

# International Conference on Complex Systems

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October 25-30, 1998

Nashua, NH (near Boston, MA)



**NECSI**

New England Complex Systems Institute

<http://necsi.net>

[necsi@necsi.net](mailto:necsi@necsi.net)

Conference Chairman:  
Executive Committee:

Yaneer Bar-Yam – NECSI  
Michael Lissack – NECSI  
Larry Rudolph – MIT

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- **Pedagogical Sessions:**

The conference will include pedagogical sessions Sunday, October 25.

- **Preconferences** (Separate Registration and Deadlines)

## Statistical Physics of Complex Systems

October 23-24, 1998

Location: Boston Area site to be announced

<http://www.necsi.net/events/spcs.html>

## "Managing the Complex"

A Semi-Annual Colloquium on Complex Systems  
and the Management of Organizations

October 22-25, 1998

Swissotel, Boston, Massachusetts

<http://lissack.com/managing.html>

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<http://necsi.net>

# 1998 ICCS CONFERENCE PROGRAM

## SUNDAY October 25

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### 9:00AM-5:00PM PEDAGOGICAL SESSIONS

\*Dan Stein - Pedagogical sessions: session chair.

- \*Alfred Hubler - Overview
- \*Gerard Vichniac - CA
- \*Cris Moore - Computational Complexity
- \*Charlie Doering - Convection, Stability & Turbulence
- \*Fred Nijhout - Patterns in Development
- \*Ken Kollman - Society & Economics
- Geoffrey West - Scaling

### 5:00PM-8:00PM RECEPTION

## MONDAY October 26

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### 9:00AM-12:20PM EMERGENCE

\*Jerome Kagan - Emergence

- \*Philip Anderson
- Stuart Kauffman
- \*Stephen Kosslyn - The Visual Mind
- \*Norman I. Badler - Virtual Humans

### 2:00PM-5:20PM DESCRIPTION AND MODELING

\*Steve Lansing - Description and Modeling

- \*John Sterman - System Dynamics
- \*David Harel - Statecharts
- \*Richard Palmer - Statistical Strategies
- Tomasso Poggio - Vision

### 7:30PM-9:30PM FUNDING COMPLEX SYSTEMS RESEARCH

- \*James Anderson - NIH (NIGMS)
- \*Mike McCloskey - NSF

## TUESDAY October 27

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### 9:00AM-12:20PM SELF-ORGANIZATION

\*Irving Epstein - Self-Organization

- \*David Campbell
- \*J. A. Scott Kelso
- Max Boisot

### 2:00PM-5:00PM AFTERNOON PARALLEL BREAKOUT SESSIONS

\*Bob Savit - Modeling Social Systems

- \*Bennett Levitan/Stuart Kauffman/Jose Lobo/Richard Schuler,
- \*Ali Minai/James Uber/Marco Propato,
- \*Thad Brown, \*David Meyer, Josh Epstein

\*Richard Bagley - Quantum Information and Computation

\*David Divincenzo, \*Seth Lloyd, John Preskill

\*Thomas Deisboeck - Medical Complexity

\*Jason Haugh, \*Steven Kleinstein, \*Andre Van Der Kouwe, \*Ary Goldberger, Donald Coffey

\*Sean Rice - Evolution: Multi Level Selection and the Structure of Biological Systems

\*Leticia Aviles, \*Charles Goodnight, \*David Sloan Wilson, Elizabeth Lloyd

\*Robert Berwick - A-Languages

### 7:00PM-10:00PM EVENING PARALLEL BREAKOUT SESSIONS

\*Dan Braha - Modeling the Design Process

\*Bill Birmingham, \*David Brown, \*Pradeep Khosla, James Rinderle

\*Terrence Deacon - Consciousness

\*Seth Lloyd - Symbolic Dynamics/Information Mechanics

\*Tim Keitt/\*Les Kaufman - Dynamics in Ecological Networks

Kalyanmoy Deb - Artificial Evolution and Optimization

# 1998 ICCS CONFERENCE PROGRAM

## WEDNESDAY October 28

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### 9:00AM-12:20PM NETWORKS

\*Larry Rudolph - NETWORKS

\*Eli Upfal - Structure and Analysis of Networks  
David Culler - The Network is the Computer  
Antonio Coniglio - Percolation and Fractal Networks

### AFTERNOON EXCURSION

### BANQUET

\*Dean LeBaron - Banquet Session

Edward N. Lorenz

## THURSDAY October 29

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### 9:00AM-11:40AM TIME SERIES

\*Richard Cohen - Time Series

\*Doyne Farmer  
\*Andrew Lo  
Bill Ditto

### 11:40AM-12:20PM MANAGING COMPLEXITY

\*Harris Berman - Medical Management

### 2:00PM-5:00PM AFTERNOON PARALLEL BREAKOUT SESSIONS

\*Kosta Tsipis - Global Systems

\*Frank Schweitzer, \*Manjula Waldron,  
\*Susan Aaron, \*Roberto Serra

\*Per Bak - Networks

\*Sorinel Oprisan, \*Bruce Sawhill, \*Daniel Coore,  
\*Duncan Watts

\*Max Garzon - DNA Computing

\*Helen Harte/\*Farrell Jorgensen - Health Care Management

\*Mark Van Kooy, \*Martin Merry, \*William Braswell,  
Mark Smith, Jeff Goldstein

Jay Lee Jaroslav - Artificial Minds

### 7:00PM-10:00PM EVENING PARALLEL BREAKOUT SESSIONS

\*Anjeli Sastry - System Dynamics

\*George Richardson, \*Chris White,  
\*Jim Hines/Jody House

\*Walter Freeman/\*Ali Minai - Neural Computation

\*Steve Bressler, \*John Lisman, \*Randy McIntosh,  
\*Mike Hasselmo, \*John Symons, \*Jorge Jose

\*Michael Jacobson - Education & Complex Systems

\*Win Farrell, \*Marshall Clemens, \*Jim Kaput,  
\*Uri Wilensky/Kenneth Reisman

Mihail Roco - Nanotechnology

## FRIDAY October 30

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### 9:00AM-12:20PM AGENTS IN ACTION

\*William Fulkerson - Agents in Action

\*Rob Axtell  
Chris Langton  
Patty Maes  
\*Van Parunak

### 12:20PM-5:20PM COMPLEXITY AND MANAGEMENT

(EXTENDED SESSION INCLUDING LUNCH)

\*Tom Petzinger - Complexity and Management

\*Michael Hammer  
\*William Mckelvey  
Henry Mintzberg  
\*Laurence Prusak  
\*Peter Senge

# 1998 International Conference on Complex Systems

## REGISTRATION

Conference attendance is limited to about 250 participants. Applications will be accepted on a first-come, first-served basis from those active or interested in becoming active in the study of complex systems.

If you are interested in presenting a paper or simply attending the conference, please apply to [iccs@necsi.org](mailto:iccs@necsi.org) and provide the following information:

Name  
Affiliation  
Address  
Telephone number  
Fax number  
E-mail address

## DATES:

Sept. 20: Registration  
Oct. 25-30: Conference

## REGISTRATION:

Apply to [iccs@necsi.org](mailto:iccs@necsi.org)

Payment information will be sent out with notification of application acceptance.  
Registration fees (includes lunch Monday through Friday at the conference):

	Regular (member*)	Student (member*)
Registration: Sept. 20	\$450 (\$400)**	\$275 (\$250)**

\*For NECSI membership information see <http://necsi.org/member.html>

Annual Membership Dues: Student \$20, Academic \$50, Other \$100

\*\*An additional \$100 penalty will be charged for those who register at the conference site.

We anticipate having some funds available to assist conferees according to need. Application to the conference organizers ([iccs@necsi.org](mailto:iccs@necsi.org)) may be made for this financial support.

## LOCATION AND ACCOMMODATIONS:

The conference will be held at the Sheraton Nashua, New Hampshire, on the Massachusetts New Hampshire border 40 minutes from Boston by car.

Rooms must be reserved directly with the hotel at:

tel: (603) 888-9970      fax: (603) 891-4179

A block of rooms has been reserved at a conference discount rate of \$110 per night (single or double) for the week of the conference (including a two day margin). These rooms are available on a first-come, first-served basis. To receive the discount rate identify yourself as a member of the New England Complex Systems Institute Convention. Cancellations may be made up to 48 hours in advance without penalty.

The Red Roof Inn, Nashua, NH is the closest alternative accommodation to the conference. It is located approximately 1/2 mile by car from the Sheraton Nashua - walking distance is even shorter (but includes a difficult street crossing). A block of rooms has been reserved at a conference discount rate of \$54.99 per night (up to four in a room)

# International Conference on Complex Systems

## Subject Areas: Unifying Themes in Complex Systems

Sessions will be structured around both themes and systems.

### The Themes Are:

#### **EMERGENCE, STRUCTURE AND FUNCTION:**

substructure, the relationship of component to collective behavior, the relationship of internal structure to external influence.

**INFORMATICS:** structuring, storing, accessing, and distributing information describing complex systems.

**COMPLEXITY:** characterizing the amount of information necessary to describe complex systems, and the dynamics of this information.

**DYNAMICS:** time series analysis and prediction, chaos, temporal correlations, the time scale of dynamic processes.

**SELF-ORGANIZATION:** pattern formation, evolution, development and adaptation.

### The System Categories Are:

**FUNDAMENTALS, PHYSICAL & CHEMICAL SYSTEMS:** spatio-temporal patterns and chaos, fractals, dynamic scaling, non-equilibrium processes, hydrodynamics, glasses, non-linear chemical dynamics, complex fluids, molecular self-organization, information and computation in physical systems.

**BIO-MOLECULAR & CELLULAR SYSTEMS:** protein and DNA folding, bio-molecular informatics, membranes, cellular response and communication, genetic regulation, gene-cytoplasm interactions, development, cellular differentiation, primitive multicellular organisms, the immune system.

**PHYSIOLOGICAL SYSTEMS:** nervous system, neuro-muscular control, neural network models of brain, cognition, psychofunction, pattern recognition, man-machine interactions.

**ORGANISMS AND POPULATIONS:** population biology, ecosystems, ecology

**HUMAN SOCIAL AND ECONOMIC SYSTEMS:** corporate and social structures, markets, the global economy, the Internet

**ENGINEERED SYSTEMS:** product and product manufacturing, nano-technology, modified and hybrid biological organisms, computer based interactive systems, agents, artificial life, artificial intelligence, and robots.

### Organizing Committee

Philip W. Anderson - Princeton University  
Kenneth J. Arrow - Stanford University  
Michel Baranger - MIT  
Per Bak - Niels Bohr Institute  
Charles H. Bennett - IBM  
William A. Brock - University of Wisconsin  
Charles R. Cantor - Boston University  
Noam A. Chomsky - MIT  
Leon Cooper - Brown University  
Daniel Dennett - Tufts University  
Irving Epstein - Brandeis University  
Michael S. Gazzaniga - Dartmouth College  
William Gelbart - Harvard University  
Murray Gell-Mann - CalTech/Santa Fe Institute  
Pierre-Gilles de Gennes - ESPCI  
Stephen Grossberg - Boston University  
Michael Hammer - Hammer & Co  
John Holland - University of Michigan  
John Hopfield - Princeton University  
Jerome Kagan - Harvard University

Stuart A. Kauffman - Santa Fe Institute  
Chris Langton - Santa Fe Institute  
Roger Lewin - Harvard University  
Richard C. Lewontin - Harvard University  
Albert J. Libchaber - Rockefeller University  
Seth Lloyd - MIT  
Andrew W. Lo - MIT  
Daniel W. McShea - Duke University  
Marvin Minsky - MIT  
Harold J. Morowitz - George Mason University  
Alan Perelson - Los Alamos National Lab  
Claudio Rebbi - Boston University  
Herbert A. Simon - Carnegie-Mellon University  
Temple F. Smith - Boston University  
H. Eugene Stanley - Boston University  
John Sterman - MIT  
James H. Stock - Harvard University  
Gerald J. Sussman - MIT  
Edward O. Wilson - Harvard University  
Shuguang Zhang - MIT