

Society for Chaos Theory in Psychology & Life Sciences

NEWSLETTER

Kevin Dooley, Ph.D., President; Robert Porter, Ph.D., Editor; Stephen Guastello, Ph.D., Production Editor
Vol. 8 No. 3, APRIL 2001

Madison Summer Conference News

ORGANIZATIONAL, BIOLOGICAL, AND INTRODUCTORY WORKSHOPS FEATURED

----- Plus -----

ROSSER'S ECONOMIC COMPLEXITIES, SPROTT'S ATTRACTOR AESTHETICS, AND GUASTELLO'S REFLECTIONS

**Eleventh Annual Conference
SUMMER CONFERENCE 2001
Madison, Wisconsin, August 3 to 6, 2001**

REGISTRATION FORMS IN THIS NEWSLETTER

The 11th Annual International Conference of the Society for Chaos Theory in Psychology & Life Sciences will be held at University of Wisconsin, Madison. Visitors to the University are

INSIDE

Workshop Abstracts and Schedules
REGISTRATION DEADLINES

Speakers: July 6th, 2001
All Others: July 20th, 2001

familiar with the Grainger Hall facilities which offer comfortable meeting rooms and spacious facilities for reception and self-organized discussions. An outside view of Grainger Hall, which

is located on the main thoroughfare, 975 University Avenue, is show on the right. Kevin assures us the trees will have leaves in August.

Hotel accommodations this year have been arranged through the HOWARD JOHNSON'S PLAZA HOTEL, which is located three blocks away from Grainger Hall. The HJ PLAZA was rated as the 1998 Hotel of the Year out of 570 HJ Hotels. Hotel room rates, which start below \$89, include access to the indoor swimming pool, fitness center, and transportation to the Madison (Dodge County) Airport. The Hotel also operates a shuttle service to UW buildings for those who need the assistance. Rooms with data ports are available upon request

Conference attendees will note that unlike previous years, reservations should be made with the hotel directly. Kevin Dooley, President and Conference Coordinator reminds everyone that: "Conference registration fees paid to SCTPLS do **not** include hotel registration." (See this newsletter for forms—ED)

NONLINEAR BOOKS

**New Top 40 list of most frequently
cited books – See *Bookshelf***

PRESIDENT'S MESSAGE

Right about now, as you are reading this, I should be pouring through thousands and thousands of abstracts for this year's conference, trying to select the 1 or 2 percent that will make it... just joking! Honestly, please consider presenting your research work at our conference this year in Madison, WI, USA, on August 3-6, 2001. The deadline for abstracts is May 4, and you can go <http://www.societyforchaostheory.org/cfp2001.html> for more information. This year's theme is on "Simulating and Visualizing Complex Systems", although as before we will accept all submissions in the broader area of nonlinear dynamics and complexity science.

We have a great set of keynote speakers lined up. Clint Sprott from the University of Wisconsin will discuss the relationship between art's aesthetic appeal and its fractal descriptors, showing how we can evolve interesting art. J. Barkley Rosser from James Madison University will be discussing "The Complexities of Complex Economic Systems". Our Saturday night banquet speaker Stephen Guastello will be discussing his latest works in dynamical human systems.

I highly recommend that you also give some consideration to attending one of our workshops. These workshops enable small groups of people interested in a particular topic to really move very far in a short amount of time, with the help of some expert facilitation and discussion. Our pre-conference workshop by Fred Abraham will be an introduction to dynamical systems. Our post-conference workshops include an introduction to complexity science for organizational and social system researchers, and a discussion of theory and methods concerning nonlinear perspectives on rhythm, chaos, and control in human biology, facilitated by Robert Porter, Franco Orsucci, Dick Bird, Ph.D., and Susan Mirow. More information can be found at: <http://www.societyforchaostheory.org/conferences.html>

Never been to a SCTPLS Conference? Imagine a conference where what's going on inside the talks is actually as interesting as what's going on in the hallways. Imagine a conference where no boundaries exist between newcomers and old-timers. Imagine a conference whose discussions will keep you thinking for the next few months, and where your brain will feel fully exercised by the end of the day. Imagine a conference where people who use mostly words and people who use mostly math (or perhaps both, or neither) intermingle without conflict. That's a SCTPLS conference. I am anxious to meet old friends and make new ones in July—see you there!

_Kevin Dooley, SCTPLS President, 2000-2001

Ten Reasons Why You Need to go to Madison on August 3 through 6.

1. Wisconsin beer in a Madison bar.
2. Wisconsin cheese.
3. Our conference hotel, Hojo's 1998 Hotel of the Year—go Hojo!
4. The Madison campus of University of Wisconsin: way-cool.
5. Those beautiful Wisconsin summer days and summer nights.

IMPORTANT DATES TO REMEMBER

May 4 SUBMISSION DEADLINE FOR ABSTRACTS

(Accepted abstract's authors will be contacted on or before May 18)

- July 3 Registration for all **speakers** is required. **ALSO:** All **lodging requests** must be received (It's hard to guarantee rooms after this date). After this date, the hotel may not be able to give the conference rate.
- July 6 "Drop dead date" for speakers to register. After this date your abstract may be dropped from the program.
- July 20 Last day for early registration. At-door rates apply. Registration cancellations refunded only to 50%; memberships not refundable.
- Aug 3 Friday: The show begins!

6. Fishing in Lake Mendota.
7. Volksfest (Swiss Independence Day) in New Glarus on Aug 6.
8. The Live Poison Dart Frog Exhibit at the Olbrich Botanical Gardens.
9. Old World delicacies.
10. SCTPLS 11th Annual Conference!

Guest Speakers Highlights of Madison Conference Schedule

Attractor Esthetics

J. C. Sprott, Department of Physics, University of Wisconsin – Madison, will present the Plenary Address Saturday afternoon, August 4. Professor Sprott has entitled his presentation: **Can a Monkey with a Computer Create Art?** While studying chaotic dynamical systems, Professor Sprott explains, I inadvertently generated a few million fractal images, called strange attractors. These images were selected by the computer from among a few billion cases that were analyzed. I showed a few thousand of these to about a dozen artists and scientists who evaluated them aesthetically. From that I discovered a strong correlation between their aesthetic quality and mathematical properties such as fractal dimension and Lyapunov exponent. Then I was able to train the computer to be even more selective and to produce thousands of images, all different, and most which are aesthetically appealing. I will describe the process and show examples of the images produced in this way and will even produce some new ones during the talk.

Nonlinear Organizational Dynamics: A Retrospective

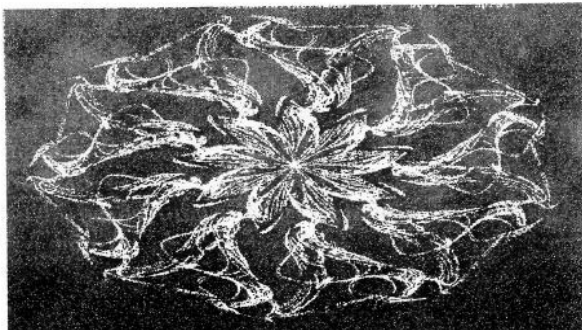
Stephen Guastello (*Nonlinear Dynamics in Organizations: The First 20 Years*) will be the Saturday evening Banquet Speaker. Himself a pioneer in the application of nonlinear science in organizations, Professor Guastello notes that the year 2001 marks the 20th anniversary of the first journal article where principles of nonlinear dynamics were applied to phenomena in organizational psychology. In this context, Professor Guastello's presentation will highlight the landmarks in theories of organizational development, work motivation and personnel selection, creativity, coordination in work teams, leadership emergence, work performance in hierarchies, and strategic management. A decade of research reveal that the accuracy associated with empirical results supporting nonlinear theories is approximately double the accuracy associated with linear theories. Professor Guastello promises to explore the implications of this result for the ever-growing frontiers of applications of nonlinear dynamics.

Previous Summer Conference Programs
can be found at
www.societyforchaostheory.org

The Complexities of Complex Economic Systems

Opening night's keynote speaker will be J. Barkley Rosser. Dr. Rosser is a Professor of Economics and the Kirby L. Kramer Jr. Professor at James Madison University. Well known in nonlinear science circles, Professor Rosser will be discussing

how understanding complexity dynamics can help us understand how economic systems develop and change. Complex economic nonlinear dynamics endogenously do not converge to a point, a limit cycle, or an explosion. Their study developed out of earlier studies of cybernetics, catastrophic, and chaotic systems. Complexity analysis stresses interactions among dispersed agents without a global controller, tangled hierarchies, adaptive learning, evolution and novelty, and out-of-equilibrium phenomena. Theoretically, bounded rationality replaces rational expectations. Complexity theory influences empirical methods and restructures policy debates.



Pre- and Post-Conference Workshop Summaries

Pre-Conference Introductory Workshop,
August 3

Dynamics for Dummies

Editor's Note: Fred Abraham, of Silliman University and the Blueberry Brain Institute will be presenting this introductory workshop. Professor Abraham is familiar to dynamic theorists for his many publications and his dedication to teaching and popularizing nonlinear theory and its applications.

This workshop will introduce some basic concepts of dynamical theory, such as state and phase space, trajectory, vector field, attractor, bifurcation, stability, chaos, self-organization, and some of their basic mathematical concepts (at a very basic level), and utilizing a few classic examples like the Lotka-Volterra and Lorenz systems plus a couple from our fields. It will also give a brief introduction to some of the research design and analysis issues, including attractor reconstruction, characteristic and Liapunov exponents, recurrence plots, false nearest neighbor, and some basic concepts of times series analysis. It will not attempt to show how to derive theory from data; just evaluate dynamical properties of data. The morning will be in lecture mode, and the afternoon will be a hands-on introduction to a couple of the simpler programs around to display theory (Madonna, which is similar to Stella) and to analyze data (Santis, beta version of Dataplore).

Post Conference Workshop I of II,
August 6

An Introduction to Complexity Science for Organizational Researchers

Presented by SCTPLS President and Arizona State University Departments of Industrial Engineering and Management, the workshop will introduce some basic concepts of complexity science.

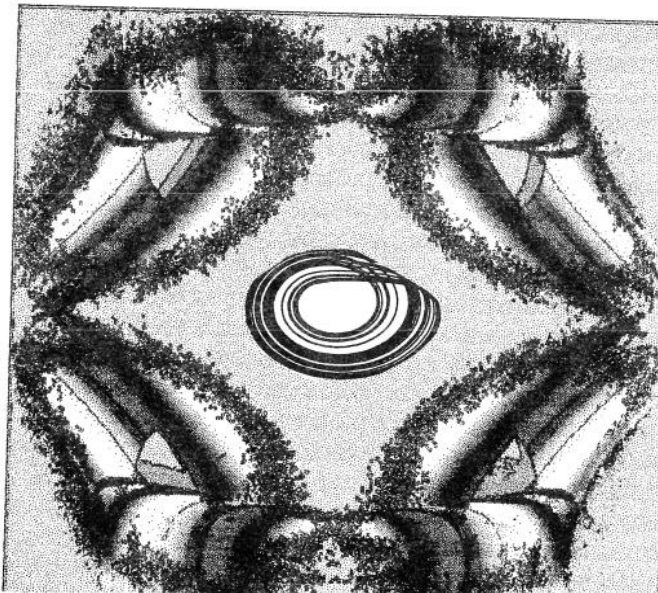
Professor Dooley writes "First, we shall discuss the architecture of complex adaptive systems, using Holland's model: agents, fitness functions, behavioral rules, boundaries, tags, connectivity and flow, and nonlinearity. Next, some basic properties of complex systems will be discussed: self-organization and emergence, self-organized criticality and power laws, rugged landscapes, organizational dynamics, and social network theory. In the afternoon we shall discuss various applications of these models, including examples in medical error, supply chain management, organization change, and knowledge management. Emphasis will be on discussion, experiential learning, and thoughts on how to move from concept to application."

Post Conference Workshop II of II,
August 6

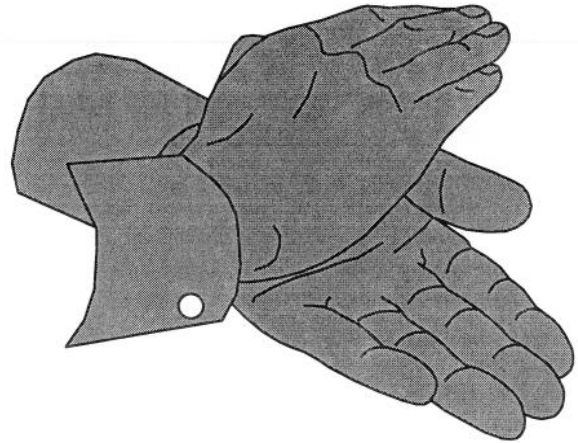
Nonlinear Perspectives on Rhythm, Chaos, and Control, in Human Biology: A Discussion of Theories and Methods

This interactive and international workshop features Robert Porter, Ph.D., Workshop Coordinator, Directions for Mental Health (Clearwater FLA) & Lambda Consulting (Tampa FLA); Dick Bird, Ph.D., Division of Psychology, University of Northumbria, UK; Susan Mirow, Ph.D., M.D., University of Utah, Salt Lake City, Utah; and Franco Orsucci, M.D., Ph.D., Collegium International Institute, and Institute for Complexity Studies; Rome, Italy.

The organizers write: Many nonlinear systems display periodic, stochastic, chaotic, and continuously-adaptive behaviors. Nonlinear biological systems, including the cardiopulmonary system, central nervous system, and the muscular-skeletal system, display these behaviors. There is a vast, classical, literature describing these biological systems and their properties. How does a nonlinear systems approach give us a clearer perspective on how these nonlinear systems work, how they malfunction, or how they may be manipulated or repaired? In addition, what measurements and what sorts of analysis do a nonlinear approaches demand? The workshop will address these questions using examples of data collection and analysis from a variety of research areas. A focus of the workshop will be the *contrast* between the more traditional interpretations and the nonlinear ones. This participatory workshop is designed for those scientists at an intermediate-to-advanced level who (1) are interested in finding out more about what is going on in other areas and who (2) are interested in discussing how theoretical perspective informs research. A basic understanding of human biology, nonlinear science, and research methods will be assumed. Enrollment limited to facilitate productive discussion. Further information can be found at: <http://www.syzygenesis.com/>



ANNOUNCEMENTS



Dynamics Days Europe 2001, will be held in Dresden, Germany, June 5-8, 2001. The Organizers are Holger Kantz, Klaus Richter, and Thomas Schreiber. The website is: <http://www.mpipks-dresden.mpg.de/~ddd2001>

Dynamics Days Europe is a major international conference aimed at covering the entire field of dynamics and nonlinearity. The XXI-st event in this tradition will take place in Dresden, sponsored by the Max-Planck-Institute for the Physics of Complex Systems. Confirmed plenary speakers include Henry Abarbanel, Benoit Mandelbrot, and many others/ Mini-symposia of two hours duration each, will contain invited and contributed talks in such areas as quantum chaos, pattern formation and growth, econophysics, and other topics.

A very limited number of contributed oral presentations will be accepted, either as part of one of the minisymposia or a parallel session. Posters will be on display during the whole conference, but there will be also two special poster sessions.

Deadline for the submission of oral contributions and early registration is 28 February 2001. Further information and registration forms can be found at: <http://www.mpipks-dresden.mpg.de/~ddd2001> ; Max-Planck-Institut fuer Physik komplexer Systeme Noethnitzer, Str. 38, D-01187, Dresden, Germany; Tel: 0351-871-2105; Fax: 0351-871-2199; e-mail: ddd2001@mpipks-dresden.mpg.de



A National Academy of Sciences colloquium entitled, **Adaptive Agents, Intelligence and Emergent Human Organization: Capturing Complexity Through Agent-Based Modeling** will be held on Friday and Saturday, October 5 and 6, 2001, at the Beckman Center in Irvine, California. Co-organizers of the Colloquium are University of Texas at Dallas faculty members Professors Brian J.L. Berry, Euel Elliot and L. Douglas Kiel.

The Colloquium will include five major topics/ panels: (1) Implications of Agent-Based Modeling for Understanding Human Rationality and Learning; (2) Cooperation and competi-

(Continued page 7)

Cool Stuff in Madison

SCTPLS is pleased to have come some of the attractions of the Madison area for your touring pleasure before, after, and during your stay at the annual conference. Please contact your hotel concierge for local activity times, dates (as applicable), and maps. Or rent a car and see them all! The following material was pieced together from various brochures and tourist publications.*

MADISON ITSELF

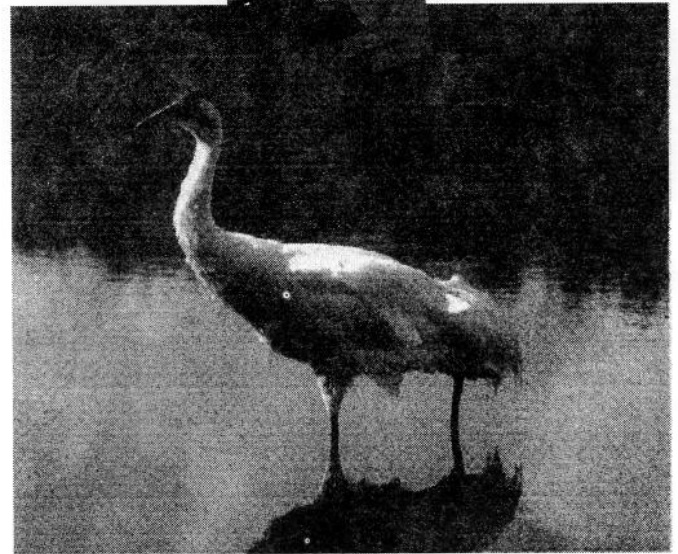
Madison, also known to the locals as Mad City, is the capital city of the State of Wisconsin. It is located on a strip of land bordered by lakes; Lake Mendota is about 3 blocks north of the conference facility at University of Wisconsin. The historic State Capitol building is also within walking distance of the conference facility. The Capitol building is open to visitors on the weekends. A variety of civic activities are organized around Capitol square on weekends.

For those who are looking for upscale dining, we recommend Top o' the Park at Capitol square; call for reservations. The rest of the area is packed with shops and restaurants of all cuisine and price ranges.

If you head down University Avenue in the opposite direction, you can spend an evening at Luther' House of Blues. Chicago-style and national live blues bands will get you to wang dang doodle all night long.

A LITTLE NORTH

If you go about 20-30 miles north of Madison you can visit Wisconsin Dells. The town is a center featuring hotel resorts, water parks, miniature golf, Ripley's Believe it or Not Wax Museum, Native American cultural attractions (schedule has been chaotic in recent years), and the Dells. The Dells are rock formations peculiar to the central-Southeastern Wisconsin region. A piece of the Dells is shown below along with a Duck; a Duck is an amphibious vehicle and a favorite form of transportation along the Dells waterways. In the outskirts of the Dells, you can camp, fish, and enjoy water sports.



In the neighboring town of Baraboo, you can visit the International Crane Foundation, where most significant species of crane can be seen. Shown above is one of the 147 existing whooping cranes in the world. This species' count was down to 47 bird in 1948, and it has made a dramatic recovery. Other endangered crane species have rebounded through the efforts of the Crane Foundation.



Circus World also makes its home in Baraboo. This was the first wintering spot for the Ringling Brothers and Barnum & Bailey Circus, which once ranked as the largest,

and still the most famous circus outfit in the hemisphere. Here you can see antique circus vehicles, animals, and live performances.

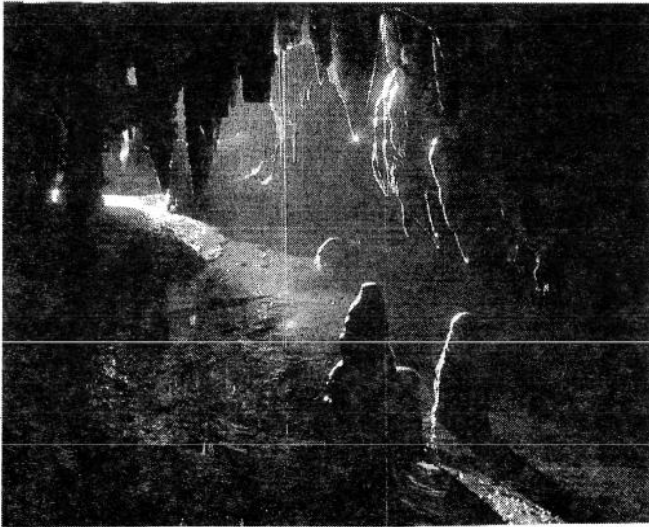
Also in the Dells-Baraboo area, you can visit Tommy Bartlett's Robot World and the Ho-Chunk gambling casino. Follow the signs on Interstate 94.

A canoe on the Wolf River is featured below.



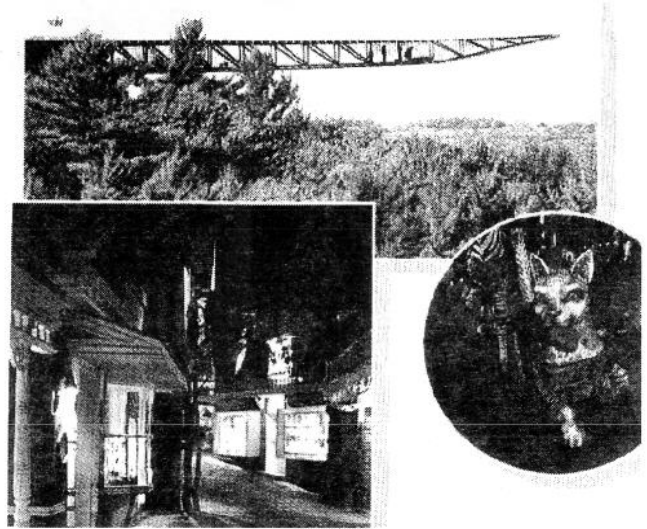
WEST of MADISON

The Cave of the Mounds is a National Natural Landmark that is also located in Blue Mounds, WI, West of Madison. These magnificent caves with their jewel-like stalactites and stalagmites were created millions of years ago by the earth's natural processes. A tour of this cave, which was first discovered in 1939, takes you through spectacular crystallized rock formations and shimmering water pools.

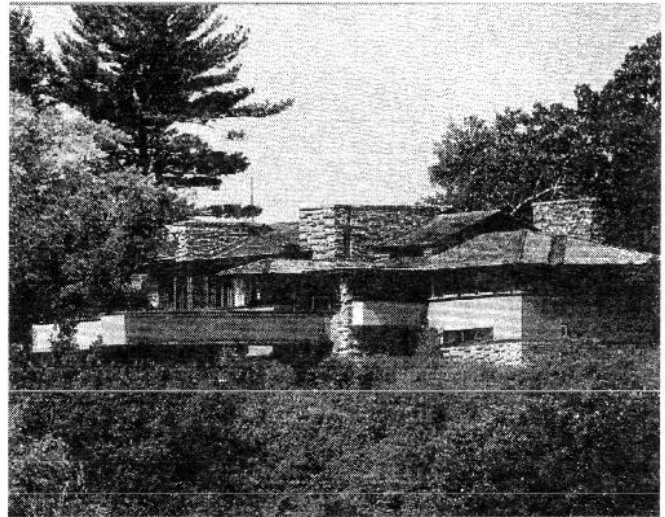


Visit the incredible House on the Rock in Dodgeville. During the 1940s, Alex Jordan discovered a 60-foot chimney of rock in the beautiful Wyoming valley, where he built a house on this sandstone formation. Jordan was a collector of curiosities, and turned the house into something far beyond a museum, which now spans 16 buildings in a 2.5-hour walk. The building boasts the only Infinity Room in the world (shown in the picture), which juts out 218 feet unsupported

with 3,264 windows for walls. Inside see the world's largest carousel with over 269 creatures, yet not one horse. Also: fabulous and amazing music machines, collections of dolls, doll houses, and ancient weaponry, nautical and maritime museum pieces, including a Sea Creature that is longer than the Statue of Liberty is tall. According to some reports, House on the Rock is the most frequently visited tourist attraction in the State.



Spring Green, Wisconsin, is (or was) the home of Frank Lloyd Wright in his estate known as Taliesin East. Built between 1911-1925, this architectural masterpiece displays some of his finest contributions to exterior and interior design.



If you plan to spend a little more time in Spring Green, check the schedule for the Spring Green Playhouse. The repertoire ranges from Shakespeare through 19th century works in an outdoor amphitheater

*Additional photo credits: Wolf River: Lawrence and Kathleen Abrams, in *Exploring Wisconsin*, publ. Rand McNally, 1983. Taliesin East: Original color photo from Naomi Stungo in Frank Lloyd Wright, publ. Carlton Books, 1999; other picture copyrights apply.

tion as Factors in Emergent Human Organization; (3) Economic Agents and Markets as Emergent Phenomena; (4) Agent-Based Modeling as Public Policy Flight Simulators; (5) Platforms and Methodologies for Enhancing the Social Sciences Through Agent-Based Simulation.

These panel themes capture the principle that complex systems exist at dramatically differing levels of analysis, ranging from the individual to the societal level. Moreover, agent-based modeling is applicable at each of these levels.

The colloquium format will consist of paper presentations, a review of the papers by a discussant followed by general audience discussion. Contact Professor Elliott (eelliott@utdallas.edu) or Professor Kiel (dkiel@utdallas.edu) for further details.



Forwarded by Kevin Dooley:

Plexus Institute Praises IOM's Bold Proposal For Health Care Reform

Cranbury, N.J. (March 1, 2001) -- "Until now, the ailing American health care system has been misdiagnosed," said Curt Lindberg, president of the nonprofit Plexus Institute. (www.PlexusInstitute.com) "As its condition deteriorated, so did the quality of patient care. With the Institute of Medicine's bold diagnosis and treatment plan, we're finally on the road to recovery."

As a National Academy, the function of the Institute of Medicine (www.iom.edu) is to advise the nation on health care policy. Today, IOM released the second in a series of reports that critique the US health care system and outline strategies for quantum improvement. *Crossing the Quality Chasm: A New System for the 21st Century* follows in the footsteps of last year's *To Err is Human: Building a Safer Health Care System*, which estimated that from 44,000 to 98,000 people die each year due to medical errors.

Crossing the Quality Chasm states that medical errors are symptoms of a dysfunctional system. The report proposes a broad overhaul based on bottom-up, evolutionary change. It identifies ten simple rules that currently govern interactions between providers and patients at the micro-system level (a nursing unit or physician's practice) and proposes a new set of rules. "The entire report is inspired by the science of complex adaptive systems (CAS)," said Paul Plsek, a consultant and Senior Fellow at the Boston-based Institute for Healthcare Improvement.

"This is just-in-time visionary thinking," praised Lindberg. "The health care system is showing more signs of extreme stress. Consumers are feeling the biggest surge in medical inflation since the early 1990's, and the incidence of chronic diseases like diabetes, obesity, and asthma is soaring. Treating the health care system like a broken machine hasn't worked. It behaves much more like an organism and needs to be

treated accordingly."

Plexus is a federation of health care professionals, scientists, business leaders and organizational theorists who've been studying and using complex systems approaches. The Institute works to improve the health of people, families, communities, and organizations through application of complexity theory. "We've witnessed the extremely encouraging impact that complexity-inspired practices have on the quality of patient care," explained Lindberg.

CAS is a new scientific paradigm that explains the behavior of systems. In short, systems are composed of agents that are constantly organizing and reorganizing into ever increasing complexity on the basis of a few simple local rules. As complexity increases, new structures and behaviors emerge. Systems are viewed as organic, unpredictable, and difficult to influence or control from a top-down, macro approach.

"Complexity thinking comes naturally to people who are clinically- and biologically-trained, noted Plsek, who wrote the report's complexity appendix and helped create Plexus Institute. For further assistance, the Institute will offer learning aids, online resources, teleconferences with experts, national conferences, and consultations.

Contacts: Curt Lindberg 609.395.8787 or curt.lindberg@home.com Paul Plsek 770-587-2492 or paulplsek@directedcreativity.com For additional Plexus contacts and examples of complexity at work: www.PlexusInstitute.com



The Institute of Medicine report *Crossing the Quality Chasm: A New System for the 21st Century* suggests that complexity science is an effective framework to use to design a new healthcare system in the U.S. It proposes that the current system behaves according to a "few simple rules" that have evolved over time, and that change should be encouraged by considering how these rules might be changed. It suggests we need to move:

- from provide care based on visits, to provide care based on continuous healing relationships, not limited to visits,
- from professional autonomy drives variability, to patient values drive variability,
- from professionals control care, to the patient is the source of control.
- From information is a record, to information is critical to the helping relationship.
- From base decision making on training and experience, to base decision making on systematically-acquired knowledge,
- From do no harm—an individual responsibility, to creating patient safety systems—a system capability,
- From secrecy is necessary, to transparency is necessary,
- From react to needs, to anticipate needs,
- From seek to improve value through cost reduction, to continuously decrease waste, and
- From give preference to professional roles over the system, to give preference to smooth system function over

professional roles. The IOM Report can be ordered at:
<http://www.nap.edu/catalog/10027.html>

REPORTS FROM THE CUSP

Editor's Note: Short research articles, book reviews, and other items of interest are solicited from all members for consideration for publication in REPORTS FROM THE CUSP. Articles are reviewed by the editor and those selected may be edited for length. Ordinarily, only one item will appear per newsletter.

CONTRIBUTIONS ARE WELCOME

NEWS FROM MEMBERS

Michael F. Halasz, Ph.D., reminds us of *The Balance*, an electronic newsletter containing comment on human affairs based on the seeking of equilibrium as the prime principle behind political, international, social, religious and interpersonal events. Dr. Halasz, Editor of *The Balance*, points out that maintenance of an order is seen as the usual public and private agenda. When, rarely, such balance fails to be maintainable there is transition to a new order, not necessarily better. The publication will illustrate this point of view with short takes on current events. Responses and submissions to the address given below are welcome.

Free e-mail copies of *The Balance* as Word file attachments to e-mail may be requested from hmalasz@att.net (text file also available.) Back issues on request. Printed issues \$2 including postage.



J. Barkley Rosser writes to inform members of SCTPLS and others that as of January 1, 2002, he shall be replacing Dick Day as editor in chief of the *Journal of Economic Behavior and Organization*. Professor Rosser writes "...it is my firm intention to continue and extend his approach to that journal to encourage serious intellectual investigation of the boundaries of economics using innovative approaches that may be outside the mainstream. I look forward to working with many of the recipients of this message in this endeavor in the future." (Signed:) J. Barkley Rosser Jr., Professor of Economics and Kirby L. Kramer, Jr. Professor MSC 0204 James Madison University Harrisonburg, VA 22807 USA tel: (001)-540-568-3212 fax: (001)-540-568-3010 email: rosserjb@jmu.edu website: <http://cob.jmu.edu/rosserjb>



Anatoliy Shiyan, Head of the Institute for Social Technologies invites visitors to the English web-site of the Institute. He writes that he has placed new preprints on the web-site <http://soctech.webjump.com>. One of these is "The universal - conceptual (European) system of social coding of the individual and theory of 2AIM as the system of knowledge about man (Philosophical concept of the theory of 2AIM)". A second is "Task of the man - to control a Nature: The classification of

relationships between types of management for men - types of 2AIM (theory and mathematics)". Additional items in Russian and English will be added this Summer. For more information contact: Anatoliy Shiyan, Head, Institute for Social Technologies, 1-st May St., 58/23, Khmelnik, Vinnitsa obl., 22000 UKRAINE, or E-mail: sim@hmel.vinnitsa.com



Linda Chamberlain is now the Director of Clinical Training in the Psychology Department of Regis University, Boulder, Colorado. Linda is the co-author of the widely known book, *Clinical Chaos*.



The Clinical Psychology program at Marquette University has just received accreditation from the American Psychological Association. Stephen Guastello reports that David Pincus (student society member) will, in all likelihood be its first Ph.D. with a dissertation on nonlinear-dynamics-related topic. He notes that while he is not a clinical psychologist he would be happy to chair Ph.D. dissertations on nonlinear dynamics in clinical psychology or other theoretical areas. Marquette University also has a Ph.D. program in Interdisciplinary Studies.

WHO'S WHO IN THE SOCIETY

President 2000-2002

Kevin Dooley, kevin.dooley@asu.edu

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Bob Porter, rjporter@mindspring.com

Treasurer and Journal Editor

Stephen Guastello, stephen.guastello@marquette.edu

Secretary

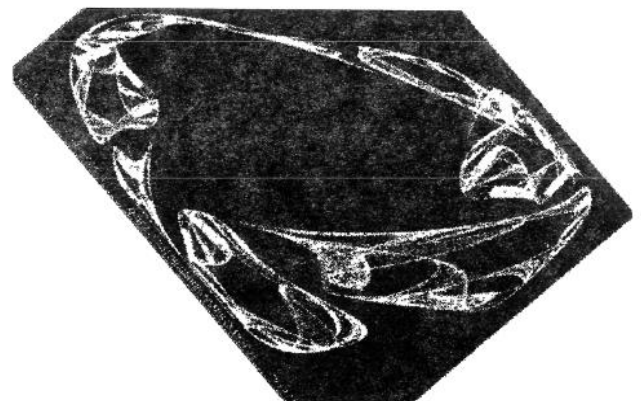
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Web Site Manager

Kevin Dooley, kevin.dooley@asu.edu

CHAOPSYC Manager

Bob Porter, rjporter@mindspring.com





Nonlinear Dynamical Bookshelf

The 2001 Top 40 Book List: Interests Broaden

There were 479 books cited in NDPLS volumes 3 and 4 (1999 and 2000). One article that actually appeared in January, 1999 was counted as 1998 in the previous book list; the article was held over one issue because of a page overflow. Nonetheless, the total number of books cited was up 19% from the previous count of 402 books; this margin corresponds to the page increase for the journal in the past two years.

The citation counting procedure for this year's Top 40 was the same the procedure used to produce the last report. The Top 40 books listed below were cited at least twice during years 1999-2000. The Top 30 in the previous report contained 27 books that were cited at least three times. In this report, however, there were only 15 books that were cited three or more times.

These trends suggest that the researchers in nonlinear dynamics are relying on a wider library of material. Some of this expansion can be attributed to expanding resources in nonlinear dynamics itself. The rest of it reflects a broadening range of nonlinear dynamics applications. Each new phenomenon that is tied to a nonlinear dynamical process brings along a new book collection.

- Abraham, F. D., & Gilgen, A. R. (Eds.), *Chaos theory in psychology*. Westport, CT: Praeger.
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NEW BOOKS

Abraham, R., & Ueda, Y. (Eds.). (2001). The chaos avant-garde: Memories of the Early Days of Chaos Theory. Series on Nonlinear Science, Series A. Vol. 39. Singapore: World Scientific. ISBN 981-02-4404-5, US\$68, L39 (British pounds), 232 pp. [http://www.worldscientific.com/book\\$/bookshop.html](http://www.worldscientific.com/book$/bookshop.html).

"This book is an authoritative and unique reference for the history of chaos theory, told by the pioneers themselves. It also provides an excellent historical introduction to the concepts. There are eleven contributions, and six of them are published here for the first time -- two by Steven Smale, three by Yoshisuke Ueda, and one each by Ralph Abraham, Edward Lorenz, Christian Mira, Floris Takens, T Y Li and James A. Yorke, and Otto E Rossler." (jacket)

Table of Contents: 1. On How I Got Started in Dynamical Systems 1959-1962, **Steve Smale**. 2. Finding a Horseshoe on the Beaches of Rio, **Steve Smale**. 3. Strange Attractors and the Origin of Chaos, **Yoshisuke Ueda**. 4. My Encounter with Chaos, **Yoshisuke Ueda**. 5. Reflections on the Origin of the Broken-Egg Chaotic Attractor, **Yoshisuke Ueda**. 6. The Chaos Revolution: A Personal View, **Ralph Abraham**. 7. The Butterfly Effect, **Edward Lorenz**. 8. I. Gumowski and a Toulouse Research Group in the "Prehistoric" Times of Chaotic Dynamics, **Christian Mira**. 9. The Turbulence Paper

of D. Ruelle and F. Takens, **Floris Takens**. 10. Exploring Chaos on an Interval, **T. Y. Li and James Yorke**. 11. Chaos, Hyperchaos and the Double-Perspective, **Otto Rossler**.

Mees, A. (Ed.)(2002). Nonlinear Dynamics and Statistics. Birkhauser, 400 pp. about US\$110. ISBN 0-8176-4163-7. Deals with cases where only time series data are available. Includes Bayesian statistics and Markov models. Prof Mees is one of the leading mathematicians in nonlinear dynamics in Australia. --Robert A. M. Gregson.

Teodorescu H-N & Kandel A. (2002). Dynamic Fuzzy Systems and Chaos Applications. Boca Raton, FL: CRC Press. 384pp. US\$90. ISBN 0-8493-2079-8. Explores a new field, with many applications in a diversity of disciplines. Includes complex and hybrid fuzzy chaotic systems.

Manuscripts Accepted by NDPLS

The following regular articles have been accepted for publication by NDPLS and received in their final form. This listing continues from the last list that appeared in the October, 2000, *Newsletter*.

- Aks, D. J., Zelinsky, G., & Sprott, J. C. Memory across eye movements: 1/f dynamic in visual search.
- Egashira, S. & Hashimoto, T. Common owning, transmission, and development of knowledge.
- El-Gohary, A., & El-Ruzaiza, A. S. Optimal control of the equilibrium state of a prey-predator model.
- Guastello, S. J., Nielson, K. A., & Ross, T. J. Temporal dynamics of brain activity in human memory processes.
- Goldstein, J. The singular nature of emergent levels: Suggestions for a theory of emergence.
- Heath, R. A. Can people predict chaotic sequences.
- Ho, S. Evolutionarily stable coalition structures.
- Iizuka, H., Yamamoto, M., Suzuki, K., & Ohuchi, A. Bottom-up consensus in voting games.
- Iwanaga, S., & Namatame, A. The complexity of collective decisions.
- Kahn, D., Combs, A., & Krippner, S. Dreaming as a function of chaos-like stochastic processes in the self-organizing brain.
- Rosser, J. B. Jr., Implications for fisheries policy of complex ecologic-economic dynamics.
- Sadtchenko, K. V. Universal laws in application to evolutionary economics.
- Schuldberg, D. Theoretical contributions of complex systems to positive psychology and health: A somewhat-complicated affair.
- Schuldberg, D., & Gottlieb, J. Dynamics and correlates of microscopic changes in affect.
- Trofimova, I., & Mitin, N. Self-organization and resource exchange in EVS modeling.
- Warren, K., Sprott, J. C., & Hawkins, R. C. The spirit is willing: Nonlinearity, bifurcations and mental control.
- Zhang, W.-B. Complexity theory and economic dynamics.

Wonderful Webbage

SECRET AGENTS or AGENT SECRETS

Questions about autonomous agents, cellular automata, and similar entities arose on CHAOPSYC in recent months. The answers sometimes depend on how one asks the question.

Q. Where can I find some literature and simulations on Cellular Automata?

A1. The classic reference is: Wolfram S. (Ed., 1986). *Theory and applications of cellular automata*. Singapore: World Scientific.

A2. You might try the following materials:
Nigel Gilbert & Klaus Trotsch. *Simulation for the Social Scientist*. Excellent chapter on automous agents. Very approachable text.

Stefan Helmreich, *Silicon Second Nature*. Issues about what is simulation and what is life. Very important for explanation problems of CA simulations.

Andrew Suensche & Mike Lesser, *The Global Dynamics of Cellular Automata*.

John Casti. *Would-Be Worlds*.

Check this Conway site first:

<http://www.mindspring.com/~alanh/life/>

This is a tutorial:

<http://alife.santafe.edu/alife/topics/ca/caweb/>

Below is a hodgepodge of web sites that might be useful to peruse. Many of these sites have useful bibliographies.

<http://www.econ.iastate.edu/tesfatsi/sylalife.htm#CompProGames>

<http://math.wisc.edu/~griffeat/sink.html>

<http://www.personal.engin.umich.edu/~streak/bib/>

http://life.csu.edu.au/vl_complex/all.html

<http://www.krl.caltech.edu/~brown/alife/zooland/>

Hope this helps. --Gus Koehler

Q. Does anyone know of any simulation programs for agent-based modeling? Not a "language" like Swarm or a CA program like CAPOW, but literally a user-friendly, cut-and-paste-objects program that a person without extensive knowledge of C++ or Java could use?

A. Starlogo is free on the web and easy to use. I spent a couple of hours on the tutorial and actually ran something but still haven't gotten the time together to really get into it. See Leigh Tesfatsion's excellent web site and list at Software for Agent-Based Computational Economics (ACE) and Complex Adaptive Systems

<http://www.econ.iastate.edu/tesfatsi/acecode.htm>

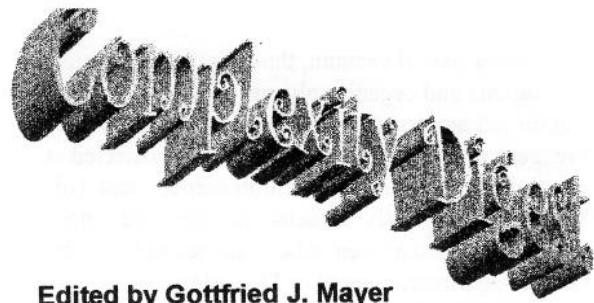
There is a useful list of tools and software prepared by the Centre for Research on Simulation in the Social Sciences at:

<http://www.soc.surrey.ac.uk/research/simsoc/simsoc.html>

Also, you might check Informs: College on Simulation:

<http://www.informs-cs.org/geninfo.html#ware>.

Hope this is helpful, --Gus



Edited by Gottfried J. Mayer

1. The Universal Nature of Biochemistry, PNAS Excerpt: People have long speculated about the possibility of life in settings other than Earth. Only in the past few centuries, however, have we been able to conceive of the specific nature of such settings: other planets around our own sun and solar systems similar to our own elsewhere in the physical universe. Speculation on the nature of life elsewhere often has paid little heed to constraints imposed by the nature of biochemistry, however. A century of fanciful science fiction has resulted not only in social enthusiasm for the quest for extraterrestrial life, but also in fanciful notions of the chemical and physical forms that life can take, what the nature of life can be. Since the time of the Viking missions to Mars, in the mid-1970s, our view of life's diversity on Earth has expanded significantly, and we have a better understanding of the extreme conditions that limit life. Consequently, our search for extant life elsewhere in the solar system can now be conducted with broader perspective than before. (...)

o The Universal Nature Of Biochemistry

<<http://www.pnas.org/cgi/content/full/98/3/805>>, Norman R. Pace, Proc. Natl. Acad. Sci. USA 2001 January 30; 98(3): p. 805-808

2. Searching For An Alien Haven In The Heavens, PNAS Excerpt: The first few articles in this issue of PNAS constitute the beginning of a two-part Special Feature dedicated to the study of astrobiology. Astrobiology is not an autonomous or self-sustaining discipline. Rather, it is a hybrid subject emerging at the crossroads of astronomy, geology, paleontology, physics, and biology. What at first pass may seem like an amalgamation of disparate fields, upon further review, is a clear and increasingly defined discipline. The roots of astrobiology are found in the 10 distinct goals set by the National Aeronautics and Space Administration (NASA) Astrobiology Institute. These objectives can be summarized into three branches: How does life begin and develop? Does life exist elsewhere in the universe? What is life's future on Earth and beyond?

o Special Feature: Searching For An Alien Haven In The Heavens <<http://www.pnas.org/cgi/content/full/98/3/796>>, Bridget C. Coughlin, PNAS 2001;98 796

3. State-Of-The-Art Instruments For Detecting Extraterrestrial Life, PNAS Excerpt: The Mars Organic Detector (MOD) is an instrument that has been developed to search for traces of the key organic compounds, amino acids/amines, and PAHs, directly on the Martian surface (19). MOD is based on the following concepts: (i) amino acids and PAHs can be directly sublimed from natural samples by

heating to 450°C under partial vacuum, thus eliminating the use of the aqueous reagents and organic solvents used in laboratory analyses; (ii) sublimed amino acids condensed on a cold finger coated with a reagent specific for amino acids can be detected at very high sensitivities by using UV fluorescence; and (iii) sublimed PAHs can be directly detected on the cold finger because they are naturally fluorescent when exposed to UV light.

o **State-Of-The-Art Instruments For Detecting Extraterrestrial Life** <<http://www.pnas.org/cgi/content/full/98/3/797>> , Jeffrey L. Bada, PNAS 2001;98 797-800.

4. Possible Ecosystems And The Search For Life On Europa, PNAS Excerpt: There is now great excitement over Jupiter's moon Europa as a possible location for extra-terrestrial biology. Here we examine Europa's suitability for life as we know it and consider candidate ecosystems that seem plausible in light of current knowledge. We then sketch life detection experiments that could be conducted with a spacecraft lander. (...) the gardening depth over 107 yr is 1 m, rather than 1-10 cm. In this case, oxidants and organics created by irradiation of Europa's surface can be efficiently buried by gardening, and therefore protected.

o **Possible Ecosystems And The Search For Life On Europa** <<http://www.pnas.org/cgi/content/full/98/3/801>>, Christopher F. Chyba, Cynthia B. Phillips, PNAS 2001;98 801-804

5. Panel Seeks Truth in Lie Detector Debate, Science An expanded polygraph screening program at U.S. nuclear weapons labs begun in the wake of suspected espionage has heated up the perennial debate over the validity of lie detectors. And if testimony at the first meeting last week of a new National Academy of Sciences panel examining the thorny issue is any guide, the truth will be hard to come by. Researchers are, however, exploring alternate technologies, including the use of brain and thermal imaging, to identify what happens in the brain when people lie. Excerpt: First introduced in the 1920s, the polygraph machine measures four parameters--heart rate, blood pressure, respiration, and sweating. But that physiological quartet doesn't get at what Davidson says is presumably the emotion being measured, namely, "fear of detection." For that, he says, researchers must go straight to the brain: "And if there's one emotion that we have really learned a lot about in the last decade, it's fear." E.N.: As research on bio-feedback suggests, it is likely that professional spies will learn to control their fear signature in the brain.

o **Panel Seeks Truth in Lie Detector Debate** <<http://www.sciencemag.org/cgi/content/full/291/5506/967>> Constance Holden, Science, Volume 291, Number 5506, p. 967, 01/02/09

6. Fitness of Advanced Eusocial Bees, PNAS Abstract: Advanced eusociality sometimes is given credit for the ecological success of termites, ants, some wasps, and some bees. Comprehensive study of bees fossilized in Baltic amber has revealed an unsuspected middle Eocene (ca. 45 million years ago) diversity of eusocial bee lineages. Advanced eusociality arose once in the bees with significant post-Eocene losses in diversity, leaving today only two advanced eusocial tribes

comprising less than 2% of the total bee diversity, a trend analogous to that of hominid evolution. This pattern of changing diversity contradicts notions concerning the role of eusociality for evolutionary success in insects.

o **Monophyly And Extensive Extinction of Advanced Eusocial Bees: Insights From an Unexpected Eocene Diversity** <<http://www.pnas.org/cgi/content/abstract/041600198v1>> , Michael S. Engel, Proc. Natl. Acad. Sci. USA published 6 February 2001, 10.1073/pnas.041600198

7. What You Don't Know Will Hurt You, Science When a predator enters a landscape and encounters prey that have no previous experience of that predator, the prey can suffer heavily. Berger et al. (p. 1036) <<http://www.sciencemag.org/cgi/content/full/291/5506/1036>> ; see the Perspective by Gittleman and Gompper <<http://www.sciencemag.org/cgi/content/summary/291/5506/997>>), in a study of wolves and bears preying on moose in North America and Scandinavia, show that most of the damage is inflicted along the front of the advancing predator population. However, naive prey quickly become accustomed to the new predators and change their behavior to avoid them. These findings bear on current human reintroductions of predators and on how fauna may have responded to advancing human populations during the Pleistocene. Excerpt: "Ecological circumstances, such as living on an island or in a pristine habitat, often lead to an unusually high level of predation among prey populations when predators are reintroduced. For example, Darwin was able to collect a specimen of the now extinct Falkland Island wolf simply by walking up to one and killing it. Indeed, 81% of known mammalian extinctions during the last 500 years have been among mammals endemic to island habitats."

o **The Risk of Extinction -- What You Don't Know Will Hurt You** <<http://www.sciencemag.org/cgi/content/summary/291/5506/997>> , John L. Gittleman and Matthew E. Gompper, Science 2001 291: p. 997.

8. Recolonizing Carnivores And Naive Prey, Science Abstract: The current extinction of many of Earth's large terrestrial carnivores has left some extant prey species lacking knowledge about contemporary predators, a situation roughly parallel to that 10,000 to 50,000 years ago, when naive animals first encountered colonizing human hunters. Along present-day carnivore recolonization fronts, brown (also called grizzly) bears killed predator-naive adult moose at disproportionately high rates in Scandinavia, and moose mothers who lost juveniles to recolonizing wolves in North America's Yellowstone region developed hypersensitivity to wolf howls. Although prey that had been unfamiliar with dangerous predators for as few as 50 to 130 years were highly vulnerable to initial encounters, behavioral adjustments to reduce predation transpired within a single generation. The fact that at least one prey species quickly learns to be wary of restored carnivores should negate fears about localized prey extinction.

o **Recolonizing Carnivores And Naive Prey: Conservation Lessons From Pleistocene Extinctions**

<<http://www.sciencemag.org/cgi/content/full/291/5506/1036>> Berger, Joel, Swenson, Jon E., Persson, Inga-Lill, Science 2001 291: 1036-1039

9. Learning Fast, New Scientist. Excerpt: Moose living in areas without any natural predators are easy targets when bears and wolves are reintroduced, but they wise up quickly says a US team. Within one generation, the predation rate drops to the level found in areas where the animals have long co-existed. This has important implications for programmes to reintroduce predators, says Joel Berger of the University of Nevada.

o Learning Fast <<http://www.newscientist.com/dailynews/news.jsp?id=ns9999403>> , Emma Young, New Scientist, 01/02/09

10. Tilling History With Biology's Tools, NYTimes. Excerpt: Evolutionary biology has become the scholarly equivalent of Starbucks or the Gap. Neo-Darwinist explanations for everything from artistic creativity to morality and rape spill off the presses. Every academic department, it seems, has its biology-enamored theorist. Every department, that is, except history. Until recently, historians were virtually the only remaining holdouts in an otherwise successful conquest of American universities by the science of innate traits, adaptive strategies and biological imperatives.

o Tilling History With Biology's Tools <<http://www.nytimes.com/2001/02/10/arts/10HIST.html>> , NYTimes, 01/02/10

11. McAfee Creates Global Map To Track Viruses, CNN Excerpt: The map claims to allow users to view global virus trends, anticipate virus outbreaks and alert computer users to any virus epidemic. The data for the map is compiled from McAfee.com's Internet-based virus scanning service, which tracks thousands of computers worldwide for virus activity. Any incidences of virus infection are added to the global virus map in real time. The map contains information about the types of viruses that have affected each region, and the number of computers infected.

o McAfee Creates Global Map To Track Viruses <<http://www.cnn.com/2001/TECH/internet/02/09/virus.map.idg/index.html>> , CNN, 01/02/09

o World Virus Map <http://mast.mcafee.com/mast/mass_map.asp?> , McAfee

12. Computer-Mad Generation Has A Memory Crash, Sunday Times Excerpt: Doctors are blaming computer technology, electronic organisers and automatic car navigation systems. They claim these gadgets lead to diminished use of the brain to work out problems and inflict "information overload" that makes it difficult to distinguish between important and unimportant facts. A preliminary study of 150 people aged 20 to 35 has shown that more than one in 10 are suffering from severe problems with their memory. Researchers from Hokkaido University's school of medicine in Japan said the memory dysfunction among the young required further investigation.

o Computer-Mad Generation Has A Memory Crash, Sunday Times <[\[times.co.uk/news/pages/sti/2001/02/04/stinwenws01005.html\]\(http://times.co.uk/news/pages/sti/2001/02/04/stinwenws01005.html\)
> Cherry Norton, Adam Nathan, Sunday Times, 01/02/04](http://www.sunday-</p></div><div data-bbox=)

13. Major Cause Of Global Warming -- Ordinary Soot, Science Daily Excerpt: In their frantic search for a solution to the global warming crisis, climatologists and policy makers have managed to overlook one of the leading causes of rising world temperatures - soot, the familiar black residue that coats fireplaces and darkens truck exhaust. According to a new study in the journal Nature, soot may be the second biggest contributor to global warming - just behind the infamous greenhouse gas, carbon dioxide (CO₂). "Soot - or black carbon - may be responsible for 15 to 30 percent of global warming, yet it's not even considered in any of the discussions about controlling climate change," says Stanford Professor Mark Z. Jacobson, author of the Feb. 8 Nature study. Human beings produce most of the soot particles that pollute the atmosphere, observes Jacobson, an assistant professor of civil and environmental engineering. "Soot consists primarily of elemental carbon," he says, "and 90 percent of it comes from the consumption of fossil fuels - particularly diesel fuel, coal, jet fuel, natural gas and kerosene - as well as the burning of wood and other biomass when land is cleared." A reduction in worldwide soot emissions, he maintains, could prove beneficial in slowing down the disastrous pace of global warming.

o New Study Reveals A Major Cause Of Global Warming -- Ordinary Soot

<<http://www.sciencedaily.com/releases/2001/02/010208075206.htm>> , Stanford University <<http://www.stanford.edu/>> , Science Daily, 01/02/09

14. Soot In The Greenhouse, Nature Excerpt: Greenhouse gases warm the planet by reflecting heat back to earth, while aerosols keep it cool by bouncing radiation back into space. This balance is already being upset by anthropogenic greenhouse gas emissions, and now Mark Jacobson argues in this week's issue that we are compounding the problem with emissions of black carbon (soot). Black carbon reduces the reflectivity of aerosols and as such may be the second most potent agent of global warming after carbon dioxide.

o Soot In The Greenhouse

<<http://www.nature.com/nature/fow/010208.html>> , Nature Feature of the Week, 01/02/01

15. Strong Radiative Heating Of Black Carbon In Atmospheric Aerosols, Nature Aerosols affect the Earth's temperature and climate by altering the radiative properties of the atmosphere. A large positive component of this radiative forcing from aerosols is due to black carbon-soot-that is released from the burning of fossil fuel and biomass, and, to a lesser extent, natural fires, but the exact forcing is affected by how black carbon is mixed with other aerosol constituents. From studies of aerosol radiative forcing, it is known that black carbon can exist in one of several possible mixing states.

o Strong Radiative Heating Due To The Mixing State Of Black Carbon In Atmospheric Aerosols

<http://www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v409/n6821/full/409695a0_fs.html> , Mark Z. Jacobson, *Nature* 409, 695-697, 01/02/08.

16. New Report Backs Planting More Trees to Fight Warming, *NY Times* Excerpt: (...) countries could blunt warming by sopping up 10 to 20 percent of the heat-trapping carbon dioxide that is expected to be released by smokestacks and tailpipes over the next 50 years. It also says the cost to industrialized countries of a global climate plan could be cut in half if they were allowed to buy and sell credits earned by those that make the deepest reductions in carbon dioxide and other so-called greenhouse gases.

o **New Report Backs Planting More Trees to Fight Warming** <<http://www.nytimes.com/2001/02/10/science/10CLIM.html>> , Andrew C. Revkin, *NY Times*, 01/02/10

17. The Great Seaweed Slaughter, *Businessweek* Excerpt: In Japan, a wasteful public-works project may be backfiring and damaging this year's crop. If so, it will be one more reason to end the boondoggles. (...) The plan was to have a network of dikes that would control flooding and create more farmland. But with the tidal flows of the entire area having been altered in a damaging way, it seems to have backfired. Ecologists have noticed an abnormal amount of phytoplankton, microscopic ocean-dwelling plants that thrive on sun, water, and nutrients -- the same nutrients seaweed needs to thrive. That is leading to a seaweed scarcity. Editor's note: Dried Seaweed (nori) is a significant ingredient of Japanese cuisine

o **Eye on Japan: The Great Seaweed Slaughter** <http://www.businessweek.com/bwdaily/dnflash/feb2001/nf2001026_998.htm?c=bwinsiderfeb09&n=link26&t=email> , *Business Week*, 01/02/06

18. An Agility-Based OODA Model For The e-Commerce/e-Business Enterprise, War, Chaos, and Business Excerpt: Since the mid-1970's, there has been a subtle yet increasing awareness that the dominant business model of the 20th century, based upon limited product variability and mass production manufacturing techniques, no longer is applicable to the rapidly-fragmenting, information-intensive, electronically wired and individually-customized global marketplace which has emerged. The pervasiveness and universality of this awareness has been accelerated in the past few years with the explosive growth and penetration of the Internet and its diversity of e-Commerce/e-Business implementations. Post-mass production models to address the new commerce of "controlled chaos" are currently in a state of evolutionary refinement. However, there is widespread agreement that their principal characteristic must be AGILITY, that is, the ability to adapt to, or to lead, constant, accelerated, uncertain and unpredictable change.

o **An Agility-Based OODA Model For The e-Commerce/e-Business Enterprise** <<http://www.belisarius.com/canter.htm>> , John Canter, *War, Chaos, and Business*, 2000

19. Learning in the Pond Snail Lymnaea, *Learn. Mem.* Abstract: We show that appetitive and aversive conditioning can be analyzed at the cellular level in the well-described neural

circuitries underlying rhythmic feeding and respiration in the pond snail, *Lymnaea stagnalis*. To relate electrical changes directly to behavior, the snails were first trained and the neural changes recorded at multiple sites in reduced preparations made from the same animals. Changes in neural activity following conditioning could be recorded at the level of motoneurons, central pattern generator interneurons and modulatory neurons. Of significant interest was recent work showing that neural correlates of long-term memory could be recorded in the feeding network following single-trial appetitive chemical conditioning. Available information on the synaptic connectivity and transmitter content of identified neurons within the *Lymnaea* circuits will allow further work on the synaptic and molecular mechanisms of learning and memory.

o **A Systems Approach to the Cellular Analysis of Associative Learning in the Pond Snail Lymnaea** <<http://www.learnmem.org/cgi/content/abstract/7/3/124>> , Paul R. Benjamin, Kevin Staras, and Gyorgy Kemenes, *Learn. Mem.* 2000 May 1; 7(3): p. 124-131

20. Maze Navigation by Honeybees, *Learn. Mem.* Abstract: We investigated the ability of honeybees to learn mazes of four types: constant-turn mazes, in which the appropriate turn is always in the same direction in each decision chamber; zig-zag mazes, in which the appropriate turn is alternately left and right in successive decision chambers; irregular mazes, in which there is no readily apparent pattern to the turns; and variable irregular mazes, in which the bees were trained to learn several irregular mazes simultaneously. The bees were able to learn to navigate all four types of maze. Performance was best in the constant-turn mazes, somewhat poorer in the zig-zag mazes, poorer still in the irregular mazes, and poorest in the variable irregular mazes. These results demonstrate that bees do not navigate such mazes simply by memorizing the entire sequence of appropriate turns. Rather, performance in the various configurations depends on the existence of regularity in the structure of the maze and on the ease with which this regularity is recognized and learned.

o **Maze Navigation by Honeybees: Learning Path Regularity** <<http://www.learnmem.org/cgi/content/abstract/7/6/363>> , Shaowu Zhang, Akiko Mizutani, and Mandyam V. Srinivasan, *Learn. Mem.* 2000 November 1; 7(6): p. 363-374

21. Learning Motor Synergies, *Learn. Mem.* Abstract: Prism adaptation, a form of procedural learning, requires the integration of visual and motor information for its proper acquisition. Although the role of the visual feedback has begun to be understood, the nature of the motor information necessary for the development of the adaptation remains unknown. In this work we have tested the idea that modifying the arm load at different stages of the adaptation process, and the ensuing change of motor information perceived by the subjects, would modify the final properties of the adaptation. We trained a set of subjects to throw balls to a target while wearing prism glasses and varied the weight of their arms at different time points during the task. We observed that the acquisition of the adaptation was not affected by the change in load. However, its persistence (i.e., the aftereffect) was reduced when tested under a weight condition different from the training trials.

Furthermore, when the training weight conditions were restored later during testing, a second, late aftereffect was unmasked, suggesting that the missing aftereffect did not disappear but had remained latent. Our results show that the internal representation of a motor memory incorporates information about load conditions and that the memory stored under a specific weight condition can be fully retrieved only when the original training condition is restored.

o Learning Motor Synergies Makes Use of Information on Muscular Load

<<http://www.learnmem.org/cgi/content/abstract/7/4/193>> , Juan Fernandez-Ruiz, Cynthia Hall-Haro, Rosalinda Diaz, Jacqueline Mischner, Patricia Vergara, and Juan Carlos Lopez-Garcia, Learn. Mem. 2000 July 1; 7(4): p. 193-198

22. Crackling Noise, arXiv Abstract: Crackling noise arises when a system responds to changing external conditions through discrete, impulsive events spanning a broad range of sizes. A wide variety of physical systems exhibiting crackling noise have been studied, from earthquakes on faults to paper crumpling. Because these systems exhibit regular behavior over many decades of sizes, their behavior is likely independent of microscopic and macroscopic details, and progress can be made by the use of very simple models. The fact that simple models and real systems can share the same behavior on a wide range of scales is called universality. We illustrate these ideas using results for our model of crackling noise in magnets, explaining the use of the renormalization group and scaling collapses. This field is still developing: we describe a number of continuing challenges.

o Crackling Noise <<http://xxx.lanl.gov/abs/cond-mat/0102091>> , James P. Sethna, Karin A. Dahmen, Christopher R. Myers, arXiv, cond-mat/0102091, 01/02/06

23. Nobel Laureate Herbert A. Simon Dies at Age 84, Carnegie Mellon News Excerpt: Carnegie Mellon University Professor Herbert A. Simon, winner of the 1978 Nobel Prize in Economics and many prestigious international scientific awards for his work in cognitive psychology and computer science, died today (Feb. 9) at the age of 84. (...) His research ranged from computer science to psychology, administration and economics. The thread of continuity through all of his work was his interest in human decision-making and problem-solving processes and the implications of these processes for social institutions. He made extensive use of the computer as a tool for both simulating human thinking and augmenting it with artificial intelligence. Simon was widely considered to be a founder of the field of artificial intelligence. (...) This past fall, Carnegie Mellon honored Simon by naming its new computer science facility after him and the late Computer Science Professor Allen Newell. Both were recognized as founders of the fields of artificial intelligence and cognitive psychology. At a symposium in his honor, Simon commented extensively on the role of computing in the future. A full text of his remarks can be found at: <http://www.ulib.org> <<http://www.ulib.org>>

o Nobel Laureate Herbert A. Simon Dies at Age 84, <http://www.cmu.edu/home/news/herb_simon.html> Carnegie Mellon News, 01/02/09



Here we list some abstracts that have been posted to the xxx.lanl.gov site in the category of complex adaptive systems. The xxx.lanl.gov site is operated by Los Alamos National Laboratories, which operates in the vicinity of Santa Fe, New Mexico, USA. Their standard instructions to system users appears below. A daily e-mail containing newly listed abstracts is available from the site operators. We hope that these items will encourage more people from SCTPLS to visit and post to xxx.lanl.gov.

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Submissions to:
Adaptation and Self-Organizing Systems
Pattern Formation and Solitons
Exactly Solvable and Integrable Systems

Paper: [nlin.AO/0002007](http://arXiv.org/abs/nlin.AO/0002007)
From: Katsuhiko Nishinari <knishi@rins.ryukoku.ac.jp>
Date: Tue, 8 Feb 2000 05:02:30 GMT (260kb)

Title: A family of multi-value cellular automaton model for traffic flow
Authors: Katsuhiko Nishinari and Daisuke Takahashi
Comments: LaTeX 12 pages and 13 Postscript figures, submitted to Phys. Rev. E
Subj-class: Adaptation and Self-Organizing Systems
\\

A family of multi-value cellular automaton (CA) associated with traffic flow is presented in this paper. The family is obtained by extending the rule-184 CA, which is an ultradiscrete analogue to the Burgers equation. CA models in the family show both metastable states and stop-and-go waves, which are often observed in real traffic flow. Metastable states in the models exist not only on a prominent part of a free phase but also in a congested phase.

\\ (<http://arXiv.org/abs/nlin/0002007> , 260kb)

-----continued page 18 -----

THIS YEAR'S CONFERENCE THEME

Simulating and Visualizing Complex Systems

One stream of research that has been particularly active in nonlinear science recently is that of agent-based (object-oriented) simulation. In such simulations, humans (or groups) are characterized by intelligent agents. These agents have the capability to learn, plan, search, perform tasks, and communicate, but are also constrained by bounded rationality. Pertinent research issues include the modeling of human cognition, communication, symbolic manipulation (problem solving), and methodological issues such as validation and performance analysis. Related work involves cellular automata to study complex physical and social systems. In addition to using the computer to simulate complexity, researchers have also shown great interest in using the computer to visualize complexity. Relevant research issues include the visualization of fractals, using color and space to denote dynamical behavior, various pattern recognition tools such as recurrence plots, and the cognitive response of humans to such visualizations.

Following our lead from last year, the conference will also have two to three guest speakers and a brainstorming session on the current state and future of the society and nonlinear science in general. We also strongly encourage collections of individuals to propose symposia that combine individual presentations with group and roundtable discussion.

OVERVIEW OF CONFERENCE SCHEDULE

August 2 (Thursday)	Early arrival day.
August 3 (Friday)	Registration; Workshop: <i>Dynamics for Dummies</i> (Fred Abraham), and Opening Ceremonies with Guest Speaker J. Barkley Rosser
August 4 (Saturday)	Conference Day 1, Afternoon Plenary Guest Speaker Clint Sprott. Evening Banquet with Guest Speaker Stephen Guastello
August 5 (Sunday)	Conference Day 2
August 6 (Monday)	Business Meeting (morning), <i>An Introduction to Complexity Science for Organizational Researchers</i> Workshop (Kevin Dooley), <i>Nonlinear Perspectives on Rhythm, Chaos, and Control in Human Biology: A Discussion of Theories and Methods</i> (Dick Bird, Franco Orsucci, Susan Mirow, &) Bob Porter (coordinator)
August 7 (Tuesday)	Departure day

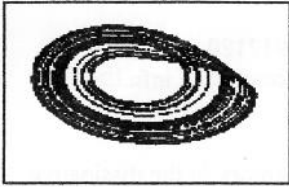
LOCATION & ACCOMMODATIONS

The 11th Annual International Conference of the Society for Chaos Theory in Psychology & Life Sciences will be held at University of Wisconsin, Madison. The Grainger Hall facilities offer comfortable meeting rooms and spacious facilities for reception and self-organized discussions. It is located at 975 University Avenue. Hotel accommodations this year have been arranged through the HOWARD JOHNSON'S PLAZA HOTEL, which is located three blocks away from Grainger Hall. The HJ PLAZA was rated as the 1998 Hotel of the Year out of 570 HJ Hotels. Hotel room rates, which start below \$89 include access to the indoor swimming pool, fitness center, and transportation to the Madison (Dane County) Airport. The Hotel also operates a shuttle service to UW buildings for those who need the assistance. Rooms with data ports are available upon request.

Registration Fees: The [early] registration fee for this conference will be US\$145 for regular members, US\$75 (special reduction from \$100) for students, and \$200 for non-members until July 8, 2001. After July 8, the door-registration rates of \$170/100/225 apply. *The Banquet dinner on Saturday August 4, as well as refreshments, is included with your registration. Special:* This year you can bring a non-member spouse to the conference at a special discount rate. To avoid confusion, the non-member spouse must register at the same time as the member.

Workshop Fees: Workshops last 4 hours. Fee is \$100 (\$65 for students). Fee includes workshop materials and refreshments. Workshops can fill quickly and early registration is recommended.

With Membership: Principal papers of this conference will be published in *Nonlinear Dynamics, Psychology & Life Sciences* conditional on arrangements with authors (see below). A subscription to NDPLS is one of the benefits of membership in SCTPLS. To become a member, use the Conference Registration Form (**next page**) or the membership form that is currently located on the **SCTPLS Web site**



Society for Chaos Theory in Psychology & Life Sciences

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To ensure proper credit, please complete the following and return with your payment. Please print clearly.

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1. MEMBERSHIP—New and Renewals

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____\$ 25 Additional after 20 July, 2001

____\$ 75 Non-member spouse (Anytime).

3. WORKSHOPS

Dynamics for Dummies (Intro to NonlinearDynamics)

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Complexity Science for Organizational Researchers

____\$100 Regular

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Rhythm, Chaos, and Control in Human Biology

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Paper (*cross-listing*): cond-mat/0002075
From: Anders Johansen <anders@moho.ess.ucla.edu>
Date: Sat, 5 Feb 2000 01:12:27 GMT (79kb)

Title: The End of the Growth Era?
Authors: Anders Johansen (UCLA) and Didier Sornette (CNRS/Univ. Nice;UCLA)
Comments: 12 pages including 5 figures
Subj-class: Condensed Matter; Adaptation and Self-Organizing Systems

\\
Both the world economy and human population have grown at a tremendous pace during the last two centuries, raising increasing worries about the sustainability of this growth as well as concerns that we humans as a result might cause severe and irreversible damage to eco-systems, global weather systems etc \cite{Cohenscience}. At the other extreme, the optimists expect that the innovative spirit of mankind will solve the problems associated with a continuing increase in the growth rate \cite{vonFoerster}. Specifically, they believe that the world economic development will continue as a successive unfolding of revolutions, e.g., the Internet, bio-technological and other yet unknown innovations, replacing the prior agricultural, industrial and information revolutions. Irrespective of interpretation, the important point is the presence of an \{it acceleration\} in the \{it rate\} of growth. Here, we show that both the acceleration in the growth of the worlds human population until the 1970's as well as in a proxy for capitalistic expansion in the United States since its creation as a nation until present are consistent with a spontaneous singularity at the \{it same\} critical time \$2058 \pm 5\$ AD and with the same characteristic self-similar geometric patterns (defined below as log-periodic oscillations). As a consequence, even the optimistic point of view has to be revised, since the acceleration of the growth rate contains endogenously its own limit in the shape of a finite-time singularity to be interpreted as an abrupt transition to a qualitatively new behavior. With a world-wide concern about the sustainability of this accelerated growth beginning to bud as well as the very recent slowing down of the population growth rate, this transition will hopefully be smoothen out \\ (<http://arXiv.org/abs/cond-mat/0002075> , 79kb)

Paper (*cross-listing*): quant-ph/9912120
From: Matteo Beccaria <matteo.beccaria@le.infn.it>
Date: Thu, 30 Dec 1999 15:37:17 GMT (8kb)

Title: Life-time and hierarchy of memory in the dissipative quantum model of brain
Authors: Eleonora Alfinito and Giuseppe Vitiello
Comments: 4pages, no figures, paper accepted for publication in the JCIS 2000
Proceedings
Subj-class: Quantum Physics; Biological Physics; Adaptation and Self-Organizing Systems

\\
Some recent developments of the dissipative quantum model of brain are reported. In particular, the time-dependent frequency case is considered with its implications on the different life-times of the collective modes.
\\ (<http://arXiv.org/abs/quant-ph/9912120> , 8kb)

NOTE NOTE NOTE LODGING for the 2001 Conference NOTE NOTE NOTE
Please note that the lodging reservations for the 2001 must be sent **directly to the hotel**, not the Society office. Room Reservation form is below. SEE THE HOTEL FORM ON SEPARATE PAGE, please provide the information requested. *Please contact the hotel directly for any reservation changes, receipts, and cancellations.*

Double and multiple occupancy rooms are available. You must make your own roommate arrangements, however. **The Society will not be arranging roommates this year.** Registration for the conference must be sent to the Society office as indicated on the Conference registration form.





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