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Some Aspects of the Fourth IFAC Congress

The Fourth Congress of the International Federation of Automatic Control (IFAC) was held in Warsaw from June 16 to 21, 1969, in the country of the outgoing President Professor Pawel J. Nowacki.

The General Assembly of IFAC was attended by the delegations of the 33 National Member Organizations of IFAC who elected Professor Dr. Ing. Victor Broida (France) as President of IFAC, Mr. John Lozier (USA) as First Vice-President and Dr. Jiri Beneš (CSSR) as Second Vice-President.

The Warsaw Congress was attended by almost 1 500 persons from 31 countries. Apart from 550 Polish participants, between 50 and 120 attendants each came from Czechoslovakia, France, Federal Republic of Germany and West-Berlin, German Democratic Republic, Hungary, United Kingdom, USA, USSR, and between 20 and 50 attendants each came from Canada, Italy, Japan, and the Netherlands. Less than 20 attendants each came from 18 other countries.

Altogether 303 papers were presented and discussed in 50 Technical Sessions of half a day each, with something between four and nine papers per session. Furthermore, ten Survey Papers, each treating the state of the art in a specific field of automatic control, were presented at ten Plenary Sessions.

Last not least, there were ten Round Table Discussions as a new feature compared with the previous IFAC Congresses. Each Round Table Discussion was devoted to one of the predominant subjects of interest in the automatic control area and with a brief introduction given by a specialist designated in advance with the purpose of getting the general discussion going. Everybody present was entitled to express his own opinion. These Round Table Discussions have been of great value in respect of a future orientation of IFAC activities because, in spite of certain inevitable contradictions, they have revealed a consensus of opinion about certain important subjects.

Two of these Round Table Discussions deserve to be especially mentioned. One dealt with automatic control education, and the discussion showed that the cooperation between IFAC and IMEKO (International Measurement Confederation) on one hand, and between IFAC and IFIP (International Federation for Information Processing) on the other hand ought to be intensified and extended to educational problems of mutual interest.

The other Round Table Discussion to be mentioned was devoted to the future of IFAC. It revealed not only the desire of an increasingly profound activity in research and education at high level but it also brought forth a visible tendency towards an extension of the education in automatic control for the benefit of not so well accustomed persons (in particular engineers working for many years in industry) more than for specialists well accustomed with the language of highly developed mathematics.

This would involve a certain simplification of the teaching procedures and, in a broader sense, of the communication procedures, namely a sometimes more physical treatment of automatic control problems accessible to a larger number of people rather than a mathematical approach.

Furthermore, this Round Table Discussion confirmed what had already been derived from the Round Table Discussion on Education, namely the trend of extending automatic control education to border fields, such as dynamic measurements and computer application to automatic control which would lead to even closer relations with IMEKO and IFIP. Even when the last automatic control equipment will have made room for direct digital control, the control computers will always need sensors, not to speak of servomotors and control valves. It will be the automatician who will ensure the necessary liaison between the specialists of information processing and measurement.

V. Broida

Views on the Fourth IFAC Congress

collected by the IFAC Honorary Editor C. Belkowski, Warsaw, from a number of participants

1. The round table discussion concerning future developments of the control theory led to the conclusion that the immediate future will bring to the forefront problems of big systems and that work in this field will relegate to the background problems of the classical control theory. The field of the technical realisations will be dominated by digital systems based on the application of integrated circuits.

2. Problems of optimisation: A great interest is observed for computing methods (algorithmus) related to optimisation problems. On the other hand, methods presented at the congress, although interesting, dealt mainly with details. Only Professor J. Westcott's paper contained a synthesis of the whole problem.

3. A lot dissertations but few novel ideas.

4. The liveliest development is observed in the field of statistical methods of identification and optimisation. Still a generalised method of solving such problems would be most welcome.

5. The discussions held at sessions 4 and 11 have shown that the search for new algorithms did not prevent those previously known (P-I-D) being as useful as before. It is even open to question whether the looking for new algorithms is practically justified.

6. There is not much new in the field of the deterministic theory of control. Problems deserving closer attention are those related to delayed attainment of new conditions and to delays in the control process.

7. The IFAC Congress can be regarded as a new phase of mathematicians attacking engineers.

8. It seems that the socialist countries are leading as regards the number of institutes and scientists dealing with theoretical problems, while the capitalistic countries have at their disposal more engineers and scientists collaborating directly with industry.

9. There can be no doubt that an engineer is more easily trained in programming than a programmer in engineering.

10. With regard to the theories dealing with the sensitivity of control it was stressed that differences between various algorithms are definitely more important than assumed up to the present time.

11. As to reliability and technical diagnosis, the paper of P. Parchomenko „Theory of interrogation and problems of technical diagnosis" (session 29) is a novel and easily understood explanation of a formalised theory of technical diagnostics, considering the totality of related problems.

12. The papers presented at the technical sessions were mostly theoretical papers of a contributory character, prepared by 1 or 2 authors. There was an insufficient number of papers dealing of many-sided presentation of the discussed problems. Few papers of immediate practical interest.

13. There is a real necessity of organising round table discussions dealing with applications in various industries.

14. The plenary sessions were the most interesting ones. Outstanding specialists could be heard. The points of view, presented sometimes in great detail, were very valuable, especially since the speakers had at their disposal a great amount of material, usually not available.

15. Regarding cybernetics, the analysis and modeling of control processes in living organisms were not considered to the full extent of existing achievements, although more interest could be expected since cybernetics enter IFAC's field of interests. The following reasons could justify this omission:

- The subjects in question were covered a short time ago (autumn 1968) in an IFAC symposium in Erevan (USSR),
- Many specialists in this field did not know that it was included in the programs of the IFAC Congress,
- IFAC's interests are mainly directed to practical applications whereas the actual developments in this field do not favour widespread applications in the early future.

The discussions stressed the necessity of concentrating research in the field of control systems of living organisms and in the first place to:

- Structures of cooperation of specialised nervous systems, for instance the structure of control of the motor system,
- Structures as met in the neuron systems.

16. IFAC Congresses contain an insufficient number of practical subjects related to applications. It should however, be understood that IFAC Congresses are chiefly meetings of scientists and designers the work of whom is at the level of scientific institutes. Turning more attention to practical subjects would introduce a tendency to use the Congress for advertisement purposes or could mean dealing with classified problems which are not intended for publication.

17. Efforts to involve IFAC in practical problems did not succeed and will not meet with success in the future. Those representing the industry talk about their achievements very generally and in a haphazard way. It would seem that the purpose of their attendance is to get in touch with the scientific achievements which could be used by the industry.

18. The technical sessions concerning power supply were well prepared and became the scene of lively discussions, limited however principally to the boiler problems, with their „analogue ancestry".

19. A lot of information was heard before at the IFAC/IFIP symposia. Those not belonging to a narrow group of specialists did not understand some of the papers dealing with big systems, and the general impression was sometimes that of dealing with an immense and complicated mathematical apparatus with no leading idea.

20. Most interesting were the round table discussions. The participants obtained a many-sided review of the discussed problems with no effort to hide the existing deficiencies. Nearly all discussions put to the forefront the problem of special languages for digital control. It is a constantly recurring problem although not always directly related to the discussed subject.

21. Following the rule „The less limitations imposed by the programme, the more advantages" – meetings and discussions behind the scenes were considered as most valuable.

22. The congress organisation was satisfactory but very bad acoustics in some of the halls. The halls were well equipped, others of a provisory character and carelessly prepared. Those operating the equipment caused some disorder by their insufficient knowledge of foreign languages.

23. Big congresses absorb a large amount of effort and money. As a result of the number of papers, a limited time can be devoted to each of them. Since science development follows a geometrical progress, the question arises whether congresses covering a large scope of subjects fulfill their purpose. Considering meetings of a scientific character, the future seems to belong to symposia and seminars covering narrow scopes of subjects.

Automatic Control Terminology

It is a pleasure to acknowledge that the Survey of U. S. Standards Activity (pp. 8-11 of IFAC Bulletin No. 52) was originally published in the magazine „Control Engineering", April 1969 issue, Volume 16, Number 4, pages 106 through 110.

AICA-IFIP Conference on Hybrid Computation

A joint AICA-IFIP Conference on Hybrid Computation (organized by the Association Internationale pour le Calcul Analogique and the International Federation for Information Processing) will be held in Munich, Germany, from August 31 to September 4, 1970.

The conference will be concerned with computation and simulation utilizing a combination of analogue with digital computers. Only original papers describing significant new work will be presented.

Those interested in presenting a paper are kindly invited to send two copies of the abstract of their paper to the following addresses by October 1, 1969:

Abstracts from America to:

Dr. R. Vichnevetsky
P. O. Box 582
Princeton, New Jersey, 08540/USA

Abstracts from the Soviet Union to:

Dr. B. Kogan
Institut Avtomatiki i Telemechaniki
Profsojuznaja 81
Moscow V-485 / USSR

Abstracts from other countries to:

Prof. Dr. J. Heinhold
Institut für angewandte Mathematik
Arcisstr. 21
D - 8000 München 2/Fed. Rep. Germany

The format of the abstracts should be 16 cm by 11 cm.

Symposium on Systems Engineering Approach to Computer Control

Under the aegis of the Science Council of Japan and with the organizational support of the Japan Association of Automatic Control Engineers and of the Society of Instrument and Control Engineers (Japan) a Symposium on Systems Engineering Approach to Computer Control will be held in Kyoto from August 11 to 14, 1970. The symposium is primarily sponsored by the IFAC Technical Committee on Systems Engineering, with the IFAC Technical Committee on Applications as co-sponsor.

The following topics will be dealt with:

- Methodology for system identification and optimization
- Uncertainty in systems and stochastic processes
- Adaptability of computer control
- Computer aided control in industrial and other systems
- Computer aided system design methods
- Economics of computer controlled systems.

Offers of papers in these areas with abstracts in English (20 - 30 lines) should be in the hands of the

IFAC Kyoto Symposium Committee,
c/o Japan Association of
Automatic Control Engineers,
14 Kawahara-cho
Yoshida Sakyo-ku,
Kyoto / Japan

by September 30, 1969. Any enquiries and preliminary registrations should be directed to the same address.