects of information, a.s.o.

The problem of conditioned reflexes in economy, respectively the "learning" algorithms for the economic-cybernetic systems held a special place within these preoccupations.

It is worth mentioning that in tackling these problems as well as those regarding the economic space, the economic time, the optimal economic time respectively, the epistemologic problems of modelling, a.s.o., most of the parti-

cipants in the symposium started from the fundamental works of Academician, Prof. Manea Mănescu, which outline the trends of development of economic cybernetics in the coming years.

The round-table debates organizes during the symposium were also very fruitful. Starting from the ample report presented by Prof. dr. Mircea Bulgaru "On the Concepts of Economic Growth and Economic Development", many topical problems of economic theory and practice have been debated, such as the components and quantification of the national wealth, the national income-national wealth-welfare connections, the macroeconomic optimum criteria, etc.

As to the papers presented by the specialists of the German Democratic Republic, at a macroeconomic level, they have underlined the preoccupations and results obtained in the development and improvement of economic cybernetics techniques and their application in the economic units for a better organization and optimization of the production processes, for raising labour productivity, for a scientific substantiation of decisions regarding production and economic administration. They have also revealed the opportunities provided by cybernetics ad the computing technique in solving problems facing the economic units. Papers in a draft stage as well as papers in a stage implementation and functioning were presented, stress being laid on the cybernetic approach and solution of the problem and the economic effects obtained by their application at the end-user.

At an enterprise level, problems were approached in connection with production planning, launching, programming and control over the fulfilment of the plan, supply and sales, quality control and the safety in the functioning of installations, domestic transports and financial-bookkeeping problems. Problems facing the harbours and shipyards, the agriculture and education in the German Democratic Republic were also discussed.

Among the papers referring to the activity at a microeconomic level, we mention: "Electronic Computer-aided Production Control at the VEB Enterprise in Magdeburg". That enterprise is endowed with a process computer and with data collection and transmission systems from the main work and control points. The whole system now being experimented enables the optimal programming of production, the control of production fulfilment according to the plan and rapidly answers the cropping up perturbations by reprogramming production. The experimental application of this system has led to a considerable improvement of the flexibility and rhythmic fulfilment of production. Another paper is referring to the use of economic-mathematical modelling for optimizing the transport, loading and stocking activities in sea ports. The use ot these models and of an adequate automatic technological device is contributing to a better organization of the harbour activities, to increasing their efficiency, to diminishing the transport and storing expenses and the ship stationing expenses. The Constanța port with which the Cybernetics Department has a long scientific cooperation is faced with similar problems. On that occasion, ideas were exchanged on the methods used and results obtained by the two sides in similar problems.

A valuable exchange of ideas has also taken place in the problem of ship design and building. The Romanian delegation presented the information system used at the Galați Institute of Naval Research and Design and the

German side presented the system used by the Rostock shipyards. Joint preoccupations and similar solutions have resulted for some of the components of the system, but also the possibility of a work together for completing each system with the lacking components (mainly for the production phase of the system). Of special interest was the use of mathematical-statistical methods at the optimal dimensioning of the loading and unloading capacity of the ships, in keeping with the type of the ship, the demand and the type of transported goods. The statistical analysis provides the necessary data for designing and achieving these capacities and, at the same time, it estimates the degree of the utilization of the potential loading and unloading capacities. Of great interest was also the paper of the Romanian delegation on the modelling of hydroamelioration processes, the German side having presented in the same field the project of an information system for the control of designing activities and the carrying out of hydromelioration systems. The informatic system presented by the German side might benefit from models already elaborated and experimented in our country.

A number of papers referred to the transport optimization problem by taking into account the specific character of this activity in various economic units. A new type of mathematical model was proposed which takes into consideration the possibility of a successiv use of several types of means of conveyance (the chain transport). The experience gained in the German Democratic Republic has evinced the utility and efficiency of this way of tackling the problem of transport.

Another interesting experience achieved in the German Democratic Republic regards the way of using minicomputers in the activity of planning and checking the fulfilment of production and in the administration of the machine-building enterprises. On the basis of a system approach of the control problem of a machine-building enterprise, algorithms, models and programmes have been elaborated for the minicomputers these enterprises are endowed with.

An important trend for the application of the methods of economic cybernetics at a microeconomic level also refers to the achievement of a unitary conception on tackling the problem of the reliability of installations in an enterprise and the establishment, on this basis, of the safety stocks as well as of the optimal plan for carrying out revision and general overhaul. We mention that in this field, too, there is a long and rich experience in our country, a fact which permitted a fruitful exchange of experience with the German side.

The working out of simulation systems and the implementation, on this basis, of man-machine interactive systems is a highly topical preoccupation in the German Democratic Republic. Such systems were achieved mainly for a hierarchical control in the machine-building enterprises which are producing hundreds of types of devices and installations which consist of tens of thousands of parts. The application of the man-machine interactive systems enables a coordination in the production of spare parts and a rapid passing from a type of product to another.

By taking into account the fact that the constructive and technological preparation of production holds an important share in the production cost, the system called "The automatic technological preparation of production"

consisting of a data bank and of the corresponding informatic subsystem has been worked out and experimented at the "Ernst Thälmann" Heavy-Machine Plant. The use of this system, in the opinion of the specialists who had achieved and presented it at the symposium, is leading to a better programming and control of production already in its preparation stage.

The use of the waiting theory in the design or reconstruction of the wharfs was the subject of a paper which aimed at putting at the disposal of the decision-making factors a series of variants examined from the point of view of productivity parameters. Considering the wharf as two-phase a waiting system (loading and storing), parameters such as the waiting time in the roadstead the stationing time in the port, the loading of the wharfs and storehouses, etc. were examined on the basis of the input flows and of the service conditions. The examination of the dependence between these parameters and their economic effects lies at the basis of optimizing the system's design.

Of interest were also the other papers of the researchers of the German Democratic Republic presented during the symposium, referring to the simulation of the evolution of certain economic indices of an enterprise by using statistical methods and digital computers, the elaboration of systems and models for equilibrating the production capacities for an enterprise with a small serial production or single pieces, the application of the micro and macroeconomic system analysis as a methodological basis for the projects of organization and their correlation with the preparation and execution of investments, etc.

In the field of microeconomic modelling, the Romanian delegation also presented papers on numerical modelling and solution of nonlinear technical-economic models, algorithms for solving the problem of the location-production-transport type, interactive techniques for the computer-aided solving of economic-mathematical models, the Monte Carlo method used in global optimization, the optimal distribution of electronic and thermic loads among the groups of an electro-technical station by mathematical programming, etc.

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