International Federation For Systems Research

NEWSLETTER

SPRING 1984 Nr. 7 Print of issue — 4000 copies

Editorial Office: Prof. F. de P. Hanika, International Secretariat of the Austrian Society for Cybernetic Studies, Haus Hanika, A-8524 Bad Gams 92, to whom all material submitted for publication should be sent.
Editorial Assistant: Stefanie Wiesbauer, Department of Medical Cybernetics, University of Vienna Medical School.

EDITORIAL

This issue makes good the preview given in issue no. 6 with one exception: Our hope to report on the SWIIS Workshop, proved to be a lost hope due mainly to the weight of material; the three days of action having produced no fewer than 30 papers, running to 223 pages of typescript.

We predicted in issue no. 5 that we expected to see a lot more of AI and find ourselves with nearly a full page Progress Report only a few short months later.

Liking statistics as a source of meaningful information, we have analysed „coverage" in column inches, for the first six issues:
IFSR 45% — ASCS 15% — SGSR 13% — NS 11% — VARIOUS 16%.

MICROELECTRONIC FOR THE PEOPLE

Opportunities and Perspectives for Economy, Education and Medicine.
Sept. 11—13, 1984
Kepler University, Linz.
The Johannes Kepler University, Linz, Austria is organizing this event with the aim „To offset the menace implied by G. Orwell's '1984'".
The main points are:

- Changes and opportunities for middle-class economy:
  New markets and occupations, microcomputers in small and medium-sized enterprises, the office of the future.
- Use and consequences of microelectronics in communications, especially videotext:
  A new medium in education, new learning by playing, decentralization of teaching, and advances in the postal services.
- Microelectronics and informatics:
  Patient care and supervisory systems, sensors, artificial limbs, microelectronics for the handicapped.
- Fear of and hope in law and sociology:
  The linked-together society, problems and opportunities of microelectronics as seen by employers, employees and trade unions.
- Microelectronics and environmental issues:
  Measuring, controlling, and automatic warning systems, sensors, optimizing systems.

The conference languages will be German and English (no translation facilities available).

All correspondences should be sent to Prof. J. Mühlbacher, Research Institute for Microprocessor Technology, Kepler University Linz, A-4040 Linz, Austria. Final papers are due by June 10th 1984.

UNIV.-DOZ. DR. HEINZ FISCHER — FEDERAL MINISTER FOR SCIENCE AND RESEARCH

The Austrian Society for Cybernetic Studies is one of the many smaller groups of scientists which greatly benefit from the support of the Austrian Ministry of Science and Research.

We have great pleasure in announcing and welcoming the appointment of Dr. Heinz Fischer to succeed Frau Bundesminister Dr. Hertha Firnberg as Austrian Federal Minister for Science and Research, an appointment the latter held since that Ministry was first established in 1971.

"Dozent" in political sciences at the University of Innsbruck, Dr. Fischer had the benefit of a classical education before taking up academic work in law and political science.

He gained his Doctorate at the University of Vienna in 1961.

He soon entered politics, having been appointed Secretary to the Group of Socialist Members of Parliament in 1963.

He was elected a Member of Parliament by one of the Vienna Electorial Districts in 1971.

From 1975 to 1983 Dr. Heinz Fischer held the high rank of „Klubobmann" ("Speaker") of the Socialist Members of Parliament in the National Council.

Since 1979 Dr. Heinz Fischer is holding the office of Deputy Chairman of the Austrian Socialist Party.

His appointment as Federal Minister of Science and Research dates from May 1983.

His private personal interests include the chairmanship of the „Gesellschaft der Naturfreunde" (Society of Friends of Nature), which he assumed in 1972.

Born in Graz, Austria in 1938, Dr. Heinz Fischer is married to his charming wife, Margit, and has two children.

continues on page 2

continued from page 1

This timely conspectus of the cybernetic scene brings together contributions covering the field, systematically and in a well ordered fashion, since each contributor submitted to the discipline of organizing what he had to say, under sub-title.

The list of the authors (Stafford Beer, Henri Atlan, Franz Pichler, Y. Z. Tsypkin, George Klir, J. Michael McLean, Luigi M. Ricciardi, Gordon Pask, Maria Nowakowska, John H. Milsum and Charles A. Laszlo, Raul Espejo, Manfred Peschel, Igor A. Mel'čuk, Donald C. Gause and Gary Rogers, Michael A. Arbib, Ervin Laszlo, Harold A. Linstone), is in itself a guarantee of scientific rigour.

References to authors cited in contributors' papers cover twenty pages alphabetically ordered by authors' names.

A separate „Quick Reference Index" covers names only, on six pages. The subject index to the original papers included in the book takes up fourteen pages.

UNIVERSITY OF HULL, UK

Department of Operational Research offers free copies of its new series of "Working Papers"

In these days of progressive tightening of university budgets, the decision of the OR Department of the University of Hull to produce a series of "Working Papers" documenting the research carried out by members of its staff, and to make copies available free of charge to those wishing to receive them, strikes a most welcome note in international scientific communication at grass-roots level, free from the delays which publication in journals or presentation at meetings normally involves.

The first of these working papers "Towards a System of Systems Methodologies" by M.C. Jackson and P. Keys is paricularly timely when so much effort is being poured into searching for that philosophers' stone, known as "General Systems Methodology". We hope to receive a shortened version for publication in a future issue.

The working paper no. 2 "OR and Systems: Resolving Some Difficulties" by P. Keys and M.C. Jackson is also available, its flavour being manifested by a brief introduction:

"This working paper consists of two short notes in which some of the points raised in the special issue of the Journal of the OR Society, 'Systems in OR', are discussed. In one of the notes, that by Keys, an attempt is made to place a structure upon the variety of contributions to that issue.

In the second, that by Jackson, an attempt is made to answer some of the questions raised in the debate by placing it in a broader conceptual framework", and the spirit of the author emerges by the quotation from Jorge Luis Borges (The Library of Babel):

"Let it suffice now for me to repeat the classic dictum: The Library is a sphere whose exact centre is any one of its hexagons and whose circumference is inaccessible".

The OR Department of the University of Hull, UK, is now being headed by Professor A. M. Lee, for years one of the best known and most highly respected scientists in OR work, worldwide. The "Working Paper" distribution scheme is in the hand of Dr. P. Keys, Department of Operational Research, University of Hull, Cottingham Road, Hull HU6 7RX, UK.

It is, naturally, to be hoped that the Hull OR team are themselves going to benefit from thus „casting their bread on the waters" in the best biblical tradition by way of "not only" comments, critical or encouraging, but as well by receiving similar documentation of current work from elsewhere. If a widespread network of such "scientific discourse by mail" were to spring from Professor A.M. Lee's and his colleagues' pioneering effort, a very substantial benefit to large numbers of researchers would be gained in the systems field at a purely nominal cost to the public purse.

Looking Across the Specialists' Fence

This is the first of a series of contributions by specialists telling others something about their own field.

SYSTEMS THINKING IN EDUCATIONAL PSYCHOLOGY

by Dr. Bernard Scott, London, UK.

In a series of initiatives, in both the U.K. and the U.S.A., concepts and approaches drawn from systems theory are finding application in the field of educational psychology. In his traditional role, the educational psychologist has not only tended to work with individual children but has also adopted, and been perceived by others as adopting, a clinical role modelled on that of the medical practitioner, in which problems are treated as being intra-individual. Systems theory teaches that the child is a self-organizing system embedded in other such systems (schools, families). In human systems, an individual cannot be viewed in isolation from the large whole of which he or she is a part. Each individual is more or less informed of that larger whole, as he/she attempts to maintain and construct a viable self image and (hopefully) an adaptive repertoire of behaviours.

To understand a child's "disruptive behaviour" or "poor emotional adjustment", it is necessary to identify and model the system of roles, relationships and associated settings with which the child is being invited to comply. Helping the child may mean explicit intervention with the larger systems. There is a long tradition of systems oriented family therapy, dating from the early formulations of Bateson, Haley, Jackson and others. Similarly, there are fruitful traditions in organizational and ecological psychology that conceptualize behaviour as „behaviour in a setting". Behaviour modification paradigms have long stressed the function of environmental variables in determining and maintaining behaviour. Systems theory offers a unifying conceptional framework for these diverse approaches. The school and, indeed, the community are systems. Logically, one cannot interact with a part without affecting the whole. For the educational psychologist, this means recognizing and responding to the systemic dimensions of individual referrals — always having an eye for the larger whole. It further means developing new ways of working in which the school is invited to investigate and, if need be, modify its modus operandi. It means educating teachers, parents and other professionals in the tenets of systems thinking and the pragmatics of human communication.

In Waddington's phrase, systems have "soft spots". In context, the right touch of word or gesture in a five minute interview with parents or teacher may achieve as much or more than prolonged therapy or action research. "Only variety can control variety", says Ross Ashby. Information is power. Abstracting general models of functioning on the basis of relatively brief concrete encounters is the psychologist's stock in trade when working with individuals. The systems revolution merely invites him to apply these skills, recoursively, to larger wholes.

The next article will deal with "Cybernetics and Design".

EUROMICRO '84

10th SYMPOSIUM ON MICROPROCESSING AND MICROPROGRAMMING

Developments in Industry, Business and Education, August 28th—30th 1984, Copenhagen, Denmark. Organized by EUROMICRO, the European Association for Microprocessing and Microprogramming.

The purpose of this Conference is to bring together people from business, industry, government, and academia interested in all problems relating to the underlaying concepts and the use of microcomputer systems and microprogramming.

There will be the usual sessions for scientific papers, short notes, and industrial papers, as well as the Finals of the 1984 Micromouse Competition (contact the Conference Office).

The scope of this meeting comprises:

— VLSI Oriented Systems
— Advanced Applications of Microcomputers
— Firmware Support for Operating Systems and Languages
— High Level Language Architecture
— Software and Hardware Development Tools
— Software Engineering and Quality Assurance
— Networks
— Office Automation
— Education
— Artificial Intelligence and Microrobotics

The announcement includes the same strict requirements for papers, which the Euromicro Meetings have demanded for years (including a signed guarantee indicating that each paper is original and no "likeness" is published elsewhere).

Conference Office:
EUROMICRO, T.H. Twente, P.O. Box 217,
7500 AE ENSCHEDE, The Netherlands.

IIASA — International Institute for Applied Systems Analysis

ARTIFICIAL INTELLIGENCE: SHAPING A NEW SOCIETY? SCIENTISTS FORESEE DRAMATIC IMPACTS

Laxenburg, Austria — 17 August 1983 — A new "industrial revolution", changing societies and profoundly affecting traditional economic and cultural structures: this could be the result of a new discipline stemming from cybernetics and computer sciences, known as „Artificial Intelligence".

Conscious planning for the future, however, could make "AI" one of the most beneficial inventions of man.

"Artificial intelligence will most likely trigger a series of events comparable to the industrial revolution", said Professor Robert Trappl of Vienna University, organizer of a small three-day meeting of world renowned AI-researchers held at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg near Vienna. "The introduction of the machine has, over the past 200 years, reduced the demand for physical strength. Now we are moving towards the automation of mental processes and this will have profound effects: it will enable machines to perform many of those human operations currently carried out by a majority of our labor force. It will probably create a huge change in employment and employment structures. If we want to fully benefit from AI's potential and avoid repercussions, we need to start concious planning for the future now", he said. Added Professor Margaret Boden of Sussex University: „In the long run, AI could turn out to be for the Western civilization what the mango-tree was for Polynesian society: a resource enabling man to concentrate on the cultural and philosophical aspects of life. The point of our meeting here at IIASA is to take stock of recent developments and to try to assess what will happen in the next ten years and what appears to be the most pressing necessities in the field of AI".

As the researchers stressed at this meeting, one of the most immediate requirements would be increased activities in the field of Artificial Intelligence in Europe: „There is the danger that Europe will not keep up with developments in the US and Japan," said Professor Nils Nilsson of the Artificial Intelligence Center at the SRI California.

"This would lead to a split within the industrialized world, comparable only to the current North-South gap. Europe would probably never be able to catch up again", added Professor Stefano Cerri, University of Pisa. In order to avoid such a development the researchers suggested extraordinarily strong efforts, especially in the field of education, for information technology, in Europe as well as in other parts of the world, with special emphasis on Artificial Intelligence. As was pointed out at the meeting, the next decade is likely to be decisive for the advance of AI, and new tools will leave the laboratories and enter the market. "A fast further advance may be predicted," said Academician Tibor Vamos of the Computer and Automation Institute of the Hungarian Academy of Sciences. "As the applications proliferate, cheaper, strictly dedicated and limited recognition and inspection systems are expected to replace many monotonous, not really human workplaces in inspection, selection, simple evaluation, transfer, assembly and other industrial operations such as painting, welding, etc."

The meeting on "Future and Impacts of Artificial Intelligence", jointly organized by the Austrian Society for Cybernetic Studies and IIASA, and supported by the Austrian Federal Ministry of Science and Research, was convened to provide the basis for a major conference to take place in Vienna next year. The proceedings of the current meeting are expected to be published with North-Holland, Amsterdam, Fall 1984. Editor: R. Trappl.

The International Institute for Applied Systems Analysis (IIASA) is a research organization supported by scientific institutions from both East and West, such as the American Academy of Arts and Sciences (USA) and the USSR Academy of Sciences. The Institute, based in Laxenburg, Austria (near Vienna), was founded in October 1972 to promote international collaboration by bringing together scientists from different disciplines, cultures, and nationalities to work on problems of concern to mankind.

ASCS RESEARCH

SOFTWARE-INNOVATION IN MEDICINE WITH SPECIAL EMPHASIS ON ARTIFICIAL INTELLIGENCE METHODS

R. Trappl, A. Szer, H. Hübner

Summary

A most recent aspect of software development is Artificial Intelligence (AI). AI aims at producing "intelligent" behavior by programs, i.e., reasoning, planning, vision, language understanding and producing. There is a special discipline "Artificial Intelligence in Medicine (AIM)" with special organizations, symposia, etc.

Austria is a country with little natural resources but with a highly educated population. Instead of relying on imported software, Austria might decide to develop software by itself and, perhaps, even sell it with profit abroad.

The Austrian Society for Cybernetic Studies, commissioned and supported by the Federal Ministry of Science and Research, therefore undertook to study software innovation in medicine, especially the very promising AI methods.

This study was performed on four levels:

- First, making a survey of existing medical software (hospital, laboratory, private practice), both abroad and in Austria;
- Second, investigating the innovation process which led to it;
- Third, sending a special questionnaire to the scientists who had developed the forefront of AIM software, worldwide; and
- Fourth, conducting expert interviews with leading Austrian decision makers in health care matters.

These latter interviews were focused on three potential AI software products, which were chosen with respect to AIM research already undertaken in Austria:

- Automatic analysis and classification of complex patterns and images in medicine (e.g. ECG, EEG, X-ray, tomograph, ultrasound pictures);
- Medical expert systems for the physician's practice and for hospitals (systems which contain a knowledge base, a reasoning program, an explanation part, etc., and which could bring latest medical knowledge even to the outpost practitioner); and
- Medical expert systems on personal computers as an aid in self-care.

The replies to the questionnaires showed that the costs for developing AIM software are surprisingly low, compared to other investments. Only a small number of specially trained scientists, together with cooperative physicians are needed, plus some special equipment (e.g. LISP-machines) not yet installed in Austria.

The experts interviewed in Austria had little hope of reducing the costs of medical care by introducing AIM software in this country. Several of them stressed the importance of doing AIM research in Austria itself, both keeping pace with the international development and for export.

Considering the demand for software, especially AI software, in medicine and health care in general, the AIM research results already obtained in Austria, and the potential revenue from exporting AIM software, the funding of four projects for the development of specific AIM software is proposed.

SOME HIGHLIGHTS FROM THE SGSR "SYSTEMS BULLETIN"

You and your views are quite important to the collective "Us". We are part of a unique community. This bulletin is the neural net that makes us one. But I wonder if you have the same problem that I do. When I receive the bulletin I usually flip through it right away to get a "sense" of the issue, then I place it on my "to read" stack where it gets buried in two days rarely to be found again. As a result, important deadlines and opportunities are missed, and our community loses vital linkages. Clearly all of us are very busy, but look at what information will be missed if this issue is not studied...

- Election of four ombudsmen to the board of directors for the first time.
- Call for papers and deadlines for the 1984 meeting & general outline for 1985.
- Results of the first meeting of the SGSR council.
- Our first guest editorial (a new one will appear each quarter).
- Reorganization of the chapters, divisions, and special interest groups.
- Recent actions of the board of directors.
- Reports of international meetings which you may have missed.

Feedback is an important isomorphy studied in systems theory. Included with this bulletin are several feedback response forms, and notices of several deadlines important to your professional activities in the systems field this next year. Deadlines include:

- Response to call for papers, 1984
- Nominations for ombudsmen to the board
- 1984 registration and reservation forms.

I hope that you will find the new format to the bulletin stimulating and useful. I would very much like your suggestions for improvements.

Most of all, I hope that you will find the time in your busy schedule to read the bulletin carefully so that we might become a more integrated community.

SGSR-NEWS

The Fall 1983 issue of the General Systems Bulletin, Vol. XIV, No. 2 presents its usual attractive appearence in combining a lot of useful information of member and non-member interests alike.

We feel we cannot do better than publish above the special separate covering note which Professor L. Troncale encloses for the benefit of the bulletin's readership. Presented is a fund of good common sense for us all.

THE DUTCH SYSTEMS GROUP

From the Systeems Groep Nederland we are indebted to Prof. Dr. Gerard de Zeeuw for the following report:

At the Annual Meeting of the Dutch Systems Group, which has been held January 18, 1984, a new Board has been elected. Quite a few of the present members stepped down — either due to statutory regulations or due to having served long and honorably — but wanting to make place for new members. Those stepping down are: Dr. Walter Kickert, Prof. Dr. Hans van der Zouwen, Dr. F. Geyer, Dr. Hugo Uytennhove. Prof. Dr. Jaap Dijkman remained on the board, but only till his successor has been groomed adequately. Dr. Gerrit Broekstra remaines representative of the Dutch Systems Group in the IFSR, and continues as a member of the Board for that specific purpose. Henk Koppelaar will stay on the board as editor for Systemica. Han Herschleb we still find caring for the finances irresistible (he does extremely well). Prof. Dr. Gerard de Zeeuw will stay to chair the unusually Board Meetings. A new member is Esther Hicks, who will be presented for nomination as secretary.

The Dutch Systems Group organized a summer course (in Dutch) in August 1983: "Software Crisis". The meeting was quite successful, drawing interest especially by its emphasis on the design of user-friendly programs/computers.

In April 1984 an international meeting is organized around the theme: 'Systems in the eighties'. A review of systems-problems and a preview of approaches to such problems will be presented in a scientifically entertaining atmosphere. Some of you may remember the success of 'Systems behind the dykes' with a similar formula, but of course quite different problems.

The Summer Course 1984 will be organized around the theme of 'Design of action-support systems'. Among such systems are decision support systems, predictive computational structures, etc.

A strong participation in the EMCSR 1984 from the Netherlands is anticipated.

Gerard de Zeeuw

CYBERNETICS AND SYSTEMS RESEARCH

North-Holland Publishing Company
Price: US $ 139.50

This volume represents the proceedings of the 6th European Meeting on Cybernetics and Systems Research, organized by the Austrian Society for Cybernetic Studies at the University of Vienna in 1982.

The attendance at the European Meetings on Cybernetics and Systems Research has increased substantially since its conception ten years ago. Consequently, a careful refereeing procedure has been introduced, thus leading to a considerable increase in the scientific quality of the material. The papers presented in 1982 were stimulating and thought-provoking.

The tendency which clearly emerges from the papers is that our attitude toward Cybernetics and Systems Research has changed. Ten years ago it was a fascinating toy, now we see that we are not only allowed to play with it, but that we feel more and more the obligation to take it into consideration in our research, our responsibility for man, his environment and his future. The field of Artificial Intelligence receives extensive coverage, deservedly so, as the next step of automation Artificial Intelligence will exert a decisive influence on the life of each person and, moreover, it will fundamentally change man's understanding of himself.

CONTENTS: Preface. Plenary Lecture: Cybernetics as a Link between two Theories of Cognition (A. Rapoport). Sessions: 1. General Systems Methodology (19 contributions), chairperson: G. J. Klir (USA). 2. System and Decision Theory (23 contributions), chairpersons: F. Pichler (Austria) and A. Wierzbicki (Poland). 3. Cybernetics in Biology and Medicine (16 contributions), chairperson: L. M. Ricciardi (Italy). 4. Cybernetics in Cognition and Learning (12 contributions), chairperson: G. Pask (UK). 5. Cybernetics in Organization, Management, and Society (28 contributions), chairpersons: F. de P. Hanika (UK) and R. Tomlinson (UK). 6. Health Care Systems (7 contributions), chairpersons: N. Bailey (Switzerland) and W. Buchstaller (Austria). 7. Energy Systems (6 contributions), chairperson: R. S. Caputo (USA). 8. Fuzzy Sets — Meeting of the EURO Working Group (8 contributions), chairperson: C. Carlsson (Finland). 9. Communication and Computers (15 contributions), chairpersons: A. Lee (Canada), W.-D. Rauch (Austria) and J. Schwaertzel (FRG). 10. Artificial Intelligence (23 contributions), chairpersons: W. Horn (Austria) and P. H. Winston (USA).

SYSTEMS RESEARCH

The official journal of the International Federation for Systems Research.

A letter from the Editor in Chief, Prof. Dr. John N. Warfield, informs us that issue no. 1 is reaching the launching pad. It will feature the following articles:

"Equilibrium, Entropy and Homeostasis: A Multidisciplinary Legacy" by Kenneth D. Bailey, Department of Sociology, University of California at Los Angeles.

"Recent Advances in Modeling and Identification of Stochastic Multivariable Systems and Their Applications" by H. El-Sherief, Exxon Production Research Company, Houston, Texas.

"A Methodology for Quality Goal-Seeking and Coordination, and the Practical Application" by Osamu Furukawa, Department of Systems Engineering, Hiroshima University, Higashi-Hiroshima, Japan.

"Current Status of Hospital Management and Information Systems in Jefferson County, Kentucky — Results of 1983 Survey" by Robert E. Hoye, Systems Science Institute, University of Louisville, Louisville, Kentucky.

"On Developing the Microelectronics Industry: A Systems Approach" by Kazuhiko Kawamura, Department of Electrical and Biomedical Engineering, Vanderbilt University, Nashville, Tennessee.

"Cybernetics in Management Thinking" by Fenton F. Robb, Scottish Gas Corporation, Edinburgh, Scotland.

In addition, the issue contains a Correspondence Item entitled "Information Technology in Developing Countries" by Kan Chen of Program in Technology Assessment, University of Michigan, Ann Arbor.

Finally, the issue will feature a guest editorial column produced by C. West Churchman of University of California at Berkeley, entitled "Churchman's Conversations".

INTERNATIONAL FEDERATION FOR SYSTEMS RESEARCH

CONSTITUTION

The Österreichische Studiengesellschaft für Kybernetik, the Systeemgroep Nederland and the Society for General System Research recognize the need for closer international cooperation with the objective of advancing the areas of a Federation, which will be the formal vehicle for their cooperative activities. The Federation will operate under the Constitution specified by the following articles.

ARTICLE 1: Name, Domicile, Language

1. The name of the Federation is "International Federation for Systems Research".
2. The Federation has its domicile in Laxenburg, Austria.
3. The official language of the Federation is English.

ARTICLE 2: Purposes

The aims of the Federation are to stimulate all activities associated with the scientific study of systems and to coordinate such activities at the international level. These aims will be realized by:

1. coordinating systems research activities of private persons and/or organizations;
2. organizing international meetings, courses, workshops, and the like;
3. promoting international publications in the area of systems research;
4. promoting systems education;
5. maintaining standards and competence in systems research and education;
6. any other means, as far as they are legal in the respective membership countries and serve the aims of the members as formulated in their respective statutes.

ARTICLE 3: Membership

1. Founding members of the Federation are the Österreichische Studiengesellschaft für Kybernetik, the Systeemgroep Nederland and the Society for General Systems Research.
2. A new member is admitted to the Federation, after presenting a written request to the Board of the Federation, together with a copy of its constitution, when all members of the Federation agree to the admission. An applicant shall be informed of the Federation's decision regarding the application no later than six months after the application is received.
3. Each member of the Federation is required to file with the Secretary of the Federation any changes in its constitution.
4. The Federation may include affiliated members; their admission is subject to the same procedure as the admission for members;
5. All members of the Federation have equal basic financial commitments and equal votes; affiliated members have no right to vote and the method of their participation is determined by the Board individually for each affiliated member.
6. Membership in the Federation is terminated when a notice is received by the Secretary of the Federation from the member of its intent to withdraw from the Federation. Such a notice must be authorized by the member's own constitutional process.
7. If the activities of a member become incompatible with the aims of the Federation, the Board may send an official warning to the member indicating that its membership is likely to be terminated.
8. A member can be excluded from the Federation by a vote of 3/4 or more of the members, provided that a warning was sent to the member at least six months in advance.

ARTICLE 4: Governance

1. Governance of the Federation is vested in a Board. The Board is composed of individuals designated by the members. Each member shall designate two individuals for the Board. Normally, these individuals will be the president and secretary or vice-president. A member may replace its representatives on the Board at any time by a written notice, duly authorized, to the Secretary.
2. The Board elects a President, Vice President and Secretary-Treasurer. Due consideration shall be given to achieving a balance of nationalities among these officers. The three officers form the Executive Committee. The Executive Committee shall be authorized to act for the Board pursuant to such regulations as the Board shall make. The term of any of the officers is at most two years, but each officer is eligible to succeed himself. Any officier may be removed from office by a vote of the Board.
3. The Board is responsible for:
   — managing all affairs of the Federation;
   — preparing By-laws of the Federation and, whenever desirable, making changes in them;
   — preparing an annual report of the activities of the Federation, including a financial statement, and distributing it to all members.
4. Voting on the Board is by simple majority. However, each member society shall have a veto.

ARTICLE 5: Finances

1. The Federation is a not-for-profit organization.
2. The Federation is financed by a yearly assessment of its members. The amounts, which are the same for all members, are determined by the Board, but should not be such as to be burdensome to any member. Financial contributions of the affiliated members are determined on an individual basis.
3. The Federation is entitled to all royalties and any other income stemming directly from its activities.
4. In the event that the Federation is dissolved or otherwise ceases to function, the remaining funds, after all debts are paid, shall be returned to the current members in equal shares, unless such a distribution would be patently inequivable, in which case another scheme of distribution may be employed if it is supported by a vote of two thirds of the members. These funds are to be used exclusively for the direct training of scientists in the area of systems research.

ARTICLE 6: Dissolution

1. The Federation may be dissolved by a vote of 3/4 or more of the members.
2. The dissolution of the Federation shall be an agenda item at intervals of not more than 5 years.

ARTICLE 7: Amendments

1. An amendment to this Constitution may be proposed by any member and shall become effective upon approval by all members of the Federation.

THE RELATION BETWEEN MAJOR WORLD PROBLEMS AND SYSTEMS LEARNING

Vol. I: **The Ecology of Human Knowledge and Global Problems in Systems Perspective. George Eric Lasker (Ed.)**

Vol. II: **Advances in Holistic Problem Solving and Human Actions System Research. George Eric Lasker (Ed.)**

Published by: Intersystems Publication, Post Office Box 624, Seaside, California 93955, USA.

The Proceedings contain a selection of papers delivered at the SGSR International Conference on World Problems and System Learning held May 23—27, 1983 in Detroit, Michigan. The papers cover a large variety of subject areas and reflect advances that have been made in theoretical and applied systems research during the past few years. Most papers are directly related to the main theme of the Conference and reflect a concern of systems scientists about the global problems and global predicaments. They also reflect the determination and the efforts of systems scholars to help solve some of these problems through education, through application of systems thinking and through system-oriented problem solving methodologies.

The Proceedings are published in two volumes. Volume 1 has eleven sections, of which the first two deal with holistic societal learning and with ecology of knowledge. These papers examine how global context and knowledge environment relate to systems learning and systems thinking. They also examine the role of intellect in cultural evolution, the effects of computer systems on the knowledge environment and the impact that changes in accessibility of information have on the general public, on the individual and on society as a whole. Some authors here also advocate the adoption of an ecology of knowledge framework within which one could study the evolutionary process of knowledge development as a process of emotional-cognitive structuring.

The papers of the third section address various world problems ranging from application of systems approach to familiy planning up to the problems of rural development in a developing country. Some papers here also address the role of education in helping to solve world problems through a systems dynamics framework. Education and systems learning are also central themes of the subsequent four sections of this volume. The papers presented here deal with both general and systems education. They survey various learning paradigms and propose some new innovative systems approaches to education.

The eighth and ninth sections are devoted to philosophical and epistemological issues of systems theory.

The tenth section presents papers on metasystems and metamodels.

The eleventh section deals with systems methodology. It is the last section of the first volume and contains papers on various theoretical and applied aspects of systems research. The theoretically-oriented papers present strategies for mathematical formalization of semantic linkage propositions and new methods for quantization of data for probabilistic reconstructability analysis.

The application-oriented papers deal here with such diverse topics as systems models for forecasting and studying bank failures, models for determining the amount of nursing care required by a given patient population, a computer study in sampling, and applications of differential models in pursuit-evasion and tracking and capture games.

Volume 2 contains an additional thirteen sections, numbered from XII to XXIV. This volume deals mainly with various aspects of holistic problem solving and examines a variety of areas related to the theoretical and applied research of human systems.

The twelfth section studies models and methodologies of social and societal systems.

Section thirteen and fourteen address various issues of international stability, conflict resolution and peace. The papers examine the effects of high technology on the relations between countries and point out that due to the tremendous destructive capability of modern nuclear weapons it is absolutely essential to develop ways of interacting with one another in a stable fashion in order to avoid use of these nuclear weapons. Emphasis is also placed upon the cultural aspects of international stability. A special paradigm is proposed for studying intercultural differences which reduce international stability. Several innovative strategies and conflict resolution approaches are suggested to improve international stability within the inter-cultural context of today's world.

Section fifteen deals with human problem solving.

Sections sixteen and seventeen address various managerial issues and examine leadership from a human systems perspective.

Section eighteen deals with institutional innovation and human needs.

Section nineteen deals with various issues of economics and social development. It studies econometric models and their integration with social phenomena.

Sections twenty and twenty-one are devoted to systems research in psychology and neurocybernetics. Here are included papers that deal with various aspects of interpersonal communication, modeling of personality, modeling of certain psychological functions, analysis of personality organization, and with examining a memory as a medium that provides negative feedback to the affective system.

Section twenty-two is devoted to applied and theoretical systems research in computer science.

Section twenty-three presents papers that deal with various aspects of simulation methodology. It covers systems theoretic foundations of simulation, the use of simulation methodology in the socio-economic domain, a critique of past world modeling efforts, simulation model of population control and simulation methodology for human systems.

The last section includes special topics in systems research and incorporates some late arrivals.

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10th INTERNATIONAL CONGRESS ON CYBERNETICS

Namur, Belgium
August 22—27, 1983

The late Professor Georges Boulanger, the pioneer and longtime President of the "Association Internationale de Cybernétique" did his work well, so that the tenth congress reached a new high in quality, as well as quantity, of contributions and results.

The committee subdivided the area into four sections. Each section was covered by symposia where a moderator, assisted by a small number of leading speakers, developed the various aspects of the subject to be treated and conducted the discussion on the ideas presented.

Mr. E. Lacroix, Governor of the Province of Namur, assumed the chairmanship of this congress which was held at the Institute of Informatics, University of Namur, 21, Grandgagnage St., B-5000 Namur, Belgium.

Organizing committee
Doreen R. STEG (Drexel University, Philadelphia, PA. USA)
Haneef A. FATMI (Chelsea College, University of London, UK)
Helmar FRANK (University Paderborn, FRG)
Georges GUERON (Société Internationale des Conseillers de Synthèse, France)
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Tuncer OREN (University of Ottawa, Canada)
Fabrizio PENNACCHIETTI (University of Turin, Italy)
Jean RAMAEKERS (Facultés Universitaires Notre-Dame de la Paix, Belgium)
Osvaldo SANGIORGI (University of Sao Paulo, Brazil)

In Section I (Principles of Cybernetics and General Theory of Systems) 39 papers were presented, in Section II (Cybernetics in Social Systems) 83, in Section III (Cybernetics in the Engineering Sciences) 28, and in Section IV (Cybernetics in Biology and Medicine) 46.

Dr. Bela Banathy spoke on "Systems Learning and Education in the Age of High Technology" and Professor G. de Zeeuw on "Intelligence Amplification and Problem Solving in a High Technology Environment", both of them are, of course, members of the IFSR Council.

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Palais des Expositions
Place André Rijckmans,
B-5000 Namur, Belgium

The conference papers will be published.

THE SOCIAL TRANSFORMATION IN SYSTEMS AGE

A letter received from the American Society for Cybernetics described as "not only a reminder to renew your membership, but an invitation to contribute to an exciting adventure" makes some pertinent observations on the role of cybernetics in human living, with particular reference to the "20th Anniversary Meeting on the Societal Transformation in the Systems Age".

The organizers (Jon Cunningham and William Reckmeyer) rightly pride themselves in having attracted "a rare mixture of systems and non-systems people from the public, private, academic, and governmental sectors".

The record of their "Examination of Life in the Systems Age" (place in October 1983 near Stanford, CA, USA) should make lively and interesting reading, since: "The very essence of many of the critical issues pervading all sectors of contemporary society lies in the extensive interdependencies, counter-intuitive mutual-causal processes, and basic role of knowledge and science that are of fundamental interest to all cyberneticians. As people become more aware of, and comfortable with the nature of life in the Systems Age — obvious even in President Reagan's latest State of the Union Address — there seems to be a major window of opportunity for all of us to share our insights and to participate more fully in humanity's efforts to resolve these issues".

Reference is made to the new ASC journal "Cybernetic", the announcement of a special project (through the AAAS) to assist the Indian Government in developing regional data networks and a concentrated multi-year effort to develop more insightful approaches to "War and Peace in the Systems Age".

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