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. 2, January, 2001

Mad World Awaits Chaos
Summer Conference to be Held in Madison
Also
Kevin Dooley Re-elected Society President
New Website Address and Format Announced

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

President Kevin Dooley recently announced that 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 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.

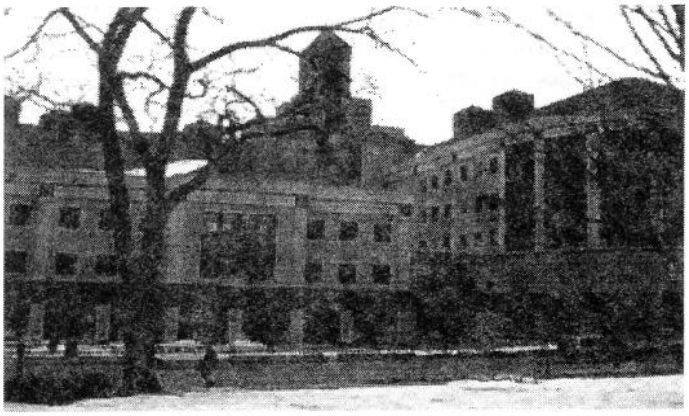
Hotel accommodations this year have been arranged through the HOWARD JOHNSON'S PLAZA HOTEL, which is located three blocks away from Grainger Hall. The HJ PLAZA was rated as the 1998 Hotel of the Year out of 570 HJ Hotels. Hotel room rates, which start below $89 include access to the indoor swimming pool, 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.

INSIDE

Simulating and Visualizing Complex Systems
to be conference theme

ABSTRACT DEADLINE
FRIDAY, MAY 4, 2001

The Summer 2000 Philadelphia Program
can now be found at
www.societyforchaostheory.org
BELOW: UW Madison's Grainger Conference Center



DOOLEY RE-ELECTED

Official vote-counter, board member, and election official, Jeff Goldstein, reported in December that all votes are counted and Kevin Dooley has been re-elected President of the Society for the Period from August, 2001, to August, 2002.

"Whew!" Kevin's opponent, Tim Haslett, is quoted as saying when contacted by election officials. Jeff says the voted was counted and recounted a fractal number of times, until hanging chads became too small to accurately measure. "The voting morphology didn't vary at all," reports Jeff.

NEW WEBSITE ANNOUNCED
SOCIETYFORCHAOSTHEORY.ORG

Kevin Dooley, Society President and Webmaster, announced the transfer of Society webpages to a new website, www.societyforchaostheory.org. A major reason for the transfer, Kevin said, is that the new site is much easier to remember than the old site which was several slash-marks deep in the Vanderbilt sever system. All old information and pages were transferred and several new features added, reports Kevin, who also said that the excellent work done by the former web master, Keith Clayton, made the transfer and modifications easy.

The old site, created and maintained by Keith Clayton until his retirement from Vandy last year, consistently received a large number of hits in spite of its hard to find address. The new site is expected to yield not only easier access but it also offers a number of features Kevin hopes to be able to implement soon. These include the new data analysis project as well as improvements in credit card processing and the indexing of site information. Folks landing on the old site will be automatically forwarded to the new. [Editors Note: CHAOPSYC, the Society's discussion forum is not effected by the move.]

PRESIDENT'S MESSAGE

Thanks everyone for a second term as President. I promise not to throw the Society into a constitutional crisis (I don't think our By-Laws have impeachment rules). I have spent most of my time in the last two months readying our new web site (www.societyforchaostheory.org), and it of course is off the ground now. Thanks go to Bob Porter for selecting a good provider and getting this off the ground. The "data archive and analysis" project will also get underway very soon-the skeleton of it, including instructions, is already available at the web site. Please, I encourage you all to consider making some of your favorite data sets publicly available so that we can benefit from methods benchmarking, and begin to better understand the subtleties of the methods-data structure interaction.

The eleventh SCTPLS conference is set for Madison August 3-6, 2001; the Call for Papers is included in this *Newsletter*. Madison is a fun place to visit in the summer (a fun place to visit anytime!), and this year's theme is "Simulating and Visualizing Complex Systems". Proposals are open for presentation on the theme and any other topics related to chaos and complexity-and I encourage you to think out-of-the-box, in terms of topics and presentations. For example, we have had great success with multi-speaker symposia, especially when they are designed for serious interaction between the speakers themselves, and the panel and the audience.

We'll have a full schedule, including guest speakers and workshops-we know already that our main Banquet Speaker on Saturday night will be Prof. Stephen Guastello (Marquette University), one of the originators on the Society, editor of NDPLS, and one of the foremost catastrophe gurus (methodologically, not personally!) in the world. Look for more news at the web site and our listserv.

May the new millennium (yes, we can officially start now) greet you with good health, good friends, good insight, and good karma (or caramel, whichever is more useful to you).

-- Kevin Dooley

Winter Chaos 2001 Conference News

Fred Abraham, Special Correspondent

Winter Chaos 2001, the 8th Annual Conference on Dynamical Systems Theory in Psychological, Social, and Biological Sciences, Sponsored by the Blueberry Brain Institute, was held in the small village winter atmosphere of the West Village of Brattleboro, VT. Rick Paar and Fred Abraham picked up the reins, and were ably assisted by last year's organizers, Mark Filippi and Carlos Torre, and a local friend, Tommy Thomas. Our theme, as when Rick organized the conference a few years ago, was to emphasize social responsibility of our field (remember also that Carlos was the recipient of the first Humanitarian Award of the Society).

Thus when Ken Bausch, author of the recent book, *The Emerging Consensus in Social Systems Theory*, an exceptionally scholarly analysis of social theory and systems theory, offered to make a presentation, we made it the lead-off, keynote presentation on the opening eve of the conference, something a tad more formal than we have ever done before.

Socially oriented presentations also included several on education and social services (Martin Gardiner, Useful Accessible Integrated Learning; David Gibson, Mapping The Dynamics Of Complex Educational Settings; Carlos Torre, Hearts and Mind: Relevance of Physiological Data for the Liberation of Educational Settings; Karen Vanderven, Effective practice: A Nonlinear Dynamical Systems Approach to the Theory-to-practice and Transfer of Training Issue in Education and Human Services; Katie Witkiewitz, Applications of Cusp Catastrophe Models to the Relapse Process (Drug Abuse Therapy).

Other socially relevant presentations included Rick Paar, The Dynamics of the Election, and a special presentation by Olga Mitina of Moscow State University and Visiting Scholar of the Blueberry Brain Institute, Dynamical Cognitive Models of Social Issues in Russia, including political and gender studies.

Personality and personal transformation and developmental issues were included with the presentations of Mark Filippi (Lessons from the Chiropractic Octal Code), Dana Gaynor (New Age Physics and Consciousness and Personal Transformations), Frank Mosca (Making Life Work: An Overview of the Basic Self System and the Fundamental Attractor State That Can Deconstruct the Counterproductive Belief States That Limit Human Compassion), and Matthijs Koopmans (Development).

Technical presentations included Bob Eldridge, Where evaluating chaos has gone since BDS/Correlation dimension/K-stat?, and the use of recurrence plots in Carlos analysis of heart rate, vector analysis and deduction of differential equations by Olga, the use of formal modelling in educational organization by David Gibson using Stella, and a brief workshop by Olga and Fred demonstrating the use of Madonna (a Stella-like program for modelling differential and finite difference equations), Santis, a data analysis and display program, and Sprott's attractor

generation program.

This conference was quite small, making it easy to self-organize, be informal and interactive, and really explore issues. As usual, it was very tolerant of mixing metaphorical and technical approaches as you can see from our titles. A variety of innovational formats was used to facilitate such open discussion. We had fun. [Visit www.blueberry-brain.org]

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, econophyisics, 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 200. 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

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The Arthur M. Sackler Colloquium of the National Academy of Sciences on **Self-Organized Complexity in the Physical, Biological and Social Sciences** will be held on Friday and Saturday, March 23- 24, 2001 at the Arnold and Mabel Beckman Center in Irvine, California.

The Colloquium is being co-organized by Donald L. Turcotte, John Rundle and Hans Frauenfelder. This colloquium will cover a variety of subjects, including turbulence; weather and climate variability; Structure of living species; complexity in biomedicine pulse rates and brain waves; economics; and other topics. Colloquium speakers include: -Per Bak and James Bassingthwaighte.

Attendance at the colloquium is limited to 250 registered participants. Please share this invitation with graduate students, postdocs, and others. The registration fee of $175 for general participants covers the meeting, breakfast, lunch, dinner and breaks, and transportation to and from the Hyatt Newporter Hotel. For additional information (final program, registration form, and hotel/travel information), please visit the colloquium web site: http://national-academies.org/nas/colloquia.

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

Trends in Chaos and Complexity Theories and Computer Simulation in the Social Sciences

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University of California–Los Angeles

In the social sciences literature numerous references are made to the growth of the field of chaos and complexity theories and of computer simulation as research tools for social scientists. Most authors make passing reference to the emerging phenomenon, providing little or no discussion about its nature. Authors assert in various ways that the increased use of theory and methods is coming, has arrived, and its projected dominance. (Henrickson) The research reported here provides a quantitative and qualitative assessment of the diffusion trends of chaos and complexity theories, and of computer simulation through the social sciences over the last 28 years in the published literature.

Two exceptions to mere assertion are from Harvey and Reed, and from Axelrod. (Harvey and Reed; Axelrod) Harvey and Reed provide three arguments why the theories have diffused more slowly into the social sciences from the physical sciences. The scope of their work was to chart how differential social science research strategies may lend themselves more or less to the use of these theories. (307) Thus, they argue that the "social sciences" is not a monolithic conceptual framework to which any single method is best applied. Robert Axelrod focused on the growing field of computer simulation in the social sciences as a monolithic body of knowledge. Axelrod noted the dispersion of the field by tracking article titles in social science journals. He noted its lack of depth in any one particular journal as only five of seventy-four journals had published more than one article with "simulation" in the title. He suggested a format for doing simulation research in order to advance the art of simulation by building a community of social scientists who use computer simulation in their research. (1997a, 23)

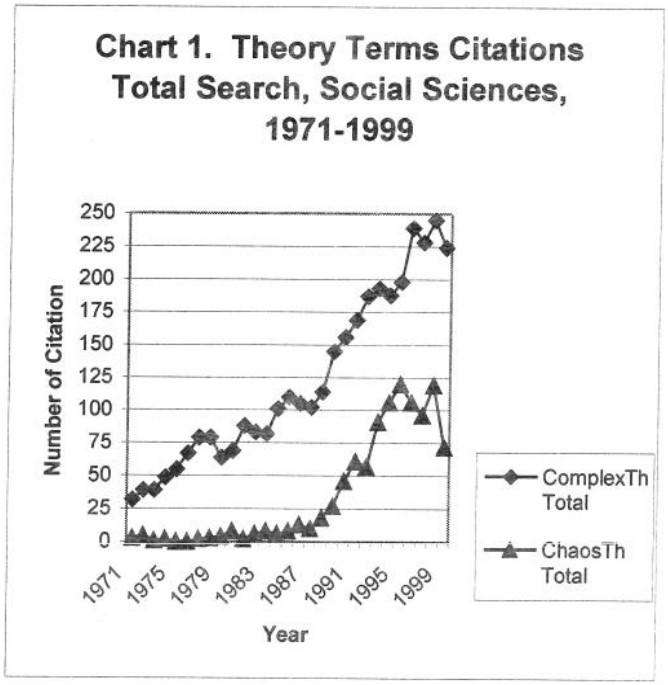
While both sets of authors recognized the increased use of these tools and both set out to advance the field, neither more fully characterized the nature of the trends occurring. The study presented here set out to describe in more detail the nature of the diffusion and adaptation of chaos and complexity theories and computer simulation into the social sciences. The larger study both quantifies and qualifies the nature of the diffusion. The study began with the insights from the authors noted above. Namely, Harvey and Reed rightly point out that one underlying assumption of many of the assertions is that they implicitly assume that there is one social science and one scientific method.

I do not assume that the diffusion into different disciplines occurs in the same way or at the same time. Axelrod

provided the impetus for a literature search by conducting a cursory literature search over a restricted domain in the literature. He searched over the term "simulation" in journal titles, although, it was over all social sciences disciplines as one monolithic group. The diffusion study here was an extensive literature search on separate social science disciplines, four out of eleven of which are presented here: business, psychology, economics and sociology. Search results on Four out of twenty-five keywords are presented here. The terms were representative of both theory and method.

For the purposes of this newsletter this is a condensed version of a larger study. I discuss part of the quantitative work completed to date and do not discuss the qualitative analysis of problem topology. The keyword composites represent the sum over all disciplines and are used to show general trends. I provide keyword composites that closely map onto main trends some of which may mask underlying variegation but would require more space to explain. For example, by summing over all disciplines the differential use across disciplines is masked.

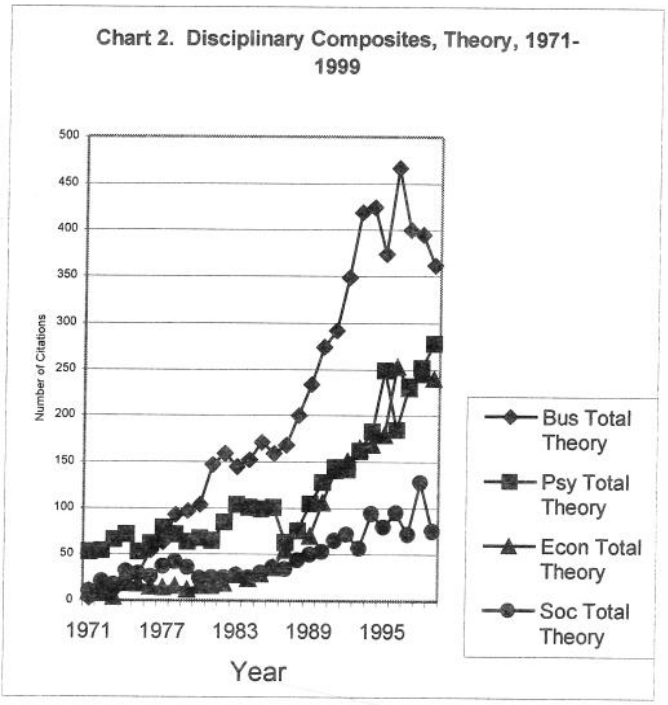
The methodology of the study was as follows. A citation study was carried out in which four electronic databases representative of four disciplines were used. The database for business was ABI/Inform; for psychology was PsychInfo; for economics was EconLit; and, for Sociology was Sociological Abstracts. ABI/Inform has citations and abstracts for articles in over 1000 journals from 1971 to the present. PsychINFO has citations and abstracts for articles in over 1300 journals from



1887 to the present. EconLit has citations and abstracts for articles in over 400 journals. Sociological Abstracts has citations and abstracts in over 2,700 journals from 1960 to the present. The searches were conducted from 1971 to 1998. Citations reported were for journals only and did not include working papers, conference proceedings, or books.

There are three charts included in this note and one table. Two charts display results about theory and one chart displays results about method. The table displays dispersion across journals by discipline. The keywords for theory were "chaos theory" and "complexity theory". The keywords for method were "computer simulation" and "neural network". Chart 1 shows the citation count over time for the keywords for theory "chaos theory", "complexity theory". There are three things to note from this chart. One, there is in increase in use over time of both terms. Two, citation counts increase noticeably about 1988 for both terms. Three, "complexity theory" has a history of citation use prior to 1988 whereas "chaos theory" does not. This seems to indicate that there is a correlation in the increased use of the terms after 1988. That is, the technical meaning of "complexity theory" shifted after the introduction of the term "chaos theory". However, it is important to note that the term "chaos theory" did not replace the use of the term "complexity theory" as both increased in use. The aberrant 1995 peak in "chaos theory" was due to a journal's special issue.

Chart 2 shows the citation count over time from 1971 to 1999 for theory in general. The chart shows the disciplines disaggregated from the composite theory term summing over "chaos theory" and "complexity theory". There are three things to note about this chart. One, citation use increases notably after 1988. Two, there is a differential adaptation in the social



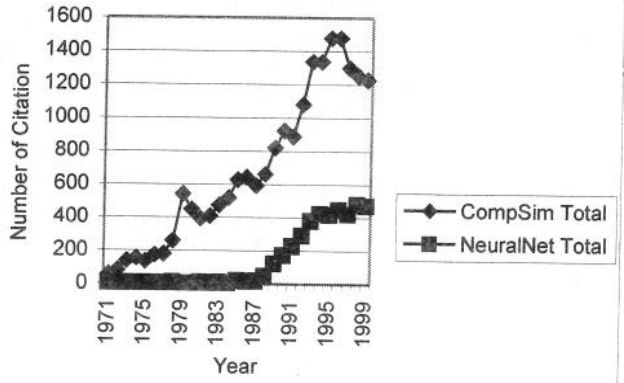
sciences in the use of the term "chaos theory". Business as a discipline is an early adopter of the terminology "chaos theory" and dominates citation count to the present time by double on average compared to psychology. Psychology and economics track each other fairly closely in citation count over time and both lag business in initial use by four years. Sociology has yet to attain businesses initial citation count. Three, during 1996-1998 there is a noticeable drop-off in citation count in business and sociology, a constant rate of use in economics, and a slight increase in use in psychology. Without going into the details there are at least two reasons for the drop-off in business. There is both a perceived and real drop-off. After taking into account the lag between publication time and input into the database, i.e. the perceived drop-off, there still exists a real drop-off. In part

the real drop-off can be explained by increased terminological specification.

Chart 3 shows the citation count from 1971-1999 for the composite terms "computer simulation" and "neural network". The disciplines are aggregated for both terms meaning each curve sums over all four disciplines. There are two features to note on this chart. One, the citation use increases about 1988 for both terms.

The more general term, "computer simulation", had a certain currency in the literature and the more specific term,

Chart 3. Method: "Computer Simulation" vs "Neural Network" 1971-1999



"neural network", gains prominence only after 1988. Second, between the years 1996-1998 there is a peak and drop-off in use of "computer simulation" that does not occur with the term "neural network". One may think that a drop-off in the general terminology may indicate a drop-off in use of that method. However, this seems to indicate that as the general term drops off in favor of increased use the more specific terminology.

To establish a sense of disciplinary dispersion in publications, I examined the extent to which journals in each discipline published multiple articles with the same term found in either the citation or abstract information. Table 1 summarizes two measures of dispersion, or degree to which each discipline published more than one article with the term "chaos theory".

ARTICLES	DEN	DISP	1	2	3-5	6-10	>10
Business	1.45	.72	80	22	8	1	1
Psychology	1.35	.81	66	13	3	1	1
Sociology	1.26	.84	46	5	5		

Table 1. Category Density and Dispersion for "Chaos Theory" as Measured by Article/Journal Distribution. See text for details.

I created two measures called the category density ratio and the dispersion count ratio. Under a particular keyword, the category density indicator is a ratio of the total number of articles published to the total number of different journal titles. Reading from the second column of the table shows that business has a higher density of publication than psychology or sociology. This means business journals on the whole publish more articles in more different journals. Under a particular keyword, dispersion count indicator is that percentage of journals that only publish one article. If we put Axelrod's numbers in terms of these indicators he would have had a category density of 1.45 and a dispersion ratio of .93 based on 107 articles and 74 journals. These indicator values are based on having treated the social sciences as a monolithic body of knowledge and reflect keyword searches over titles only.

This work builds on and complements that of Harvey and Reed, and Axelrod. Insofar as their motivations were to advance the art of complexity science research and computer simulation, this study complements this previous work. Tracking trends builds a greater understanding of the variety of ways in which chaos and complexity theories and computational simulation have been put to use across disciplines and may help interdisciplinary researchers further their conceptual framework on problem solving.

Bibliography

Axelrod, Robert. 1997a. "Advancing the Art of Simulation in the Social Sciences." In Simulating Social Phenomena, ed. Rosaria Conte, Rainer Hegselmann, and Pietro Terna. Berlin: Springer Verlag.

Axelrod, Robert. 1997b. The Complexity of Cooperation. New Jersey: Princeton University Press.

Henrickson, Leslie. 2000. Trends in Social Sciences: Use of Chaos and Complexity Theories and Computational Techniques. (Unpublished manuscript).

Harvey, David L., Michael Reed. 1997. "Social Science as the Study of Complex Systems." In Chaos Theory in the Social Sciences: Foundations and Applications, ed. L. Douglas Kiel and Euel Elliott. Ann Arbor: University of Michigan Press.

NEWS FROM MEMBERS

Michael Halasz has been pursuing studies in native American archaeology and Latin American history. He and his wife have visited pre-Columbian sites in New & Old Mexico and will shortly go to Peru with an `elderhostel' group. Michael also edits `The Balance' - an electronic publication applying systems concepts to political, social, cultural and religious events. The Balance can be obtained, free, at http://home.att.net/~hmhalasz/index.html Monthly issues are sent by e-mail

Kenton Hyatt writes to tell us he has been approached to help form an organization in Santa Cruz, CA, that will be called Values Technology. The organization will be doing assessment and development in personal and organizational values (and the skills that come out of those values). Kenton says he sees values as being those concepts around which attractors and strange attractors develop, as well as being the "ground" of basins for individuals, groups, and organizations.

Dick Bird reports that Marios Kittenis gained his M.Phil from the University of Cambridge in December 2000 for successfully defending his thesis on a chaos analysis of EEG associated with the latency of saccadic eye-movements. Marios is an ex-student of Northumbria and Dick was his external examiner.

Nonlinear Dynamical Bookshelf

Basin, M. A. (Ed.). (1998) [Syngetics]. Moscow. (In Russian).

Basin, M. A. (2000). Волы Ќванты Собвітия. Moscow. (In Russian).

Basin, M. A., & Шилович, И. И. (1999). [Synergetics on the Internet]. Moscow. (In Russian).

Ellis, R. D., & Newton, N. (Eds.). (2000). The caldron of consciousness: Motivation, affect and self-organization - An anthology. Philadelphia: John Benjamins. 270 pp. + xxii + index. USD 34.95 These new studies by prominent neuroscientists, psychologists and philosophers work toward a coherent framework for understanding emotion and its contribution to the functioning of consciousness in general, as an aspect of self-organizing, embodied subjects. Distinguishing consciousness from unconscious information processing hinges on the role of motivating emotions in all conscious modalities, and how emotional brain processes interact with those traditionally associated with cognitive function. Computationally registering and processing sensory signals (e.g. in the occipital lobe or area V4) by itself does not result in perceptual consciousness, which requires subcortical structures such as amygdala, hypothalamus, and brain stem. This interdisciplinary anthology attempts to understand the complexity of emotional intentionality; why the role of motivation in self-organizing processes is crucial in distinguishing conscious from unconscious processes; how emotions account for agency; and how an adequate approach to emotion-motivation can address the traditional mind-body problem through a holistic understanding of the conscious, behaving organism.

Contributions by: Ralph Ellis; Eugene Gendlin; Bill Paw; Martin Peper; Marica Bernstein, Samantba Stiehl and John Bickle; N. Newton; Valerie Hardcastle; Mark Bickhard; Nick Georgalis; Jaak Panksepp; Peter Zachar; Gary Backhaus. (Series: Advances in Consciousness Research) -- *Publisher*

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.) ISBN 5-88485-081-6 **(picutured left).** 78p. The basis of human psychic activity is made by needs. However, the question tied up with needs is one of the most difficult in modern psychology. The book is the result of detailed investigation of meanings of the word "need" and its equivalents in ancient and modern Indo--European languages on the material of different dictionaries. The investigation permits to find large fund of notions connected with this word. One of the most general concepts of need, which exists in the Indo-European languages is connected with the notion of natural law, which displays itself in the universe, in human life, and in the human interactions. This book also presents experience of application of main synergetic notions to theoretical psychology in order to construct the basic classification of human psychic needs. This work made a significant contribution in psychology and synergetics. An idea about the unity of structural laws valid in the universe and in human life consolidates the material.

Harari, R. (2000). ?Qué sucede en el acto analítico? La experiencia del psichanálisis. Buenos Aries: Lugar Editorial. (In Spanish). 304 p.

Harte, D. (2000). Multifractals: theory and applications. Boca Raton, FL: CRC Press. ISBN 1-5848-8154-2. Multifractals are basically probability measures, but have so far little literature from a statistical standpoint The book aims to set up a satisfactory framework in which to discuss the statistical properties of the various estimates in use to estimate fractal dimensionslity. There is a large section on the estimation of the correlation dimension, and associated bias problems. *--Publisher*

Nayfeh, A. H. (2000). Nonlinear interactions: analytical, computational and experimental methods. US$110 publ: John Wiley. ISBN 0-471-17591-9. This is concerned with system control problems, which can in some cases only be modelled by nonlinear governing equations. It comprehensively deals with nonlinear interactions when studying systems that have stability problems. *-- Publisher*

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 ISBN 0-19-513198-3 Organizational innovation and change are dynamic processes that are best explained in dynamic terms. However, most current theories of innovation and change are static and overly deterministic, bound by the constraints of traditional social scientific approaches. This volume advances a novel theoretical framework and research methods specifically designed to support the development and evaluation of theories of change in processual terms. The process perspective offers a view of innovation and change that encompasses continuous and discontinuous causation, critical incidents, contextual effects, and narrative explanation. It is a flexible mode of inquiry that is ideally-suited to explore critical features of change within and among organizations.

This book, which grew out of a successful series of workshops on process research methods, is divided into two sections. The first outlines the theory underlying process research with special emphasis on its core feature, narrative explanation. Four basic forms of narrative explanation are distinguished. One or more of these basic forms can be shown to underlie all theories of change, innovation and development.

The second section describes how to do process research. This section initially addresses issues of research design and data collection for process studies. It introduces four methods specifically adapted for the study of processes: Markov modeling, phasic analysis, event time series analysis, and nonlinear dynamic systems modeling. Each method is suited for different types of questions about change and innovation processes, and each can be used to test different aspects of process theories.

This volume aims to promote the development of a process-based social science that complements traditional variance-based approaches. The process approach exercises more fully and in a systematic manner the human ability to understand and to explain through narrative. It has the potential to unlock a different, more fundamental level of understanding of innovation, change, and related phenomena. This book should be of interest to scholars in management, engineering, communication, sociology, education, and social work. *--Publisher at www.oup.com*

Richards, D. (Ed) (2000). Political Complexity: Nonlinear Models of Politics. Ann Arbor: University of Michigan Press. ***Minireview:*** The approach: "Formal political theory is largely based on set-valued mappings such as voting theory or game dynamics. Therefore, although nonlinear feedback relations are common, they seldom take the form of one-dimensional functions as in economics. For example, even in the highly formalized topic of multi-dimensional voting, it makes little sense to describe the map from proposal to proposal in terms of a function. Instead, one has set-valued mapping that for each status quo point a set of subsequent proposals are feasible: the familiar petal-shaped 'winset.' Instead, different approaches must be used. Similarly, strategic behavior in political science, often represented in terms of distributions of strategies among a population of players cannot be described as a one-to-one nonlinear function, despite its underlying nonlinearity." (P. 4). Thus, the methods used in political science may include nonlinear dynamic systems, neural networks, n-person game theory, symbolic dynamics, or spatial models of agent-based interactions. (P. 5).

Guidelines for analysis: Richards calls for a dialogue toward "industry standards" for nonlinear methodology in political science, which I would extend to the field generally. This list has approached this discussion on several occasions and is actively working on the concept. For example, she suggests that a complete time series analysis would include: Hinich bispectral analysis (Hinich 1982); correlation dimension test (Richards, 1992); BDS test (Brock, Dechert, andf Scheinkman 1989; Brock Hsieh, and Lebaron, 1991); shuffle diagnostic; Lyapunov exponent (McBurnett, 1996); refinements regarding sample size, noise, and confidence intervals such as those by Brock and Baek, 1991 or Baharhona and Poon, 1996. *--Gus Koehler*

JOURNAL NEWS

CHAOS & COMPLEXITY LETTERS

Chaos & Complexity Letters is a new refereed electronic journal that addresses any area of complex systems research. It will be available in CD-ROM format and accessible online for subscribers. Preprints and abstracts will be accessible for free. Relevant topics include(but are not restricted to): artificial life, cellular automata, chaos theory, complexity theory, control theory, fractals, genetic algorithms, information systems, neural networks, nonlinear dynamics, parallel computation, synergetics. Papers dealing with applications of these topics (for example, to biology, economics, medicine, psychology, sociology, technology etc.) are also strongly encouraged.

Manuscripts are considered under the following categories: ***Original Papers*** should be significant, original pieces of work, not exceeding 5000 words in length. ***Reviews*** should be detailed outlines, presenting arguments for the content, importance and topicality of the material. Multi-media hypertext provides a superlative vehicle for reviewing many issues and reviews exploiting these features are actively

encouraged. Reviews should not exceed 10,000 words in length. Intending authors of reviews are encouraged to contact the editors in advance. ***News and Ideas*** will be provocative suggestions for applications of complex systems ideas or methodology. These will be refereed and a standard of analysis and presentation considerably in excess of typical news-group contributions will be required. Contributions should not exceed 3000 words in length. ***Software and Algorithms*** will include any of the following: Interactive processes, such as CGI and JAVA, Program packages, Algorithms will be demonstrations of new computational ideas and techniques. ***Educational Material*** will include lectures, tutorials and other educational material. ***Original Data*** samples of any kind of original data (e. g. time series etc.) offered to the scientific community to compare different methodological approaches. ***Technical Notes*** should be similar to departmental reports, and contain more detail of implementation and methods than would normally appear in a paper; technical notes should not exceed 2000 words.

For further information, contact: Prof. Franco Orsucci, MD, PhD, Email :francorsucci@riu.edu Department of Cognitive Science, Rome International University, Via Piave 41, I-00187 Rome, Italy. Web http://www.riu.edu/orsucci.htm

COGNITIVE PROCESSING

This new journal, *Cognitive Processing*, can be accessed on the web via www.papst-publishers.com/psychozeitschrift and the papers can be downloaded. The first issue is available as 2000-1 on the website, together with details about the scientific board and so on. There is a lot of material with nonlinear implications. It is in English and published in Germany with an international editorial committee. – *Robert Gregson.*

NONLINEAR DYNAMICS, PSYCHOLOGY, AND LIFE SCIENCES

We were informed in early November, 2000, that the National Library of Medicine will be indexing *NDPLS* in *MEDLINE. NDPLS* has apparently been given the much-coveted rating of "very good." Congratulations go to all Editorial Board members, authors, and reviewers for the great manuscripts and commentaries that shaped the results that we now see. *NDPLS* is also indexed in the American Psychological Association's *PSYCINFO* and *Social Science Abstracts/Index.*

The Editor also has the pleasure of announcing the appointments of Frederick D. Abraham and Robert A. M. Gregson to the *NDPLS* Editorial Board. Fred and Robert will be helping us out with the cognitive science topics as they both have done many times in the past.

Fred is perhaps best known among us as the 2nd President of SCTPLS. He is the senior author of A VISUAL INTRODUCTION TO DYNAMICAL SYSTEMS THEORY FOR PSYCHOLOGY (1990), which has become a cult classic, and co-editor of CHAOS THEORY IN PSYCHOLOGY (1995), and many book chapters and articles on nonlinear dynamics applications, including a contribution to the inaugural issue of *NDPLS*. Fred is on the faculty of the Department of Psychology, Silliman University, Dumaguete City, Philippines, and he lives in Waterbury Center, Vermont.

Robert is well-known for his books NONLINEAR PSYCHOPHYSICAL DYNAMICS (1988), n-DIMENSIONAL NONLINEAR PSYCHOPHSYCIS (1992) and CASCADES AND FIELDS IN PERCEPTUAL PSYCHOPHYSICS (1995), along with many chapters and journal articles on nonlinear dynamics in cognitive psychology, including several in *NDPLS*. Robert is Professor Emeritus from the Psychology Department of Australian National University, Canberra, ACT Australia.

On a more whimsical note, we announce the retirements of Keith Clayton and Mary Ann Metzger from the *NDPLS* Editorial Board. They have both given us five years of hard core manuscript reviewing since the time *NDPLS* was first formed. Their efforts have been critical to building the journal to what it is today. Their retirements come as belated effects of their retirements from their respective university posts at Vanderbilt University (Nashville, TN) and University of Maryland-UMBC (Baltimore, MD). Keith and Mary Ann are still subscribing to *NDPLS* through the membership system. Keith is also turning over the job of SCTPLS webmaster to Kevin Dooley, and job Keith has also done for five years. Mary Ann is continuing as SCTPLS Membership Secretary.

WONDERFUL WEBBAGE

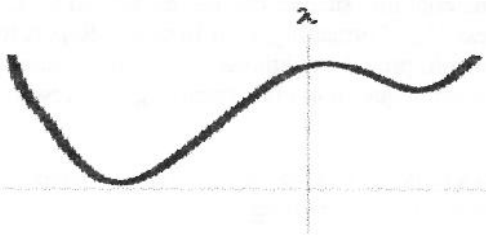
Just a note to say that the April 2000 News Notes on Agent-Based Computational Economics (ACE) are now available at http://www.econ.iastate.edu/tesfatsi/ace0400.htm ACE is the computational study of economies modeled as evolving systems of autonomous interacting agents. The ACE news notes regularly include items of interest to ACE researchers in particular and to complex adaptive systems researchers in general: namely, journal announcements; book announcements; pointers to software; pointers to research groups and sites; workshop and meeting announcements; and program, course, and position announcements. Past ACE news note distributions are archived at the ACE website at http://www.econ.iastate.edu/tesfatsi/ace.htm

--Leigh Tesfatsion

I am happy to announce the launching of the "Difference Equations and Discrete Dynamical Systems: A Newsletter on the World Wide Web". This is an independent source of news, commentary, book and software reviews and more. If you work on, or are otherwise interested in difference equations and related fields, please take a moment to check http://members.home.net/sedaghat/de_nl/coverpgathm.html. The inaugural issue contains listings of upcoming and recent events and conferences, listings and/or reviews of several books and a new software, links to related websites and more. Check the "about this newsletter" link first!

Please send me an email if you have a comment or suggestion, or if you want to send links, news, etc.: hsedagha@vcu.edu. I hope that this new resource will be of use, or interest, to you and look forward to receiving your intellectual contributions to its various departments.

--Hassan Sedaghat



SCTPLS DATA LIBRARY & ANALYSIS PROJECT

GENERAL INFORMATION ABOUT THE PROJECT

The Society for Chaos Theory in Psychology & Life Sciences is pleased to announce its new Data Library and Analysis Project. The goal of the project is to facilitate the testing of new software, algorithms, and computational procedures for nonlinear dynamical phenomena. The materials for the project will be housed on its web site, with exceptions as noted below www.societyforchaostheory.org.

1. All interested parties are invited to contribute data sets to the cause. Interested parties should read the next section, ***How to Contribute a Data Set***.

2. Descriptions of the data sets will be housed on this web site. The file ***How to Contribute a Data Set*** gives a preview of the format of the data set descriptions that we wish to acquire.

3. The data sets themselves will be housed either on this web site or on the contributor's site, depending on which method represents the cybernetic path of least resistance. Downloading instructions will be (are) given at the point of access.

4. The Society will not provide analytic software or licenses for software. Fortunately, many options are available at no charge or involve facilities that you may own already. The Society will provide as complete information as possible about available software. The node of this web site designated ***Other Resources/Software*** will contain that information. We invite the use of computational techniques that are not yet known to our web site.

5. The analytic strategy that a researcher might choose to pursue depends, of course, on the type of data being considered, and the programs that could be applicable to such data. Please refer to the following file, ***Suggestions to Include in a Data Analysis***, for a further discussion of possible options.

6. People who have downloaded data from the project are welcome to contribute their final reports to a section of this web site that is dedicated to housing such reports. Potential reports are not limited to those that use the available data from this site. Please refer to the following file, ***Formatting Your Research Report for this Web Site***, for preparation and submission of these documents.

7. After a collection of reports has started to grow, some of the reports will be selected for publication ***in Nonlinear Dynamics, Psychology, and Life Sciences***. The choice of papers will be based on the reviews of the Editors. The usual considerations of depth, clarity, originality, and topic coverage will apply. The authors whose work has been selected in this fashion will be contacted sufficiently in advance of publication to ascertain their interest in such publication.

HOW TO CONTRIBUTE A DATA SET

If you would like to make a data set available for this project, please submit the following materials to Kevin Dooley, kevin.dooley@asu.edu SCTPLS President and Webmaster. E-mail submission is required for all materials; if there is a problem using e-mail for this purposes, please describe the problem to Dr. Dooley, and alternative arrangements will be worked out if possible. Please do not send "go to my website" messages.

1. Cover letter/message. Please identify yourself and your institutional affiliation. Give the name of the data set that you are enclosing as an attached file. Your message should clearly state an assurance from your that indeed you have the right to post this data set. The best case is where the person submitting the data is the one who made it. There are other acceptable conditions also, e.g., the data are already in the public domain.

2. The data file should be in formatted in ASCII or MS EXCEL spreadsheet. Dr. Dooley will be screening incoming material for format and web-worthiness. Large files may be ZIPPED or TAR COMPRESSED.

3. A description of your data set in 750 words or less giving:

a. A descriptive title of the data;

b.The name(s) and affiliation(s) of the people submitting the data;

c.A description of the variables, how they were measured, and the conditions under which they were generated;

d. The format of the variables if not already given in 3.3 above;

e. The file type and any compression facility that may have been used;

f. A summary of the published research involving that data, if any; if none, so state;

g. Bibliographic citations to #3-f, if any.

h. You may include up to 2 figures if they are important for understanding your data set, its peculiarities, or particular analytic challenges that it might present. Figures should be prepared in .jpg, .tif, .gif, or postscript. They may be converted to another format by the Webmaster. BITMAP files are usually too large for the site; they may be submitted to the Webmaster, who will probably convert them to a different format.

The selection criteria for project data sets are simple. The general goal is to have good material available, to

minimize redundancy, and to maximize variety. We encourage data sets for EEGs, EKGs, genomes, other biological phenomena, cognitive processes, clinical or other transcripts of human communication, other social and organizational behaviors, and economic phenomena.

SUGGESTED RESEARCH QUESTIONS

There are many possible questions that one might pose concerning new computational techniques and different types of data. We can make some suggestions, nonetheless:

If two computational techniques are meant to produce the same theoretical indicator (e.g., fractal dimension) by different means, is one method more suitable to one type of data than it is to another?

Various filtering strategies have been suggested over the years. Do they actually improve the data by removing noise, or do they strip out true measurement, or true dynamics, as well?

Sometimes we are interested in comparing entire modeling strategies. Does one computational system identify nonlinear systems more accurately than another?

Are the results of any of the new computational strategies more robust under different conditions of sampling, stationarity, cross-validation, etc.?

How are any of the questions given above modified when the researcher is faced with different types of data, such as EEGs, performance of work groups, hierarchically-organized phenomena, etc.

Do any of the new analytic techniques convey any new *meaning* concerning the phenomena from which the data were taken?

At this point we wish to convey some idea of the type of analyses that we *do not* wish to actively encourage. Researchers who are familiar with the nonlinear dynamics literature are probably aware of the large supply of journal articles where, "We took data generated from the logistic map [Lorenz attractor, etc] equation, added X% IID noise, ran it through [our favorite] computational procedure, and looked at what come out." Although it is probable that "pure attractor" data sets will be part of the data library, the goal here is different: We wish to facilitate the solution of ***substantive*** problems that are encountered in the life and social sciences, which can only be solved by resolving problems that are encountered with real data.

More generally, we can anticipate 4 stratetic approaches to any of the data analysis objectives listed above:

1. One data set, one method of analysis, with interpretation relative to something that is known about the data.

2. Two or more data sets used, one method of analysis, with interpretations that address (in part) some aspect of the data that are different.

3. One data set used, two or more methods of analysis, with interpretations that address some aspect of the analyses that is different.

4. Two or more data sets, two or more methods of analysis.

This last type of strategy lends itself to comprehensive thinking, which is good. From a practical standpoint, however it will be unwieldy. Analysts should be advised to break up their material into smaller chunks, as defined by 1, 2, 3 above. The next file, "Formatting Your Research Report for this Web Site" should provide additional useful information for framing your research questions and organizing your results.

FORMATTING YOUR RESEARCH REPORTS FOR THE SCTPLS WEB SITE

When you are ready to write up and post your research report, please prepare your document according to the instructions below. For the most part, you should follow the ***NDPLS Instructions for Authors*** [button] with the following exceptions:

1. Text should be single-spaced instead of double-spaced.

2. Place the tables and figures in the text where they are meant to appear, rather than at the end of the manuscript.

DO adhere to the following style points of manuscript preparation:

1. Begin your article with a title, list of authors, their institutional affiliations, and the address and e-mail of the corresponding author. In the case of multiple-author works, there will be only one "corresponding author."

2. The author/title information is followed by an abstract of approximately 150-250 words summarizing the nature of the research question, the data used and programs used, and the highlights of results.

3. References in the text and reference list should conform to the *NDPLS*/APA style.

4. If you are working with a data set that was downloaded from this website, cite the contributing authors, their data set, and URL as it appears on this web site. Include other bibliographic citations to publications involving the data as given in the data description if such publications exist.

5. Research reports are accepted in English only. Both the British and United States dialects are acceptable.

Electronic formats for your reports are limited to the following preparations: MS WORD, Word Perfect, `.pdf` (for Adobe Acrobat Readers), and postscript. TEX users should prepare the postscript version of their document.

Figures take up a lot of space if wrong format is chosen. For those using MS WORD, convert your graphics to `.jpg`, `.gif`, or `.tif` before inserting them into your manuscript. BITMAP files tend to be overly large. Scanner documents tend to be large and incompatible with other software.

If you cannot convert your figures to a small format that is compatible with your word processor, put a MARKER in your text where figures should go (see ***NDPLS Instructions for Authors***), and send the figures to the Webmaster in separate files. The Webmaster will make the necessary conversions and post the document in a suitable format.

As we mentioned earlier, the Society intends to collect a set of manuscripts culled from the web site postings for publication in its research journal, ***Nonlinear Dynamics, Psychology, and Life Sciences***. It is assumed that a posting to this website constitutes submission for journal review, UNLESS YOU SPECIFY OTHERWISE. To specify otherwise, your title page must acknowledge that the paper is

under review by another journal, or has been accepted for publication in another journal.

If you do in fact wish to have your manuscript considered for a special collection in *NDPLS*, it is required that your manuscript has not been accepted for publication elsewhere, and is not under review by another journal. Publication on your own website, or access through the SCTPLS website does *not* constitute "publication." Distribution of your work through an "electronic journal" DOES constitute publication, however. Presentations at conferences, or publication of abstracts in conference documents do NOT constitute publication. Publication of the full text in a conference proceedings books USUALLY DOES constitute publication. *NDPLS* cannot accept previously published material even if the original language of publication was not English. Contact the *NDPLS* Editor [stephen.guastello@marquette.edu] for any clarifications of the foregoing policy.

The provisions of the United States Copyright Law will apply to all documents loaded to this site. The US Code is generous to authors, and most of its provisions have been adopted as an international standard. The following points are particularly pertinent:

1. All rights to the paper belong to the authors until such time as a transfer of copyright has been signed between an author and another entity, such as a publisher. SCTPLS intends to honor the nature of agreements that exist between authors and other entities as a result of a transfer of copyright.

2. If the copyright has not been transferred, there is no problem with posting your paper to the SCTPLS site. If the paper has been accepted for publication, publishers typically allow authors to supply preprints through sites such as this one. When the paper is published, however, it is necessary for the authors to remove their paper from the site OR request permission from the publisher to leave it on the site.

3. It is the author's responsibility to request permission from their publisher to continue to make their paper available on the SCTPLS site. To obtain such permission, contact the Permissions Office of the Publisher of the journal or book. Such permission is not usually authorized from the office of the Journal Editor.

4. If your document contains someone else's copyrighted materials other than the data provided on this site (e.g., figures, tables, or text excerpts greater than 99 words), it is the author's permission to secure such permission from the original publisher and/or authors. Journals typically give permission information on one of the inside covers of the journal.

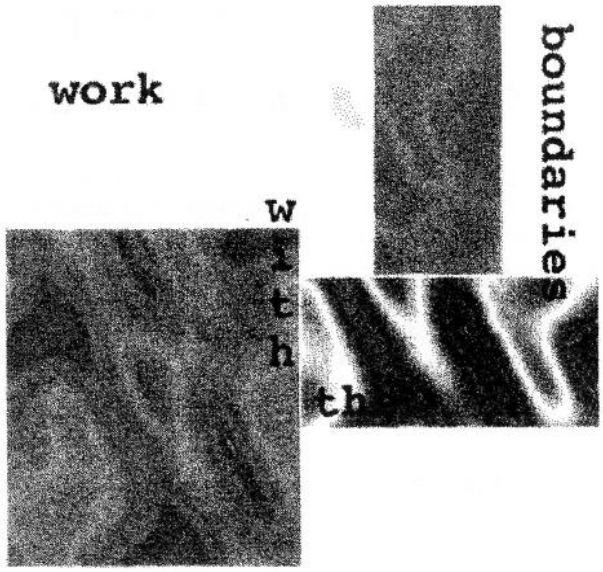
Send your completed document to Dr. Kevin Dooley kevin.dooley@asu.edu. And last, but not least, analytic research reports are welcomed by the NDPLS Editors throughout the year, whether you choose to participate in the web-based project or not.

Continued from p. 6: News from Members

Anatoliy Shiyan, Head of the Institute for Social Technologies invites visitors to the English web-site of the Institute: http://soctech.webjump.com. He says that the newly rewritten manual "Social Technologies for Management. Typologies for Persons and Relationships, Optimal Management of Man" (in Russian) may be found at http://soctech.narod.ru. Several papers of Anatoliy's, published in 2000, may be of interest to Society members: Formation of hierarchical social structures as a way of realization of Election Campaigns: the theory and results of application. - *Political Marketing* (Moscow, Russia).; N3; 9-42. (In Russian); About a role of communicants in maintenance of psychological comfort: from stress to suicide; *Applied psychology* (Moscow, Russia); N4; 67-79. (in Press).

WORK WITH THE BOUNDARIES

All SCTPLS Members who have renewed their memberships for 2000-2001 received this year's full color poster, "Work with the boundaries." Forgot to renew? No worries, Mates! There's a form you can use on the new SCTPLS web site.



Continued from p. 9: Wonderful Webbage

From the universe's foremost supplier of immersed, boundary-free, non-orientable, one-sided surfaces, here's something that's fun for the whole family: http://www.kleinbottle.com.

--Arnold Wytenburg

CALL FOR PAPERS & SYMPOSIA

11th Annual International Conference of the
Society for Chaos Theory in Psychology & Life Sciences
University of Wisconsin
Madison, Wisconsin, USA
August 3-6, 2001

An invitation is extended to all interested scholars to submit abstracts reporting work involving chaos theory, fractals, nonlinear dynamics, complexity, and related principles. Submissions are solicited in research, theory, and application in any of the psychological and life sciences sub-disciplines. Areas represented at recent conferences have included neuroscience, biology, medical research, economics, sociology, anthropology, physics, political science, psychology, organizations and management, education, art, philosophy, and literature. The program will include single papers, symposia, and roundtable or other special sessions. Subject matter may be theoretical or applied, and may be empirically or methodologically oriented.

THIS YEAR'S CONFERENCE THEME

Simulating and Visualizing Complex Systems

We especially encourage submissions aligned with this year's conference theme. One stream of research that has been particularly active is that of agent-based (object-oriented) simulation, whereby 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 (soon to be named), 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.

Saturday night Banquet speaker will be:
STEPHEN GUASTELLO
Steve is one of the earliest members of the Society, Editor of our journal Nonlinear Dynamics, Psychology, & Life Sciences, and a leading expert on catastrophe theory.

BRIEF OVERVIEW OF CONFERENCE SCHEDULE

August 2 (Thursday)	Early arrival day.
August 3 (Friday)	Registration, Workshops and plus Opening Ceremonies with Invited Speaker
August 4 (Saturday)	Conference Day 1, Banquet with Invited Speaker
August 5 (Sunday)	Conference Day 2
August 6 (Monday)	Business Meeting, Workshops
August 7 (Tuesday)	Departure day

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. 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 The show begins!

INSTRUCTIONS FOR SUBMISSION OF ABSTRACTS

Submissions should include the title of the presentation, the names and affiliations of all authors, and a SHORT abstract (200 –250 words).

All abstracts **MUST** be submitted in publishable, ***electronic* form**, either as ASCII email enclosures or as WORD or WORDPERFECT attachments. Please facilitate review of your abstract by:

1 **DO NOT** include diagrams, graphics, or special fonts, as these cannot be printed in the program. If figures or math text are needed for proper evaluation of proposal, send abstract by FAX instead; see below.

2 If you are using WORD or WORDPERFECT, **TRY TO AVOID** submissions with hard carriage returns at the end of lines in the body of the abstract (We will have to remove them manually, one at a time!). **Use returns *only* at paragraph breaks.**

3 **DO INCLUDE** your address, phone/fax number, and email address for notification regarding the status of your submission.

4. **PLEASE INCLUDE** notation of any special audio or visual needs. Standard overhead projectors will be available. Unusual equipment is difficult and expensive to obtain, so review your needs carefully.

5. **PLEASE USE** the sample, below, as a guide.

6. **PLEASE avoid special formatting, extensive reference lists, etc**. ALL abstracts will be converted to the form and format shown in the sample before they are published on the web site and in the Conference Program.

SAMPLE ABSTRACT SUBMISSION

TITLE: Applications of "chaos theory" in the study of really interesting stuff.

AUTHORS & AFFILIATIONS: A. Tractor, Department of Interesting Stuff University of Everything, City, Country, Postal Code.
And
L. Sighcle, Department of Related Stuff, Research Place, City, Country, Postal Code.

ABSTRACT: We report results of a two-year study of the fluctuations in several interesting variables. Of particular interest are the relation between several of the variables and several of the others. Our analysis suggests that the relation of variables may be understood as reflecting the operation of a nonlinear, complex system. Several suggestions about the dynamics of this system as well as implications for further study will be discussed. (Research supported, in part, by the National Institute of Interesting Stuff).

CONTACT INFORMATION Lymet Sighcle, Ph.D., Department of Related Stuff, Research Place City/State, Country, Postal Code. Voice phone: 999-999-9999, Ext. 99; email: lsighcle@researchplace.com

AUDIO VISUAL NEEDS: VHS Videotape

SUBMISSION DEADLINE

The **deadline** for submission of abstracts is:

Friday, ***May 4,*** 2001.

SUBMIT ABSTRACTS, **ELECTRONICALLY**, TO:

kevin.dooley@asu.edu

Please Remember **that your abstract can be most easily and accurately processed if you send them in plain text, or WORD, or WORDPERFECT formats, without special formatting and without carriage returns in the body of the abstract. See Instructions, above.**

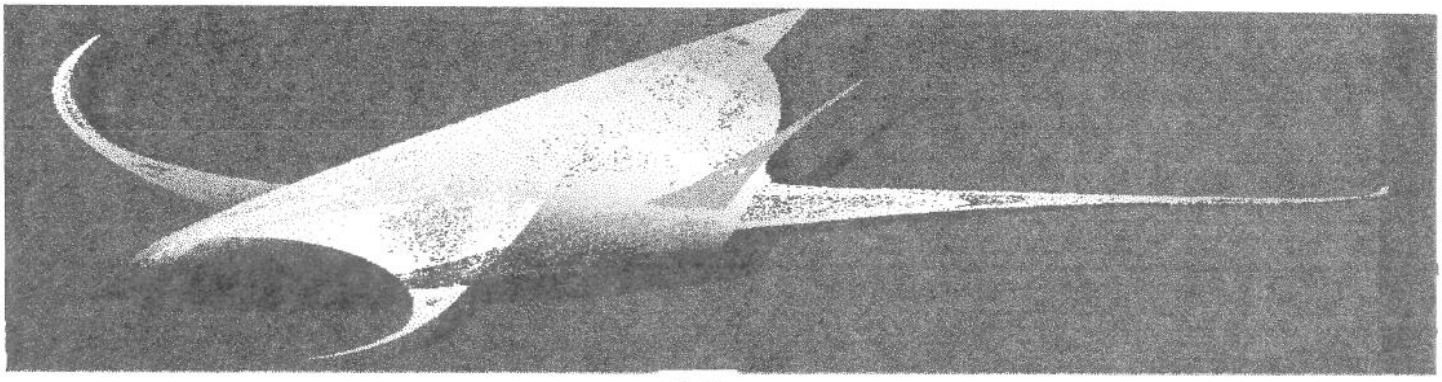
- Abstracts may also be mailed in the form of 3.25 diskettes, PC format, to, Kevin Dooley, PhD, Arizona State University, PO Box 875906,Tempe AZ 85287-5906
- FAX special graphic material to Kevin Dooley at 480-965-8692
- You will be notified when your abstract is received. Responses regarding abstracts *acceptance* will be made *via* email on or before May 18, 1999. If you are not notified by May 18, please contact Prof. Dooley at above email address.
- A list of accepted Abstract Titles and Presenters will be available on the SCTPLS webpage by May 25.
- Full Schedule of Presentations will be available on the SCTPLS webpage by June 10.
- The SCTPLS webpage is located at: http://www.societyforchaostheory.org

LOCATION & ACCOMMODATIONS

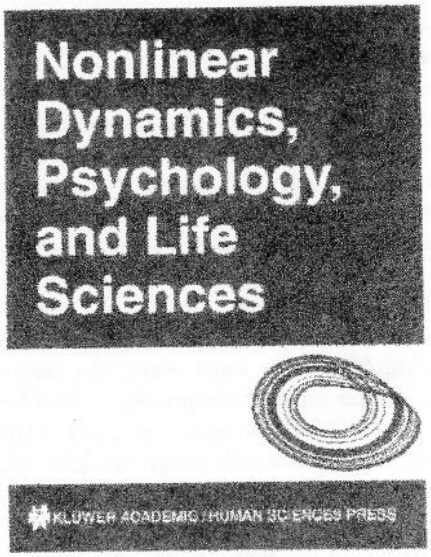
The 11th Annual International Conference of the Society for Chaos Theory in Psychology & Life Sciences will be held at University of Wisconsin, Madison. The Grainger Hall facilities offer comfortable meeting rooms and spacious facilities for reception and self-organized discussions. It is located at 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 (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.

Registration Fees: The [early] registration fee for this conference will be US$145 for regular members, US$100 for students, and $200 for non-members until July 8, 2001. After July 8, the door-registration rates of $170/125/225 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.

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** ***Newsletter***) or the membership form that is currently located on the **SCTPLS Web site** **http://www.societyforchaostheory.org** **ASCII** copies may be obtained from Mary Ann Metzger, secretary **<metzger@umbc.edu>**.



***In addition to* submitting an abstract, you may wish to consider the following invitation from our Journal editor.**



An Invitation to All SCTPLS '01 Speakers

On behalf of the Society I am inviting all SCTPLS '01 speakers to submit papers based on their conference presentations for review pursuant to publication its research journal, *Nonlinear Dynamics, Psychology and Life Sciences. NDPLS* is a forum for the publication of peer-reviewed original papers that augment the fundamental ways in which we understand, describe, and predict nonlinear dynamical phenomena in psychology, the life, and social sciences. "Nonlinear Dynamics" for purposes of the journal purview refers to a group of mathematical concepts that includes (but it not limited to) attractors, bifurcations, chaos, catastrophes, fractals, solitons, cellular automata, evolutionary computations, and processes of self-regulation. Regarding format, any submitted version of your paper will need to be in standard manuscript form. We use American Psychological Association (APA) style, if you are familiar with that. Format details and other information about *NDPLS* can be found on the Society website. In all cases, we can only publish manuscripts that have not been published already, and are not under consideration by any other journal. This is, of course, a familiar boundary condition.

I look forward to seeing you all in Madison.

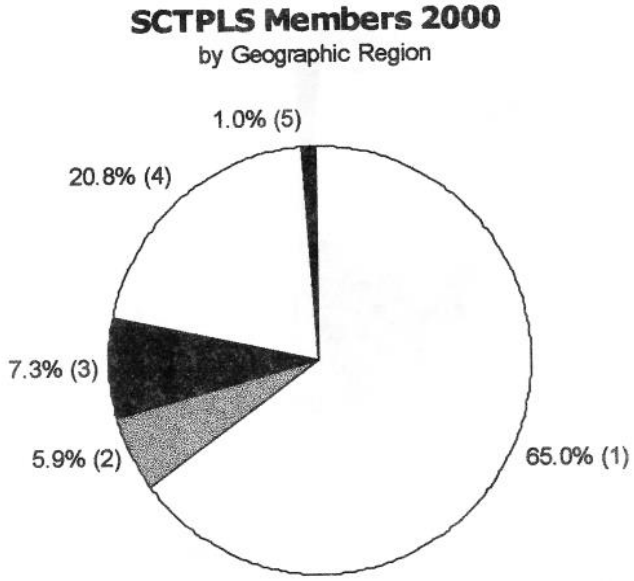
Sincerely,

Stephen J. Guastello, Ph.D.

Editor in Chief, *NDPLS*
Dept. Psychology, Marquette University
P. O. Box 1881 Milwaukee, WI 53201-1881 USA.

WHERE *ARE* THE NONLINEAR DYNAMICS?

By the end of December, 2000, the number of active SCTPLS members stood at 303. Members hail from approximately 30 different countries, although some regions of the world are more heavily represented than others. The pie chart below shows the current distribution of members from the major chunks of the world. Who defined the "chunk"? The U.S. Postal Service, of course!



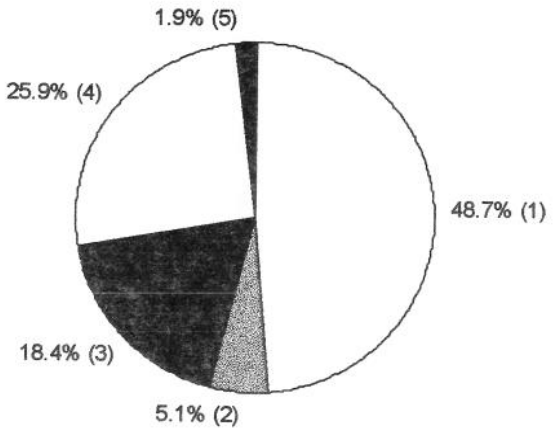
1= USA. 2 = CANADA. 3 = PACIFIC RIM. 4 = EUROPE. 5 = REST OF WORLD

We calculated a chi-square test on the distribution above to see if it changed at all from a similar count we had on file from August, 1997. There was a significant shift ($p < .05$) in membership. All the movement, however, could be accounted for by a decline in European members, and an increase in the Pacific Rim members. The European shift was mostly explained by the decline in membership in Russia. The Pacific Rim shift was explained by increased numbers from Australia and Japan.

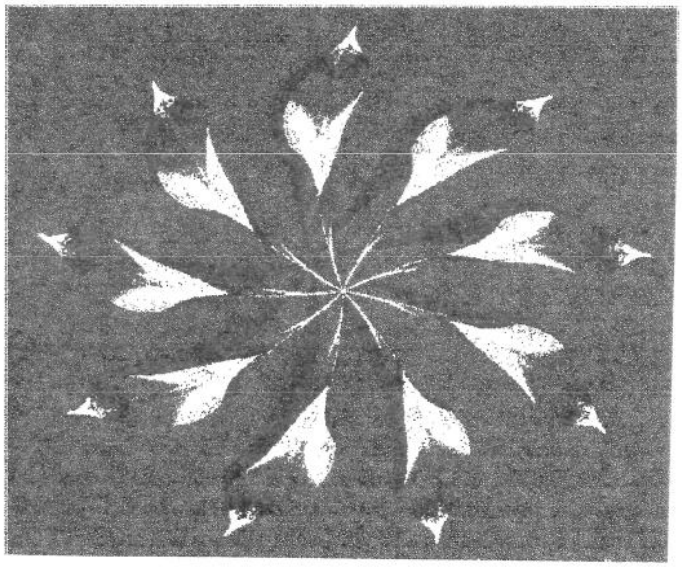
The next question was whether the *NDPLS* articles have been coming from the same places. In other words, where are the nonlinear dynamics innovations coming from? For this purpose we counted all the articles that either have been published or scheduled for publication in 2001, not including the book reviews and little editorial messages. If a paper was a single author paper, one publication was scored for that author's country; countries were assigned based on the authors' stated organizational affiliations. If an article contained two or more authors, and they came from different countries, the count of one publication was divided among the authors. In the most fractured case, the publication contained four authors, two of whom were from Russia, and two came from Germany. A count of 0.5 was assigned to Germany and 0.5 to Russia for that publication.

The most frequently appearing country was the United States, with 38.5 publications. The next countries in decending order: Australia (12), Italy (7.5), Canada (4), Bulgaria (3), and France (2). After that we had a 10-way tie with one publication each for: Austria, Egypt, Greece, Korea, Norway, Singapore, Spain, Switzerland, UK, and Yugoslavia. Finally, there was a 4-way tie with 0.5 publications each for: Chile, Germany, Hong Kong, and Russia.

NDPLS Authors 1997-2001
by Geographic Region



The countries are regrouped in Pie Chart #2 above to form the same five categories that correspond to the analysis of members. There were some significant differences based on the chi-square test ($p < .05$). The USA and Canada have contributed fewer manuscripts compared to their respective numbers of members. Australia is producing papers at a rate faster than its number of members would suggest. The rest of the world appears to be in balance.



From

Complexity Digest

Edited by Gottfried J. Mayer

1. Immune Molecules Prune Neural Links, Science Summary: (1) In work described on page 2155 <http://www.sciencemag.org/cgi/content/full/290/5499/2155> ,a team of neuroscientists suggests that the class I major histo-compatibility complex proteins, previously known for their role in controlling immune responses, also play a role in the nervous system. They are necessary for the formation of normal neuronal connections in a visual area of the brain during development, and later in life, they're called into play in the hippocampus, a brain area involved in memory and learning. The work shows a completely unexpected function for the immune system molecules.Brain-Building MHCs. In some ways, the nervous system and the immune system solve similar problems: They both have todistinguish and respond to an extremely large array of input from the external world, and both are exceedingly complex. Huh et al. (p. 2155; see the news story by Helmuth) show that class I major histocompatibility complex (MHC) molecules, used by the immune system to respond to antigens, are also necessary for accurate assembly of the brain.In mice genetically deficient for class I MHC molecules, the neural connections between the retina and their targets in the central nervous system are abnormal. Long-term potentiation, a form of cellular learning, is enhanced, and another form, long-term depression, is eliminated. The diversity and specificity of class I MHC molecules makes them attractive candidates for a role in establishing neural connections.

(2) Brain-Building MHCs In some ways, the nervous system and the immune system solve similar problems: They both have to distinguish and respond to an extremely large array of input from the external world, and both are exceedingly complex. Huh et al. (p. 2155 <http://www. sciencemag.org/ cgi/content/full/290/5499/2155> ; see the news story <http://www.sciencemag.org/cgi/content/full/ 290/5499/2051a> by Helmuth) show that class I major histocompatibility complex (MHC) molecules, used by the immune system to respond to antigens, are also necessary for accurate assembly of the brain. In mice genetically deficient for class I MHC molecules, the neural connections between the retina and their targets in the central nervous system are abnormal. Long-term potentiation, a form of cellular learning, is enhanced, and another form, long-term depression, is eliminated. The diversity and specificity of class I MHC molecules makes them attractive candidates for a role in establishing neural connections.

* Immune Molecules Prune Neural Links, Laura Helmuth, Science, 290(5499): 12/15/00, p.2051
* Functional Requirement for Class I MHC in CNS Development and Plasticity, Gene S. Huh, Lisa M. Boulanger, Hongping Du, Patricio A. Riquelme, Tilmann M. Brotz, and Carla J. Shatz, Science 2000 290: 2155-2159

2. Synaptic Efficacy and the Transmission of Complex Firing Patterns Between Neurons, J. Neurophysiol.

Abstract: In central neurons, the summation of inputs from presynaptic cells combined with the unreliability of synaptic transmission produces incessant variations of the membrane potential termed synaptic noise (SN). These fluctuations, which depend on both the unpredictable timing of afferent activities and quantal variations of postsynaptic potentials, have defied conventional analysis. We show here that, when applied to SN recorded from the Mauthner (M) cell of teleosts, a simple method of nonlinear analysis reveals previously undetected features of this signal including hidden periodic components. The phase relationship between these components is compatible with the notion that the temporal organization of events comprising this noise is deterministic rather than random and that it is generated by presynaptic interneurons behaving as coupled periodic oscillators. Furthermore a model of the presynaptic network shows how SN is shaped both by activities in incoming inputs and by the distribution of their synaptic weights expressed as mean quantal contents of the activated synapses. In confirmation we found experimentally that long-term tetanic potentiation (LTP), which selectively increases some of these synaptic weights, permits oscillating temporal patterns to be transmitted more effectively to the postsynaptic cell.Thus the probabilistic nature of transmitter release, which governs the strength of synapses, may be critical for the transfer of complex timing information within neuronal assemblies.

* Synaptic Efficacy and the Transmission of Complex Firing Patterns Between Neurons <http://jn.physiology.org/cgi/content/abstract/84/6/3010>, Philippe Faure, Daniel Kaplan, and Henri Korn, J. Neurophysiol. 2000 December 1; 84(6): p. 3010-3025.

3. Maze Navigation by Honeybees: Learning Path Regularity, 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.

* 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.

4. Gene Mutation Extends Lifespan In "I'm Not Dead Yet" Fruitflies, Natl. Inst. Aging/Science Daily Excerpt: Mutating a single gene can double the lifespan of fruitflies from 37 days to between 69 and 71 days, while maintaining a high level of functioning and fertility. This finding of a research team led by Stephen L. Helfand was supported in part by the National Institute on Aging (NIA)<http://www.nih.gov/ nia> , part of the National Institutes of Health. Their study is reported in the December 14 issue of Science. This is the third mutation in the fruitfly genome that is reported to extend lifespan. According to Helfand, the Indy gene is associated with the way that the body stores and uses energy.

The gene is named "Indy" in homage to Monty Python and the Holy Grail's tag line, "I'm not dead yet," uttered by a supposed plague victim being hauled off for burial while still alive. (JPEG file available on request.) The researchers speculate that the way the Indy gene mutation works to extend life and health may be via changes in the normal metabolism of food. This link between altered metabolism and life-span extension became the focus of Helfand's studies when other laboratories showed that research animals receiving full nutrition but lowered calorie intake, or caloric restriction, lived longer. Although the mechanism by which caloric restriction benefits longevity is not understood, Dr. Helfand suggests that it is likely to involve changes in energy utilization. The Indy fruitfly differs from other long-lived fruitflies by the direct, ratherthan indirect, action of the altered gene on metabolism and the use of food energy. "What is interesting about this line of research is the recurrence of the link between metabolism, caloric restriction and longevity. This study points to the possibility that if you genetically alter metabolism, you can alter lifespan," said Dr. David Finkelstein, research director for metabolic regulation research at the National Institute on Aging. "While there is an 80 percent homology between the fruitfly and human genomes, we are still many steps away from understanding how caloric restriction may affect human lifespan," Finkelstein said.

* Gene Mutation Extends Lifespan In "I'm Not Dead Yet" Fruitflies <http://www.sciencedaily.com/releases/2000/12/001215082220.htm>, National Institute on Aging (NIA) <http://www.nih.gov/nia>, Science Daily, 12/15/00

* Old Flies May Hold Secrets Of Aging <http://www.sciencemag.org/cgi/content/full/290/5499/2048> Elizabeth Pennisi, Science, 290(5499): 12/15/00, p. 2048

* Extended Life-Span Conferred By Cotransporter Gene Mutations In Drosophila <http://www.sciencemag.org/cgi/content/abstract/290/5499/2137> , Blanka Rogina, Robert A. Reenan, Steven P. Nilsen, Stephen L. Helfand, Science, 290(5499): 12/15/00, p. 2137

5. Europe's Meeting Of Unequals, Financial Times The problem of how to come to a legitimate method to determine the democratic decision of the people of a modern society has not only been painfully demonstrated in the pitiful processes related to the counting of votes. The idealistic "one person, one vote" principle has not been implemented not only in the US. There, due to the antiquated electoral system e.g. a vote for president in Alaska counts three times as much as a vote in Massachusetts. But not only the US uses thresholds to introduce non-linearites in the vote-counting process. The same problem causes trouble in Europe where European matters are decided by votes assigned to countries and not to people. That raises the problem how to take into account the different population sizes in different countries. Excerpt: As for the twin aims of efficiency and legitimacy, the complex solutions proposed at the summit seem more likely to hinder than help. With all the variations of voting weights for big and small, increased thresholds necessary to reach a qualified majority decision on any issue, and failure to extend significantly the subjects on which

majority voting can be used, future decision-making is likely to be more difficult, not less. By opting for greater complexity in order to reconcile their differences, the EU leaders will make their system less transparent, and less open to democratic control, whether by the European parliament, or by national parliaments. Simplification of the rules should have been the order of the day. It was not."

* Europe's Meeting Of Unequals <http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT39NU65LGC&live=true&tagid=ZZZU2IUKJ0C&Collid=Any> , Quentin Peel, Financial Times, 12/10/00

6. Have We Overdone Deregulation and Privatization?, HBS Working Knowledge. Excerpt: During the Jimmy Carter administration, Congress enacted legislation that had become known as "the Federal Express bill." It was designed to test the idea of deregulation by allowing air freight carriers to fly planes of any size on any routes, without federal price controls. The bill accommodated the persistent lobbying activities of one Fred Smith, the young CEO of Federal Express, who had been required under previous regulation to use small, inefficient aircraft to transport freight or else submit to stringent government regulation. It was regarded by Congress as an experiment carried out in a small, obscure industry which, if unsuccessful, would have little economic impact. Little did Congress realize that true believers in deregulation, like Alfred Kahn, a Cornell economics professor whom Carter had appointed as chairman of the Civil Aeronautics Board, would champion the extension of the idea to the entire airline industry, and then into areas such as brokerage fees and other professional services. In recent years, the deregulation movement has spread to industries with which consumers interact daily, such as electric power and telephone service, whose dependability and equitable pricing were generally left to government and not thought much about.

* Have We Overdone Deregulation And Privatization? <http://hbswk.hbs.edu/heskett/deregulation.jhtml> , HBS Working Knowledge, 12/11/00.

7. Unchained Value: The New Logic of Digital Business, HBS Working Knowledge. Excerpt: In Unchained Value, Internet expert Mary Cronin introduces a radically new strategic model for organization that she calls the "digital value system." It is focused not on static, internally focused "chains" but on dynamic, external webs of relationships that take full advantage of the power, flexibility, and opportunity of the digital arena. One of the keys to the new model, she writes, is an understanding that the old strategy of hoarding information to maximize its value is no longer appropriate. "The Internet undermines competitive strategy based on information scarcity," she writes, "by making every Web site into a potential channel for free distribution of anything and everything that can be transmitted digitally."

* Unchained Value: The New Logic of Digital Business <http://hbswk.hbs.edu/topics/ecommerce/>, HBS Working Knowledge, 12/11/00, excerpted from: Unchained Value: The New Logic of Digital Business, Mary J. Cronin. HBS Press, 2000.

8. Common Knowledge: How Companies Thrive by Sharing What They Know, HBS Working Knowledge. Excerpt: Pervading the idea of knowledge sharing are three myths. Perhaps myth is the wrong term—maybe they are just assumptions that seem reasonable at first glance, but when acted on send organizations to a dead end. Many of the organizations I studied started with one or more of these assumptions and then had to make corrections to get back on track. The three myths are (1) build it and they will come, (2) technology can replace face-to-face, and (3) first you have to create a learning culture. Managers who want to make the knowledge in their organizations more available often have a mental image of a large warehouse that contains all of that knowledge. They envision those who are looking for knowledge going to the warehouse and taking out what they need. The idea has a lot of intuitive appeal. Knowledge seems so amorphous that the notion of its being documented and located in a central place offers a comforting sense of control and manageability.

Common Knowledge: How Companies Thrive by Sharing What They Know <http://hbswk.hbs.edu/topics/knowledge/> , HBS Working Knowledge, 12/11/00, excerpted from: Common Knowledge: How Companies Thrive by Sharing What They Know, Nancy M. Dixon, HBS Press, 2000.

9. The Causes of 20th Century Warming, Science. Summary: Global air surface temperatures increased by about 0.6°C during the 20th century, but as Zwiers and Weaver discuss in their Perspective, the warming was not continuous. Two distinct periods of warming, from 1910 to 1945 and since 1976, were separated by a period of very gradual cooling. The authors highlight the work by Stott et al., who have performed the most comprehensive simulation of 20th century climate to date. The agreement between observed and simulated temperature variations strongly suggests that forcing from anthropogenic activities, moderated by variations in solar and volcanic forcing, has been the main driver of climate change during the past century. Global annual mean near-surface air temperature increased during the 20th century in two major steps, the first between roughly 1910 and 1940 and the second (which is still continuing) after about 1975. It has been difficult to understand the causes of this overall rise, partly because anthropogenic forcing by fossil fuel combustion has grown steadily during that interval and partly because it was not as important a forcing factor in the first half of the century as in the second. Stott et al. (p. 2133; see the Perspective by Zwiers and Weaver) have used a state-of-the-art climate model, HadCM3, to examine the reasons for this increase. An ensemble of four simulations of the last 140 years indicates that a combination of natural climate variations and human-induced variability can explain the observed temperature rise, and that most of the multidecadal-scale global variations are not due to internal variability of Earth's climate system, but are externally forced.

* The Causes Of 20th Century Warming <http://www.sciencemag.org/cgi/content/summary/290/5499/2081> , Francis W. Zwiers And Andrew J. Weaver, Science 290(5499): 12/15/00, P. 2081. External Control Of 20th Century Temperature by Natural And Anthropogenic Forcings <http://www.sciencemag.org/cgi/content/short/290/5499/2133> , Peter A. Stott, S. F. B. Tett, G. S. Jones, M. R. Allen, J. F. B. Mitchell, G. J. Jenkins, Science 290(5499): 12/15/00, P.2133.

10. Low Clouds and Cosmic Rays, Science/ Phys.Rev. Let. Summary: If the study of global climate change were a card game, one of the wild cards would be the role of clouds. Clouds are a primary influence on the energy budget of Earth's surface and

atmosphere because of their effects on the reflection and absorption of solar radiation and their trapping of outgoing long-wave radiation. Clouds differ in their radiative properties, however, and the complexity of cloud formation is greater than our understanding of all of the factors that control their distribution and composition. Solar cosmic rays may influence global cloud cover because they can ionize atmospheric particles and thus create condensation nuclei for cloud droplet formation. The terrestrial cosmic ray flux depends on solar output and is modulated by Earth's magnetic field; both of these quantities are known to vary. Marsh and Svensmark have measured global average monthly cloud anomalies for lower, middle, and upper troposphere, and correlated them with changes in the cosmic ray flux. They found, surprisingly, that cloud cover at altitudes of less than 3.2 kilometers covaries with cosmic ray fluxes from 1980 to 1995, but no correlation was seen for higher altitude clouds. If this relation is systematic, cosmic ray variability could have a significant effect on the evolution of climate.

* Low Clouds And Cosmic Rays <http://www.sciencemag.org/cgi/content/full/290/5499/2033b> , H.Jesse Smith, Science, 290(5499): 12/15/00, p. 2033b
* Marsh and Svensmark, Phys. Rev. Lett. 85, 5004 (2000)

11. Models Of Division Of Labor In Social Insects, Annu. Rev. Entomol. Abstract: Division of labor is one of the most basic and widely studied aspects of colony behavior in social insects. Studies of division of labor are concerned with the integration of individual worker behavior into colony level task organization and with the question of how regulation of division of labor may contribute to colony efficiency. Here we describe and critique the current models concerned with the proximate causes of division of labor in social insects. The models have identified various proximate mechanisms to explain division of labor, based on both internal and external factors. On the basis of these factors, we suggest a classi-fication of the models. We first describe the different types of models and then review the empirical evidence supporting them. The models to date may be considered preliminary and exploratory; they have advanced our understanding by suggesting possible mechanisms for division of labor and by revealing how individual and colony-level behavior may be related. They suggest specific hypotheses that can be tested by experiment and so may lead to the development of more powerful and integrative explanatory models.

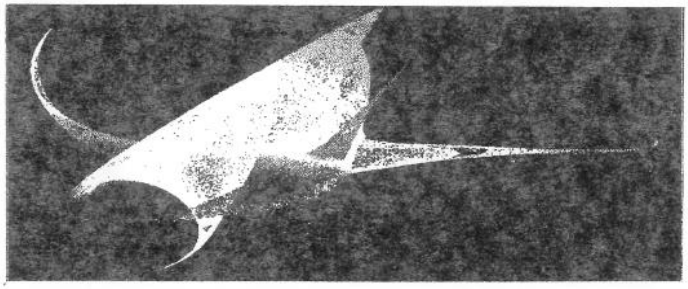
* Models Of Division Of Labor In Social Insects <http://ento.AnnualReviews.org//cgi/content/abstract/46/1/413> , Samuel N. Beshers, Jennifer H. Fewell, Annu. Rev. Entomol. 2001 January 1; 46(1): p. 413-440

12. Earth's Continental Land Masses Created In Short, Fast Bursts, Science Daily. Excerpts: Scientists believe they have unraveled one of geology's most enduring mysteries about how the Earth's continental crust was built, and they say it happened in a relative blink of an eye. According to Alexander Cruden, associate professor of geology at the University of Toronto and second author of the paper to appear in the Dec. 6 issue of Nature, the way that granite forms - a rock that makes up about 70 to 80 per cent of the Earth's continental crust - is not the sluggish, multi-million year process thatscientists previously believed. In fact, Cruden and his co-authors argue that the process occurs in rapid, dynamic and possibly catastrophic events that take between 1,000 and 100,000 years, depending on the size of the granite intrusion. And that's changing how scientists look at the formation of the Earth's continents. (...) The researchers used experimental studies that involved melting rock samples to understand how granitemagma initially forms in the upper mantle and lower crust and how fast it can move. That data was then applied to theoretical models to determine its method and rate of ascension. New models for the emplacement stage - where the granite is intruded into older rock in the upper crust - are based on a combination of theoretical studies and fieldwork in areas such as the Canadian Shield, Sweden, the Sierra Nevada of California, Greenland and the Andes of South America. A unique aspect of the research is that the three main stages of granite formation - generation, ascent and emplacement - are regarded together as a system. Historically, these processes have been studied by different geological specialists in isolation from each other. Cruden likens the granite formation process to subterranean volcanic eruptions. Like Lego blocks built on top of one another, large parts of the Earth's continental land masses were created by tens of thousands of quick eruptions or bursts of molten magma that were transferred rapidly from the mantle and lower-most crust and then injected as large horizontal sheets into the upper crust. These sheets then cooled and crystallized to form the large granite intrusions that we see exposed at the surface of all continents today, he says. The Earth's continents began forming approximately four billion years ago, Cruden explains. "This research has important implications for how we understand the basic physics and chemistry of crust formation processes as well as the formation of economic ore deposits - gold and copper, for example - many of which are associated with granite intrusions."

* Earth's Continental Land Masses Created In Short <http://www.sciencedaily.com/releases/2000/12/001207140240.htm> , Fast Bursts, Scientists Say, Science Daily, 12/8/00

13. Diet And The Evolution Of The Earliest Human Ancestors, PNAS Abstract: Over the past decade, discussions of the evolution of the earliest human ancestors have focused on the locomotion of the australopithecines. Recent discoveries in a broad range of disciplines have raised important questions about the influence of ecological factors in early human evolution. Here we trace the cranial and dental traits of the early australopithecines through time, to show that between 4.4 million and 2.3 million years ago, the dietary capabilities of the earliest hominids changed dramatically, leaving them well suited for life in a variety of habitats and able to cope with significant changes in resource availability associated with long-term and short-term climatic fluctuations.

* Diet And The Evolution Of The Earliest Human Ancestors<http://www.pnas.org/cgi/content/abstract/97/25/13506> Mark F. Teaford, Peter S. Ungar, PNAS 2000;97 13506-13511



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