THE FIFTH INTERNATIONAL CONGRESS OF CYBERNETICS AND SYSTEMS AND THE "ARTURO ROSENBLUETH" INTERNATIONAL SCHOOL OF SYSTEMS AND CYBERNETICS

The Fifth International Congress of Cybernetics and Systems jointly organized by the World Organization of General Systems and Cybernetics, the Mexican Association of Systems and Cybernetics and the Mexican Institute of Systems has taken place in Mexico City, between the 17th and 21st of August, 1981. For preparing the Mexican participants in the Congress debates, the Mexican Association of Systems and Cybernetics and the Mexican Institute of Systems had organized an international school on cybernetics subjects, between August 3rd and 14th. Taking into consideration the close relationship between the two events, in the following we shall present them in the order of their unfolding.

As a general characterization, it can be said that both scientific events enjoyed a high scientific prestige both as regards the capacity of the participants and the level of the papers presented.

We specify that the International School was named "Arturo Rosenblueth" in memory of the Mexican cardiologist with the same name, a close friend of the creator of cybernetics, Norbert Wiener. As the latter points out in his memories, his discussions with Rosenblueth had played an important part in the creation of the fundamental ideas of the link between the theory of automatic systems and homeostasis-fundamental problems in modern cybernetics.

As regards the international school, it unfolded on several subjects: 1. The interdisciplinary study of social systems; 2. Education; 3. Ecology; 4. Biomedicine; 5. Systems Engineering; 6. Economy; 7. Industrial applications; 8. Applications in the administrative field.

The lectures of the international school were provided by 23 foreign specialists — from eight countries — and by 12 American specialists. Professors from: Great Britain (3), France (2), the Federal Republic of Germany (2), Holland (6), India (1), Mexico (12), Poland (2), Romania (3) and the U.S.A. (4) have been invited and participated in the courses.

Both the International School and the Congress focussed on the subject: the theory of systems and cybernetics in the service of development — which was clearly expressed in the congress programme underlining that the main target of the Fifth International Congress of Cybernetics and Systems is to demonstrate the importance of cybernetics and the science of systems for meeting the requirements of the developing countries. The organizers have seen in the congress debates a concrete exercise in which scientists from all over the world are participating and who are interested in improving their knowledge about how a system, at the same time very big and very complex — that is a developing country can be approached scientifically in their studies. For exemplification, we present several themes from the varied subject-matter of the International School.

At group 1 of interdisciplinary studies on social systems, George Klir and Roger Cavallo (the Bighamton University — U.S.A.) presented a theme on the conceptual fundamentals of the systems theory. Helmut Jungermann (the Berlin Technical University) dealt with the decision-making theory. At subject 2, Gerard de Zeeuw (the Amsterdam University) dealt with the working out of studies on social transformations. At subject 3, the education for development was examined (Edmond Nicolau) and the polytechnical culture — a cybernetic alternative for development (Manuel Marin, the National-Polytechnic Institute, Mexico). As regards ecology, Luis Bojorquez—Mexico— dealt with the systems analysis and D. Laycock— (the Central London Polytechnic) with the computer-aided simulation of ecological systems. As regards Biomathematics, Jorge Gallego—France —approached various mathematical models for solving biological and medical problems and Michel Bojanczyc— the big, complex systems and their simulations. As part of the systems engineering, we mention the cycle of lectures delivered by E. Martinez —Mexico— on nonlinear programming as well as the lectures on the applications delivered by Alberto Moreno Bonett. In the field of economy, Robert Vallée —France— presented the principles of the dynamic systems, C. V. Negoiță— Techniques used in the study of big systems and Edmond Nicolau dealt with the relationship between information and development.

In connection with the industrial applications, we mention the following cycles: industrial cybernetics (C.V.Negoiță); industrial dynamics (R. Romero— Mexico), forecasting and control techniques (J. Sanchez—Mexico). An extremely important subject for the developing countries was presented by Manuel Marin: the quality control systems. As regards the administrative applications, A.Ghosal (India) dealt with the administrative prospects of applied cybernetics. Stress was laid on the themes approached by the international school, because that school preceded the congress also in point of the structure and topics discussed.

The Fifth International Congress of Cybernetics and Systems took place under the honorary presidency of Jose Lopez Portillo, President of Mexico. There was a sponsorship committee in which the Romanian science was largely represented, more than 20% of the Committee members being Romanian specialists led by Academician, Professor Manea Mănescu.

The Congress debates took place on several sections to which we must add an open Forum, four panel debates and eight round table discussions.

The Congress sections were: artificial intelligence; biology; medicine; neurology; economy; ecology; industrial applications; organization and management; philosophical and mathematical fundamentals; social systems; systems engineering; energetics; informatics; modelling the health protection systems.

The open Forum had as a theme the investigation of an international centre of systems and cybernetics, in Mexico.

The panel debates referred to: modelling and elaborating decision making on regional planning of soil utilization; studies in computer science in the less developed countries; interactive graph systems; national models.

The round table discussions had a specific character in point of the active participation of an ever larger number of people in elaborating the conclusions.

The subjects of the round-table discussions were: food problems; education; energetics; industrialization; urbanism; social progress; public administration; ecology.

The programme of the Congress included papers of specialists from many countries: Argentina, Austria, Belgium, Brasil, Great Britain, Bulgaria, Canada, the People's Republic of China, the Republic of China, Czechoslovakia, France, the German Democratic Republic, the Federal Repulic of Germany, Greece, Holland, India, Israel, Italy, Mexico, Norway, Poland, Romania, Spain, Turkey, the U.S.A., the U.S.S.R., Venezuela and Yugoslavia, 28 countries in all. The programme included 190 papers 20 of which (see appendix) signed by Romanian specialists. We mention that the Romanian specialists participating in the Congress were members of the preparatory committee and were chairmen of sections.

The round-table discussions took place according to a special methodology, namely a number of cards were distributed to the participants on which they jotted down their viewpoints on the subject discussed. Then, the moderator wrote on the blackboard the formulated viewpoints submitting them to general debate. Of course, everything started with an exposition on the subject under debate.

Each point of view written on the blackboard was discussed in order to obtain the consensus of the participants.

If a general characterization of the congress debates is made, we should like to underline a few facts which we consider to be essential. In the first place, the impeccable organization by ensuring through specialized organizations both the proper unfolding of the debates and the simultaneous translation. In the second place, the large participation with papers of specialists from a large number of countries. The tackling of a specific subject-matter— the role of cybernetics in the development of the countries — seems, however, to be the main characteristic of this congress. An essential part in this respect was played by the chairman of the Mexican Association of Systems and Cybernetics, Prof. Elohim J.L. who has lent this trend to the congress debates. He was also the initiator of the new method of unfolding the round table meetindgs.

From the scientific point of view, the main subject was the approach by various simulation techniques of the big and complex systems. Undoubtedly, the social preoccupations were those which have dominated the congress debates. Worth mentioning in this respect is the remarkable effort of the Dutch group (Gerard de Zeeuw, Johannes van der Zouwen, Felix Geyer, Hajen van Houten) which had previously organized the debates of the section of social sciences. Namely, with the organizers' accord, they had previously collected all the papers on social subjects, they carefully selected them and minutely organized the discussion of the accepted papers in eight sessions for half a day each- so that all ideas could be discussed at length.

Another remarkable feature is the major, predominant role granted to dialectics within the debates, a fact underlined by prof. Elohim both at the opening and the closing sessions.

Extremely important, in connection with the conclusions of the Congress, is the decision of setting up in Mexico an international centre of cyber-

netics for the application of cybernetics in the progress of the developing countries.

As part of the festivities which have taken place at the Congress, the Diploma of the World Organization of General Systems and Cybernetics was awarded to Dr. Alejandro Carillo Castro, general coordinator of the administrative studies at the presidency of the Republic of Mexico. At the same time, the "Norbert Wiener" gold medal has been awarded to Prof. Charles T. Helvey of Tennessee University for his merits in promoting cybernetics, Prof. Helvey being in charge of the foreign relations of the World Organization and opening the debates of the Fifth Congress, in the absence of Dr. Rose, Director General of WOGSC.

Also present at these events were Dr. Eng. Alberto Moreno Bonett—chairman of the Mexican Institute of Systems and Prof. Elohim Lopez Jimenez—chairman of the Mexican Association of Systems and Cybernetics.

At the closing festivity of the congress, it has been announced that the Sixth Congress will take place after three years, in Paris.

As a positive estimation of the achievements obtained by the Romanian cyberneticians, their representatives were in the presidium in all the four important moments of the events we are referring to: the opening and the closing of the "Arturo Rosenblueth" International School and of the Fifth Congress of Cybernetics.

Prof. dr. Ed. Nicolau