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www-home page: <http://www.sea.uni-linz.ac.at/ifsr/>  
ftp-server: <ftp://ftp.sea.uni-linz.ac.at/public/ifsrNL>



A Merry  
Christmas  
and a  
Happy  
New Year  
2000!

*Dear Readers!*

*Read this Newsletter with a certain feeling of nostalgia! It will be the last one in that form!*

*The Executive Committee of the IFSR looked very carefully at the issue of the Newsletter and the question whether it is cost effective and useful. It was our impression that the current Newsletter does not really fulfil that role, given the cost to produce and distribute it.*

*Therefore the EC came up with another solution: We will have just one Newsletter per year, but it will be thicker.*

*It will report on the activities and projects of our member societies – which means that we encourage you to submit reports on your activities. It would give more space to our member societies. A major part of the Newsletters will be devoted to the Fuschl Conversations.*

*In even years we will report on the past Fuschl Conversation, very much in the style of*

*Newsletter vol. 17, no 2 (June 1998). In the odd years we will devote some space to the preparation of the next Fuschl meetings, its topics etc. This should encourage our readers to comment and to offer their opinion.*

*Naturally other Conversations will also be offered space to contribute. So the year 2000 will not only change the way we write our date and a view of how we planned our software, but it will also change the Newsletter.*

*By this new arrangement we will save some money which we want to invest in some more effective activities where we feel that there is a better investment. Nevertheless let me wish you a Merry Christmas and a Happy New Year! And Cheers to the new Newsletter! Yours sincerely*

*Gerhard Chroust*

## FUSCHL 2000 CONVERSATION 2000

In April 2000 we will convene our 10th Fuschl Conversation. The topics of the teams have been formulated and the participants selected. The Fuschl 2000 Conversations will to a large extent be continuations of the Conversations held in 1996 and 1998 and will comprise the following five teams:

### **21<sup>ST</sup> CENTURY LEARNING SYSTEMS**

**Coordinator: Sue McCormick**  
[sue@digisys.net](mailto:sue@digisys.net).

Today's rapid and increasingly technological changes, the globalization of human systems and their internetworking are generating unprecedented learning demands and requirements. To meet these demands we must redesign our learning systems, from preschool to corporate training levels. The research group will address the following questions:

- What are some of the emerging approaches that enables us to redesign our learning systems?
- What are new models of learning that underpin these approaches?
- What are the learning challenges inherent in these models?
- What are some of the ways the conversation methods can be used to address these learning challenges?

### **THE Y3K SOLUTION: REPOSITING THE IDEAL SEEKING SOCIAL SYSTEMS DESIGN**

**Coordinator: Gordon Dyer,**  
[G.C.Dyer@open.ac.uk](mailto:G.C.Dyer@open.ac.uk).

The first triggering question is:

- What would we want the human condition to be by Y3K?

The choice of such time scale should make it easier it overcome the stumbling block of thinking that it "cannot be done". In such a time scale anything ought to be possible, as it is far enough ahead for current biases to be designed out if we have the will. It is also far enough for us to really think about the type of global human society that we want to encourage, and what kind of core values do we want to realize in designing that society?

The second triggering question is:

- What needs should be planted today which might lead to our desired vision for Y3K?

- What can we as individuals do in the next 5 years as part of an action plan to plant these seeds?

### **AWARENESS AND SOCIAL SYSTEMS.**

**Coordinator: Gary Metcalf**  
[gsmetcalf@ashland.com](mailto:gsmetcalf@ashland.com)

This conversation will focus on exploring participant's understanding of social systems, and the ways in which we come to know, or are understanding of social systems, and the ways in which we come to know, or are aware of social systems. In addition to sharing preliminary ideas about the topic and engage in preparatory reading, participants will be expected to bring examples of real-world systems of interest to them, in order to apply in the context of these example systems ideas that will develop in the course of the week. The ultimate goal is to develop an increased understanding of the workings of social systems. One of the questions is

- What are the "materials" involved in creating the systems envisioned through idealized design.

### **DESIGN OF DISCIPLINED INQUIRY ON THE FOUNDATION OF INFORMATION SCIENCE**

**Coordinator: Bela A. Banathy,**  
[BABanathy@worldnet.att.net](mailto:BABanathy@worldnet.att.net)

A research group on the Foundations of Information Science was formed in 1994. The group held a 1994 meeting in Spain, a 1996 meeting in Austria, and more recently has been conducting an on-line conference, and meeting in collaboration with other professional organizations. This effort has yielded significant results that have been published in special issues of a number of journals, and books.

Because of the increased interest in this research topic, and the increasing significance of the issues addressed, a conversation is being organized to sketch the design of a broad-based research effort on this topic.

The research team will begin the design of a systemic approach to disciplined inquiry into this area. The triggering question is:

- What questions need to be asked in order to frame the inquiry in a systemic way?

## DESIGNING SYSTEMS FOR HUMAN BETTERMENT

Coordinator; Arne Collen  
[acollen@saybrook.edu](mailto:acollen@saybrook.edu)

The influence of Systems Sciences is nowhere more needed than in areas pertaining to human welfare and the human condition. This conversation group will continue its 1998 focus on the relevance and applications of cognitive and systems sciences to the design of human activity systems for human betterment. We wish to emphasize the nature of social and human-oriented systems that reveal to us who we become, how we come to know our world, and the ways we relate to one another. We are especially interested in such systems as learning and learner-centered education (caring) systems, systems that foster human development, personal and collective guidance systems, cooperative and collaborative social systems, and synergistic win-win systems. These special interests are informed by what we have learned about human beings over the course of this century and can learn constructively from each other in this coming century.

We believe that knowledge of the ways we think, feel, perceive, and inter-relate help us as designers to create and develop our systems for human betterment. We expect such systems to take into consideration our human welfare as

well as the welfare of those affected by our activities. The globe promises to be a more holistic, interconnected and interdependent world community. Whether we like it or not, whether we wish to accept it or not, we are entrusted from now on as the stewards of all life on the planet. Therefore, our concern for the design of systems of human betterment must include the ecological, ethical, humane, and participatory dimensions in the broadest sense. Trigger question:

- What are the knowledge domains, problems, and issues of design when applied to the creation of systems for human betterment?

### More details:

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### Previous Proceedings:

*B.H. Banathy, G. Chroust (eds.): The Eight Fuschl Conversation (Fuschl Am See, April 14-19, 1996) Austrian Society for Cybernetic Studies, Vienna, Sept. 1998, ISBN 3 85206 145 8*  
*M. Beneder, G. Chroust (eds.): Designing Social Systems in a Changing World (The Ninth Fuschl Conversation) Austrian Society for Cybernetic Studies, Vienna, Sept. 1998, ISBN 3 85206 148 2*

## NEW APPROACHES

### INTELLIGENT WHEELCHAIR SYSTEMS FOR THE DISABLED.

IJ Stott and DA Sanders

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#### Introduction

In the past mobile robotics, sensor systems and artificial intelligence have been used in industrial applications. These systems have at first glance seemed ideally suited for applications in Rehabilitation Technology (RT). In reality the transfer of knowledge between these two fields has proved to be difficult. Inclusion of a human in the loop can cause the inclusion of unpredictable or misleading inputs. The Dynamic Systems Engineering Research Group (DSERG) has been investigating this problem in

recent years, specifically the problem of mobility for severely disabled people.

#### Powered mobility

The access to independent means of mobility has been shown to be an important factor in the level of self-esteem and feeling of well being of a person [Verburg et al (1984)]. Verburg stated that independent means of mobility such as crawling, walking and running are usually acquired in the first two years of life as part of the normal development of a child. At a very early stage of normal development children

learn that behaviour and interaction with the environment can be controlled. In the absence of the natural development from crawling to walking, a powered wheelchair can provide a reasonable level of independence.

For the severely disabled, a powered wheelchair can offer an escape from total reliance on others. However the decision to allow a young child to drive a powered wheelchair must be taken very seriously. Badly or recklessly driven wheelchairs could cause injury to the driver and others, and cause considerable damage.

Powered wheelchairs are generally directed using manual controls, often a joystick or switches. Some controllers are programmable to suit the requirements of individuals. The user could indicate a direction with the input device, the wheelchair hopefully moved in the required direction react to the disturbance and correct the trajectory.

### Intelligent Mobility Systems

Recent work by the DSERG has investigated the integration of intelligent systems to wheelchair controllers. Intelligent wheelchair systems required the addition of sensor systems and control algorithms that could process information from a user and other sensors and use this information to assist the user [Stott et al (1995)]. Many of the system goals tend to be contradictory. A prime objective of this work was to prevent the wheelchair crashing. The needs and wants of the user have complicated the "simple" task of preventing collisions. For example a user that is or feels in control of a wheelchair will expect the wheelchair to behave exactly as instructed. If a wheelchair system detects a dangerous condition developing it will react to it. The user may feel that the wheelchair does something unexpected and not as instructed. Some intelligent wheelchair systems have attempted to avoid this problem by taking full control from the user for "A to B" journeys [Pruski et al (1992)], or constraining the autonomous operation [Bell et al. (1994) and Sanders et al. (1994)]. A major problem during the design of the control algorithms was to decide when to activate and deliver trajectory modifications to the wheelchair. New work by DSERG is concentrating on the human-machine interface to try to interpret the overall wish of the user – this was the biggest challenge.

Sonar sensors have been widely used on sensor systems for autonomous vehicles [Chang et al (1996)].

An ultrasonic ranging system was selected as it was cheap and robust. It was connected along

with the user's input device to an interface to a simple data mixing system. This was created to interpret the sensor and user information [Stott et al. (1997)]. The new systems were fitted to a wheelchair and tested. The system modified the trajectory to guide the wheelchair through doorways, around obstacles and along corridors [Goodwin et al (1997)]. The sensors limited the accuracy of the system and new systems are currently under investigation. The new systems will apply distributed intelligence to the sensors and an expert system will interpret the information before the controller command signals are modified

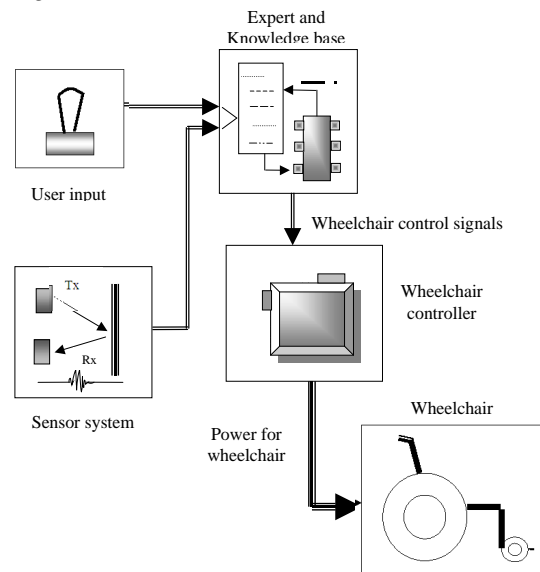


Fig. 1 : System Structure

### Conclusion

The application of state-of-the-art technology to the R.T. field has proved difficult even though many industrial systems have been automated successfully. R.T. applications tend to have "Human-in-the-Loop" systems and this introduces random uncertainties into the system goals. A human expects a system to respond in a predictable manner. The systems must be sympathetic to human needs or it is likely that the user and carers will reject the system.

Bell D., Borenstien J., Levine Sp., Koren Y. & Jaros L. (1994). "An Assistive Navigation System For Wheelchair Based Upon Mobile Robot Obstacle Avoidance". Ieee Proc. Of Conf. On Robotics And Automation. ( 1994). Pp 2018 - 2022.

Chang C.C. & Song K. (1996). "Sensor-Based Motion Planning Of A Mobile Robot In A Dynamic Environment". Proc Of The IEEE IECON Int. Conf. On Ind. Equipment.1996. Pp766-771

Goodwin Mj, Sanders Da And Stott Ij (1997). "A Data Fusion Algorithm For Wheelchair Navigation".

Proceedings Of Int Conf On Rehabilitation Robotics (Icorr'97), Bath University, pp 131 - 134.  
 Pruski A. & Bourhis G (1992). "The Vahm Project: A Cooperation Between An Autonomous Mobile Platform And A Disabled Person". Proc. of The 1992 IEEE Int. Conf On Robotics And Automation. Pp 268 - 273.  
 Sanders Da, Stott Ij, Poland Ga, Tewkesbury Ge, & Cawte H. (1994). "Computer Assistance For A Disabled User/Operator To Navigate A Vehicle Through A Doorway." IEEE Proc. Of 20th EuroMicro Conf, Liverpool. Uk. Isbn 0-8186-7127-0, Pp231-238.  
 Stott Ij, Sanders Da And Goodwin Mj (1995).

Improvements In Real Time High-Level Microcomputer Control Of A Wheelchair Using Sensor Systems. IEEE Proc Of 21st EuroMicro Conf, Sep 95, Isbn 0-8186-7127-0, Pp 335 - 340.  
 Stott Ij, Sanders Da, & Goodwin M (1997). "A Software Algorithm For The Intelligent Mixing Of Inputs To A Teleoperated Vehicle". J. of Systems Architecture 43 (1997) 67 - 72.  
 Verburg G., Snell E., Pilkington M. & Milner M. (1984). "Effects Of Powered Mobility On Young Handicapped Children And Their Families". Proc. of 2nd Int. Conf. Of The Rehabilitation Engineering Soc. Of N. America. June 1984. Ottawa. Pp172 - 173.

## CONFERENCE REPORTS

### 7<sup>TH</sup> INTERNATIONAL WORKSHOP ON COMPUTER AIDED SYSTEMS THEORY AND TECHNOLOGY 1999 (EUROCAST'99)

September 29<sup>th</sup> – October 2<sup>nd</sup>, 1999  
 Vienna University of Technology  
 Vienna, Austria

The biannual EUROCAST international conferences are held alternating in Las Palmas de Gran Canaria and a continental European location. This seventh event in the EUROCAST series was organized by the Institute for Handling Devices and Robotics (Vienna University of Technology), in cooperation with the Institute for Systems Science (Johannes Kepler University Linz) and the Instituto Universitario de Ciencias y Tecnologías Cibernéticas (Universidad de Las Palmas de Gran Canaria).

The concept of CAST as Computer Aided Systems Theory was coined by F. Pichler in the late 80's to encompass theoretical and practical developments as computer tools to attack problems in System Science. It was thought as the third component – the other two being CAD and CAM – that will provide for a complete picture of the different ways to practical developments in Science and Engineering. In

1989, the University of Las Palmas de Gran Canaria organized the first international meeting on CAST: EUROCAST'89. I proved to be a very successful gathering of systems theorists, computer scientists and engineers from most of European countries, North America and Japan. It was apparent that EUROCAST and CAST meetings were consolidated by the number and quality of contributors. This was also true of the last EUROCAST of this century, in which the scope had been extended to include Systems Technology. Topics of EUROCAST'99 included: concepts and models for the architectural level of complex systems, advancements in engineering design environments, complex models and simulation, CAST in automation and control, applications in environmental and energy systems.

The workshop was attended by 69 participants from 18 different countries. 82 regular papers were selected for the technical program. 66 regular papers (grouped into 20 sessions) as well as 4 survey papers were finally presented during the workshop.

The many positive comments made by the participants of this workshop confirmed its success in meeting its objectives.

*Proceedings will appear as Springer Lecture Notes early 2000.*

## CONFERENCE ANNOUNCEMENTS

*For contacts and further information see Calendar of Events*

### SECOND INT. ICSC SYMPOSIUM ON NEURAL COMPUTATION / NC'2000 Technical University of Berlin, Germany May 23-26, 2000

The science of neural computation focuses on mathematical aspects to solve complex practical

problems. It also seeks to help neurology, brain theory and cognitive psychology in the understanding of the functioning of the nervous system by means of computational models of neurons, neural nets and subcellular processes. NC'2000 aims to become a major point of

contact for research scientists, engineers and practitioners throughout the world in the field of Neural Computation. Participants will share the latest research, developments and ideas in the wide arena of disciplines encompassed under the heading of NC'2000 as a follow-up of the most successful NC'98 conference in Vienna.

**TOPICS:**

- Computational Neural Network Models
- Neurophysiologically Inspired Models

- Software And Hardware Implementations
- Neural Network Applications

NC'2000 will include invited plenary talks, contributed sessions, invited sessions, workshops, tutorials and poster sessions.

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## NEWS FROM CONNECTED

The new@news.connected.org list has been specially created to people informed of new articles on Connected Magazine: <http://www.connected.org>

In the Dialogue Handbook, Annelie Ekelin draws on experience in the Dialogue project to write about ways and means of working on writing within a group.

"A feminist approach to working on texts"  
<http://www.connected.org/methods/writing2.html>

Michael Conn, MCI WorldCom, talks of the Council's work on ethics and the Internet.

"Finding the balance between freedom of speech on the Internet and protecting children "  
<http://www.connected.org/is/filtering.html>

Francis Gurry, Assistant Director General of the World Intellectual Property Organisation, on the adoption of open, consultative processes using the Internet.

"Open, consultative government, an example from WIPO"  
<http://www.connected.org/govern/gurry.html>

Here are some interesting excerpts from Alan McCluskey ([alan@connected.org](mailto:alan@connected.org)) paper on "Consensus building and verbal desperados".:

In representative democracy, legitimacy in decision-making comes from the devolution of individual power by a substantial group of citizens to one person ...

New forms of democracy using the Internet ...[try to bypass] elected representatives especially in new areas ... where political jurisdiction may not be clearly defined. ... Advocates set out to reach a consensus on proposed solutions. It is this consensus, coupled with a process that is seen to be inclusive and wide-ranging, that lends legitimacy to the solutions advocated and enables their adoption...

In such a process, it is very easy to become a hostage to a minority or even an individual who persistently advocates one unchanging proposition. Such behaviour is very difficult to handle. Consensus is generally reached by reasoned discussion if not by the play of power between the various parties involved. However, no amount of reasoned discussion will avail on those who refuse any change or compromise...

## NEWS FROM THE BOOK MARKET

### CONSTRUCTION SYSTEMS AND INFORMATION A PROCESS VIEW

**Malcolm Crowe, Richard Beeby and John Gammack**

Aiming to bridge the gap between computer scientists and the increasingly sophisticated computer user, as well as between soft systems thinking and structured systems analysis, this wide-ranging and philosophical book begins by

studying the nature of scientific enquiry and engineering design, to establish a common language between the two. The book goes on to look at how these principles can be applied to the information needs of organisations with a look at information systems of the future. The authors aim to build on the established ideas of Checkland, Rorty and Hesse and new insights.

McGraw-Hill, 1999  
ISBN: 0077079620 – Price £ 24,95

## JOURNALS

### **EMERGENCE: A JOURNAL OF COMPLEXITY ISSUES IN ORGANIZATIONS AND MANAGEMENT**

The New England Complex Systems Institute (NEC) is an independent educational and research institution dedicated to advancing the study of complex systems, established as a joint effort of faculty of New England academic institutions for the advancement of communication and collaboration outside of institutional and departmental boundaries.

Emergence, which is published by Lawrence Erlbaum Associates, Inc., is a quarterly publication of NEC containing articles relating complex systems, sensemaking, psychology, philosophy, semiotics, and cognitive science to

the management of private and public organizations.

More information: <http://emergence.org>

### **SPIRIT AND MATTER**

Newsletter of the Foundation For Spreading The Knowledge to Unify Humanity

The newsletter contains topics like  
*Great Natural Events and Their Meaning*  
*Love Discovered*

*From Pluralism to Unity*

*Understanding the Language of Events*

The Foundation is an international non-profit organisation founded in Istanbul, Turkey, May 1994

More information: <http://www.bilyay.org.tr>

News  
from  
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News  
from  
the  
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### **Important IFSR-events:**

- EMCSR 2000: April 24-28, 2000
- Board Meeting of the IFSR: Wednesday, April 26
- Presentation of IFSR: April 28, at the EMCSR 2000
- Fuschl Conversation: Sunday, April 30 to Friday, May 5, 2000

### **MEMBERS OF THE IFSR**

American Society for Cybernetics  
Asociacion Argentina de Teoria General de Sistemas y Cibernetica  
Asociacion Mexicana de Sistemas y Cibernetica  
Association francaise des sciences et technologies de l'information et des systems  
Bulgarian Society for Systems Reseach  
CHAOS - Centre for Hyperincursion and  
Gesellschaft für Wirtschafts- und Sozialkybernetik  
Greek Systems Society  
Instituto Andino de Sistemas (IAS)  
Instituto Mexicano de Sistemas  
Int. Society for the Systems Sciences (ISSS)  
International Systems Institute  
Italian Association for Research on Systems  
John v. Neumann Society for Computing Sciences  
Management Science Society of Ireland (MSSI)  
Oesterr. Studiengesellschaft für Kybernetik (OeSGK)  
Polish Systems Society  
Polski Towarzystwo Cybernetyczne (Polish Cybernetical Society)  
Slovenian Society for Systems Research  
Sociedad Espanola de Sistemas Generales (SESGE)  
Society for Cybernetics + Systems Research

Systeemgroep Nederland  
Systems Engineering Society of China  
Technology Transfer Center  
The Korean Society for Systems Science Research  
The Learned Society of Praxiology  
The Society of Management Science and Appl. Cybernetics  
United Kingdom Systems Society

<b>JOURNAL OF SYSTEMS RESEARCH AND BEHAVIOURAL SCIENCE</b>
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**Volume 16 Number 6 contains:**

An Information Technology for the Understanding of Social Systems  
B. Antal Banathy  
A Structured Model for Evaluating Information Systems Effectiveness  
Shivraj Kanungo, Sonjay Duda and Yadlapati Srinivas  
The Role of Politics in IS Career Progression  
Craig Standing and Susan Standing  
Disciplines, the Two Cultures, and the Scianities  
Russel L. Ackoff

**CALENDAR OF EVENTS**

Title	Date and Place	Further Information
<i>Abbreviations: CfP, CfA: Call f.Papers/Abstract, FP: Final Paper due, &lt;No. nn&gt;: more details in issue.nn</i>		
Systems Science 2000 - Integrative Approaches To Natural And Social Dynamics <18/2>	University of Osnabrück, Germany 20 - 22 March 2000 CfA: expired	H. Malchow ,University of Osnabrückl Institute of Environmental Systems Research D-49069 Osnabrück, Germany Tel/Fax +49-541-969-2575/2599 <a href="mailto:sys2000@usf.uni-osnabrueck.de">sys2000@usf.uni-osnabrueck.de</a> <a href="http://www.usf.uos.de/~sys2000">http://www.usf.uos.de/~sys2000</a>
15 <sup>th</sup> European Meeting on Cybernetics and Systems Research, EMCSR'2000	Vienna, Austria 24-28 April 2000 CfP: Oct. 20, 1999	Austrian Soc. for Cybernetic Studies, -Schotteng. 3, A-1010 Vienna, Austria, tel: +43-1-53532810, fax +43-1-5320652, email: <a href="mailto:sec@ai.univie.ac.at">sec@ai.univie.ac.at</a> <a href="http://www.ai.univie.ac.at/emcsr/">http://www.ai.univie.ac.at/emcsr/</a>
Virtual and Interactive Museums: Visions, Concepts and INitatives <18/2>	Vienna, Austria April 27, 1999 CfP: expired	G. Silvestri, Österr. Gesellschaft für Informatikgeschichte, Vienna 2, Franzensbrückenstrasse 26/3} Tel: +43/1/218 60 58, fax +43/1/218 60 58 -13, email: <a href="mailto:oegig@oegig.at">oegig@oegig.at</a> , <a href="http://www.oegig.at">http://www.oegig.at</a> .
10 <sup>th</sup> Fuschl Conversation <18/1>	Fuschl , Austria May 1-5, 2000 Participation by invitation only!	Bela Banathy, Int. Systems Institute, 25781 Morse Drive, Carmel, CA 93923, USA, tel/fax +1 (408) 625-3178, <a href="mailto:BHBANATHY@AOL.com">BHBANATHY@AOL.com</a> Gerhard Chroust, Kepler Univ. Linz, 4040 Linz. Austria, tel+43 732 2468-866, <a href="mailto:GC@sea.uni-linz.ac.at">GC@sea.uni-linz.ac.at</a>
Second International ICSC Symposium on, NEURAL COMPUTATION, NC'2000 <18/34>	Berlin, Germany May 23-26, 2000 CfP: expired	ICSC International Computer Science Conventions P.O. Box 657, CH-8055 Zurich, Switzerland, <a href="mailto:icsc@icsc.ch">icsc@icsc.ch</a> , tel: +41-878-888-150, Fax +41-1-761-9627, <a href="http://www.icsc.ab.ca/nc2000.htm">http://www.icsc.ab.ca/nc2000.htm</a>
8th International Conference on Information Processing and Management of Uncertainty in Knowledge Based Systems IMPU 2000	Madrid, Spain July, 3 – 7, 2000	Secretaria IPMU 2000, Dept. Matematica Apl., ETIS Telecomunicacion, Univ. Politecnica de Madrid, Madrid 28040, Spain, <a href="http://www.mat.upm.es/ipmu">http://www.mat.upm.es/ipmu</a> e-mail: <a href="mailto:ipmu@mat.upm.es">ipmu@mat.upm.es</a>
World Congress Of The Systems Sciences	Toronto, Canada, July 17-19, 2000	Peter A. Corning , Institute for the Study of Complex Systems, 119 Bryant Street, Suite. 212, Palo Alto, CA 94301 USA. tel: (650) 325-5717 fax: (650) 325-3775, <a href="mailto:ISCS@aol.com">ISCS@aol.com</a>



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