



SOCIETY FOR CHAOSTHEORY IN PSYCHOLOGY & LIFE SCIENCES

09 FEB 2005

NEWSLETTER Vol. 11 No. 2, January 2005

Holly Arrow, Ph.D., President
Robert Porter, Ph.D., Editor; Stephen Guastello, Ph.D., Production Editor

MILE HIGH CONFERENCE IN DENVER

15th Annual International Conference

The Society for Chaos Theory in Psychology & Life Sciences
August 4-6, 2005

ALSO

Society Mourns Loss of Doug Vickers (*Memorials on page 3*)

Society president-elect Matthijs Koopmans has released the official Call for Paper for this summer's conference in Denver, Colorado. All interested scholars are encouraged to submit abstracts reporting work involving chaos theory, fractals, nonlinear dynamics, complex systems, and related topics.

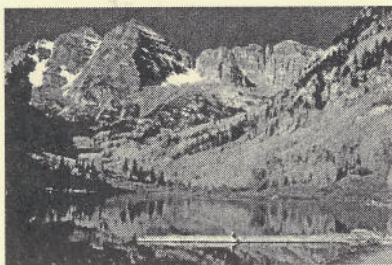
The Society's multidisciplinary membership means that topics covered include work in many areas of psychology, general biology, neuroscience, medicine, and the social sciences, as well as anthropology, art, education, literature, mathematics, philosophy and physics.

The program will include symposia, panel discussions, a poster session, and sessions of individual papers. Advances in basic or applied research, developments in theory, reports of empirical results, and methodological papers are all welcome. We continue to encourage contributors to consider alternative presentation formats, such as product demonstrations, short workshops, debates around controversial topics, and roundtable discussions. More information is available at the Society website.

DAVID PINCUS APPOINTED NEW SCTPLS SECRETARY

The SCTPLS Executive Committee and Trustees are pleased to announce that David Pincus has been appointed as the new SCTPLS Secretary. Dave will assume the post on March 1, 2005. Mary Ann Metzger, who served as SCTPLS Secretary since September, 1998 announced her retirement to the Executive Committee and to the membership in December.

David is Assistant Professor of Clinical Psychology at Chapman University in Orange, CA, and a member of SCTPLS since 1995. Members might be familiar with his dynamics research on family and group therapy situations and other topics.



THIS YEAR'S CONFERENCE THEME NONLINEAR SCIENCE IN CONTEXT

In many areas of knowledge, nonlinear science has left its marks. From the use of nonlinear techniques to analyze stock market behavior, irregular heartbeat and changing levels of carbon-dioxide emissions, all the way back to Leonardo DaVinci's dynamical analysis of water streams, nonlinear science has had its place in the world at large. Will it continue to do so? How will it help us predict, for example, the antecedents and consequences of the declining value of the dollar? Help us better understand ethnic conflict and violence? Risky behavior among today's teenagers? How pervasive is the influence of nonlinear science on policy, and how influential, conversely, are policy considerations on the nonlinear-scientific endeavor?

Clearly, science does not take place in a vacuum. To what extent do nonlinear scholars let themselves be guided by society's interests? Should they? Can we, under the cloak of 'basic science' consider ourselves as being answerable only to scientific imperatives, such as the falsifiability and internal consistency of theoretical frames? If science meets agreed

upon standards of good scholarship, is it by definition constructive? Is it helpful to be concerned with the metaphysical questions concerning the context in which scholarship is generated? Metaphysical questions such as the 'good' and the 'bad' ramifications of our scholarly activities. How should we deal with potentially adverse consequences of our scientific endeavors? Many would argue that the integrity nonlinear scholarship is based on its adherence to the values of basic science. Is there a tension between the need to do nonlinear science that is basic and the need to do nonlinear science that is useful, constructive and helpful to practitioners? How far can we go, and should we go, taking responsibility for the ramifications of our work in society at large? Or for the way practitioners and policy makers use of scientific findings? How do we facilitate the translation of nonlinear scientific insights into practice? Conversely, how do we encourage nonlinear science is responsive to the outside world? Many of these questions pervade our work everyday, but we do not always have the time or opportunity to step back and reflect on them. I'd like to encourage submissions that further contemplate this set of issues, or that frame the work being reported in light of these contextual considerations.

INSTRUCTIONS FOR ABSTRACTS

Abstracts should be between 150-250 words for posters, individual papers, or short workshops. The connection to nonlinear dynamics, chaos, complexity, fractals or related concepts should be clear to the reader.

Abstracts may be up to 500 words for symposia or panel discussion. For symposia, abstracts should reflect the content of EACH speaker's contribution. The format for a symposium is for all speakers to give presentations, followed by or interspersed with discussion. Symposium organizers are encouraged to include a discussant. For panel discussions, abstracts should provide a brief overview of the topic, and indicate the relevant background of the panelists and sample questions they will address. The format for a panel discussion is an introduction to the topic and the speakers, after which the panelists address a series of questions or issues (rather than giving a series of presentations).

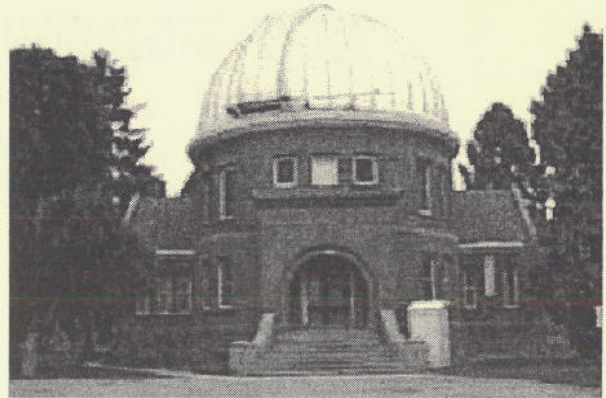
Each person submitting is limited to a maximum of two presentations as first author (okay to be a co-author on additional submissions by others).



To submit an abstract, go to
<http://www.societyforchaostheory.org/conf2005/cfp>

**The deadline for abstract submissions is
APRIL 9, 2005**

Any questions about abstracts, please contact Matthijs Koopmans (President Elect and Conference Coordinator) at mkoopmans@aol.com



Location, Accommodations, Registration

The University of Denver will host the conference, and convenient (and very affordable) lodging has been arranged on site. Early registration fees for the conference will be US \$185 for regular members, \$135 for student members, and \$260 for non-members until July 15, 2004. After July 15, the on-site registration rates of \$210/160/285 will apply. The banquet dinner on Friday August 5, 2005 and refreshments during the conference are included with your registration, as is a visit to the Chamberlain Observatory after the banquet.

Official lodging for this conference will be booked through the Society for at the University of Denver. Room rates for single occupancy are \$190 for the 3-night package August 4, 5 and 6, and \$65 for additional nights. *Lodging includes breakfast in the AM.* For double occupancy, add 25% to the foregoing amounts (for two people). See website for additional information about lodging.

PUBLICATION OPPORTUNITY

All presenting conferees are further invited to prepare their papers for review and possible publication in the Society's research journal *Nonlinear Dynamics, Psychology, and Life Sciences*. *NDPLS* is peer-reviewed and abstracted in *PsycInfo (Psychological Abstracts)*, *Medline (Index Medicus)*, and *JEL/Econlit*. *NDPLS* uses American Psychological Association (APA) style. Click JOURNAL on the SCTPLS web site to access Instructions for Authors. All SCTPLS members receive *NDPLS* and the *SCTPLS Newsletter* as a benefit of membership.

Douglas Vickers (1940-2004)



We were shocked and saddened to hear of the death of long-time member and society supporter, Douglas Vickers, in the late fall. His sudden loss is a blow to his many society friends who valued his good humor and ready wit as much as for his insightful mind. Following are obituaries by two of his countrymen. —Ed

Douglas Vickers
M.A.(Edinburgh), B.A., Ph.D.,
Sc.D. (Cambridge), FASSA;
Professor & Deputy Head,
Psychology Department, University
of Adelaide; Visiting Research
Scientist, Defence Science &
Technology Organisation; Director,
Cognition & Applied Decision
Making Research Unit, Psychology
Department, University of Adelaide

seminar as a visitor was recently at the ANU where he was looking forward to a collaborative stay as a Visiting Fellow early in 2005. He had many active valuable ideas, sadly now cut short and those will have to be carried forward by others.

Only a year before his death he was, somewhat belatedly, elected to Fellowship of the Academy of the Social Sciences in Australia, the last of many honours bestowed on him.

I knew Douglas personally for a few years, even meeting him in Europe, though he was based a long way from Canberra and only visited here more recently to stay with family, including grandchildren. In ordinary conversation he was unassuming, but when giving a seminar one had no doubt of his rigorous capacity to

analyse and disentangle psychological processes. He will be remembered particularly for the accumulator models of human memory and decision that he developed with Philip Smith, and more of his earlier work can typically be found in the long series of influential volumes on Attention and Performance that came out under various publishers' imprints.

From Prof. Robert Gregson

With the untimely death of Professor Douglas Vickers, Australia has lost one of the handful of mathematical psychologists who have made distinguished contributions to their discipline. Douglas had a polymath background, he first graduated in Philosophy at Edinburgh University, taking prizes and a medal in Logic, then to Adelaide where he took prizes in both French and in German, he returned to Britain, and then went to Cambridge on an Edinburgh scholarship where he took Natural Sciences and a Ph.D. in experimental psychology in 1967, that was funded by the U.K.'s Department of Scientific and Industrial Research..

His unusual linguistic competences resulted in a Scientific and Professional Scholarship awarded by the French Ministère des Affaires Étrangères in 1980-81. His widow Yvonne and Doug had established a second home also in France and he spent periods of leave there.

His research interests spanned Transformational approaches in perception, Decision, control and optimisation processes in perception and cognition, Mechanisms of confidence and short-term memory, Performance indices of cognitive efficiency, Neuropsychological test design and the analysis and generation of path-following tasks, Nonlinear dynamics analysis in psychology, and Data visualisation. A common quality of all this work was an emphasis on the construction of viable mathematical models. His work has appeared in the leading psychology journals in the USA and his collaboration with other researchers marks his welcome influence on the next generation of Australian scientists. The number of large grants he held is a tribute to the lasting quality of his work, and he served as an examiner for theses in Australia, Europe, the USA and Canada.. His most recent work in nonlinear dynamics was reflected by papers in our journal *Nonlinear Dynamics, Psychology and Life Sciences*, on whose editorial board he was a founding member. His last



From Prof. Phillip Smith

Douglas Vickers (1940 - 2004) held an MA in Mental Philosophy from the University of Edinburgh (1961), a BA in Natural Sciences from the University of Cambridge (1963) and a PhD in Experimental Psychology from the University of Cambridge (1967). In 1994 he was awarded the ScD in Biological Sciences from the University of Cambridge. He joined the Department of Psychology at the University of Adelaide, Australia, in 1967 and at the time of his death held the post of Full Professor.

Douglas was a French Government Scientific and Professional Scholar in 1980, the Convenor of the Editorial Committee for the XXIV International Congress of Psychology in 1988, the President of International Society for Psychophysics in 1999, and was appointed a Fellow of the Academy of the Social Sciences in Australia in 2003.

Douglas is best known for his work on sequential-sampling decision models, especially his work on accumulator models. Accumulator models, along with random walk models, have been one of the two dominant classes of models of speeded decision making in simple perceptual tasks. Douglas championed accumulator models over random walk models because he believed they provide the most natural account of the relationship between three dependent variables: response time, response accuracy, and response confidence. Confidence, in particular, he saw as a "neglected third

variable," which any satisfactory theory of decision-making needs to explain. In his "balance of evidence" theory of response confidence, he identified confidence with the difference in the evidence favoring the two response alternatives, at the time the response is made. He also believed accumulator models generalize more naturally than do random walks from two-alternative to n-alternative judgments. Much of his work on models of decision-making is summarized in his 1979 monograph, "Decision Processes in Visual Perception" (Academic Press).

Perhaps his finest achievement is a theory of perceptual self-regulation based on subjective confidence. The theory holds that decision makers adjust their decision criteria to try to make their decisions, on average, with some target level of confidence. It provides a computationally explicit model of the control processes that dynamically regulate the speed and accuracy of decisions in response to changes in the prevailing stimulus conditions. With his coworkers, he showed the theory provides a good account of many aspects of the relationship between speed, accuracy, and confidence in changing environments.

At the time of his death, Douglas and his students were working on another of his career-long interests, the problem of perceptual structure and organization. His goal was to characterize geometric invariants that allow perceptual structure to be extracted from sparse or noisy stimuli. He summarized this work in a Purdue Winer Memorial Lecture in 2003.

Douglas will be sorely missed by his wife Yvonne, his two children Marc and Anne, and his six grandchildren.

Esther Thelen, Pioneer in the Application of Nonlinear Science to Child Development, Dies



We were saddened to hear of the death of prominent psychologist, Esther Stillman Thelen, on December 29th at the age of 63. Professor Thelen was one of the first researchers in child development to recognize how development could be understood in dynamic-system terms. science, neuroscience, computer science, and robotics. Known for her work with babies, Prof.

Thelen's research and insights extended across disciplines and impacted work in cognitive sciences and neuroscience as well as computer science and robotics.

Prof. Thelen was head of the Infant Motor Development Laboratory at Indiana State University and was president of the Society for Research in Child Development. Her earliest work examined the dynamic patterns of natural, adaptive, motor behavior (her dissertation was on grooming-behavior in wasps). She is perhaps best known for her ground-breaking



work on infant locomotion in which she was able to demonstrate how crawling and walking emerged from complex self-organized systems of movement. Her work forced a revision in theories about locomotion that were based in the early work of McGraw in the late 1930s and 1940s.

An overview of Prof. Thelen's work may be found at: <http://php.indiana.edu/~gormleyf/> (PictureCredit: www.cogs.indiana.edu/people/homepages/thelen.html)

President's Letter

While "Happy New Year" hardly felt like an appropriate salutation amidst the news of catastrophe in Indonesia, Sri Lanka, Thailand, and the other affected nations, one can certainly hope that 2005 will continue to be marked by coordinated worldwide efforts to assist with recovery, rebuilding, a transition to more peaceful relations in regions troubled by civil unrest, and the belated establishment of a tsunami warning system that covers this region of the world. Our sympathy and condolences go out to all affected directly or indirectly by the disaster.

On a smaller, more personal scale, we received sad news from Australia in November 2004 of the passing of long-time member Douglas Vickers, whose obituary can be found elsewhere in this Newsletter. I hope it will inspire fellow members (as it did me) to become more familiar with Dr. Vickers' work by reading some recent publications, including those readily available in copies of NDPLS. Known for his work on mathematical models of perception, cognition, and short-term memory, Douglas served the Society as an editorial board member for our journal since its inception. He will be missed. May his ideas continue to be extended and developed by his colleagues and others yet to be influenced by his work. In December, we also bid goodbye to pioneer Esther Thelen, whose application of dynamical systems approaches to motor behavior brought nonlinear concepts into the mainstream of developmental psychology.

Looking ahead, I anticipate with pleasure the annual gathering of the Society community, which will take place in early August in Denver, Colorado. This is a new location for the conference, and we hope to draw on a new pool of colleagues in the Rocky Mountain region to join us both at the conference and our Society. Handling the registrations for this conference will be David Pincus, who will take over as Secretary of the Society from Mary Ann Metzger in March. Mary Ann has provided warm, wise, and welcoming service to all of us in the Society in this position since 1998, and we all owe her our gratitude for these many years of managing the records for membership and conference registrations, taking minutes at our annual meetings, and providing advice and guidance on both substantive and procedural matters on the Executive Committee. Mary Ann will be working with David to make the transition as smooth as possible.

For those of you who may not know David yet, he grew up living in a log cabin, discovered chaos theory in his high school physics class, and joined the Society in 1995. He received his Ph.D. in Clinical Psychology at Marquette University in Milwaukee Wisconsin, where he studied with Steve Guastello. His current research interests include family systems, small group dynamics, and the self. Dave directs the Complex Adaptive Systems in Psychological Research

(CASPR) Lab at Chapman University in Orange County, California, where he is Assistant Professor of Psychology. Look in your 2001 volume of NDPLS for a sample of his recent work.

I also want to take this opportunity to thank Fred Abraham and the Constitutional Review Committee for completing their work of reviewing our current constitution and by-laws and developing proposed amendments to our Articles of Organization. The membership will have the opportunity to vote on these amendments at our annual meeting in August.

--Holly Arrow, *President SCTPLS*

Directorship Change at the Center for Complex Systems and Brain Sciences

Prof. Larry S. Liebovitch has been appointed as the Interim Director of the Center for Complex Systems at Florida Atlantic University.

The Center was founded nearly 20 years ago by J. A. Scott Kelso, one of the earliest pioneers in applying Haken's Synergetics concepts in physics to the study of sensory perception and motor coordination. Prof. Kelso recently announced that he has stepped down from his position as Director, to concentrate on his research and writing in his continuing role as the Glenwood and Martha Creech Eminent Scholar Chair in Science. Prof. Kelso was one of the first to apply Herman Haken's concepts of complex systems in physics, to the study of sensory perception and motor coordination.

Prof. Liebovitch earned his B.S. in Physics from the City College of New York, his Ph.D. in Astronomy from Harvard University, and was on the faculty of the College of Physicians and Surgeons of Columbia University for 14 years before coming to FAU 10 years ago. His research has included studies of the kinetics of ion channel proteins in cell membranes, the dynamics of networks, the timing of heart attacks, how genes regulate other genes, and models of the spread of e-mail viruses and infectious diseases. His teaching has included courses on the mathematics and science of fractals, statistics, the psychology of the internet, and research methods in psychology.

The Center for Complex Systems and Brain Sciences at Florida Atlantic University (www.ccs.fau.edu) in Boca Raton FL studies the principles and mechanisms underlying complex behaviors at all levels from molecules to humans. This is done through research and graduate education using multi-disciplinary approaches. The Center has housed the National Institute of Mental Health's (NIMH) National Training Program in Complex Systems and Brain Sciences.

Active projects at the Center include studying sensory-motor coordination by using functional MRI brain imaging, understanding how the brain processes and stores memories by studying the anatomy and physiology of the hippocampus, studies on the dynamics of music perception and performance, the analysis of mRNA microarray data of genes that underlie heart disease, models of the geographical spread of infectious diseases, and studies of the mathematical properties of dynamical systems.

12th Annual Snowflake Conference February 25-27, 2005

Founder and coordinator, Fred Abraham recently announced that the twelfth annual meeting of the Blueberry Brain Institute's Snowflake Conference will be held at The Pueblo at the East Campus of Springfield College, Springfield, MA, from February 25 to 27th, 2005.

The Snowflake series has established a tradition of informality both in style and substance. It is open to metaphoric as well as formal explorations of systems/holistic thinking to science, society, and philosophy, not necessarily in that disorder. It is a small conference and features open discussion.

The Pueblo is a rustic, pueblo-style building in the woods by a lake in Springfield. It affords walks and has a kitchen. This is a small conference, usually about 20 people, with plenty of time for longer presentations and lots of discussion. It is very friendly and casual.

Fred reports that topics range over rather diverse subjects in philosophy, education, research, social applications, and theory. Contacted at his home, Fred said "We have been blessed by very bright and innovative participants in the past, and do not doubt the same for this one."

More information on the conference can be found at:
<http://www.blueberry-brain.org>

Nonlinear Dynamics in Psychology and Life Sciences Added to Prestigious Database

Society journal editor, Steve Guastello, reports that NDPLS will be included in a variety of abstract databases that are produced by Elsevier, that largest scientific publisher in the world. The most notable are ScienceDirect and Scopus. Elsevier claims that Scopus is the largest single database in the world.

The material should start to appear in January, 2005, plus or minus whatever work time is involved. Elsevier databases are available through subscription. Please check your university libraries to see if you have access already. Society members receive NDPLS as a benefit of membership, of course.

Keynote Speakers for Denver Meeting Announced Prof. Marc Lewis and L. Douglas Kiel to Speak

Society President-Elect, Matthijs Koopmans is happy to announce that **Professor Marc D. Lewis** has agreed to be one of two keynote speakers at the Society meeting this summer in Denver. Prof. Lewis is at the Department of Human Development and Applied Psychology at the Ontario Institute of Studies in Education, University of Toronto. He specializes in the study of personality development as it relates to cognition and emotion. His work is informed by developmental psychology and a dynamical systems perspective. He has done empirical work in the area of stage shifts in cognitive development and he has developed a state

space grid to facilitate the analysis of socio-emotional behavior over time. His research outlining the contribution of nonlinear dynamics to our understanding of child and adolescent development has appeared in several highly regarded peer reviewed outlets, including *Child Development*, *Journal of Abnormal Child Psychology and Developmental Science*.

The second keynote will be provided by **L. Douglas Kiel**, professor of management in the Social Sciences Department at University of Texas, Dallas. He is well known for his books, *Managing Chaos and Complexity in Government* (1994, Josey-Bass) and *Nonlinear Dynamics, Complexity and Public Policy* (co-edited, 1999, Nova Science) and related contributions to organizational theory and practice. He was also the guest co-editor of the NDPLS special issue on Agent-Based Modeling (April, 2004).

NEWS



Aleksander Jakimowicz writes that he is near completion of his new book entitled "Deterministic Chaos in Economics". (Alexksander's earlier book, "From Keyenes to Chaos Theory. Evolution of Business Cycle Theory" has been awarded a prestigious prize from the Bank Handlowy in Warsaw for theoretical research in the field of economics and finances. This prize is considered to be the Polish Nobel Prize for Economics. -Ed.)

Jerry Chandler wants us to know about the first call for papers for an international symposium (Foundation for Informational Sciences) to be held in Paris during July 4 to 7, 2005. The conference provides a wide look at the nature and use of the informational sciences from several disciplinary perspectives. See: www.mdpi.org/fis2005/main.html for a preliminary plan and list of speakers and related travel information.

Chris Hudson (cghudson@comcast.net) is pleased to announce an article accepted for publication and coming out shortly: Hudson, C.G. (In press, Fall 2004). The dynamics of self-organization: Neglected dimensions. *Journal of Human Behavior in the Social Environment*, 10 (3).

We have heard that **Ralph Abraham** has begun a new project working with **Dan Friedman** (Prof. of Economics at UCSC). They have received an NSF grant for 3 years beginning Jan 1, 2005. They are building models of financial markets with NetLogo and plan experiments combining human and bot subjects. The modeling strategy is based on "Landscape Dynamics" meaning evolutionary game models with continuous strategy spaces. The web home for the project is: www.vismath.org/research/landscapedyn

Stanley Krippner, professor of psychology at Saybrook Graduate School in San Francisco, received the Ashley Montagu Peace Award from the Common Bond (U.S.) and Harmony (Russia) Institutes at a conflict resolution conference in St. Petersburg in 2003. His co-edited book, *The*

Psychological Impact of War Trauma on Civilians, was featured at the UNESCO Conference on Unity and Diversity in Seattle in 2005 where he spoke on the link between armed conflict and the spread of AIDS.

Member **Michael Radin** (marsma@rit.edu) writes to report that he organized a Session on Dynamical Systems at the CMS (Canadian Mathematical Society) at the Summer 2004 Meeting in Halifax; June 14-16, 2004, and a Session on Dynamical Systems and Applications, at the CMS (Canadian Mathematical Society) Winter 2004 Meeting in Montreal; December 11-13, 2004. Michael is also serving on the Faculty Learning Community this 2004-05 Academic Year at RIT and has refereed a book *Arts and Metacreation* with Stephen Guastello written by Mitchell Whiteslaw.

Maurice Yolles, Liverpool Business School, writes to remind members of the Interantional Journal of Organizational Transfromation and Social Change (see link, below) Maurice also notes that he will running a stream at a Fall conference on systems and cybernetics in which SCTPLS members might be interested in participating. More information can be found on: www.liv.ac.uk/ccr. Professor Maurice Yolles, Liverpool Business School, UK, m.yolles@livjm.ac.uk, Centre for Creating Coherent Change and Knowledge, <http://cwis.livjm.ac.uk/c4k> International Journal of Organisational Transformation and Social Change, <http://www.intellectbooks.com/journals/otsc.htm>

WORKSHOPS for the 15th Annual International Conference

The following workshops will be featured at the Society conference in Denver this summer. For more information, visit the society web site.

Power Laws at Edge of Chaos in Organizations Facilitator: Bill McKelvey, Ph.D. Introductory Level. 8:30 AM – 12:30 PM.

Virtually all quantitative organizational and social science researchers presume Gaussian (normal) distributions, with stable means and finite variances, with appropriate statistics to match—for evidence, study any random sample of current research papers of your choosing. Suppose this premise is mostly wrong. What then?

Consider the coast of England. It appears jagged no matter what kind of measure is used: miles, kilometers, meters, feet, inches, centimeters, millimeters, or microns. This is called "scalability"—no matter what the scale of measurement, the phenomenon appears the same. Scalability results from what Benoit Mandelbrot called "fractal geometry." A cauliflower is an obvious example. Cut a "branch" off the cauliflower; cut a smaller branch from the first branch; then an even smaller one; and then another, etc. Now set them all on a table, in line. Each fractal subcomponent is smaller than the former; each has the same shape and structure. They exhibit a "power law effect" because they shrink by a fixed ratio. Power laws call for "scale-free theories" because the same theory applies to each of the different levels—that is, fractals.



Power laws appear ubiquitously in Nature—city size and population, the structure of the Internet, genetic circuitry, tumor growth, sexual conquests, citation rates, wealth, job vacancies, financial markets, firm size, etc. Power law effects are Pareto distributed—they have unstable means

and infinite variance and what are called “fat tails.” Gaussian distributions have vanishing tails, with the result that focus dwells solely on means and limited variance.

There are at least five reasons why organizational researchers and social scientists should worry about fat tails:

- Power laws more and more appear ubiquitous in Nature. Power laws are tell-tales of inter-influencing rather than independent agents. Since organizations are composed of frequently interacting and coevolving agents, it seems highly probable that power law effects characterize organizations. Is there evidence they appear in organizations? What are the implications for researchers?
- If power laws are ubiquitous, then so are scale-free theories—i.e., the same theory applies at multiple organizational levels. Organization theories, in contrast, are often level specific. Worse, they are often discipline specific. Given power law phenomena, researchers, in part, need to shift from their fractionated, multidiscipline explanations of organizational behavior to scale-free theories.
- What epistemological rules of “justification logic” need to change if important phenomena in organizations are Paretian rather than Gaussian distributed? What should scientists do differently? Why complexity and earthquake sciences become fundamental.
- How much textbook information for MBAs and other students is misconstrued in a fat-tail world? How can a fat-tail world be managed? What should managers and leaders do differently?
- Should chaos theorists pay more attention to power laws and scale-free theory?

Workshop Design

1st Hour: Presentation on the presence of power law phenomena in physical and biological phenomena; why these phenomena occur in social settings and must be taken seriously by social and organizational researchers.

2nd Hour: Small group discussion of pros and cons; identification of key questions; Q&A and broader discussion.

3rd Hour: Presentation on scale-free theory; why it occurs; extensions from biology to social and organizational phenomena; an organizational scale-free theory; illustration from the formation of coral reefs to industrial clusters.

4th Hour: Small group discussion of the kinds of scale-free theories, process of applying them to organizations; consideration of other possible scale-free theories in life, psychological, social, and organizational settings.

Options: Depending on group interest, added presentation notes on epistemological issues, use of agent-based computational models, organizational learning, and Kauffman’s *NK* model of the origins of order, etc.

Bill McKelvey is a Professor of Strategic Organizing & Complexity Science at the UCLA Anderson School of Management, Los Angeles, CA. His works on nonlinear dynamics in organizational behavior have appeared in

Organization Science, Nonlinear Dynamics, Psychology, and Life Sciences, and numerous other venues.

Testing Hypotheses for Nonlinear Dynamics with Popular Statistical Software Stephen J. Guastello, Ph.D. Intermediate Level. 1:30 – 5:30 PM.

This workshop explains how hypotheses concerning catastrophe models, chaos, and related attractor dynamics can be tested statistically using SPSS or similar statistical software. The analytic techniques involve the polynomial extensions of the general linear model and nonlinear regression. Examples from published works on topics such as mental fatigue, leadership, population growth, personnel selection and performance, and economic inflation will be considered among other topics. This workshop is intended for participants who are familiar with the general linear statistical model and who are now ready to move forward.

The workshop is organized into six different themes: (1) The statistical properties of measurements in a nonlinear process. (2) The properties of exponential distributions, power law distributions, and the interpretation thereof. (3) Catastrophe models for discontinuous change processes, which are extensions of the general linear model. (4) The properties of nonlinear regression and how it can be used to specify and test *any* nonlinear hypothesis, including how to find a Lyapunov exponent and a fractal dimension. (5) The exponential series for continuous change processes, such as attractor dynamics, oscillations, and the presence of chaos. (6) As time permits, the foregoing principles will be extended to cover static representations of dynamical processes or linkage (or slaving effects) in self-organizing systems. The goal in each stage is to provide participants with a step by step procedure for getting their analytic work accomplished. Participants will receive a collection of notes, handouts, and data to assist with their research efforts after the workshop.

Stephen J. Guastello is an Associate Professor of Psychology at Marquette University, Milwaukee, WI, where he specializes in industrial-organizational psychology and human factors engineering. He received his degrees in Psychology from The Johns Hopkins University, Washington University (St. Louis), and the Illinois Institute of Technology. He has written two books and over 90 journal articles and book chapters on various topics in psychology, most of which involve nonlinear dynamics. He is a past president of the Society for Chaos Theory in Psychology & Life Sciences, and currently editor in chief of its research journal, *Nonlinear Dynamics, Psychology, and Life Sciences*.

Combinatorial Dynamics for the Social Sciences: Networks, Games and Strategies William Sulis, M.D., Ph.D.

This is a two part workshop designed to provide the participant with a background knowledge of the basic structures used in combinatorial dynamics, together with examples of their application to problems in the social sciences. Combinatorial dynamics serves as an alternative approach to traditional continuous or discrete, deterministic or stochastic dynamical systems models. It is particularly useful

in situations in which choice plays a central role, and where the main object of study is the dynamics of relationships between entities, as opposed to changes of state within an entity. The emphasis is upon concepts, definitions, results, and examples. The participant will gain a working knowledge sufficient to apply to related problems. This workshop is in two parts, which may be taken together or separately.

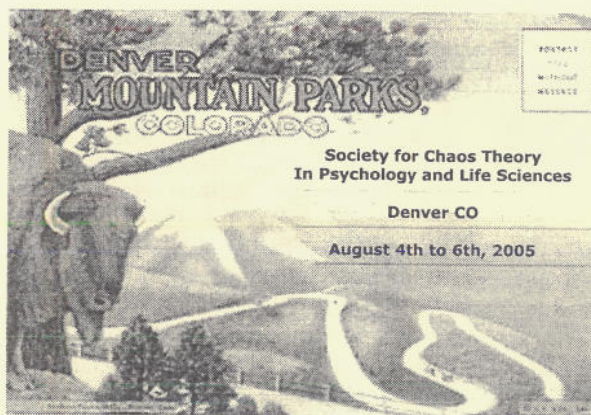
***Combinatorial Dynamics 1: Basic Structures
Intermediate Level. 8:30 AM – 12:30 PM.***

This workshop begins with an introduction to the basic definitions of graph theory including connectivity, colorings, Ramsey theory, graph invariants and polynomials. These ideas will be applied to the example of small world networks. Next, the evolution of such networks will be explored through an introduction to the basic model of random graph theory with particular emphasis on the evolution of random graphs and transition functions. The ideas will be applied to examples of random graphical dynamical systems, such as ensembles with variable structures and the Internet. Next, the basic definitions of ordered set theory and order invariants will be introduced together with characterizations of ordered sets. These ideas will be applied to context analysis with examples drawn from physics and psychology. Finally an introduction will be given to linearly ordered sets, in particular the ordinal and cardinal number systems.

***Combinatorial Dynamics 2: Games and
Strategies
Advanced Level. 1:30 – 5:30 PM.***

This workshop introduces the concepts of combinatorial game theory, which describes games involving choice but not chance. Familiar examples include games such as checkers, chess, Nim, Go. Ehrenfeucht-Frassé games will be described and applied to problems in graph theory, random graph theory, and ordered set theory. Next, the basic concepts and definitions of combinatorial game theory including the surreal number system, games as numbers, and cooling will be introduced. These ideas are applied to real games such as Nim, Dots and Boxes, and Go. Finally, a new class of dynamical systems models, Archetypal Dynamics will be described. Archetypal dynamics derives its inspiration from Jung's notion of the archetype, and is applied to the understanding of the phenomenon of emergence. Archetypal dynamics draws upon the material presented in the workshop and provides an integrative example.

Dr. William Sulis is Associate Clinical Professor, Psychiatry, and Associate Member, Psychology, at McMaster University. He is Director of the Collective Intelligence Laboratory. He has a private practice in Geriatric Psychiatry and holds a Ph.D. in Mathematics. He is an alumnus of the Santa Fe Institute Complex Systems Summer School. He has co-authored 3 books, published 30 papers in Complex Systems Theory, co-directed a NATO Advanced Study Institute and was on the organizing committee of a NATO Advanced Research Workshop. He is a past president of The Society for Chaos Theory in Psychology and the Life Sciences, and is on the editorial board of Nonlinear Dynamics, Psychology, and Life Science.



**SPECIAL ANNOUNCEMENT:
GET LINKED!**

Dear SCTPLS Members,

The various committees of SCTPLS are in the middle of a program to raise the awareness of SCTPLS, the works of its members, and its academic-scientific contributions. Today's frontier is The Web. I am writing to request your assistance in two matters which I hope will be small but important requests.

1. If you have a personal, business, or university web site, please link SCTPLS to one of your pages. I've noticed that many of you do mention SCTPLS in one context or another, but a live link helps the project. The SCTPLS home page is, once again, www.societyforchaostheory.org. Also, if you can find a reason to link your site to our journal NDPLS, please add that one as well: www.societyforchaostheory.org/ndpls/.

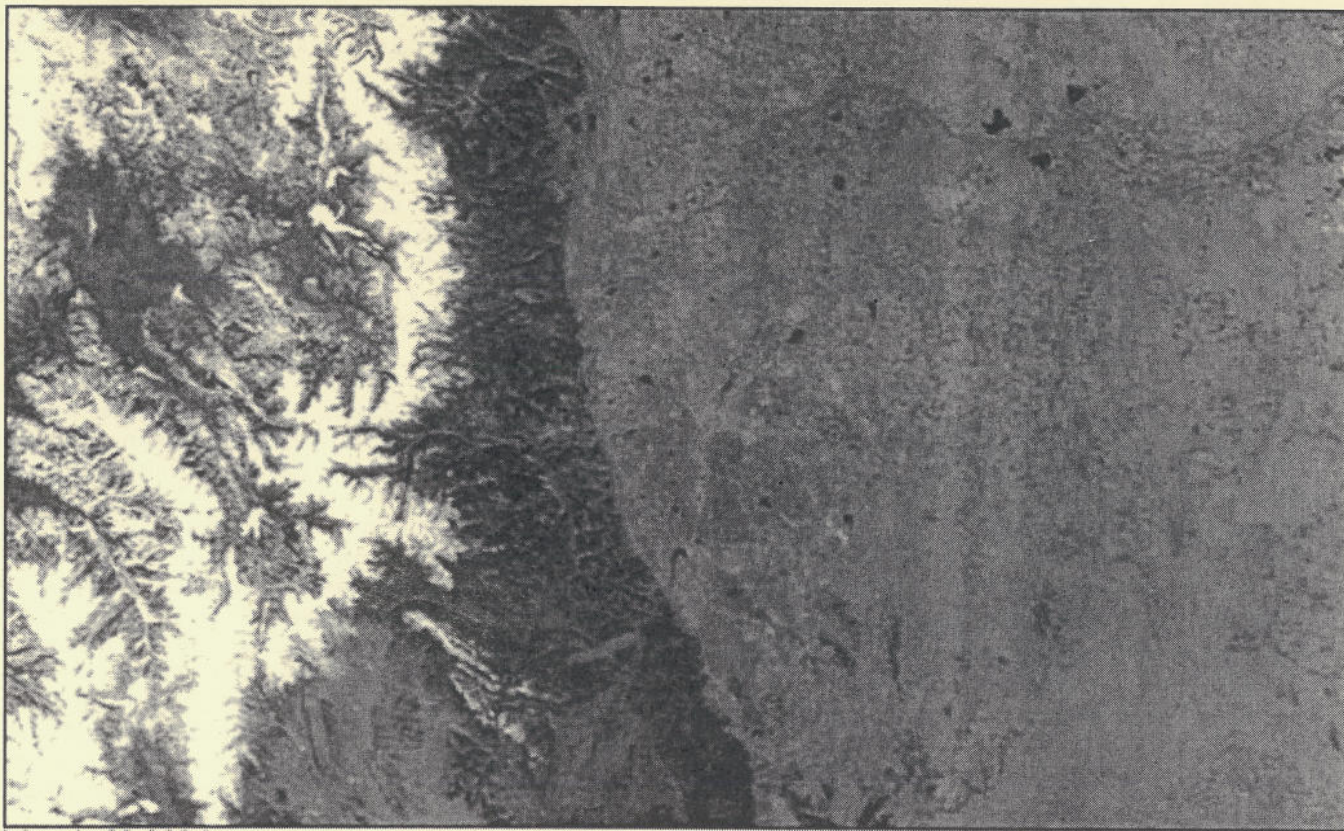
2. Terrill Frantz, our Web Manager, has put together an automated method for linking YOUR site to SCTPLS. If you go to www.societyforchaostheory.org/membership you can just insert your URL where indicated, and the connection will appear on "links to some members' sites." We'd like to increase the representation of our current members there.

All of these links will boost SCTPLS' position in web searches that someone might do on chaos, chaos theory, nonlinear dynamics, complexity, and related key words. Every link helps. Thank you in advance!

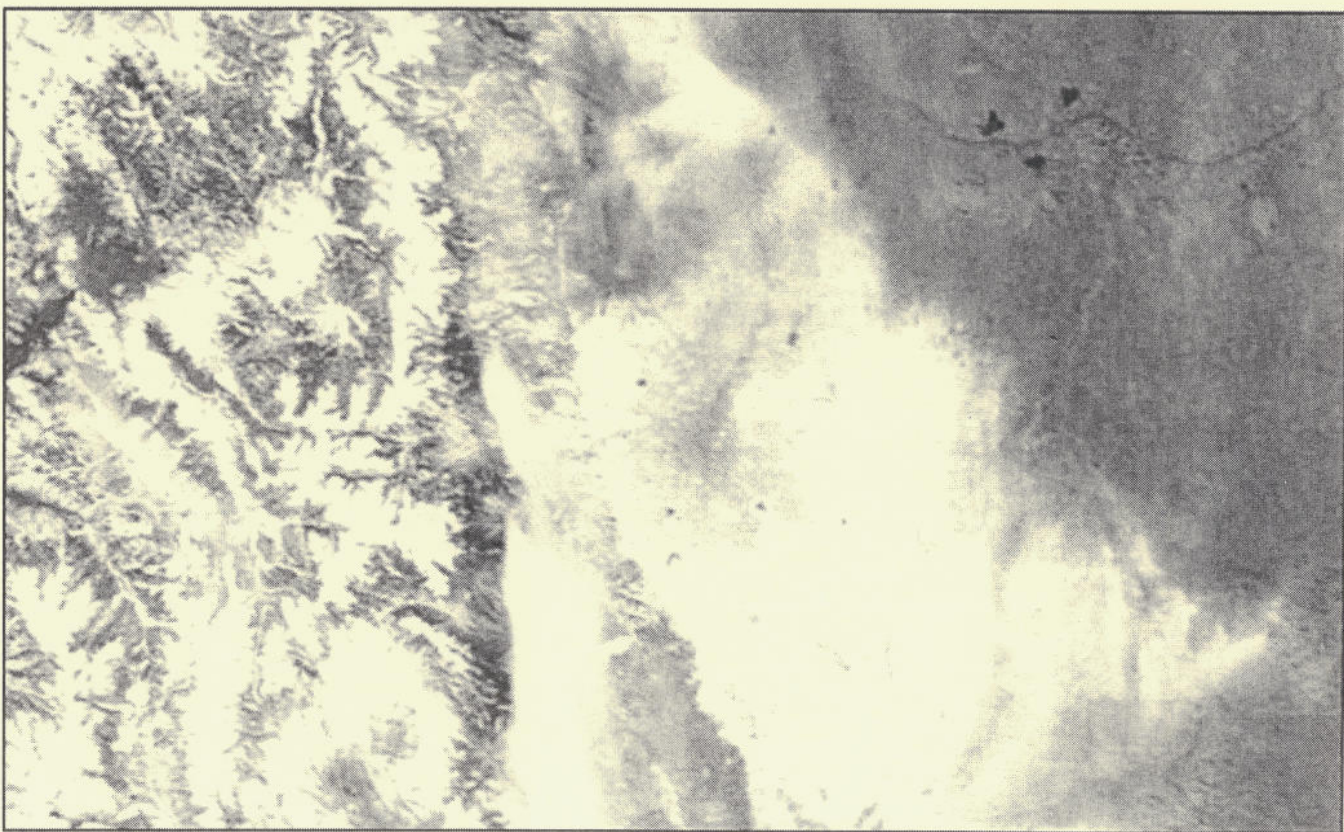
Sincerely,

Stephen J. Guastello, Ph.D.
Editor, NDPLS
Chair, SCTPLS Publications Committee

DENVER SEEN FROM OUTER SPACE (NASA Photo)



March 29, 2004



March 25, 2003

BOOK ANNOUNCEMENTS

Nonlinear Dynamical Bookshelf

The Bookshelf is composed of items that people remember to send to us. Sometimes we find them ourselves. Have you written a new book on a dynamics topic? Read one lately? You know what to do....

This edition of the bookshelf is an upward compilation of all the books we have listed starting April, 2000, one issue after our previous upward compilation was published. It's been a long time...

- 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.
- Antonescu, A., & Moraru, I. (2002). Homo Agresivus. Bucharest: Matrix Rom. [In Romanian]
- Arbib, Erdi, & Szentagothai (1997). Neural organization: Structure, function and dynamics. Cambridge, MA: MIT Press.
- Anishchenko, V. S. et al. (2002). Nonlinear dynamics of chaotic and stochastic systems: Tutorial and modern developments. NY: Springer-Verlag.
- Arnol'd, V. I. (1999). Bifurcation theory and catastrophe theory. New York: Springer-Verlag.
- Arrow, H., McGrath, J. E., Berdahl, J. L. (2001). Small groups as complex systems. Thousand Oaks, CA: Sage.
- Aruka, Y., & Matsumoto, A. (Eds.). (2000). Evolutionary economics in Tokyo: Proceedings of the fourth annual conference of the Japan Association for Evolutionary Economics. Tokyo: JAFEE/Chuo University.
- Alt, W., & Deutsch, A. (Eds.). (2001). Mathematics and biosciences in interaction. Basel, Switzerland: Birkhauser.
- Alt, W., Deutsch, A., & Dunn, G. (Eds.). (1997). Dynamics of cell and tissue motion. Basel, Switzerland: Birkhauser.
- American Institute of Physics. (2004). The proceedings of the 7th Experimental Chaos Conference (2003). Proceedings vol. 676.
- Austin, J. H. (2003). Chase, chance and creativity: The lucky art of novelty. Cambridge, MA: MIT Press.
- Bird, R. J., (2003). Chaos and Life Complexity and Order in Evolution and Thought. New York: Cambridge University Press.
- Baldi, P. (2001). The shattered self: The end of natural evolution. Cambridge, MA: MIT Press.
- Banerjee, S. & Verghese, G. C. (Eds.) (2001). Nonlinear phenomena in power electronics: Bifurcations, chaos, control, and applications. New York: Wiley.
- Bar-Yam, Y. (Ed.). (2000). Unifying themes in complex systems: Proceedings of the first international conference on complex systems. Perseus Press.
- Basar, E. (2000). Brain functions and oscillations II: Integrative brain functions, neurophysiology and cognitive processes. New York: Springer-Verlag.
- Basin, M. A. (Ed.). (1998) [Syngetics]. Moscow. (In Russian).
- Basin, M. A. (2000). Волы Кванты События. Moscow. (In Russian).
- Basin, M. A., & Шилович, И. И. (1999). [Synergetics on the Internet]. Moscow. (In Russian).
- Bausch, K. (2000). The emerging consensus in social systems theory. Boston: Kluwer.
- Ben-Avraham, D., & Havlin, S. (2000). Diffusion and reactions in fractals and disordered systems. Cambridge, MA: Cambridge University Press.
- Boccaletti, Gluckman, Kurths, Pecora & Spano (Eds.). (2002). Experimental Chaos. Sixth Experimental Chaos Conference. AIP conference proceedings vol. 622. NY: American Institute of Physics.
- Bohner, M., & Peterson, A. (2001). Dynamics equations on time scales. Boston: Birkhaeuser.
- Bonabeau, E., Dorigo, M., & Theraulaz, G. (1999). Swarm intelligence: From natural to artificial systems. Santa Fe: Santa Fe Institute.
- Boyarsky, A., & Gora, P. (1997). Laws of Chaos: Invariant Measures and Dynamical Systems in One Dimension. Basel, Switzerland: Birkhauser.
- Brockwell, P. J., & Davis, R. A. (2002). Introduction to time series and forecasting. (2nd Ed.). NY: Springer-Verlag.
- Brown, S. L. & Eisenhardt, K. M. (1998). Competing on the Edge: Strategy as Structured Chaos. Boston, MA: Harvard Business School Press.
- Buchanan, M. (2001). Ubiquity: The Science of History, or Why the World Is Simpler Than We Think. New York: Crown Publishers.
- Bunde, A., Kropp, T., Joachim, H., & Schellnhuber, H. J. (2002). Theories of disaster. NY: Springer-Verlag.
- Camazine, Scot, et al (2001). Self-Organization in Biological Systems. Princeton, NJ and Oxford, UK: Princeton University Press.
- Casti, J. L. (2001). Five more golden rules: Knots, codes, chaos, and other great theories of 20th-century mathematics. New York: Wiley.
- Chatfield, C. (2002). Analysis of time series (6th edition). Boca Raton, FL: Chapman & Hall/CRC.
- Chen. (1999). Controlling chaos and bifurcations in engineering systems. Boca Raton, FL: CRC Press.
- Ciampi, L. (1999). Die emotionalen Grundlagen des Denkens. [The emotional basis of thinking]. Gottingen:

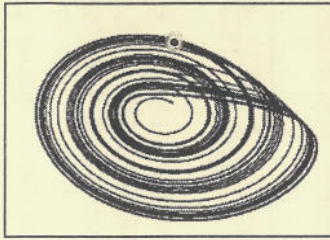
- Vanderhoeck & Ruprecht. . In German.
- Combs, A. (2004). *Radiance of being: Complexity, Chaos, and the Evolution of Consciousness*. (2nd Ed.). St. Paul, MN: Paragon House.
- Combs, A., Germaine, M., & Goertzel, B. (Eds.). (2004). *Mind in Time: The Dynamics of Thought, Reality, and Consciousness*. Cresskill, NJ: Hampton Press.
- Comfort, L. K. (2000). *Shared risk: Complex systems in seismic response*. New York & Amsterdam: Pergamon div. Elsevier.
- Crutchfield, J. P., & Schuster, P. (2002). *Evolutionary Dynamics: Exploring the interplay of selection, accident, neutrality, and function*. NY: Oxford University Press.
- Day, G. S., & Schoemaker, P. J. H. (Eds.) (2000). *Wharton on managing emerging technologies*. New York: Wiley.
- Dean, A. (2000). *Complex Life: Nonmodernity and the Emergence of Cognition and Culture*. Oxon, UK: Abingdon.
- Deering, A., Russell, J., Diults, R. (2002). *Alpha leadership: Tools for business leaders who want more from life*. John Wiley & Sons.
- DeJong, K. (2001). *Evolutionary computation: Unified approach*. Cambridge, MA: MIT Press.
- De Landa, M. (2000). *A thousand years of nonlinear history*. Cambridge, MA: MIT Press.
- DeRisio, S., & Orsucci, F. F. (Eds. 2004). *Bioethics in complexity: Foundations and evolutions*. Singapore: Imperial College Press/World Scientific.
- Diekmann, Law, & Metz (Eds.) (2001). *The geometry of ecological interactions: Simplifying spatial complexity*. Cambridge, UK: Cambridge University Press.
- Dietrich, E., & Markman, A. B. (Eds.). *Cognitive dynamics: Conceptual and representational change in humans and machines*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ding, M. et al, (Eds.). (2001). *The proceedings of The 5th Experimental Chaos Conference*. Singapore: World Scientific.
- Dogaru, R. (2002). *Universality and emergent computation in cellular neural networks*. Singapore: World Scientific.
- Dolev, S. (2000). *Self-stabilization*. Cambridge, MA: MIT Press.
- Durlauf, S. N., & Young, H. P. (Eds.). (2001). *Social dynamics*. Cambridge, MA: MIT Press.
- Edgar, G. A. (1998). *Integral probability and fractal measures*. NY: Springer.
- Elayadi, S. N. (2000). *Discrete Chaos*. Chapman and Hall.
- Ellis, R. D., & Newton, N. (Eds.). (2000). *The caldron of consciousness: Motivation, affect and self-organization - An anthology*. Philadelphia: John Benjamins.
- Eoyang, G. (Ed.). (2003). *Voices from the Field: An Introduction to Human Systems Dynamics*. Circle Pine, MN: Human Systems Dynamics Institute.
- Family, F., Daoud, Hermann, H. J. & Stanley, H. E. (2002). *Scaling and disordered systems*. Singapore: World Scientific.
- Faugeras, O., & Luong, O-T. (2004). *The geometry of multiple images: The laws that govern the formation of multiple images of a scene and some of their applications*. Cambridge, MA: MIT Press.
- Fonseca, J. (2001). *Complexity and innovation in organizations*. Routledge.
- Forbes, N. (2004). *Imitation of Life: New Biology is Inspiring Computing*. Cambridge, MA: MIT Press.
- Fradkov, A. L., Miroshnik, I. V., Nikiforov, V. O. (1999). *Nonlinear and adaptive control of complex systems*. Boston & Dordrecht: Kluwer.
- Freeman, W. J. (2000). *Neurodynamics an exploration in mesoscopic brain dynamics*. London: Springer-Verlag.
- Gilmore, R., & Lefranc, M. (2002). *The topology of chaos: Alice in stretch and squeeze land*. New York: Wiley.
- Goerner, S. (2001). *After the clockwork universe: The emerging science and culture of integral society*. Floris Books.
- Goldberg, K. (Ed.). (2000). *The robot in the garden: Telerobotics and Telepistemology in the Age of the Internet*. Cambridge, MA: MIT Press.
- Goriely, A. (2001). *Integrability and nonintegrability of dynamical systems*. Singapore: World Scientific.
- Gottman, J. M., Murray, J. D., Swanson, C. C., Tyson, R., & Swanson, K. R. (2002). *The mathematics of marriage: Dynamic nonlinear models*. Cambridge, MA: MIT Press.
- Gouesbet, G., Meunier, Guttin, Cluzel, & Menard (2003). *Chaos and its Reconstruction*. Commack, NY: Nova Science.
- Griffeath, D., & Moore, C. (Eds.). (2002). *New Constructions in Cellular Automata*. NY: Oxford University Press.
- Griffin, D. (2001). *The emergence of leadership: Linking self-organization and ethics*. Routledge.
- Grigsby, J. & Stevens, D. (2000). *Neurodynamics of personality*. New York: Guilford Press.
- Gregerson, N. H. (2002). (Eds.). *From Complexity to Life: Explaining the Emergence of Life and Meaning*. NY: Oxford University Press.
- Guastello, S. J. (2002). *Managing emergent phenomena: Nonlinear dynamics in work organizations*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Haber, R., & Keviczky, L. (1999a). *Nonlinear system identification. vol 1: Nonlinear system parameter identification*. Boston: Kluwer Academic Publishers.
- Haber, R., & Keviczky, L. (1999b). *Nonlinear system identification. vol 2: Nonlinear system structure identification*. Boston: Kluwer Academic Publishers.
- Haken, H. (2002). *Brain dynamics: Synchronization and activity patterns in pulse-coupled neural nets with delays and noise*. NY: Springer-Verlag.
- Haken H. (2002). *Information and self-organization: A macroscopic approach to complex systems*. (2nd Edition). NY: Springer-Verlag.
- Harari, R. (2000). *¿Qué sucede en el acto analítico? La experiencia del psicoanálisis*. Buenos Aries: Lugar Editorial. (In Spanish). 304 p.
- Harari, R. (2001). *La pulsion es turbulenta como el lenguaje: Ensayos de psicoanálisis caotico*. Barcelona: Ediciones del Serbal. [In Spanish].
- Harari, R. (2001). *Lacan's seminar on "anxiety": An introduction*. New York: Other Press. [In English].
- Harari, R. (2003). *El fetichismo de la torpeza: y otros ensayos psicoanaliticos*. Rosario, Santa Fe: Argentina: Homo Sapiens Ediciones.
- Harel, D., Kozen, D., & Thurny, J. (2000). *Dynamic logic*. Cambridge, MA: MIT Press.
- Haritonov, S. V. (2000). *Display of universal law in the human*

- psyche: The synergetic approach to the classification of psychic needs. St Petersburg: Petersburg - 21st century (In Russian.)
- Harte, D. (2000). *Multifractals: theory and applications*. Boca Raton, FL: CRC Press. ISBN 1-5848-8154-2.
- Haykin, S. et al. (2001). *Nonlinear dynamical systems*. New York: Wiley.
- Heath, R. A. (2000). *Nonlinear dynamics: Techniques and applications in psychology*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Henry, J. (2002). *Creativity and perception in management*. Thousand Oaks, CA: Sage Publications.
- Heylighen, Bollen, & Riegler (Eds.) (1999). *The Evolution of Complexity*. Boston: Kluwer Academic.
- Hogan, J., Champneys, A. Krauskopf, B., di Bernardo, M., Wilson, R. E., Osinga, H. M., & Homer, M. E. (2002). *Nonlinear dynamics and chaos: Where to do we go from here?* Bristol, UK: Institute of Physics Publishing.
- Hoover, W. (1999). *Time reversibility, computer simulation and chaos*. Singapore: World Scientific.
- Hsiao, C, Kimio, M., & Powell, J. L. (2001). *Nonlinear statistical modeling: Proceedings of the Thirteenth International Symposium on Economic Theory and Econometrics: Essays in Honor of Tekeshi Amemiya*. NY: Cambridge University Press.
- Jackendoff, R. (2002). *Foundations of language: Brain, meaning grammar, evolution*. NY: Oxford University Press.
- Jakimowicz, A. (2003). *Od Keynesa do teorii chaosu. Ewolucja teorii wahań koniunkturalnych*. [From Keynes to chaos theory. Evolution of business cycle theory, in Polish]. Warsaw: Wydawnictwo Naukowe PWN.
- Jaques, E. (2002). *Social power and the CEO: Leadership and trust in a sustainable free enterprise system*. Westport, CT: Quorum Books.
- Jirsa, V. K., & Kelso, J. A. S. (2004). (Eds.). *Coordination dynamics: Issues and Trends*. NY: Springer-Verlag.
- Johnson, S. (2001). *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*. New York, NY: Scribner.
- Juarrero, A. (1999). *Dynamics in action: Intentional behavior in a complex system*. Cambridge: MIT Press.
- Judd, K., Mees, A., Ku, T., & Vincent, T. (Eds.). (1997). *Control & Chaos*. Basel, Switzerland: Birkhauser.
- Kaiser, R., & Montaldi, J. (Eds.). (2000). *Peyresq lectures on nonlinear phenomena*. Singapore: World Scientific.
- Kanenko, K., & Ichiro, T. (2000). *Chaotic scenario of complex systems*. New York: Springer-Verlag.
- Kantz, H., & Schreiber, T. (1999). *Nonlinear time series analysis*. Cambridge, UK: Cambridge University Press. *Now in paperback!*
- Kantz, A. & Schreiber, T. (2004). *Nonlinear Time Series Analysis (2nd ed.)*. New York: Cambridge Univ. Press.
- Keller, E. F. (2002). *Making sense of life*. Cambridge MA: Harvard Univ. Press.
- Kennedy, J., Eberhart, R. C., & Shi, Y. (2001). *Swarm Intelligence*. Orlando FL: Academic Press/Harcourt Science and Technology.
- Kirilyuk, A. P. (1997). *Universal concept of complexity by the dynamic redundance paradigm: Causal randomness, complete wave mechanics, and the ultimate unification of knowledge*. (Publisher info lost, sorry).
- Kohler, T. A., & Gumerman, G. J. (2000). *Dynamics of human and primate societies*. NY: Oxford University Press.
- Korsch, H-J. & Jodl, H-J. (1999). *Chaos: A program collection for the PC*. New York: Springer-Verlag.
- Kowalik, Z., J. (2002). *Biomedizinische Zeitreihen und Nichtlineare Dynamik (Biomedical Time Series and Nonlinear Dynamics)*, Mnster-Hamburg-London: LiT-Verlag.
- Kriz, J. (1998). *Chaos, angst, und ordnung. [Chaos, anxiety, and order]*. Gottingen: Vanderhoeck & Ruprecht. In German.
- Lehnert, K., Elger, C. E., Arnhold, J., & Grassberger, P. (2000). *Chaos in the brain?* Singapore: World Scientific.
- Lefton, R.E., Buzotta, V., Lefton, R. (2003). *Leadership through people skills*. McGraw-Hill Trade.
- Lek, S., & Guegan, J-F. (2000). *Artificial Neural Networks*. NY: Springer-Verlag.
- Levine, D. S., & Brown, V. R. (Ed.). (2000). *Oscillations in neural systems. The international neural network society series*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Lewin, R. (2000). *Complexity: Life at the Edge of Chaos*. 2nd edition, Chicago, IL: University of Chicago Press.
- Lindsey, J. K. (2001). *Nonlinear models in medicine*. New York: Oxford.
- Lin, Z., & Carley, K. M. (2003). *Designing stress resistant organizations*. Boston: Kluwer.
- Lissack, M. (2002). *The interaction of complexity and management*. Quorum Books.
- Locker, M. (2001). *Noise-sustained patterns: Fluctuations and nonlinearities*. Singapore: World Scientific.
- Lomi, A., & Larsen, E. R. (Eds.). (2001). *Dynamics of organizations: Computational modeling and organizational theories*. Cambridge, MA: MIT Press.
- Losa, G.A. Nonnenmacher, T. F., Merlini, D., & Weibel, E.R. (Eds.). (1998). *Fractals in biology and medicine, Vol. II*. Basel, Switzerland: Birkhauser.
- Losa, G.A. Nonnenmacher, T. F., Merlini, D., & Weibel, E.R. (Eds.). (2001). *Fractals in biology and medicine, Vol. III*. Basel, Switzerland: Birkhauser.
- Loye, D. (1999). (Ed.). *The evolutionary outsider: The impact of the human agent on evolution*. Westport, CT: Praeger.
- Loye, D. (2000). *An arrow through chaos: How we see into the future*. Park Street Press.
- Loye, D. (2000). *Darwin's lost theory of love: A healing vision for the new century*. www.iuniverse.com (Cyberbook).
- Loye, D. (Ed.). (2004). *The Great Adventure: Toward a fully Human Theory of Evolution*. Albany, NY: State University of New York Press.
- Mainzer, K. (1999). *Computernetze und virtuelle realitat: Leben in der Wissensgesellschaft*. Berlin-Heidelberg: Springer.
- Mainzer K. (Ed.). (1999). *Komplexe Systeme und Nichtlineare Dynamik in Natur und Gesellschaft. Komexitatsforschung auf dem Weg ins Nachste Jahrhundert. [Complex systems and nonlinear dynamics in nature and society: Complexity research leading into the next century]*. Berlin-Heidelberg: Springer.
- Manian, R., Dugan J. B., Sullivan, K., & Copit, D. W. (1999).

- Bridging the gap between systems and dynamic fault tree models. pp. 105–111; Contract(s)/Grant(s): NSF CCR–95–02029; NSF CCR–95–06779; NSF MIP–95–28258; Report # 19990056049. Houston, TX: National Aeronautics and Space Administration (NASA). Avail: AIAA Dispatch.
- Mandelbrot, B. B. (1997). *Fractals and scaling in finance*. New York: Springer-Verlag.
- Mandelbrot, B. B. (1999). *Multifractals and 1/f noise: Wild self-affinity in physics*. New York: Springer-Verlag.
- Mandelbrot, B. B. (2004). *Fractals and chaos: The Mandelbrot set and beyond*. New York: Springer-Verlag.
- Manrubia, S. C., Mikhailov, A. S., Zanette, D. H. (2004). *Emergence of dynamical order: Synchronization phenomena in complex systems*. Singapore: World Scientific.
- Mantegna, R.N. & Stanley, H.E. (1999). *Introduction to Econophysics: Correlations Complexity in Finance*, Cambridge, UK: Cambridge University Press.
- Manteufel, A. & Schiepek, G. (1998). *Systeme spielen [Systematic games]*. Gottingen: Vanderhoeck & Ruprecht. 237 p. In German.
- Marmarelis V. Z. (2004). *Nonlinear Modeling of Physiological Systems*. New York: Wiley.
- Marion, R. (1999). *The edge of organization: Chaos and complexity theories of formal social systems*. Thousand Oaks, CA: Sage.
- McDonald, M. (2002). *Predict market swings with technical analysis*. New York: Wiley.
- McKnight, L. W., Vaaler, P. M., & Katz, R. L. (Eds.). (2001). *Creative destruction: Business survival strategies in the global internet economy*. Cambridge, MA: MIT Press.
- Mees, A. (Ed.)(2002). *Nonlinear Dynamics and Statistics*. Birkhauser.
- Meyer, J. J. C. (Ed.). (2001). *Handbook of defeasible reasoning and uncertainty management systems*. Boston: Kluwer.
- Michaels, M. (2001). *The Quest for Fitness: A rational exploration into the new science of organization*. Writers Club.
- Midgley, G. (2001). *Systemic intervention: Philosophy, methodology and practice*. Boston: Kluwer.
- Midgley, G. (2003). *Systems Thinking (Four volume set)*. London, UK: Sage.
- Mikhailov, A. S. & Calenbuhr, V. (2004). *From cells to societies: Models of complex coherent action*. New York: Springer.
- Miller, D. W. (2003). *The Web and the Cloth: Science, Consciousness, and Homeodynamics*. Brooklyn, NY: BTR Publishing.
- Moraru, I. (2000). *Paradigma Psychologieiei Haologice*. Bucharest: Editura Universal Dalsi. [In Romanian.]
- Moro, A. (2000). *Dynamic antisymmetry*. Cambridge, MA: MIT Press.
- Morrison, K. (2002). *School leadership and complexity theory*. Routledge-Falmer.
- Nayfeh, A. H. (2000). *Nonlinear interactions: analytical, computational and experimental methods*. New York: Wiley.
- Nekorkin, V. I. & Velarde, M. G. (2002). *Synergetic phenomena in active lattices: Patterns, waves, solitons, chaos*. Springer-Verlag.
- Nolfi, S., & Floreano, D. (2000). *Evolutionary robotics: The biology, intelligence, and technology of self-organizing machines*. Cambridge, MA: MIT Press.
- Northouse, P. (2003). *Leadership: Theory and practice*. Thousand Oaks, CA: Sage Publications.
- Nunez, R., & Freeman, W. J. (Eds.). (1999). *Reclaiming cognition: The primacy of action, intention and emotion*. Thorverton, Exeter, UK: Imprint Academic.
- Nusse, H. E. & Hunt, B. R. (2003). *The theory of chaotic attractors*. NY: Springer Verlag.
- Obermayer, K., & Seinowski, T. J. (Eds.). (2001). *Self-organizing map formation: Foundations of neural Computation*. Cambridge, MA: MIT Press.
- Odifreddi, P. G. (1999). *Classical Recursion Theory Vol II*. Amsterdam: Elsevier.
- Ollhoff, J., Walcheski, M. (2002). *Stepping in wholes: Introduction to complex systems*. Sparrow Media Group.
- Olson, E. & Eoyang, G. H. (2001). *Facilitating organizational change: Lessons from complexity theory*. San Francisco: Pfeiffer/Josey-Bass.
- Orsucci, F. F. (2002). *Changing mind: Transitions in natural and artificial environments*. Singapore: World Scientific.
- Oyama, S., Griffiths, P. E., & Gray, R. D. (Eds.) (2003). *Cycles of contingency: Developmental systems and evolution*. Cambridge, MA: MIT Press.
- Patterson, D. M. & Ashley, R. A.(2000). *A nonlinear time series workshop*: Boston: Kluwer.
- Pelligrini, C., Cerrai, P., Freguglia, P. Benci, V., & Israel, G. (Eds.). (2003). *New York & Dordrecht: Kluwer Academic Publishers*.
- Peitgen, Juergens, & Saupe. (2004). *Chaos and fractals new frontiers of science (2nd Ed.)* New York: Springer Verlag.
- Peruzzi, A. (Ed., 2004). *Mind and causality: Advances in Consciousness research*. Philadelphia: John Benjamins Publishing Co.
- Peng, S-L. & Cao, K-F. (2001). *Star products in one-dimensional symbolic dynamics*. [Directions in Chaos Vol. 8]. Singapore: World Scientific.
- Peters, E. E. (1999). *Patterns in the dark: Complexity, risk and financial markets*. New York: Wiley.
- Peters, R. M. (2001). *Variability-entropy theory*. New Hyde Park, NY: Author.
- Pikovsky, Rosenblum, & Kurths. (2001). *Synchronization: A universal concept in nonlinear sciences*. Cambridge: Cambridge University Press.
- Press, S. J. (2003). *Subjective and objective Bayesian statistics(2nd Ed.)*. NY: Wiley Interscience.
- Poole, M. S., Van de Ven, A. H. Dooley, K., & Holmes, M. E. (2000). *Organizational Change and Innovation Processes: Theory and Methods for Research*. New York: Oxford University Press.
- Portugali, J. (2000). *Self-organization and the city*. New York: Springer-Verlag.
- Pronzato, Wynn, & Zhigljavsky (1999). *Dynamical search: Applications of dynamical systems in search and optimisation*. Boca Raton, FL: CRC press.
- Puu, T. (1997). *Mathematical location and land use theory*. NY: Springer-Verlag.
- Puu, T. (2000). *Attractors, bifurcations, and chaos: Nonlinear phenomena in economics*. Berlin: Springer.
- Puu, T., & Sushko, I. (2002). *Ogliopoly dynamics*. NY: Springer-Verlag.

- Pykkänen, P., & Vanden, T. (2002). *Dimensions of Conscious Experience*. Philadelphia: John Benjamins.
- Raikhlin, R. (2001). *Civil war, terrorism, and gangs: The system of sociology and social dynamics*. Web publication by author: http://israel.net/raikhlin/social_dynamics/myengbook.
- Raju, C. K. (2003). *Eleven pictures of time*. Thousand Oaks, CA: Sage.
- Reiners & Driese (2004). *Transport Processes in Nature: Propagation of Ecological Influences through Environmental Space*, Cambridge: Cambridge Press.
- Rutkowski, L. *Flexible Neuro-Fuzzy Systems Structures, Learning and Performance Evaluation*. Dordrecht & Boston: Kluwer.
- Ritter, F. E., Shadbolt, N. R., Elliman, D., Young, R., Govet, F., & Baxter, G. D. (2003). *Techniques for modeling human and organizational behavior in synthetic environments*. Ohio: Wright-Patterson Air Force Base.
- Richards, D. (Ed) (2000). *Political Complexity: Nonlinear Models of Politics*.
- Rubinstein, M. F., & Sirtsternberg, I. P. (1999). *The minding organization: Bring the future to the present and turn creative ideas into business solutions*. New York: Wiley.
- Rosser, J. B., Jr, & Rosser, M V. (2004). *Comparative economics in a transforming world economy (2nd ed)*. Cambridge, MA: MIT Press.
- Rosser, J. B. Jr. (Ed., 2004). *Complexity in Economics: The International Library of Critical Writings in Economics 174*. Northampton, MA: Edward Elgar,
- Sakai, K. (2001). *Nonlinear dynamics and chaos in agricultural systems*. Amsterdam: Elsevier.
- Schiepek, G. (1999). *Die Grundlagen der Systemischen Therapie: Theorie, Praxis, Forschung*. [The basis of systems therapy: Theory, practice, and research]. Göttingen: Vanderhoeck & Ruprecht. In German.
- Schuster, H-G. (1999). *Handbook of chaos control: Foundations and applications*. New York: Wiley.
- Schuster, H. G. (2001). *Complex adaptive systems*. Saarbruecken, Germany: Scator Verlag.
- Schweitzer, F. (2002). *Modeling complexity in economic and social systems*. Singapore: World Scientific.
- Scott, A. (2003). *Nonlinear science: Emergence and dynamics of coherent structures (2nd.Ed.)* New York: Oxford.
- Scott, A. (2004). *Encyclopedia of Nonlinear Science*. New York: Oxford.
- Shaw, P. (2002). *Changing conversations in organizations: A complexity approach to change*. Routledge.
- Skar, J., & Coveney, P. (2003). *Self-organization: The quest for the origin of evolution of structure*. London, UK: Royal Society & FirstCite.
- Slovova, A. (2003). *Cellular neural networks, dynamics, and modeling*. Boston: Kluwer.
- Sornetto, D. (2000). *Critical phenomena in natural sciences: chaos, fractals, self-organization and disorder, concepts and tools*. New York: Springer-Verlag.
- Sprott, J. C. (2003). *Chaos and time-series analysis*. New York: Oxford University Press.
- Stacey, R. D. (2001). *Complex Responsive Processes in Organizations: Learning and Knowledge Creation*. London: Routledge.
- Stacey, R. D., Griffin, D., & Shaw, P. (2000). *Complexity and Management: Fad or Radical Challenge To Systems Thinking*. London: Routledge.
- Staddon, J. E. R. (2001). *Adaptive dynamics: The theoretical analysis of behavior*. Cambridge, MA: MIT Press.
- Steeb, W.-H, Hardy, Y., & Stoop, R. (2002). *The nonlinear workbook, 2nd edition*. New Jersey: World Scientific.
- Sterman, J. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. New York: Irwin/McGraw-Hill.
- Sulis, W., & Trofimova, I. (Eds.). (2001). *Nonlinear dynamics in the life and social sciences*. Amsterdam: IOS Press.
- Teodorescu H-N & Kandel A. (2002). *Dynamic Fuzzy Systems and Chaos Applications*. Boca Raton, FL: CRC Press.
- Villermaux, C. E. & Chomaz, J.-M. (1999). *Mixing: chaos and turbulence*. Boston: Kluwer.
- Vemuri, K. K., Dugan, J. B., (1999). *Reliability analysis of complex hardware-software systems pp. 178-182; Report # 19990056056*. Houston, TX: National Aeronautics and Space Administration (NSASA).
- Vezina, J-F. (2001). *Les hasards nécessaires: La synchronicité dans les rencontres qui nous transforment*. Quebec(?): Les Editions de L'Homme. [In French].
- Vose, M. D. (1999). *The simple genetic algorithm: Foundations and theory*. Cambridge, MA: MIT Press.
- Ward, L. M. (2001). *Dynamical cognitive science*. Cambridge, MA: MIT Press.
- Watts, D. (2003). *Six Degrees: The Science of a Connected Age*. NY: W. W. Norton.
- Welborn, R. Kasten, V., Ballmer, S. (2003). *The Jericho principle: How companies use strategic collaboration to find new sources of value*. John Wiley & Sons.
- Whitelaw, M. (2004). *Metacreation: Art and artificial life*. Cambridge, MA: MIT Press.
- Yaniguichi, Y., Stanley, H. E., & Ludwid, H. (Eds.) (2000). *Structure and Function of Biological Systems under Extreme Conditions*. Heidelberg, Germany: Springer-Verlag.
- Zbilut, J. B. (2003). *Unstable singularities and randomness: Their importance in the complexity of physical, biological and social sciences*. Amsterdam: Elsevier.
- Zhusubaliyev, Z. T., & Mosekilde, E. (2003). *Bifurcations and chaos in piecewise-smooth dynamical systems*. Singapore: World Scientific.





SOCIETY FOR CHAOS THEORY IN PSYCHOLOGY & LIFE SCIENCES

NEWSLETTER Advertising Rate Card, 2005

Holly Arrow, Ph.D., President
Robert Porter, Ph.D., Editor; Stephen Guastello, Ph.D., Production Editor

Yes, We Do!

The *SCTPLS Newsletter* welcomes advertising from publishers, software manufacturers, manufacturers of other scientific products and supplies. Our page sizes, prices, and copy deadlines are listed below.

The *SCTPLS Newsletter* is published four times a year in October, January, April, and July or August. The fourth issue of the year contains the abstracts and related material for the Annual International Conference. Circulation currently ranges from 350-400 copies per issue to a highly focused readership.

Page size:

8.5 inches horizontal X 11 inches vertical.

Colors:

The standard *Newsletter* paper color is ivory. The ink is usually black, although special color choices may be used for some issues. Ads are printed in gray-scale with one color of ink.

Print Fields:

The following rates apply to finalized electronic ads supplied by the advertiser.

Full page: 7.5 inches h. X 9.8 v., \$150.00.
Half page horizontal: 7.5 inches h. X 4.9 inches v., \$100.
Half page vertical: 3.5 inches h. X 9.8 v., \$100.
Quarter page (half column, boxed): 3.5 inches h. X 4.9 inches v., \$75.

Set-up Charges:

Ads requiring typesetting or other forms of pre-print processing are subject to an additional service charge. Please advise us of your requirements.

Deadlines:

September 15, for the October issue.
January 5, for the January issue.
March 5, for the April issue.
June 15, for the July-August issue.

Send electronic ad material to:

Dr. Robert Porter, Editor
rjporter@mindspring.com.

Send ad material in other formats (e.g., hard copy or film) to:

SCTPLS Publications Office
P. O. Box 484
Pewaukee, WI 53072

Send payment to:

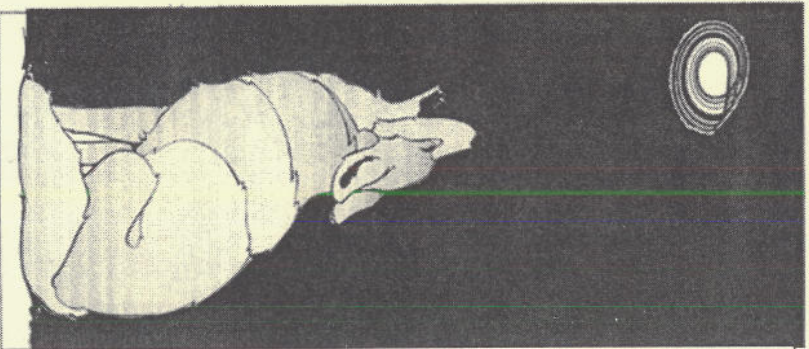
By check:
Please use the Publications Office address above.

By credit card:
Send a brief cover letter on your letterhead with credit card number (AMEX, MasterCard, Visa, Discover) and expiration date to your choice of (a) the Publications Office above, (b) fax to SCTPLS: 1-414-288-5333, or (c) e-mail to register@societyforchaostheory.org.

If undeliverable return to:

2005
Society for Chaos Theory in Psychology & Life Sciences
Department of Psychology, MARQUETTE UNIVERSITY
P. O. Box 1881, Milwaukee, WI 53201-1881 USA

FIRST CLASS AIRMAIL EVERYWHERE



CALL FOR PAPERS

**15th Annual
International
CONFERENCE**

**DENVER, CO, USA
August 4-6, 2005**

**DETAILS INSIDE...
... AND MORE**

www.societyforchaostheory.org/conf2005