Dear Readers,

In the last several weeks I realized what it means to be without a secretary. My secretary left around May 1994 and, since certain precedures had to be followed, it has taken until now to provide me with another one. This meant that lots of work got delayed, especially this Newsletter. I hope that with the New Year I will be able to be back on schedule. To make up for the delay we are providing you with a double issue, containing more than the usual amount of information and number of contributions.

We also take pleasure in presenting IFSR's vice president, Prof. M. Jackson and we are happy to announce some interesting news with respect to IFSR's journal SYSTEMS RESEARCH.

There will - unfortunately - also be another change in the Newsletter: Due to the limited funds available we decided that we could no longer afford a professional editor for the Newsletter. For this reason Dr. Stephen. Sokoloff, my co-editor, who was especially concerned with the linguistic quality of the Newsletter , as well as with writing, obtaining and editing longer articles, will resign by the end of this year. The production of the Newsletter will hitherto be my sole responsibility. but I hope that Dr. Sokoloff will still provide me with interesting articles..

I therefore would like to thank Dr. Sokoloff for all his efforts for the Newsletter and I hope that I can keep up his tradition of high quality.

At last I would like to wish all members of the IFSR and readers of the Newsletter a happy Holiday Season and a Successful New Year.

Gerhard Chroust
Systemtechnik und Automation
Kepler University Linz, 4040 Linz, Austria

New Officers of the IFSR

Prof. Michael C. Jackson, Vice-president

On April 7, 1994, the Board of the IFSR elected a new Executive Committee:
President: **Bela H. Banathy,**
   (for bibliography, see Newsletter No. 33)
   25781 Morse Drive, Carmel, CA. 93923 USA,
   email: Belasr@aol.com

Vice-President: **Michael C. Jackson**,
   United Kingdom Systems Society,
   University of Humberside,
   Cottinghan Road, Hull HU6 7RT, U.K
   tel: +44 1482 440550 Ext. 3720
   fax:+44 1482 445715

Secretary/Treasurer: **Gerhard Chroust**,
   (for bibliography, see Newsletter No. 33)
   Kepler University Linz, A-4040 Linz, Austria
   email:chroust@sea.uni-linz.ac.at

Michael C. Jackson

Michael C. Jackson, born 1951, is Professor of Management Systems and Dean of the School of Computing and Information Systems at the University of Humberside. After studying Politics, Philosophy and Economics at Oxford University, he spent 4 years in the civil service before returning to academic life. He has since studied and taught at Lancaster, Warwick and Hull Universities, and was appointed a full professor at Hull in 1989.

Professor Jackson enjoys diverse consultancy interests and has worked with many well known organisations. He also undertakes work for a wide range of community and non-profit-making organisations. He has held managerial positions as Head of Department, Chair of the UK Systems Society and Council Member of the Operational Research Society; and is currently a Dean of School and Vice-President of the International Federation for Systems Research. He has authored 2 Books (*Creative Problem Solving* and *Systems Methodology for the Management Sciences*), edited six others, is editor of the international journal *"Systems Research"*, has published over 70 articles in other learned journals, and has contributed chapters to several books.

From the IFSR Vice-President

I was pleased to be elected Vice-President of the International Federation for Systems Research. The growing significance of systems thinking, and the proliferation of individuals, groups and societies interested in the ideas, make it essential that we co-ordinate our efforts in order to have the maximum beneficial impact on organisations, communities and the societies in which we live. I intend to be an active Vice-President and I have two immediate ambitions.

The first of these is to rejuvenate *"Systems Research"*, the official journal of the IFSR. We owe a great debt to John Warfield, who originally established the journal, and to Gerard de Zeeuw, who has managed to keep it going in recent years without the support of a major publisher. I am pleased to say that I have been able to secure the future of the journal by negotiating a new ten year contract with the prestigious publishers John Wiley and Sons. Wiley have agreed to supply the journal to members of organisations belonging to IFSR for the reduced rate of $40 per subscription in 1995, 1996 and 1997. As long as we can build up subscriptions there should also eventually be royalties accruing to the IFSR from sales. I am to be first editor of the journal under Wiley and I would ask you to help relaunch *Systems Research*, and make it a success, by encouraging individuals and organisations to subscribe and by sending papers for publication to my address.

My second objective is to set up a network of *active* systems research groups as part of the IFSR. The aim would be to exchange ideas and information, develop joint projects and to co-operate on bids for funding to develop systems research. Activities would be publicised through the Newsletter and through *Systems Research*. If you belong to a systems research group and would like to join this network, please write to me.

M.C. Jackson

From IFSR's Executive Committee

INVOLVING MEMBER ORGANIZATIONS
One of the key IFSR programs proposed by the Executive Committee (EC) in the July Issue of the Newsletter is the creation of opportunities for the direct involvement of member organizations in the affairs of the Federation. The EC therefore suggested the establishment of several *Standing Committees* to address issues of common interest and importance. These issues would include Program Development, R&D in Systems and Cybernetics, Database Development, Publications, Electronic Communications, Systems and Design Education, IFSR Events, Resources/Funds Development, Membership Development, Outreach (to NGO's and Other Relevant International Agencies), and other issues of interest. Committees would be constituted from members of member organizations

who would volunteer to work on particular committees. At this point in time we are asking our member organizations to comment on the IFSR Committees proposed here and also to suggest other Committees. Our driving interest is to forge the IFSR into a dynamic, evolving, contributing systems community with a constantly unfolding purpose and program. The leaders of IFSR member organizations are invited to discuss this proposal with their membership and communicate their ideas, comments, and interest in participating to:
Bela H. Banathy,

25781 Morse Drive, Carmel, CA. 93923 USA,
email: Belasr@aol.com.

Dear Readers!

Thank you for entrusting me with the Newsletter Editorship for nearly a decade now. Of course, I'm not very happy with the low priority which the IFSR gives to generalist-type activities, the changes that will be made in the Newsletter were not my idea, I wasn't even consulted.

Stephen Sokoloff

NEW TRENDS

Bioelectricity/Biomagnetics

Some Advanced Applications

Prof. Dr. Helmut Pfützner
Technical University of Vienna
Gußhausstr. 27
A-1040 Wien

Bioelectricity/Biomagnetics (BE&M) is the science of the electric and/or magnetic behavior of biological systems. Biophysical methods are applied to determine the reactions of biological molecules, cells, tissues and organisms to electromagnetic fields, and also to study synaptic transmissions, for example between nerves and muscle cells.

Industry is willing to fund basic research in BE&M because results can, thanks to modern sensor, automating and computer technologies, be practically applied. We first study the electromagnetic behavior of biological systems, then we find direct applications· for our results in biology, medicine or related fields. The engineering work, the design of the sensors, the electronics and the software, is done in close cooperation with industry.

In BE & M one has to deal with inaccuracy. Biological systems elude exact description, and their physical properties are expressed in terms of orders of magnitude. Sensors should be sensitive, but they don't have to be precise. The modeling of field structures may be based on finite elements of rough design. For evaluation of data new technologies such as imprecise neural networks have proven invaluable. Our work concentrates on three levels of biological systems: microorganism, cell and tissue level and organism level.

The level of microorganisms

When an electric or magnetic field is applied to microorganisms in a liquid culture, it is distorted or weakened by that culture. A strong field may manipulate small living cells, or even kill them. These phenomena are the points of departure for various practical applications of fields to determine the number of bacteria or yeast cells in a sample of chocolate, beer or stored human blood. We have also evaluated the characteristics of electrodes which are specifically affected when inserted into samples. The results were used to develop a bacteria tracer; it is proving successful on the world market. Since the biological and electrochemical mechanisms involved are highly complex and only incompletely understood, neural networks are employed for data evaluation.

As has been known for centuries, a metal electrode may have bactericidal effects when it is inserted into a contaminated liquid. One project is to make use of this phenomenon to develop fully automated equipment for water conditioning. We thereby utilize both the feedback from the sensors, which indicates the degree of contamination as well as the ionic composition of the water, and the modern technology of metal composition.

Finally, we use fields to manipulate micro-organisms. Electric fields bring about local concentrations of cells; they even make those cells fuse together, which of course involves a transfer of genetic material. With magnetic fields we can guide magnetotactic bacteria; that makes it possible to visualize micro-field configurations. Besides, we are trying to make cells guidable with magnetic antibody complexes or by fusing them with magnetotactic cells.

The cells and tissue level

Such field modifications in the presence of biological material offer alluring prospects for the specific detection and/or characterization of such substances. Measuring devices do not have to come into direct contact with them. Apart from costly resonance techniques such as NMR, however, practical applications are complicated by the low magnetic moment of biological matter. Nevertheless, the characterization of human blood on the basis of this property is feasible because of the specific moment of hemoglobin. Utilizing electric fields, one can more easily analyze blood and determine the hematocrit (the volume of red blood cells which was packed by centrifugation in a given volume of blood) and the cell size. These measurements can be made because the nanometer-thick cell membrane acts as an electrical capacitor which responds in a very sensitive manner to membrane defects, thus enabling us to readily detect damage to stored blood.

We use the same principle to detect muscle cell membrane defects; these serve as an indicator of the tissue damage which occurs during the amputation of extremities. We also apply it to food technology; a simple apparatus enables us to determine whether liver is fresh or deep-frozen and to recognize pale, soft and exudative (PSE) muscles in pork.

The organism level

The various tissues and organs of which the human body consists display significantly different electrical characteristics because of the divergent electrical properties of their membranes. One focus of attention is the human skin. It is a multi-layered system with densely-arranged cells and channels. The latter are filled with sweat, an excellent conductor, during phases of physiological excitement. We have developed a computerized sensor system which can locally determine the humidity, temperature and electrical conductivity of the skin. It has applications in many fields, including physiology, tumor detection and cosmetics.

A second focal point is the heart/lung system. First an electrophysiological model of the human thorax is made, based on dielectric lab analyses of the tissues located in it (heart muscle, blood, lung, surrounding muscle and fat, etc.). Then the electrical responses to various physiological activities are predicted; the values obtained serve as a basis for monitoring methods. One approach is to transmit a high-frequency electric field and to evaluate the signals then detected on the skin. Magnetomechanical sensors are also attached to the skin to gather information. This is then processed by hard- and software filtering. Neural networks are thereby utilized because they can cope with the complex, poorly-understood interconnections. Currently a monitoring system of this type is being tested at various clinics; its applications include the diagnosis of lung defects after accidents and the monitoring of apnea (temporary cessation of breathing), both in small children (associated with SIDS-sudden infant death syndrome) and in adults. In the latter it is often associated with extremely loud snoring. Persons affected have a drastically reduced life expectancy.

TELEONICS: A process based systems approach

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Introduction

Teleonics is a systems approach through which an observer can obtain a better understanding of the functioning of living systems. It focuses primarily on the processes that characterize living systems, rather than on the levels and subsystems of which they consist. The units of function in teleonics are the **teleons**, or goal-directed process units, which stretch over several levels and incorporate numerous living and non-living subsystems.

Teleonics has been applied to the study of complex systems in the diverse fields of education, societal governance, business organization, technology assessment, psychology, health care and music theory.

The nature of teleons

Teleons are concerned with the processing of *matter, energy* and *information* which are inseparably bound together. In living systems, such processes are generally executed for a certain purpose or with a certain aim in mind. This means that processes on all levels of the living hierarchy have a teleos, which in Greek means purpose, aim, goal or end. The nature of the teleos will be different on the various levels of the hierarchy. Any analysis of teleons should start with the identification of the teleos. For example teleons exist in the human and animal body for the supply of oxygen and nutrients to the cells. In a society, there will be teleons for agricultural and industrial production and distribution of products as well as for the production and distribution of knowledge. Once the teleos has been identified it is obvious that if it is to be reached persistently, the teleon must have some internal regulation or governance. The evaluation of governance is an important aspect of teleonics. Governance rests on the application of feedback and feedforward processes, which ensure that the teleos is reached. Feedback can be negative (morphostatic) or positive (morphogenetic). Each of these has a role to play. In teleons where the teleos is concerned with maintenance of the system the feedback is generally morphostatic. On the other hand, if the teleos is concerned with growth and development, the appropriate form of feedback is a morphogenetic one.

Types and grouping of teleons

Teleons connect the various levels of the nested hierarchy of living processes. Starting from any of the levels, it is obvious that there will be two kinds of teleons. The ones which connect an upper (outer) level to a lower (inner) level are called endoteleons. The teleons which are directed at the higher (outer) levels are called exoteleons. At each level bundles of both kinds of teleons combine to form doublets. Examples of doublets are the cells, individuals, families, organizations, communities and societies. Although we tend to think of these entities as concrete systems, they are indeed simply points in the hierarchy where the processes come into close association with each other. The concrete nature of these entities is considered to be the result of the process interaction and not, as is generally assumed, the other way around. Cells, humans and organizations are the result of their processes and not vice versa. This differentiates teleonics from the normal systems theories. In the latter one would define the system by drawing a boundary and identifying the subsystems and evaluating the interactions between them. In teleonics one defines the processes and searches for the subsystems which contribute to them. Boundaries play a lesser role, all process boundaries are extremely permeable.

Teleons usually reach over many levels of the living hierarchy, creating many concrete systems or doublets. Therefore the entire universe looks like a huge living network in which the teleons are the strings and the

doublets are the knots. We have referred to this network as the Biomatrix. It is very difficult to study such a complicated network as a whole. We have suggested that if any point in the Biomatrix is studied at least three levels of the hierarchy are taken into consideration. This is obvious, as the two kinds of teleons at any level in fact connect that level to the upper and lower levels.

Uncertainty, stress, disease and creativity in the Biomatrix

Living systems exhibit uncertainty. Although teleons are designed to reach a teleos, they do not always succeed. To study uncertainty in teleons, we introduced the concept of telentropy. Telentropy exists in all teleons. There is no living activity of which we can be completely sure that it will reach its goal. We could think of a human-centered teleon, such as going to work every day. When we leave there is always a chance of an accident, an unexpected meeting with a friend or a car breaking down. The total uncertainty can be expressed by telentropy. Telentropy can be injected into teleons by interferring with the teleos, structure, process or the governance of the teleon. In living systems there is sufficient internal governance to eliminate the telentropy and thus to ensure that the goals are attained. However, the means for doing this are limited and can be exhausted. Such a state of affairs can lead to stress and disease of the teleon. In certain cases the telentropy can be channeled away from a teleon into other teleons, either at the same level or between different levels of the hierarchy. If these teleons cannot control the resulting increase in telentropy efficiently, their operation will be unfavourably affected. It is a well known phenomenon in biology that the symptoms of disease appear at points which are remote from the cause of the disease. This is especially true for the so-called psychosomatic diseases, where the cause might lie in unfulfilled (telentropic) psychological problems, yet the results manifest themselves as a cellular defect, such as cancer or an ulcer. In these cases the telentropy has been transferred away from the psyche to the cells. The same is true for other levels of the Biomatrix. Societal or organizational malfunction can be analyzed by following the movement of telentropy.

Telentropy is not always detrimental; it is an essential feature of creativity. It is due to the uncertainty of reaching of our goals that we think of new ways of doing things. By channeling telentropy in the right direction, growth and development of living systems can be attained.

A bibliography can be requested from the author.

Survival Strategies for Enterprises in Post-Socialist Countries
- and Why they often don't Work

Magoroh Maruyama
Aoyama Gakuin University
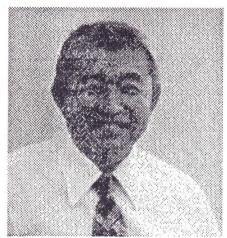Tokyo 150, Japan

In the process of conversion to free market systems, tried-and-proven methods of Western firms, such as giving workers bonuses and shares of company stock, have been transplanted to Eastern Europe. In many cases they have not produced the expected results, however, since the conditions prevailing in the Post-Socialist world are considerably different from those in classical Capitalist countries. Some examples will be discussed below.

Bankruptcy Game
In free-market countries, allowing workers to become shareholders often enhances their productivity. In the East, however, it has triggered a bankruptcy game; employees intentionally reduce their productivity so that the stock will become cheaper. So do managers who want to or are required to buy stock, and even foreign firms that are engaging in joint ventures with state-owned ones.

Subverted Bonuses

Some Hungarian firms used bonuses to enhance productivity, but for several reasons this approach has proven unsuccessful. First of all, the money was distributed equally, and not on the basis of merit. Besides, managers sometimes withheld a part of the bonus fund to pay workers for special services. The ensuing secret negotiations often led to suspicions and resentments.

Prof. Magoroh Maruyama

Individual Performance Evaluations

Eastern European employees hate written performance records because they remind them of former secret police methods. Besides, at least in Hungary, the evaluations are manipulated. For example, a retiring person might be given a better grade so that he will receive a higher pension. This is even explained to the other workers, who willingly go along with the deception.

Inactive Savings

In Hungary, the interest rate has exceeded the inflation rate, and has even gone up to 35%. Although this did lead to an increase in domestic savings, the deposits remained inactive and little money has been available for investment. Besides, in order to stimulate imports the government has refrained from adjusting the foreign currency exchange rate to current inflation levels. Foreign firms have been taking advantage of this situation by depositing large amounts of money in Hungary and collecting the interest on them. Thus, although the Hungarian balance of payments is statistically excellent, the level of investment is low.

Nonproductive „service" industry

Although some new businesses have emerged in Eastern Europe, a large proportion of them are in the service sector. It is more profitable to move goods back and forth than to produce them, and besides service enterprises do not require much investment. Therefore the development of the economies in the former Soviet Block has been rather lopsided.

The transformation from Communism to a free-market economy in Eastern Europe is an unprecedented situation. Various „sure-fire" survival strategies that have been tried out have unfortunately proven unsuccessful. Policy makers and business planners must understand the reasons for these failures if they are to adapt effective measures.

That is the challenge for the future.

Project Report

Cultural Aspects of Automation
Prof. J.L. Elohim

A study carried out at the Scientific Academy
of Lower Austria, Krems
Schloßg. 6/16, A-3512 Mautern, Austria

Technical innovations lead to improvements in the quality of life, but they often have detrimental side-effects as well, such as deterioration of human relations and environmental destruction. The aim of Professor Elohim is to achieve a rationally guided co-evolution of technology and culture.

Prof. J. L.Elohim   Photo: Sokoloff

He hopes to attain this goal by forming groups to tackle such diverse problems as the reduction of environmental pollution and the development of efficient public transportation systems. These groups would consist of people with different points of view - engineers, politicians, concerned citizens, etc. In developing new approaches they would make use of principles such as synergy (interdisciplinary cooperation), systems thinking (holistic view attained through a consideration of the sequential, hierarchical and functional relationships between ideas) and cybernetic interpretation (feedback). Unfortunately, convincing colleagues to take account of the social impacts of their innovations has proven, in his opinion, very difficult

Professor Elohim is the founder and former president of the Mexican Society of Systems and Cybernetics. He began his career as an electronic engineer, but became concerned with the human implications of technology. He has undertaken studies at the University of Wales in Swansea, England, and the Ecole des Hautes Etudes in Paris. Until 1991 he was a professor at the School of Electrical and Mechanical Engineering of the National Polytechnical Institute in Mexico. Since then he has been working in Krems, Austria.

reported by Stephen Sokoloff

The Principia Cybernetica Web
a knowledge base for systems research
Johan Bollen

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Although system science and cybernetics have provided a strong integrating force for other sciences, these fields remain diverse and fragmented, lacking a solid philosophical framework. Their concepts and methods have proven useful in the most diverse domains, but consequently researchers have mainly focused on applying these new and revolutionary ideas, rather than on developing the science's ontology and philosophical foundations.

The Principia Cybernetica Project (PCP), founded in 1989, is devoted to the development of a complete and consistent cybernetic philosophy. The project's name refers to Russell and Whitehead's Principia Mathematica, the work that laid the philosophical foundations for the science of mathematics as we know it.
PCP, however, is not thought of as a closed, rigid set of axioms and definitions. Its basic architecture consists of nodes, representing concepts and their definitions, and links, representing the associations between the concepts. Nodes and links form a dynamic and continuously evolving network, incorporating the knowledge that makes up the Principia Cybernetica.

PCP was not designed as a specialized product of a few scientists, but rather as a collaborative development by many researchers in the field of systems science and cybernetics, each contributing their own viewpoint and expertise. Therefore, advanced collaboration and communication technologies are essential components.

PCP aims to build an adaptive and growing body of philosophical knowledge by applying cybernetic tools and methods to the development of cybernetics itself. PCP encourages multidisciplinarity and tries to integrate the different viewpoints that make systems science and cybernetics such a diverse field. PCP investigates the process of collaborative knowledge development. The research results will, in the spirit of the project, be fed back into the development of PCP through improvements to software and infrastructure. Our most recent research has focused on dynamically adjusting the structure of a knowledge network so that information will become more easily and efficiently accessible. The idea is to develop learning rules and algorithms that can ensure the network's soundness when the variety of the nodes and links increases. PCP aims to provide an information service to the cybernetics community. Accurate and up-to-date information on the main issues of the cybernetics and systems domain should be readily available to as many people as possible.

The World Wide Web (WWW) is based on a distributed hypertext paradigm on the Internet computer network. It provides a friendly, efficient and increasingly popular way of communicating and fits in very well with our views on the PCP-architecture: a large set of nodes, representing concepts, linked by associations, that can be easily accessed by any researcher on any platform from any location.

Our WWW-server, which was started in 1993, contains at present some 800 nodes. They include definitions of concepts and principles, articles, discussion nodes, maps, a searchable index, links to related Internet servers, and general reference material on cybernetics and systems science (glossary, bibliography, lists of organizations and journals with addresses, etc.). The PCP web has received several positive reviews and an honourable mention for document design at the "Best of the Web Awards". Recently, the possibility to annotate and extend nodes has been added, so that users can interactively contribute to the developing structure and content of the web.

Access:
Internet: Install a browser on your computer. WWW software (e.g. Mosaic) is freely available.
FTP: Connect to: rtfm.mit.edu, download document in : /pub/usenet/news.answers/www/faq, containing detailed instructions. Having installed a WWW browser, use the WWW-address ("URL"): "http://pespmc1.vub.ac.be/" to retrieve our start page.
E-Mail: The CERN server accepts WWW-addresses via email and sends back the corresponding WWW page. Send message "SEND http://pespmc1.vub.ac.be/" to: listserv@info.cern.ch. The start page enables one to browse the WWW without additional software.
More information: email to PCP@vnet3.vub.ac.be, or anonymous FTP at is1.vub.ac.be, directory /pub/projects/Principia_Cybernetic.

Conference Report

The 94 Fuschl Conversation
Fuschl, Austria, April 10-15, 1994

The Fuschl Conversations are one of the programs of the IFSR. The 94 Conversation was held in April at the Lake Fuschl, Austria. Research teams worked on four topics. The *Systems Education-Organizational Learning Team* considered what outcomes we hope to attain from systems education and formulated sets of systems competencies that education can help students to realize. The team also explored systems learning in organizations. The Societal Evolution Team explored characteristics of the ideal society by modeling societal evolution. They arrived at the conclusion that the best approach to understanding the process of societal evolution is the simultaneous use of evolutionary theory and systems theory. The team developed a program for the societal

applications of the ideas they generated. The next team, focusing on *Self Regulation*, explored self organizing principles that might guide human and organizational behavior. They found that this area of exploration seems particularly relevant in the light of the more recent understanding we have attained concerning the chaotic nature of most complex systems. *Designing Conversations* was the topic of the fourth team. It first developed and acted out a set of metaphors for systems design. The insights gained from the metaphors led it to propose a set of salient individual and group characteristics and competencies that enhance conversation-based systems design.

Preparing for the 96 Fuschl Conversation, member organizations are invited to bring to the attention of their members the opportunity to participate in the next meeting. The 1996 program is scheduled for April 14-19, 1996, at the Lake Fuschl, Austria (following EMCSR'96). Topics currently being considered include:

- Systems Design as a Collective Human Activity,
- Systems Learning in General Education,
- Guided Societal Evolution,
- Designing the IFSR as a self-organizing System, and

The Design of Systems of Learning and Human Development for the 21st Century. Participants are expected to explore the knowledge base of the particular theme and prepare an "input paper" that summarizes their findings. The papers will be distributed prior to the Conversation. The Conversation is guided by "triggering questions" developed by the teams and takes the form of a structured disciplined inquiry process. After the Conversation, participants are expected to prepare a publishable paper. The IFSR plans to pay the cost of room and half board (breakfast & dinner). Those interested in participating should contact Bela H. Banathy, 25781 Morse Drive, Carmel, CA. 93923, USA before the end of January, 1995.

Fuschl Conversation 1994

STIQE'92
Systems & Quality '92
1st Int. Meeting on Linking Systems Thinking and Total Quality Management
Maribor, Dec 10-12, 1992

Papers presented have been published in Systems Research vol. 11, no. 1, 1994. *(see 'What is New in Systems Research', below)*

News from the Book market

IFSR International Series on

Systems Science and Engineering
(Series Editor: George J. Klir)
(see insert on next page)

Fuzzy Measure Theory
Zhenyuan Wang, George J. Klir
State University of New York at Binghamton
341pp., $69.50
Plenum Publishing Corp.,
233 Sprint St., New York, NY 10013-1578
tel: (212) 620-8000; fax(212) 463-0742

The Stafford Beer Classic Library
Six of Stafford Beer's prominent books have been re-published and are offered as a set at £75.00/$120.0. (use ISBN 0471 951544

Brain of the Firm, 2nd Edition
ISBN 0471 94839X (paperback) July 1994,
£14.95/$23.95
The Heart of Enterprise
ISBN 0471 948373 (paperback) July 1994,
£14.95/$23.95

Presenting recent books in the...

IFSR International Series on Systems Science and Engineering

Series Editor: George J. Klir
Editorial Board: Gerrit Broekstra, John L. Casti, Brian Gaines, Ivan M. Havel, Manfred Peschel, Franz Pichler

This series, published by Plenum Press on behalf of the International Federation for Systems Research (IFSR), produces high-quality monographs and textbooks on various topics of systems science and engineering. In keeping with the aims of the IFSR, The International Series on Systems Science and Engineering promotes the scientific study of systems at an international level.

Volume 9
CHAOTIC LOGIC
Language, Thought, and Reality from the Perspective of Complex Systems Science
by Ben Goertzel

Applies principles of complex systems science to the question of how our minds, using language, construct and perceive the world. Provides the first comprehensive mathematical model of human reason, consciousness and personality, drawing upon the concepts of the "dual network" and the "cognitive equation". In addition to the relation between mind and reality, this provocative study also explores such issues as the justification of belief systems and the connection between creativity and mental illness.

0-306-44690-1/296 pp./ill./1994/$72.50
($87.00 outside US & Canada)

Volume 8
THE ALTERNATIVE MATHEMATICAL MODEL OF LINGUISTIC SEMANTICS AND PRAGMATICS
by Vilém Novák

Utilizes the functional generative description of natural language to develop a new approach to mathematical modeling of the pragmatics and semantics of natural language. Includes an introduction to the alternative set theory that provides the basis for this alternative mathematical model, emphasizing the phenomenon of vagueness. Contains a wealth of innovative ideas about expressing the semantics of words, phrases, and sentences in mathematical terms.

0-306-44269-8/220 pp./ill./1992/$65.00
($78.00 outside US & Canada)

Volume 7
FACETS OF SYSTEMS SCIENCE
by George J. Klir

Offers broad introductory coverage of the growing field of systems science, including its historical roots, relationship with other areas of human affairs, current status, and probable role in the future. Based on Dr. Klir's classroom lectures at the State University of New York at Binghamton, the book's first section details the author's perspectives on the systems science movement. The second section contains reprints of thirty-five classic papers that reinforce the concepts introduced in Part 1. Presented in a non-technical format with a minimal use of mathematics, *Facets of Systems Science* is intended for the advanced undergraduate or beginning graduate student.

0-306-43959-X/680 pp./ill./1991/$79.50
($95.40 outside US & Canada)

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The Meaning of Operational Research and Management Cybernetics
ISBN 0471 948381 (paperback) July 1994, £14.95/$23.95

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The Viable System Model
Interpretations and Applications of Stafford Beer's VSM
Edited by Raul Espejo and Roger Harnden
ISBN 0471 937312 (paperback) 1992, £18.95/$35.95

How Many Grapes Went into the Wine
Stafford Beer on the Art and Science of Holistic Management
Edited by Roger Harnden and Allenna Leonard
ISBN 0471 94296 0 (hardback) May 1994, 416 pages, £24.95/$39.95

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What is new in
"SYSTEMS RESEARCH"?

Systems Research, the official journal of IFSR, is to be relaunched in 1995 as a publication of John Wiley and Sons. John Wiley is a very prestigious publishing house which has been responsible for putting into print the work of many well-known systems authors. Among their considerable list of journals *System Dynamics Review* should be mentioned.

Systems Research will continue to be published four times a year. It is available at a reduced price of $40 per annum to members of societies affiliated to the IFSR. The initial contract is for ten years and royalties will eventually accrue to the IFSR, once subscriptions have been built up. Authors receive 25 free off-prints of their papers. The first editor of the relauched journal is Professor Mike Jackson, Vice-President of the IFSR. Papers for publication should be sent to:

Professor M.C. Jackson
University of Humberside
Cottingham Road
Hull. HU6 7RT, United Kingdom
tel:+44 1482 440550 Ext. 3720
fax: +44 1482 445715

Subscription information can be obtained from the same source.

Aims and Scope
Systems Research provides a forum for the exchange of new ideas and knowledge relating to the use of systems thinking for the development, management and assessment of activities, programmes and organizations. Its scope will be comprehensive, dealing with systems approaches to: the redesign of organisational and societal structures; the management of administrative and business processes; problems of change management; the implementation of procedures to increase the quality of work and life; the resolution of clashes of norms and values; difficulties related to the introduction of new scientific results, etc. Papers should show an appreciation of both theory and application and seek to deal with problems from an interdisciplinary, systems perspective.

Readership
Systems Research will appeal to academics whose careers largely involve systems work and also to academics whose primary research activities lie in other fields, but who wish to take advantage of published systems work relevant to their own disciplines - for example to those concerned with management, management science, and the information and decision sciences.

Systems Research will also appeal to professionals and practitioners intent on enhancing their own career activities by using systems ideas. To realise these ends effectively, clarity of writing is essential and will be a major factor in manuscript acceptance.

Systems Research is the official journal of the International Federation for Systems Research and it is, therefore, the intention to stress international readership appeal. Every effort will be made to make *Systems Research* attractive to current and potential affiliates to the International Federation, including those in developing nations.

Regular Features

Systems Research published, in addition to regular papers, 'notes and insights' reporting on studies in progress, observations on methodology, commentaries, teaching notes, etc. There is also a 'correspondence' section as well as 'book review' and 'news' sections. Occasionally there are special issues devoted to topics of interest to members of the systems community or to the work of prominent systems researchers. Past papers include (in alphabetical order):

S. Beer: Easter.
K.E. Boulding: Systems Research and the Hierarchy of World Systems.
G. Broekstra: Parts and Wholes in Management and Organization.
C.W. Churchman: Conversations.
T.A. Cowan: Paradoxes of Science as a System.
H. von Foerster: On Gordon Pask.
M.C. Jackson: Systems Methods for Organizational Analysis and Design.
G.J. Klir: Complexity : Some General Observations.
P. Ledington: Relevance, Formality and Process: Toward a Theory of Soft Systems Practice.
F.F. Robb: Cybernetics in Management Thinking.
R. Rosen: The Physics of Complexity.
J.N. Warfield: Implicit Aspects of Much Systems Thinking.
G. de Zeeuw: Problems of Increasing Competence

Contents of vol. 11, no. 1:
Vol. 11 No 1. contains the proceedings of Systems & Quality '92 (STIQE'92), the First Int. Meeting on Linking Systems Thinking

and Total Quality Management (Maribor, Dec 10-12, 1992).
In their introduction, the two Programme Chairmen say:
The entire world is looking for new models of control over the given situation. Systems thinking may provide some useful answers. Formally, Systems Theory and Total Quality Management are both of the same age, there is, however, hardly any study of their relationship. To explore it was the aim of the meeting. The present issue of Systems Research presents 15 conference contributions showing various models.

Matjaz Mulej and Miroslav Rebernik: There is Hardly a (Total) Quality without Systems Thinking
J.L. Elohim: The Systemic, Cybernetic and Synergetic Alternative in Quality Management
Elmar A. Stuhler: Philosophy of Change and Progress
Earl A. Molander and Michael F. Sisavic: Contrasting Paradigms and Movements: Systems Theory and Total Quality Management
Josef Zelger: On the Road to Quality Management: Some Basic Philosophical Concepts
Hellmut Loeckenhoff: Systemic Leadership for Strategic Quality Management
Dusko Ursic: Evolution of Quality and Quality of Systems Thinking
Miroslav Rebernik: De-memorizing and Changing of Mental Models as a Precondition for TQM
Matjaz Mulej: Quality and Innovation - What Can Be Done without Systems Thinking in Depressed Regions?
Louis Jacques Filion: Visionary Systems Thinking (VST) as a Support to Creativity in the Quality Management (TQM) Process
Janko Kralj: Quality of an Enterprise's Business Operations
Gerhard Chroust: Quality Aspects of System Development Paradigms
Boris Snoj: Measurement of the Services Quality from the Customer's Perspective
Stefan Kajzer and Janko Belak: Corporate Planning as an Instrument of Assertion of the Total Quality
Timme A. Helzer: Envisioning TQM through Systems Thinking

Conference Announcements

For contacts, etc. see Calendar of Events.

EUROCAST'95 -
5th Int. Workshop on Computer Aided Systems Technology (CAST)

EUROCAST'95 welcomes contributions dealing with the following aspects of CAST:
- User Environments and Tools for CAST
- Computer Aided Design of Complex Systems
- Computer-based Systems Engineering
- Non-classical Concepts and Methods for Systems Theory
- Applications of CAST tools
- Artificial Intelligence for Systems Technology
-Modern Computational Tools for Complex Systems

EUROCAST'95 attendance is limited and early registration is advisable.

Problems of Excavating Cybernetics and Systems
Amsterdam, April 17-21, 1994

Both of these fields traditionally aim to combine two fields of interest: *detaching* observable variations from the observer, researcher and intervener, and *attaching* users, interveners and researchers to observable variation. Present developments in relation to both of these areas support divergence rather than interaction, however, posing a challenge.

One interest is in the *explanation* of ordered observational variation, that is complexity. Here the focus is on how frames and constraints are or become *locked in* the world. The other is in the *control* of variation. Its aim is to explore how frames and constraints get *transferred.*

Conference Chair: Prof. Gerald de Zeeuw, Dr. Ranulph Glanville, Prof. Robbin R. Hough.

XII Int. Conf. on Systems Science
Techn. University Wroclaw, Sept 12-15, 95

Topics of this conference are:
o General Systems Theory, control theory
o Systems identification, modelling and simulation
o System optimization
o Large Scale control systems
o Flexible manufacturing systems
o Distributed computer systems and networks
o Decision support systems, artificial intelligence and expert systems
o Application of system analysis to technical, management, communication, transport and biomedical systems

News from the IFSR

Direct Mailing of the IFSR Newsletter! Several individuals have expressed interst in directly receiving the IFSR-Newsletter. We are therefore offering a direct mail service, starting 1995. To simplify the administration send the amount of $10 (to cover mailing costs) to our bank account 04.05.924.865 at Raika, Linz-Traun, Austria (Bank ID No.: 34 500) or mail it to us by registered mail. In return you will receive the Newsletters for one year (usually 5 issues).

From our Member societies

The 1994 ISSS Annual Meeting
The 38th Annual Meeting of the International Society for the Systems Sciences took place June 14-19, 1994, at the Asilomar Conference Center, Pacific Grove, California. ISSS President Harold A. Linstone was responsible for program planning and preparation. Managing Director Linda Peeno handled administrative matters. The venue's ideal location on the Monterey peninsula amid pines and dunes along the ocean provided a delightful setting for the 150 participants.

The theme of the meeting was: "New Systems Thinking and Action for a New Century". There were 45 paper sessions with 145 papers, 7 workshops, 2 discussion groups, a panel discussion, and a demonstration (of computer networking). Invited plenary speakers included
Prof. Yehezkel Dror, Hebrew University, Jerusalem: the Von Bertalanffy Memorial Lecture - Social Systems Mutations: Terra Incognita

Prof. George Klir, State University of New York, Binghampton: On the Principles of Uncertainty

Prof. Robert R. Rycroft, George Washington University - Technology Policy: Fitting Concept With Reality

Prof. Heinz Von Foerster - The Language of Systems and the System of Language

Dr. Willis Harman, Institute of Noetic Sciences - Global Dilemmas and the Plausibility of Whole-System Change

Joseph F. Coates, Coates & Jarratt, Inc. - Why Futures Studies Are so Uninteresting

In honor of former ISSS President Kenneth Boulding, Bela H. Banathy organized a session of "Boulding Conversations", featuring William Reckmeyer, Robert Theobald, and Patrick Jenlink. There were also the traditional Presidential Address, given by Harold A. Linstone, and the Incoming President's Address, presented by Donald deRaadt.

A Presidential Roundtable on the Society's future offered the views of five ISSS presidents whose terms span twenty years (James G. Miller '73, George Klir '81, Bela H. Banathy '84, Len Troncale '90, and Harold A. Linstone '93). An innovative feature was a daily pair of self-organizing conversations, one on systems practice led by Bruce Francis and the other on systems theory moderated by Carl Slawski.

From the Treasurer/Secretary

Discussion Groups on the Internet Relevant to Cybernetics

Internet provides a fantastic new means to communicate. Many so-called discussion groups have surfaced. They are internet-addresses with an adequate software support for communication between group members. Below there is a list of various such discussion groups.
IFSR Newsletter will periodically publish such lists. Send information to the Editor!

Group Name:	**Cybernetics and Systems**
Focus:	General
Facilitator:	Cliff Joslyn <cybsys@bingsuns.cc.binghampton.edu>
List address:	cybsys-l@bingvmb.bitnet
Subscription:	Send "SUB CYBSYS-L yourname" as body message to:listserv@bingvmb.bitnet
Group Name:	**Principia Cybernetica Project**
Focus:	as the name indicates
Facilitator:	Francis Heylighen <fheyligh@vnet3.vub.ac.be>
List address:	prncyb-l%bingvmb.bitnet@uga.cc.uga.edu
Subscription:	send a message to Francis Heylighen
Group Name:	**Autopoiesis**
Focus:	as the name indicates
Facilitator:	Ken Palmer <autopoiesis-request@world.std.com>
List address:	autopoiesis@world.std.com
Subscription:	send a message to: thinknet@world.std.com
Group Name:	**Control Systems Group Network**
Focus:	Bill Power's Perceptual Control Theory
Facilitator:	Gary Cziko <g-cziko@uiuc.edu>
List address:	csg-l%uiucvmd.bitnet@pucc.princeton.edu
Subscription:	send "SUB CSG-L yourname" as body message to: listserver@vmd.cso.uiuc.edu
Group Name:	**The Observer**

Focus:	Autopoiesis and enactive cognitive science
Facilitator:	Randall Whitaker <rwhitaker@falcon.aamrl.wpafb.af.mil>
List address:	rwhitaker@falcon.aamrl.wpafb.af.mil
Subscription:	send a message to Randall Whitaker
Group Name:	**Cybernetics Communications**
Focus:	established recently: framework of a proposed textbook on cybernetics,
Facilitator:	Jixuan Hu <jixuanhu@gwuvm.gwu.edu>
List address:	cybcom@gwuvm.gwu.edu
Subscription:	send "SUB CYBCOM yourname" as body message to: listserv@gwuvm.gwu.edu

Calendar of Events

Title	Date and Place	Further Information
Abbreviations: CfP, CfA: Call f.Papers/Abstract, FP: Final Paper due, <No. nn>: more details in issue.nn		
Problems of Excavating Cybernetics and Systems <No. 34>	April 17-21, Amsterdam *CfA: Jan 15, 1995, FP: Apr. 1, 1995*	Coordinator PECS, Center f. Innovation and Co-operative Technology, Grote Bickersstraat 72, 1013 KS Amsterdam, NL fax: +31 20 525 1211, email:PECS@duc.uva.nl.
EUROCAST'95 - 5th Int. Workshop on Computer Aided Systems Technology (CAST) <No. 34>	May 22-25, 1995, Innsbruck, Austria *CfA: Jan 20, 1995 FP June 30, 1995*	Prof. F. Pichler, Inst. of System Sciences, Kepler Univ. Linz, A-4040 Linz, tel. +43 732 2368-895, fax: -893 email pichler@CAST.uni-linz.ac.at
Einstein meets Magritte - an interdisciplinary reflexion on science, nature, human action and society .	May 29-June 3, 1995, Brussels	Diederik Aerts, TENA, Vrije Univ. Brussels, tel: +32 2 629 32 39, fax +32 2 629 22 76, email: diraerts@vib.ac.be
Critical Issues in Systems Theory and Practice - 4th Int. Conf of the United Kingdom Systems Society	July 10-14, 1995, Hull, UK	Doreen Gibbs, School of Computing and Info Systems, Univ. of Humberside, Cottingham Rd, HULL HU6 7RT, tel. 0482-440550
ICED 95, 10th Int. Conf. on Engineering Design: Design Science for and in Design Practice	Aug. 22-24, 95, Prague *CfA:expired FP: Feb 15, 1995*	CVUT Faculty of Mech. Eng., Technicka 4, CZ 166-07 Praha 6. tel: +422 311 1273, fax: +422 2431-0292
KnowRight'95 - Int. Congress on Intellectual Property Rights for Specialized Information, Knowledge and New Technologies	Aug. 21-25, Vienna *CfP: Jan 13, 1995 FP: Apr. 14, 1995*	W Grafendorfer, OCG, Wollzeile 1-3, A-1010 Wien, tel: +43 1 512 0235, email:ocg@vm.univie.ac.at
EUROMICRO'95 : Design of Hardware/Software Systems	Sept 4-7, 1995, Como, Italy *CfP: Jan 31, 1995*	Krzysztof Kuchcinksi, Linköping Univ., Dept. of Computer and Info Sciences, S-58183 Linköping, Sweden, tel +46 13-281883, email:kku@ida.liu.se
XII International Conference on Systems Science <No. 34>	Sept. 12-15, Wroclaw, Poland *CfA: Jan 31, 1995 FP: May 31, 1995*	Prof. J. Swiatek, Techn. Univ. of Wroclaw, Wybrzeze Wyspianskiego 27, PL-50-370 WROCLAW tel: +48 71 21-62-26, fax +48 71 22-36-64, email: I17@PLWRTU11.BITNET
IDIMT'95 - 3rd Interdisciplinary Information Management Talks	Nov. 8-10, 1995, Kubova Hut, Czech Rep. *CfA: April 1995i*	Prof. G. Chroust, Systemtechnik u. Automation, Kepler Univ. Linz, 4040 Linz, tel: +43 732 2468 865, email: CHROUST @ sea.uni-linz.ac.at
13th European Meeting on Cybernetics and Systems Research, Vienna	Apr. 9-12, 1996, Vienna, Austria	Robert Trappl, Dept. of Med. Cybernetics & AI Univ. of Vienna, Freyung 6/2, A-1010 Vienna, Austria, tel: +43-1-53532810, fax: +43-1-5320652, E-mail: sec@ai.univie.ac.at
Fuschl-Talks 1996 <No. 34>	Apr. 14-19, 1996, Fuschl, Austria *CfA: Jan 31, 1995*	Prof. B. Banathy, 25781 Morse Dr., CARMEL, CA 93923, USA, email: belasr@aol.com
ICCHP 1996: International Conference on Computers for Handicapped Persons	July 16-19, 1996, Linz, Austria	Austrian Computer Society, Wolzeile 1-3, A-1010 Wien, Austria, tel: +43 1 512 02 35, email: ocg@vm.univie.ac.at