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EDITORIAL

This issue will reach the readers much later than anticipated. Last academic year, while I was spending my sabbatical leave in Vienna, Austria, I had the pleasure of editing Simuletter and practically all issues were on time.

In the meantime, I accepted the general editorships of two book series (JAI Press, Greenwich, Connecticut) on:
- Advances in Modelling and Simulation and
- Advances in AI in Software Engineering.

I had realize that due to an abundance of professional activities, it would be much better to relinquish the editorship of Simuletter to another professional. However, as the then Chairman of SIGSIM, R.E. Nance, kindly convinced me, it would not be right to leave our Quarterly until an editor would be available.

The readers of Simuletter may be delighted to know that the next issue is ready and will reach them shortly under the able editorship of Harold Highland. Harold has contributed to Simuletter for a long time and I am glad that he has accepted to continue devoting his time once more.

My best wishes for the old friends, the new members of the executive committee of SIGSIM.

I would like to acknowledge valuable cooperation I have received from Dick Nance and Tuncay Saydam as Chairman and Vice-Chairman. I had the pleasure of having Osman Balç, Maurice Elzas, Ghi Vansteenkiste, and Bernie Zeigler as associate editors. I would like to thank them all for their help.

Needless to say, I appreciated very much the contributions I have received from the readers, for whom it was a pleasure to serve.

Tuncer I. Ören
WHAT HATH GOTT ROTH?

Deja Vu

As the saying goes: "The more things change, the more they stay the same."

Having been your chairman in the late seventies, there is a certain deja vu associated with tromping around the same ground again. And it is familiar ground: the ACM bureaucratic structure seems the same; even the players there are somewhat the same (the real, good, helpful inside people, I mean). SIGSIM itself seems to be about the same size and have the same problems: should we raise the dues (we have) and how to generate material for "Simuletter."

Like last time, I am fortunate to have as fellow officers some very capable, dedicated professionals. Osman Balci, a colleague from Virginia Tech and Steve Roberts, from Regenstrief Institute.

At this point I would like to acknowledge the Editor, Tuncer Oren, who has elected to retire. He has, with Dick Nance, been responsible for the revitalization of "Simuletter" and deserves our plaudits and gratitude. Fortunately, another experienced "pro" will step in to take over. Harold Highland, who served as editor previously, has agreed to accept the interim responsibility and to train his successor. He'll have a new advisory board of contributing editors, each covering a special area of simulation. Two have been appointed and volunteers are sought.

Osman Balci has taken the responsibility for some much-needed development activities. He will promote professional development seminars; secure institutional sponsors; and develop a membership questionnaire. Substantial progress has already been made on these objectives. While a proposal to present a seminar at a future Winter Simulation Conference was tabled at the 1985 WSC board meeting, an important advance was made. The point here is that the proposition was taken under consideration at all by an organization which has previously rejected such enterprises, and will be re-addressed in the future. Nice work, Oz.

Oz has also been successful from the outset of his campaign to get sponsors: right off the bat he enlisted four and is working toward a first goal of eight to ten.

That's about it for now. I'd like to hear from the membership about your concerns or desires. I know writing is time-consuming but I'd be happy to take calls from members. Since this column started with a saying, let me offer another which a colleague offered regarding my second term:

"I guess you'll have to do it until you get it right!"
Simulation and Model-Based Methodologies: An Integrative View

Editors: T.I. Ören, University of Ottawa, Ont., Canada; B.P. Zeigler, University of Detroit, IL, USA; M.S. Elzas, University of Wageningen, The Netherlands

Published in cooperation with NATO Scientific Affairs Division

(NATO ASI Series, Series F: Computer and System Sciences, No. 10)

Hard cover DM 158,—; approx. US $55.50
ISBN 3-540-12884-0


This volume of the NATO Advanced Study Institute provides an overview of current research in the field of simulation. It shows the aspects and concepts from the different subfields of simulation. Moreover, it emphasizes the presentation of common methodological characteristics. The book should contribute to the discussion and clarification of concepts and problems which are germane to the many important fields that are based on the development and use of mathematical models.

Publication date: September 1984
MODELS OF REALITY:
SHAPING THOUGHT AND ACTION

Jacques Richardson, editor

PART 1. CONCEPT

A PRIMER OF MODEL SYSTEMS, by Jacques Richardson, Unesco
Defines, classifies, describes and explains models and their applications.

THE EARTH AS A SYSTEM, by James Grier Miller and Jessie L. Miller, Center for Study of Democratic Institutions, USA
Presents a general theory of systems within the context of our planet as a "mixed living and nonliving system"; discusses its relationship to man and ecology and to policy making for the global system.

THE DETERMINATION OF FORM, by Hin Bredendieck, Georgia Institute of Technology, USA
Discusses "structure, form and position" from the perspective of designer and architect; proposes bilateral holism by attending to both "inside-out" and "outside-in" approaches.

SOME PRINCIPLES OF MATHEMATICAL MODELING, by Blagovest Sendov, Kliment Ohridski University, Bulgaria
A theoretical note on models, predictions, laws, uncertainty and plausibility.

ON LOGIC, AXIOMS, THEOREMS, PARADOXES AND PROOFS, by Edward Jacobsen, Unesco
Notes on the nature of mathematical models and the problem of consistency.

AN INTERACTIVE MODELING SYSTEM AS A TOOL FOR ANALYZING COMPLEX SOCIO-ECONOMIC PROBLEMS, by Viktor A. Gelovani, Scientific Institute of Systems Research, USSR
Cites the need for a "rational combination of substantive methods with the formal modeling of those aspects of development in which the laws of change are sufficiently well known." Describes the modeling methods at his institute.

THE DEVELOPMENT OF MODELS IN URBAN AND REGIONAL PLANNING, by J.N.R. Jeffers, Institute of Terrestrial Ecology, UK
Suggests kinds of models and criteria for the selection of models useful for decision-making in Unesco's Man and the Biosphere Program, with special attention to developing regions.

SOCIAL MODELS: BLUEPRINTS OR PROCESSES?, by Graham R. Little, New Zealand
Postulates a "process approach" to social goal-setting.

PART 2. APPLICATION

GLOBAL MODELING IN THE 1980s, by John M. Richardson, Jr., American University, USA
Outlines characteristics of global models and several "widely discussed" models; offers an agenda for global modeling during the decade.

THE POLITICS OF MODEL IMPLEMENTATION, by Kenneth L. Kraemer, University of California, Irvine, USA
A case study of the political environment of a computerized fiscal-impact model for urban planning.
ON MODELING, LIMITS AND UNDERSTANDING, by Dennis Meadows, Dartmouth College, USA,
interviewed by Geoffrey S. Holister, The Open University, UK

Comments on the validity and usefulness of large economic models.

INFORMATION SOURCES FOR MODELING THE NATIONAL ECONOMY, by Jay W. Forrester,
Massachusetts Institute of Technology, USA

Describes the System Dynamics National Model, which "draws on all classes of information for
its structure and policies," and its usefulness in learning more about economic dynamics.

SOCIETAL USE OF SCIENTIFIC AND TECHNICAL RESEARCH: EXISTING AND ALTERNATIVE
MODELS, by Veronica Stolte-Heiskanen, University of Tampere, Finland

Speculates about the use of models in directing scientific and technical research to the solution
of social/scientific problems (population challenge, energy challenge, environment challenge,
nuclear challenge).

SIMULATING A SMALL NATION'S INTERNATIONAL SCIENTIFIC CONTACTS: AN EVALUATIVE
ANALYSIS, by Pál Tamás, Institute of Sociology, Hungary

Explores the possible advantages and shortcomings for a nation's scientific community in terms
of access to study and training abroad, using as a model Hungary in the post-war years.

USES AND LIMITATIONS OF MODELS IN POLICY PLANNING AND EVALUATION, by Rahat Nabi
Khan, Consultant, India

Defines and gives examples of the application of "system models" and "process models" to
economics, demographics and other areas.

MICRO-OPERATIONAL RESEARCH: A SIMPLE MODELING TOOL FOR MANAGERS, by James
Clayson, The American College in Paris, France

Designing and applying "simple, heuristic" models, not necessarily expressed mathematically,
for use by managers. Case example: location of warehouses by a French firm.

MODELS IN SCIENCE EDUCATION, by George Marx, Eötvös University, and Esther Tóth, József Attila
Grammar School, Hungary

Delineates the use of physical models and games in the teaching of science in elementary and
secondary schools.

THE BRAIN BUILDERS, by Alissa Swerdloff, Writer, USA

Creation and use of a computerized model to further the understanding of the brain and its
workings.

QUANTUM PHYSICS: THE POWER AND MYSTERY OF THE SUBATOMIC WORLD, by the Editors
of The Economist, UK

Explication of the quantum theory, one of the most important hypothetical models in modern
science.

A NEW MODEL OF TIME, A NEW VIEW OF PHYSICS, by Ilya Prigogine, Nobel Prize winner in physics,
and Isabelle Stengers, University of Brussels, Belgium

Analyzes the transition to new models (of interrogation rather than certainties) in physics and
appraises the impacts of these new models.

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Energy Modeling and Simulation

10th IMACS World Congress on Systems Simulation and Scientific Computation, Montreal, Canada, 8-13 August, 1982


IMACS TRANSACTIONS ON SCIENTIFIC COMPUTATION, Volume IV

1983 xii + 394 pages
Price: US $55.25 (in USA & Canada)
Dfl. 130.00 (Rest of World)
ISBN 0-444-86610-8

APPROXIMATE MONTH OF PUBLICATION: JULY

This book is divided into three main sections. The first section, Energy Systems Modeling and Analysis, presents methodological papers which represent the state-of-the-art for analyzing components of the energy system from a system analysis perspective. The section also presents some case studies using current methodologies. The subsections are divided according to the principle themes, e.g. energy-economy modeling, resource supply, electric utility systems, new energy technologies and demand assessment methods. Section II, Simulation of Nuclear Power Plants, presents state-of-the-art papers on thermal reactors and breeder reactors. These two appear to provide the best baseload electric generation to coal over the next thirty to forty years. These systems are simulated to analyze both normal operations as well as stress analysis. The third section, Magnetic Fusion Energy, presents key research on various components necessary for developing magnetic energy as the new breakthrough for the twenty-first century.

more, the performance evaluation of designs is covered in
great depth, notably techniques for modeling,
simulations, and measurements. The volume is orga-
nized in four sections which cover computer system
performance, computer system and network simulators,
computations and architectures of parallel computers,
and arithmetic and languages for large-scale computers,
respectively.

CONTENTS: Preface. Section 1: Computer System Perfor-
mance. Papers by: H.D. Hughes and L. Li; R.F. Garza; A. Heč;
P.J. Denning and W. Kowalk; R. Suri; A. Brandwajn;
M. Ruschitzka; C. Martel; T.F. Gonzalez; T-P. Chang and
Y.-M. Yu; B. Mikolajczok; J. Stoklosa. Section 2: Computer
Systems and Network Simulators. Papers by: R.H. Perrott and
C. King; U.W. Pooh; P. Navaux et al.; A. Faro and G. Massina;
H. Decker; E. Paese O'Grady; M.K. Kirchoff and R.A. Rogers;
R. Vacare, F. Cennamo and A. D'Oria; V.C. Rideout et al.
Section 3: Computations and Architectures of Parallel
Computers. Papers by: M. Ginsberg; J.F. Gloudeman and
J.C. Hodge; J.R. Wells and J. Rodney Grisham; R.W. Hockney;
J.I. Lemboule et al.; W. Schönauer and K. Raith; Y. Kaneda
and M. Koheta; E.J. Kushner and M. Edward Borsky;
G.A. Mapd and R.P. Pergas; R.G. Reynolds and T.L. Chang;
W. Ameling; J. Milde; L. Kringa and W. Ameling. Section 4:
Arithmetic and Languages for Large-Scale Computers. Papers
by: W.L. Miranker; U. Kulisch; G. Bohlender and K. Grüner;
H. Böhm; E. Kaucher; S.M. Rump; C.P. Ullrich; J.W. von
Gudenberg; S.D. Johnson; T.J. Myers and A. Toni Cohen.
Modeling and Simulation in Engineering

10th IMACS World Congress on Systems Simulation and Scientific Computation, Montreal, Canada, 8-13 August, 1982

edited by WILLIAM F. AMES, Georgia Institute of Technology, Atlanta, Georgia, U.S.A., in collaboration with ROBERT VICHNEVSKY

IMACS TRANSACTIONS ON SCIENTIFIC COMPUTATION, Volume III

1983 x + 340 pages
Price: US $49.00 (in USA & Canada)
Dfl. 115.00 (Rest of World)
ISBN 0-444-86609-4

APPROXIMATE MONTH OF PUBLICATION: JUNE

This third volume of papers presented at the 10th IMACS World Congress held in Montreal, Canada, is devoted to modeling and simulation in various fields of engineering. The volume is divided into five sections representing five major areas of engineering interest. These are, in order of occurrence, Chemical Engineering, Mechanical Engineering, Electrical Engineering, Engineering Mechanics, and Aerospace Engineering. The last section also includes some miscellaneous papers.


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Electrical Machines and Converters

Modelling and Simulation


edited by H. BUYSE, Département d'Electricité, Université Catholique de Louvain, Louvain-la-Neuve, Belgium and J. ROBERT, Institut Electrotechnique Montefiore, Université de Liège, Liège, Belgium

1984 x + 300 pages
Price: US $42.25 / Dfl. 110.00
ISBN 0-444-875964
APPROXIMATE MONTH OF PUBLICATION: OCTOBER

The modelling and simulation of electrical machines and converters are topics which seem of great interest today, especially in view of the industrial needs and also due to the ever increasing potential of the digital computers.

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In Simulation, Communication, and Control

Proceedings of the IMACS European Meeting on Digital Techniques in Simulation, Communication, and Control, University of Patras, Patras, Greece, July 9 - 12, 1984

Edited by SPYROS G. TZAFESTAS, Control Systems Laboratory, Dept. of Electrical Engineering, University of Patras, Patras, Greece

1985 x + 556 pages  
Price: US$ 63.00 / Dfl. 170.00  

**CONTENTS:**

Preface.  
1. Modelling and Simulation.  
2. Digital Signal Processing and 2-D System Design.  
   2.1. 1-Dimensional Filters; 2.2. 2-Dimensional Filters  
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Simulation in Research & Development

Proceedings of the IMACS European Simulation Meeting on Simulation in Research and Development Eger, Hungary, 27-30 August, 1984

Edited by A. JÁVOR, Central Research Institute for Physics of The Hungarian Academy of Sciences, Budapest, Hungary

1985 viii + 266 pages
Price: US $37.00 / Dfl. 100.00
ISBN 0-444-87747-9

This book contains a selection of extended versions, with some additional ones, presented at the IMACS European Simulation Meeting. It deals with several methodological and application problems of modelling, which are of interest in various fields of research and development. Some of the main areas covered are:

- Parallel simulation using various multiprocessor structures that can provide efficient tools for the growing demands of modelling complex systems.
- Latest results in simulating VLSI microelectronic circuits including switch level and multimode simulation.
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<td>IFAC/IFI/IFORS</td>
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<tr>
<td>Work. Conf. on Mathematical Modelling in Immunology</td>
<td>Jun 86</td>
<td>Vienna</td>
<td>TC7/WG7.1</td>
</tr>
<tr>
<td>Fifth Symp. on Control in Transportation Systems</td>
<td>8–11 Jul 86</td>
<td>Vienna</td>
<td>IFAC/IFI/IFORS</td>
</tr>
<tr>
<td>Workshop on Silicon Compilation</td>
<td>Jul 86</td>
<td>Edinburgh</td>
<td>TC10/WG10.5</td>
</tr>
<tr>
<td>Work. Conf. on Changing Requirements for Training in Informatics</td>
<td>11–15 Aug 86</td>
<td>U.S.A.</td>
<td>TCS/WG3.4</td>
</tr>
<tr>
<td>Intl. Symp. on Automation and Data Processing in Aquaculture—</td>
<td>11–18 Aug 86</td>
<td>Tornhilde</td>
<td>IFAC/NAF/NSAC</td>
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<tr>
<td>AQUACULTURE 86</td>
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<tr>
<td>Regional Conf. on Microcomputers in Secondary Education</td>
<td>18–22 Aug 86</td>
<td>Tokyo</td>
<td>TC3</td>
</tr>
<tr>
<td>Twelfth Intl. Conf. on Very Large Data Bases—VLDB-86</td>
<td>25–28 Aug 86</td>
<td>Kyoto</td>
<td>VLDB/IFIP</td>
</tr>
<tr>
<td>Third Work. Conf. on Formal Description of Programming Concepts</td>
<td>25–28 Aug 86</td>
<td>Eberbrup, Denmark</td>
<td>TCS2/W2G.2</td>
</tr>
<tr>
<td>Fourth Symp. on Large Scale Systems: Theory and Applications</td>
<td>26–29 Aug 86</td>
<td>Zurich</td>
<td>SFAC/IFAC/IFORS</td>
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<tr>
<td>Work. Conf. on Information Systems Assessment</td>
<td>26–29 Aug 86</td>
<td>Norwoodwijkhe, NL</td>
<td>TCS/8/WG8.2</td>
</tr>
<tr>
<td>Intl. Workshop on Performance-Driven Digital System Design</td>
<td>Aug 86</td>
<td>Los Angeles</td>
<td>TC10/WG10.2</td>
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<tr>
<td>Intl. Workshop on Software Engineering for CAD Tools</td>
<td>Aug 86</td>
<td>Bonn</td>
<td>TC10/WG10.2</td>
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<tr>
<td>First Intl. Conf. on Economics and Artificial Intelligence</td>
<td>2–4 Sep 86</td>
<td>Aix-en-Provence, France</td>
<td>IFAC/IFI/IFORS</td>
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<tr>
<td>Eighth European Conf. on Operational Research</td>
<td>16–19 Sep 86</td>
<td>Lisbon</td>
<td>EURO/IFORS</td>
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<tr>
<td>Intl. Symp. on Simulation of Control Systems</td>
<td>22–26 Sep 86</td>
<td>Vienna</td>
<td>IFAC/ACPE/IMACS</td>
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<tr>
<td>Work. Conf. on Handling Things on a Micro</td>
<td>Sep 86</td>
<td>Australia</td>
<td>TC10/WG10.3</td>
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<tr>
<td>Workshop on Concepts and Characteristics of High-Performance Workstations</td>
<td>Sep 86</td>
<td>Linz, Austria</td>
<td>AUSCS/IFIP</td>
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<tr>
<td>Conf. on The Future of Information Systems—Lessons from the 80's</td>
<td>Sep 86</td>
<td>Dublin</td>
<td>TC9/WG9.1</td>
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<tr>
<td>Work. Conf. on Women and Computerization</td>
<td>Sep 86</td>
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</table>
Conference Announcement

1986 Eastern Simulation Conferences
and Professional Development Seminars
An SCS World-Wide Multi-Conference
Norfolk, Virginia
10-12 March 1986
Omni International Hotel, Norfolk Virginia

★ HARDWARE FOR THE SIMULATIONIST
★ SOFTWARE FOR THE SIMULATIONIST
★ SIMULATIONS AT THE FRONTIERS OF SCIENCE
★ SIMULATORS III

Norfolk is at the turning point of a massive redevelopment effort that began in the late 1950’s. The Waterside, a festival market place of unique design is immediately adjacent to the Omni Hotel. Brought to Norfolk by developer James Rouse’s new Enterprise Development Corporation, the two-story waterfront pavilion houses a lively mixture of 100 specialty shops and eateries. Included are fine restaurants specializing in seafood and international cuisine along with food booths serving everything from raw oysters to souvlaki.

But through all the changes, Norfolk has held onto the small town charm and rich maritime heritage that have characterized its 300 years as a port city.

Three facilities to house the arts for practitioners and patrons alike have opened in recent years. The Chrysler Museum claims the largest and most comprehensive collection of classic and modern art in the southeast; Scope is a domed convention hall where rock, pop, jazz and other musical concerts play regularly; and Chrysler Hall, adjacent to Scope, is intended for more classical performances.

The Waterside will no doubt be the premier shopping area in Norfolk for some time to come, but not far from the Waterside is Granby Mall, a paved pedestrian walkway and open-air shopping arcade that serves as downtown’s retail district. Nearby on College Place is Knickerbocker Square, where the facades of a pottery shop, an art gallery, an oriental store and other small businesses have been remodeled to resemble the quaint town square of yesteryear.

Some of the city’s oldest homes, like the Moses Myers House and the Willoughby-Baylor House, which date to the 1700’s, are preserved as historical attractions. St. Paul’s Church, Norfolk’s lone surviving structure of British bombardment during the Revolutionary War is downtown near these older houses.

Come visit Norfolk, a friendly city, during the Eastern Simulation Conferences.

Hardware for the Simulationist
R. David Lowry
DENELCOR, Inc.
17000 E. Ohio Pl.
Aurora, CO 80017
(303) 337-7900

Software for the Simulationist
V. Wayne Ingalls
Boeing Computer Services
c/o 24645 SE 192nd St.
Maple Valley, WA 98038
(206) 773-8356

Simulations at the Frontiers of Science
John Young
Division of Reproductive & Developmental Toxicology
National Center for Toxicological Research
Jefferson, AR 72079
(501) 541-4504

Simulators III
Bruce Fairchild
Applied Computer Technology
1384 Dorney Avenue
Allentown, PA 18103
(215) 770-0519

These conferences are sponsored by:

The Society for Computer Simulation

For more information contact: SCS, RO. Box 17900, San Diego, CA 92117 • (619) 277-3888.
PROGRAM OUTLINE

Topics are set in regular text type; paper titles are set in italics.

Simulations at the Frontiers of Science
- The Simulator as a Frontier of Research
- Simulation Applied to Astronomical Problems
- A Solar Simulator
- A Preliminary Neural Model of Language Representation and Production
- Simulation of a Developing Organism
- The Air Traffic Controller in the Air Traffic Control Loop
- Computer Simulation and Pharmacokinetics
- Pharmacokinetics and Pharmacodynamics
- Pharmacokinetic Simulation Modeling
- Experimental Design and Model Validation
- Pharmacodynamic Simulation Modeling
- PK/PD Posters by Contributing Authors
- Atmospheric Phenomena:
  - Hurricanes
  - Tornadoes
  - Air Pollution:
    - Fog/Smog
  - Gases
  - Oceanic Studies and Streams:
    - Storms
  - Thermal Effects
  - Planetary Systems:
    - Earth Surface Motion
    - Surface Entities
    - Water Resources
  - Astronomical Studies:
    - Planet/Comet Orbital Motion
    - Solar System/Star Motions
    - Planetary Rings and Moons
    - Surface Water Models
    - Terrestrial and Wetland Models
  - Toxic Fate and Effect Models (with demonstration)

Software for the Simulationist
- Computer Software for Human Factors Engineering
- Computer Software for Man/Computer Interface
- Educational Microcomputing in the Public Schools:
  - The Response of Public Schools to the New Technologies
  - Teacher Training and the Role of Simulation in Student Learning
- Microcomputers and the Simulation Lab
- Simulation Software for Microcomputers
- Integration of Computers into the School System Administration
- Learning Techniques Using Computers & Simulation
- Teaching Thinking Skills
- Teaching the Potential Simulationist
- Improving Thinking Skills with Computer Programming
- Feedback to Schools of Public Graduates Performance in the Workplace
- Successful Special Education Techniques Provide Clues to Human Learning
- Computer Grants for Education Institutions/Systems
- A Microcomputer-Based Simulator for Event-Driven Systems
- Training Effectiveness Evaluation of the Automated Maneuvering Board Training System
- Microprocessor Based Training Simulator for Load Dispatch Center
- The Human Factors Research Simulator
- "TATATeach" — An Expert Training Simulator
- The Use of Control Room Simulators in Nuclear Power Plants
- The Modular Modeling System Code Applied to a Circulating Fluidized Bed Demonstration Plant Modeling Project
- Modular Modeling System Application to Fluid and Control Systems Design and Analysis
- Are Micro-based Systems Suitable for the Simulator Environment?
- An Advanced Micro-based Instructor Station Concept
- Developing Improved Control Strategies for Utilities Using Computer Simulation
- Elements of an Analysis/Training Simulator for Gasification Combined Cycle Units
- Distributed Microcomputer System Architecture for Power Plant Simulation
- Using a Personal Computer to Simulate Corrosion Product Behavior
- Modeling and Simulation of a Steel Making Electric Arc Furnace
- Object Oriented Simulation for Just-In-Time Inventory Management
- Knowledge-Based Opponent Simulation for Tactical Decision Training

Simulators III
- Simulators with Artificial Intelligence
- Object Oriented Approaches to Simulation
- Expert Systems in Training/Decision Aid Simulators
- Simulators for Tactical Decision Aids
- Gaming
- Technology Trends
- Architectures
- Effectiveness
- Modeling and Software
- Graphics and Displays
- Languages or Models/Software
- The Anatomy of an Expandable Simulator
- An Approach to Scene Design for Real-Time Computer-Generated Imagery
- Simulation of Electrical System for a 1300 MW Nuclear Power Plant Simulator
- F-16 SAMT Evaluation: Overview and Commentary
- Automated Production of Video Data Bases for Interactive Simulators
- Duplication of the Eye — Hybrid Visual Displays
- Simulation of Passive and Active Visual Systems
- Simulation of Far Infrared System Displays

- Expectance as a Factor in the Perception of Visual Displays
- Detail in the Visual Display — The Data Base Problem
- Training Effectiveness, Suitability and Cost of the Electronic Equipment Maintenance Trainer (EEMT)
- Application of a Higher-Level Simulation Language to Pressurized Water Nuclear Reactors
- The Bridge Wing Shiphandling Simulator
- Performance Measurement for an Embedded Training Application of Simulation
- Training Capabilities Test of Electronic Equipment Maintenance Trainer
- A Performance Measurement and Debriefing System for Air Combat Maneuvering
- The Aircraft Carrier Landing Task Research Program at the Visual Technology Research Simulator
- Simulator Features: The Neglected Aspect of ISD,
- A Natural Language Component for a Modeling and Simulation Environment
- Multilevel Flow Control in Computer Networks
- Simulation of Token-Passing Local Area Bus Network
- The Simulation Algorithm Itself: Driving the Inference Engine
- High-Level Programming in a Multicomputing Environment
- Automated Statistical Analysis of Discrete-Event Simulation
- Standard Tools and Techniques for Simulation Model Development
- Computer Graphics Simulation of an Industrial Robot Using an Advanced Personal Computer Workstation
- Q-Language: A Language for Rapidly Prototyping Qualitative Simulation Models
- Comparison of a Block Oriented and Equation Oriented Continuous System Simulation Language
- Discrete Event Simulation in EXPRESS for Management Science Applications
- Monte Carlo Simulation for Time Series Prediction
- "Anybody Can Simulate!" A Discussion of Micro Saint
- Graphics Software Design and Implementation
- The PICK Operating System as a Simulation Programming Environment

Hardware for the Simulationist
- Capabilities of Hardware Systems
- Special Types of Hardware and Its Uses
- Microcomputers and the Simulation Lab
- Array Processor Technology
- Parallel & Vector Processors
- Vendor Hardware Presentations/Demonstrations
- Users Future Hardware Needs and Desires
RENO, biggest little city in the world

Reno is unique. It is a modern urban center with the conveniences of a big city, but its roots are deeply planted in the Old West. Vast country surrounds it, but Metropolitan Reno is compact; most of the major hotels, casinos and civic buildings are found within a three-mile radius.

Areas surrounding Reno offer a wide variety of recreation facilities and scenery, which are found nowhere else on earth. Majestic mountains, green valleys and deep blue lakes form an outdoorsman’s paradise. Golf, tennis, skiing, hunting and fishing at their finest are all within minutes of downtown.

Major attractions include The Fleishman Atmospherium-Planetarium with its stellar exhibits and star projector and the Harrah’s Automobile Collection. For the historical buffs, there is Virginia City with the offices of the Territorial Enterprise where Mark Twain worked as a reporter, the Bucket of Blood saloon, and last but not least Pipers Opera House where such famous entertainers as Caruso, Houdini, and the great Sarah Bernhardt performed.

Let this little city show you its big heart, when you attend the best SCSC ever.

Pre-register now, using forms inside.

Sponsored by The Society for Computer Simulation
P.O. Box 17900, San Diego, CA 92117. (619) 277-3888.
1986 Summer Computer Simulation Conference

The 1986 Summer Computer Simulation Conference will feature technical papers, panel discussions, state-of-the-art reviews, tutorials, exhibits, and presentations on all aspects and applications of computer simulation. A comprehensive and innovative coverage of the field of simulation is planned consisting of over 60 sessions covering 19 topical groups:

**SIMULATION METHODS**
- Modeling Techniques
- Numerical Methods for Simulation
- Simulation Executives
- Simulation Languages
- Stochastic Applications
- Simulation Environments

**COMPUTER SYSTEMS**
- Supercomputer Applications
- Parallel Processor Applications
- Simulation of VLSI Circuits
- Simulation with Microcomputers
- Graphics

**SIMULATION CREDIBILITY AND VALIDATION**
- Validation Methodology
- Credibility of Models
- Quality Assurance Techniques
- Case Studies
- Ethics

**PHYSICAL & ENGINEERING SCIENCES**
- Aeronautical and Astronautical Systems
- Vibration and Mechanics
- Electromagnetic Processes
- Controls and Optimization

**COMMUNICATION SYSTEMS**
- Design of Data Communications Networks
- Protocols
- Performance Analysis
- Multiplexing and Concentration
- Design Issues
- Integrated Systems
- Systems Components & Their Interrelationships
- Satellite Communications

**CHEMICAL SCIENCES**
- Chemical Reactors and Separation Processes
- Advanced Mathematical Techniques
- Dynamic Systems in Chemical Engineering
- Thermophysical Properties

**ENERGY AND RESOURCE MANAGEMENT**
- Power Plants
- Simulation of Power System Transients
- Modeling and Simulation of Electrical Power Networks
- Simulation of Biomass Power Generation
- Hydrodynamics and Heat Transfer Reservoirs

**BIOMEDICAL SIMULATION**
- Pharmacokinetic Applications
- Prosthetic Applications
- Simulation of Biological Processes

**ENVIRONMENTAL SCIENCES**
- Models and Simulation of Ecological Systems
- Simulation of Animal Populations
- Simulation of Chemical Transport Through the Soil
- Aquatic Pollution Models

**MANAGEMENT AND THE SOCIAL SCIENCES**
- Economic System Models
- Decision Support Systems
- War Games
- Simulation of Production Systems Transportation

**TRAINING AND RESEARCH SIMULATORS**
- Power Plant Simulators
- Chemical Process Simulators
- Flight Simulators
- Missile Simulators
- Simulator Technology
- Maritime Simulation
- Interactive Video Simulators

**GOVERNMENT SIMULATION/COMPUTATION ACTIVITIES**
- Simulation/Computer Facilities
- Simulation for Military Decisions
- Simulation Activities
- Workstations
- Office Automation for Simulation Activities
- Procurement/Project Management Simulations

**CAD/CAM & MANUFACTURING SYSTEMS**

**ARTIFICIAL INTELLIGENCE**
- Aerospace Applications
- Electronic System Applications
- Robotics
- Expert and Knowledge Based Systems
- Signal Fusing and Pattern Recognition
- Natural Language Processing
- Learning Systems
- Voice Recognition

**SIMULATION OF DISCRETE SYSTEMS**
- Stochastic Applications
- Methodology

**SIMULATION OF CONTROL SYSTEMS**

**MISSILE SIMULATIONS**

**EUROPEAN SIMULATION SOCIETIES**

**MILITARY AND DEFENSE SYSTEMS**
Record attendance - simulation and SIMSCRIPT II.5 conference

CACI's conference organizers were taken by surprise when 323 simulation enthusiasts registered for the annual meeting. Last year the number was under 150. Growing interest in simulation analysis, relevance of the program to today's simulation problems, and live demonstrations, were the reasons given for this increased popularity. A typical comment, from Ron Painter at Norden Systems, was "Best conference I ever attended".

The program was as follows:

**Animated simulation results - Alasdar Mullarney**

SIMVISION lets the SIMSCRIPT modeller develop applications with graphical user interaction. The application user may describe the system configuration of interest by selecting pictures of objects from a menu and locating them on a screen.

During the simulation, the user can view the animated behavior of the system under study. In addition, pie charts, histograms and other easy-to-understand graphical representations are provided.

**Avoiding statistical pitfalls - Averill Law**

Simulation is the most widely used technique for the study of probabilistic, dynamic, real-world systems. However, there is an unfortunate impression that simulation is just a complicated exercise in computer programming.

**Artificial intelligence and SIMSCRIPT II.5 - Dave Andes**

The simulation community can use AI now. Common AI structures and procedures are available in SIMSCRIPT II.5.

**Factory planning with no programming - Bruce Kleine**

SIMFACTORY is a powerful, flexible, off-the-shelf simulation tool, designed specifically for manufacturing and industrial engineers. You describe your shop layout and see the animated picture of the factory at work.

**Software design and documentation language - Henry Klein**

The Software Design and Documentation Language (SDDL) is a program which produces an enhanced listing of SIMSCRIPT source code by reformatting it with indentation and vertical flow lines based on structure logic.
Interactive entry of large data bases - Jay Braun

Software designers benefit from SIMBASE methods that relate simulation features to logical database constructs. They also get a framework for developing user vocabularies.

Computer and communications network analysis - Bill Garrison

NETWORK II.5 accepts your computer or communications system description and provides measures of hardware utilization, software execution, and conflicts. You can use it to determine the ability of a proposed system configuration to perform an expected workload.

Concurrent processing of simulation - Joel West

Computer systems are being developed to provide large-scale parallel-processing power. However, without the necessary simulation tools for using this concurrent processing, 1024 cpu's will be no more useful than one.

Continuous and combined simulation - Glen Johnson

Systems being simulated frequently deal in part with the flow of objects or liquids. Flow is of particular interest in studies of manufacturing processes, transportation of liquids, and situations involving conveyors and vehicular traffic.

Distributed simulation - Myron Melman

The Distributed Systems Simulation (DISS) methodology enables the design of highly modular, flexible and easily extensible simulators using a 1 to 1 mapping from system to model and from model to simulator program.

1986 Conference planned

The 1986 simulation and SIMSCRIPT II.5 conference will be held in the Washington DC area on August 25-26.

The conference will be followed by a series of one day application meetings.

The schedule is as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
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<tr>
<td>August 25</td>
<td>simulation and SIMSCRIPT II.5</td>
</tr>
<tr>
<td>August 26</td>
<td>computer and communication network analysis</td>
</tr>
<tr>
<td>August 27</td>
<td>factory planning without programming</td>
</tr>
<tr>
<td>August 28</td>
<td>military applications of simulation</td>
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</tbody>
</table>

For more information contact: Cathy Brown
CACI
3344 North Torrey Pines Ct.
La Jolla, CA 92037
(619) 457-9681
DEADLINE FOR SUBMITTING ABSTRACTS

Extended abstracts (two pages typewritten without drawings and tables) are due to arrive.

LANGUAGE

The presentation of the papers at the Congress is preferably in English; French and German are allowed. Full papers for the Proceedings must be in English.

2nd EUROPEAN SIMULATION CONGRESS

CORRESPONDENCE ADDRESS

GHISLAIN C. VANSTEENKISTE
PROFESSOR OF ENGINEERING
UNIVERSITY OF GHENT
COUPURE LINKS 653
B-9000 GHENT, BELGIUM
PHONE 91-236961 EXT. 400
TELEX 12754 RUGENT

ANTWERP, BELGIUM
September 9 - 12, 1986
ORGANIZED BY
Dutch Benelux Simulation Society
in cooperation with
ASIM, ISCS, SIMS, UKSC
IMACS, JSST, SCS

CONGRESS COMMITTEE
INTERNATIONAL:
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Cellier F. (U.S.A.)
Crosbie R. (U.S.A.)
Furuta K. (Japan)
Gorez R. (Belgium)
Hamata V. (Czechoslovakia)
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Karplus W. (U.S.A.)
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Mezencev R. (France)
Murray-Smith D. (U.K.)
Stephenson J. (U.K.)
Sydow A. (G.D.R.)
Takaba A. (Japan)
Tucci S. (Italy)
Tzafestas S. (Greece)

NATIONAL:
Broeckx F., Dekker L., Devreese J.,
Elzas M., Kerckhoffes E., Muller H., Smit W.,
Vansteenkiste G., Vanwormhoudt M.,
Zuidervaart J.

LOCAL OFFICERS:
Baron G., De Bruyn M., De Wael L.,
D'Hollander E., Lataire Ph., Schoukens L.,
Spriet J.

SCIENTIFIC PROGRAM
The Congress will be centered around Advanced Information Processing in Simulation (parallel processing - artificial intelligence in simulation) and Simulation-Aided Implementations (in well-defined and ill-defined systems).

Papers are expected in:

Methodology:
covering phenomena-behavior representation and handling, knowledge-processing, lumped and distributed parameter models, stochastic models, bond graph and discrete-event based representations, expert system and CAD-CAM aids, man-machine interfaces in on-line/real-time simulation.

Computational implementations:
simulators/advanced computer systems, parallel processing, nonconventional/next generation tools, advanced software tools, parallel algorithms, computer model validation.

Simulation in:
physical processes, aerospace, process control, water resources systems, biomedical engineering, socio-economic systems.

State-of-the-art reviews/panel discussions/demonstrations/exhibitions/video sessions are being organized.
The 1986 Winter Simulation Conference will feature contributed papers on applications and methodological topics, tutorials on fundamental simulation concepts and simulation languages, state-of-the-art reviews on current practice and research, panel discussions on current issues, software demonstration sessions, and vendors' exhibits.

We encourage submissions on the following methodological and application topics:

**MODELING METHODS** — Discrete languages, discrete/continuous languages, artificial intelligence, formalisms, graphics, animation, distributed simulation, databases, simulation environments.

**ANALYSIS METHODS** — Variate generation, modeling input processes, output analysis, verification/validation, variance reduction, experimental design, optimization, hybrid simulation/analytical models.

**APPLICATIONS:**
- **Manufacturing:** Materials handling, facilities planning, production control, logistics, warehousing and distribution, robotics, manufacturing systems, inventory control.
- **Government:** Military, communications, transportation, environment, aerospace.
- **Service:** Health care, banking, insurance, tourism.
- **General:** Economic and financial planning, computer systems, agriculture, energy.

Presentations and papers in other areas will be considered. Acceptable papers will be published in the conference Proceedings. The proceedings of this conference will be widely disseminated. As such, publication in the record of more than an abstract of a submitted paper is likely to inhibit republication in ACM's refereed publications.

**DEADLINES AND REQUIREMENTS:**

All submissions must be accompanied by the title, full name, affiliation, complete address and telephone number of each co-author in regular sessions and participant in tutorial or panel sessions.

April 1, 1986 — Submit one- to three-page proposals to present tutorials or state-of-the-art surveys; to organize, referee and chair regular paper sessions; or to organize and chair panel discussions.

May 1, 1986 — Submit four copies of contributed papers or extended abstracts which have not previously been published or presented. Full-length papers will receive priority consideration. A list of key words for reference purposes must be provided as well. Submission implies that the author will attend the 1986 WSC to present the paper.

June 15, 1986 — Contributors are notified of presentation acceptance.

August 15, 1986 — Authors, panel chairs, and tutorial presenters provide camera-ready manuscript copy (three page minimum) on galley paper for the conference Proceedings to the Proceedings Editor. Contributors will be notified as to the acceptability of their submissions.

Please direct correspondence pertaining to the program to:

Stephen Roberts, Program Chairman WSC '86
Regenstrief Institute
1001 West 10th Street
Indianapolis, IN 46202
(317) 630-7447
wsc86@purdue-ecn-gb.ARPA

Please include full name, affiliation, address and telephone number.

Inquiries concerning other matters should be sent to:

James Henriksen, General Chairman WSC '86
Wolverine Software Corporation
7630 Little River Turnpike
Annandale, VA 22003
(703) 750-3910

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ANNOUNCEMENT AND CALL FOR PAPERS

4th International Symposium on
Modelling and Simulation Methodology:

Intelligent Environments and Goal-Directed Models

February 4-6, 1987, Tucson, Arizona

Call for papers on modelling and simulation methodology taking advantage of recent advances in hardware/software technology.

Topics include, but are not limited to:

Intelligent Environments, support of knowledge bases (including model bases), automated model generation, multiparadigm programming and modelling, symbolic model processing, distributed simulation, expert systems.

Goal-Directed Models with variable structure, adaptive, self-modifying or learning capability; environments which support methodology for such modelling paradigms.

Quality Assurance Methodologies, robust architectures, model/experimental frame validation, certification of constructed objects, integrity of knowledge bases.

Deadlines:

Abstracts of about four pages describing the contribution of the proposed presentation are due October 1, 1986.

Authors will be notified by November 1, 1986 of acceptance/rejection.

Full papers will be due January 1, 1987. After a strict review process, selected ones will be published in a book. Interested contributors should consult previous publications in this series.

For the convenience of overseas participants, the meeting is timed to take place immediately following the SCS Multiconference in San Diego, CA, Jan. 29-31, 1987.
One copy of the abstract should be sent to each of the co-directors:

Prof. B.P. Zeigler  
Dept. of ECE  
The University of Arizona  
Tucson, AZ 85721  
USA

Prof. Tuncer I. Ören  
Computer Science Dept.  
University of Ottawa  
Ottawa, Ont. K1N 9B4  
Canada

(602) 621-2108  
(613) 564-5068 or 738-0701  
Telex: 053-3338 UOFO LIB OTT  
Electronic Mail: tiosl@uottawa

Scientific Committee:

Sudhir Aggarwal (USA), Paul Davis (USA), Maurice Elzas (Netherlands), Rammana Reddy (USA), Robert Shannon (USA), Ghislain Vansteenkiste (Belgium).

Advisory Committee:

N. Baba (Japan), O. Balci (USA), C. Barnett (USA), F. Cellier (USA), I. Chlamtac (Israel), C. Domingos (Venezuela), C. François (Argentina), R. Garzia (USA), P. Hogeweg (Netherlands), A. Ieazolla (Italy), A. Javor (Hungary), A. Jones (USA), E. Kerckhoffs (Netherlands), C. Kulikowski (USA), R. Ragade (USA), R. Sargent (USA), L. Troncale (USA), B. Unger (Canada).

Previous Publications in the Series:


A Seminar in Knowledge-Based Simulation and Modelling  
will be held on February 2-3, 1987 to provide a background in expert systems and simulation models. Interested professionals and graduate students may register for the seminar independently. For information contact: P. Baltes, Special Professional Education, the University of Arizona, Tucson, AZ 85721, (602) 621-3054.
Call for Papers

1987 ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems

May 11-14, 1987
Banff, Alberta, Canada

How does one make effective use of a computer architecture exhibiting massive parallelism? The ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems is a forum for presenting state-of-the-art work that studies such questions of computer system design and usage, through the application of performance measurement and modeling techniques. Contributions that "advance the state of the art" through the development of new performance evaluation techniques, or the furthering of our understanding of existing techniques, are also welcome.

Specific topics of interest include, but are not limited to, those listed below. Along with each of the applied topics is indicated a program committee member who has agreed to actively encourage submissions, and chair a session, on that topic.

- Computer Networks (Mart Molle)
- Database/File Systems (Ken Sevcik)
- I/O Systems (Alan Jay Smith)
- Distributed Systems (John Zahorjan)
- Parallel Processing (Daniel Reed)
- Supercomputing (Elizabeth Williams)
- Techniques (Experimental methodology, Petri nets, Queueing networks, Reliability models, Workload models)

By September 23, 1986, six copies of each submission must reach the program chairman:

Derek L. Eager
Department of Computational Science
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Saskatoon, CANADA S7N 0W0

Papers should be no longer than 5000 words. Author identification should appear only in a separate cover letter. Proceedings will be published as a special issue of Performance Evaluation Review, the ACM SIGMETRICS quarterly publication. Papers of exceptional merit will be forwarded to IEEE Transactions on Software Engineering for possible publication.

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The conference will be held in Raleigh at the North Carolina State University Student Center located at the juncture of Morrill Dr. and Cates Ave., on the south side of the University campus. This is within walking distance from the conference hotel. The Raleigh-Durham Airport is served by most of the major carriers. The weather in Raleigh may be warm and humid.
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