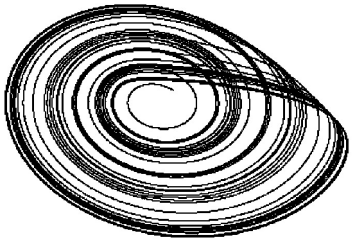
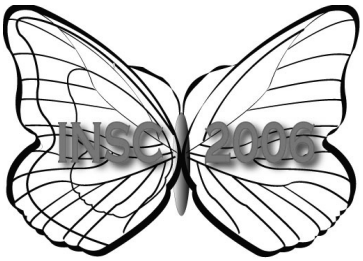
SOCIETY FOR CHAOS THEORY
IN PSYCHOLOGY
& LIFE SCIENCES





IS COMING --- MARCH 2006

NEWSLETTER **Vol. 11 No. 3, July 2005**

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

15th Annual
INTERNATIONAL CONFERENCE ISSUE
Denver, August 4-6, 2005

INSIDE: **Conference Program and Abstracts**

This year's theme
NONLINEAR SCIENCE IN CONTEXT

Welcome to the SCTPLS conference! Please find us and tell us about yourConference experience.
Holly Arrow, President & Matthijs Koopmans, President-Elect & Conference Chair.

Power Laws At The Edge Of Chaos In Organizations *(Introductory, Workshop)* Thursday, 4 Aug, 8:30 AM - 12:30 PM

Instructor: **Bill McKelvey, Ph.D.** , UCLA

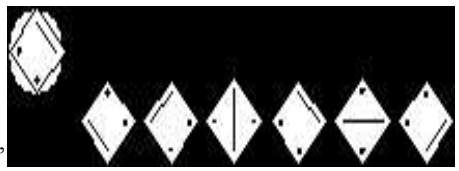
Testing Hypotheses for Nonlinear Dynamics with Popular Statistical Software *Intermediate, Workshop)* Thursday, 4 Aug, 1:30 PM - 5:30 PM

Instructor: **Stephen J. Guastello, Ph.D**., Marquette University

Combinatorial Dynamics for the Social Sciences: Two-part workshop

Combinatorial Dynamics 1: Basic Structures *(Intermediate, Workshop)* Thursday, 4 Aug, 8:30 AM - 12:30 PM

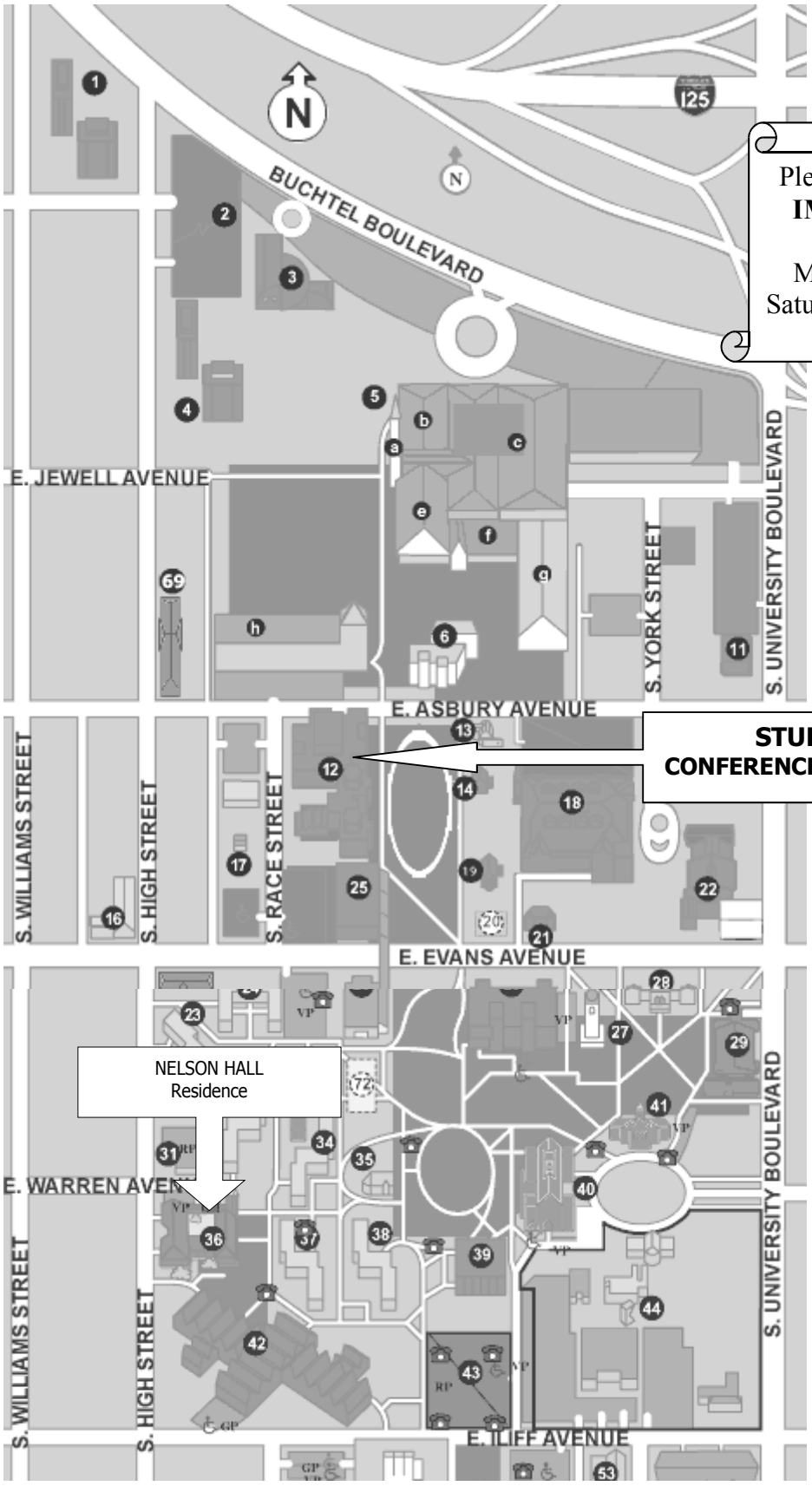
Combinatorial Dynamics 2: Games and Strategies *(Advanced, Workshop)* Thursday, 4 Aug, 1:30 PM - 5:30 PM



Instructor: William Sulis, M.D., Ph.D. , Practicing Geriatric Psychiatrist & Academic Professor McMaster University

PLEASE REMEMBER
IMPORTANT BUSINESS MEETING
ON SATURDAY AFTERNOON

UNIVERSITY OF DENVER CAMPUS MAP



SCTPLS 2005 Conference Schedule

Day 1 Thursday, August 4

Registration *8-10 AM, 12:30-1:30, 5:30-6* ***OUTSIDE STRUM 124***

	Sturm 186	*Sturm 124*
8:30 - 12:30	Workshop (Introductory Level) Power Laws at the Edge of Chaos in Organizations **Bill McKelvey (UCLA)**	Workshop (Intermediate Level) Combinatorial Dynamics 1: Basic Structures **William Sulis (Practicing Geriatric Psychiatrist & Academic Professor, McMaster University)**
12:30-1:30	*Intermission*	
1:30-5:30	Workshop (Intermediate Level) Testing Hypotheses for Nonlinear Dynamics with Popular Statistical Software **Stephen Guastello (Marquette University)**	Workshop (Advanced Workshop) Combinatorial Dynamics 2: Basic Structures **William Sulis (Practicing Geriatric Psychiatrist & Academic Professor, McMaster University)**
5:30-6:00	***Meet the members & Registration. Light snacks. Sturm 124***	

6:15 Opening Remarks -- 6:30 Sunset Address

Neural Self-organization and Processes of Emotion

Marc Lewis (University of Toronto)

Cognitive neuroscientists portray the brain as a computational device for transforming inputs to outputs. In contrast, dynamical approaches model the brain as a self-organizing system that converges to attractors in response to perturbations. Though much improved, this picture is still half complete. Brain activities have to stabilize in order to do their work, but they do so only in the service of emotion. Emotional states emerge through "vertical integration" across the levels of the neuroaxis, including brainstem structures that mediate basic drives and packaged responses, limbic structures that attach emotional significance to events, and cortical structures that modulate and regulate feeling and action. The mechanisms responsible for this integration are intrinsically dynamical and they all play a part in the consolidation of emotion. They include the nested feedback architecture of neural circuitry, the global effects of neuromodulators and neuropeptides, emergent phase synchrony across cortical, limbic and brainstem structures, and the top-down coordination described by Haken's circular causality. Emotional states arising from neural integration capture cognition and action in the moment, but they also drive synaptic changes that underpin personality formation. Thus, stability in real time and stability over development are both outcomes of self-organizing neuroemotional states.

Marc Lewis is a Professor at the Department of Human Development and Applied Psychology, University of Toronto. He specializes in the study of personality development as it relates to emotion. His work is informed by developmental psychology, affective neuroscience, and a dynamical systems perspective on brain and behavior. He has done empirical work in the area of transitions in cognitive and emotional development, and he has developed a state space grid methodology to facilitate the analysis of socioemotional behavior over time. More recent work utilizes electrophysiological methods for identifying the neural underpinnings of emotion regulation in normal and antisocial children. His research outlining the contribution of nonlinear dynamics to our understanding of child and adolescent development has appeared in several highly regarded peer reviewed outlets, including Child Development, Journal of Abnormal Child Psychology, and Developmental Science.

Day 2	Friday, August 5	
8:00- 8:30	*Low Cost Breakfast Buffet available Nelson Residence Hall*	
	Sturm 186	*Sturm 124*
8:30-10:30	***Society***	***Social Networks 1***
	Captivity in Spouse Complaints to the Police as a measure of Dependability of the Authorities: Regional Comparison **Hilik Goldstein** The Method in Their Madness: Chaos Theory and the D.C. Snipers **J. Suzanne Horsley** Innovation Information Seeking and Innovation Adoption: Facilities and Plant Managers Energy Outlook Comparing Linear to Nonlinear Models **Stephen Guastello & Joseph Jacobson** Environmental Sustainability and Happiness **Aleksander Zidansek**	Bad Apples: The Relationship between Individual-level and Group-level Dynamics **David Pincus** Perturbations, Measurement and Nonlinearity in the Social Interaction **W. F. Lawless** Multi-fractal Validation of Geographic Settlement Models **Roger Sambrook** Cultural Change Supports Healthcare Improvements: Implications for Social Marketing Efforts **Frank Funderburk**
10:30-10:45	*Intermission*	
10:45 -12:15	***Nonlinear Methodology***	***Social Networks 2***
	The Effects of Irregular and Missing Data on Lyapunov Exponent Calculation **David Kreindler & Charles Lumsden** A Multi-modeling Approach to the Study of Modeling Complex Bio-behavioral Systems **Jeff Schank, Chris May & Joshi Sanjay** Low-dimensional Analysis by Proper Orthogonal Decomposition **Claudio Tebaldi**	Altruism Extreme Behaviors in Social Networks and the Definition of "Self" **Fariel Shafee** "Population of Easter Island," Modeled by Discrete Dynamical Systems **Michael Radin, William Basener, Bernard Brooks & Tama Wandt** Complexity Theory and Postmodern Texts: Conclusion Does Not Imply Closure **Allison Reed Miller**
12:15-1:30	*Intermission*	
1:30-2:30	***Symposium***	***Short Workshop***
	EEG Rhythms and Neurodynamics under Cell Phone Radiation **Tulio Minelli, Maurizio Balduzzo, Madeleine Clifford, Francesco Ferro Milone & Valentina Nofrate**	Sense and Practical Use of Tools to Estimate the Status of Health and to Evaluate Multidimensional Bio-psycho-social Therapeutic Goals **Karl Toifl**
2:30-2:45	*Intermission* ***PROGRAM CONTINUED NEXT PAGE***	

Day 2	Friday August 5 *continued*	
	Sturm 186	*Sturm 124*
2:45 - 4:15	***Cognition 1***	***Philosophy 1***
	Toward a General Theory of Cognitive Thermodynamics **Malcolm Dean** Chaos Theory, Metaphor Processing, and Complexity **Rita M. Weinberg** Mental Representation about Concepts Using Nonlinear Dynamical Systems Theory **Olga Mitina**	The Cantor Dust of Conflict **Meg Spohn** Emergence, Self-transcending Constructions and a Metaphysics of Hope **Jeffrey Goldstein** Emergent Hierarchies in Perception **Thomas Malloy**
4:15 – 4:30	*Intermission*	
4:30 – 5:30	***Cognition 2***	***Philosophy 2***
	Resemblance in Morphogenesis **Thomas Malloy** Aesthetics and Fractal Dimension of Electric Sheep **Ralph Abraham, Fred Abraham, Scott Draves, Clint Sprott & Pablo Viotti**	Modeling the Margins of Complexity: Complexity Theory's Encounter with Postmodern Texts **Allison Reed Miller** Where Chaos Dissolves **Susan Aaron**
5:30 – 6:30	***Poster Session with Cash Bar & Snacks*** ***Governor's Ballroom***	

Problem Ecologies & Regulatory Accretion: Habits that Pass for Dynamics
Linda Dennard (University College Cork & ETHOS, Cork, Ireland)

Modeling and Simulation
Jodinell Lyssy, Kimberly Thompson & Christina Hinojosa (AFRL/HEDR)

Stochastic Substrates of Animal Cognition
Chistopher May, Jeffrey Schank & Sanjay Joshi (University of California, Davis)

A Nonlinear Model for Type I Diabetes
Tim Holt (Warwick Medical School)

Banquet seating will begin about 6:30

Saturday Banquet Keynote Address

Out of Time and In Over Our Heads: How Efficiency Swamps the Individual and De-complexifies Organizations

Dr. L. Douglas Kiel (University of Texas, Dallas)

Research from the fields of both evolutionary psychology and cognitive psychology reveal that the cognitive capacities of humans seriously lag behind the pace of evolving societal complexity. The continuing demand for efficiency in the "developed societies" increasingly serves to exacerbate both individual and organization effectiveness. The mantra of constantly "doing more with less" provides little time for workers to find the slack required for organizational learning. The concept of the learning organization thus is replaced by the entropic organization in which the chaos of innovation is overwhelmed by the chaos of dissipation. In short, workers find themselves "out of time and in over our heads." This condition clearly serves neither the purposes of individuals or organizations.

Dr. Kiel will explore what these trends mean for organizations. We may find that the organizational response to evolving societal complexity may require considerably more thought as to the real capacities of the human brain and human organizational forms. The history of management and organizational studies is founded on novel proposals, if not solutions, to the challenges of organizational success. We may need to start with a more basic appreciation of how humans are hardwired before we can create organizations that serve the dual purposes of individual satisfaction and organizational success. The potential chaos created by these new innovations will be one of the great challenges for leaders in the 21st century.

L. Douglas Kiel is Professor of Management in the Social Sciences Department at University of Texas, Dallas. He is well known for his books, Managing Chaos and Complexity in Government (1994, Jossey-Bass) and Nonlinear Dynamics, Complexity and Public Policy (co-edited, 1999, Nova Science) and related contributions to organizational theory and practice. He was also co-editor of the NDPLS special issue on agent-based modeling (April 2004).

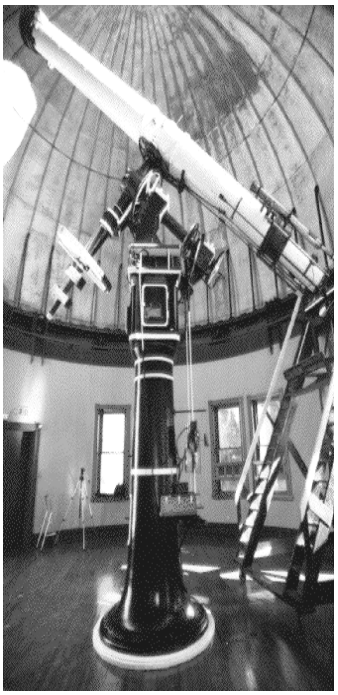
9:00 – 10:30	***A visit to the Chamberlain Observatory***

PLEASE REMEMBER

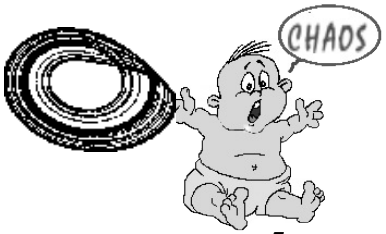
IMPORTANT BUSINESS MEETING Saturday Afternoon.

TOMORROW!

Please join us in Denver on the evening of Friday, August 5th at the University of Denver's Chamberlin Observatory. The Observatory is located a few minutes' walk from the University campus, and it is a beautiful, domed 19th-century stone building nestled in one of Denver's many lovely green parks. We'll be viewing celestial phenomena through a 120-year-old telescope with 20" refractor and incredible resolution. The telescope takes up an entire room under the dome, which rotates and opens and closes to accommodate it. The Observatory is noted for being a fascinating historical and architectural landmark, as well as the site of monthly "star parties," when members of the Denver community show up with their 'scopes and set them up on the lawn outside the Observatory. Members of the community can then look through the big 'scope inside, as well as check out other interesting celestial items through the smaller ones outside. Our hosts will be Dr. Robert Stencel from the Physics and Astronomy department at DU (as well as the Observatory Director); and Colby Jurgenson, Ph.D. Candidate in Physics and Astronomy, whose areas of interest include dying stars. As August 5 is the date of a new moon, the viewing should be especially spectacular. For a virtual tour of this Denver landmark and generally nifty place, you may go to http://www.du.edu/~rstencel/Chamberlin/.



Day 3	Saturday Morning, August 6		
8:00 - 8:30	*Breakfast Buffet*		
	Sturm 186	*Sturm 187*	*Sturm 124*
8:30 – 10:30	***Organizational Science***	***Clinical Theory & Practice 1***	***Neurophysiology***
	Complex Dynamics at Work: OD Theory and Practice **Glenda Eoyang** Beyond Averages: Extending Organization Science to Extreme Events in Power Laws **Bill McKelvey** Leadership Emergence in Coordination Intensive Groups. **Stephen Guastello & Robert W. Bond, Jr.**	Identifying the Emergence and Convergence of Patterns Foundational to Mental and Social Disorder **Jaclyn Gisburne** Tarasoff Dilemmas and the Problem of Counterfactuals **Patricia Lipscomb** Dynamical Systems Theory and Pain Imagery: Bridging the Gap between Research and Practice **David Pincus** Individuation as a Chaotic Process **Krystyna Laycraft**	Bridging Science and Consciousness via Chaos, CAS and Homeodynamics **Daniel Miller** Conceptual Imagination of Thinking as a Structured Process of Emotional and Logical Information processing by Humans in Pattern Recognition and Problem Solving **Yuiri Byelov** Quantitative Analysis of Conceptual Model of Thinking Processes on Olfactory Bulb Model Using Computer Toolbox **Yuriy Byelov, Sergiy Tkachuk & Roman Iamborak** Differential Movement Patterns but not Amount of Locomotion in Open Field Behavior of an ADHD Animal Model: The Spontaneously Hypersensitive Rat **Jay-Shake Li & Yi-Chen Huang**
10:30-10:45	*Intermission*		
10:45-12:15	***Bios Symposium***	***Clinical Theory & Practice 2***	***Education***
	Bios **Hector Sabelli , Arthur Sugerman, Louis Kauffman & Lazar Kovacevic**	The Multidimensionality of Health: Two Tools, One to Estimate the Status of Health and Another One to Evualuate Therapeutic Goals **Karl Toifl** Neuro-occupation: Then Nonlinear Dynamics of Intention, Meaning and Perception **Ivelisse Lazzarini** The Myth of Psyche through Nonlinear Eyes **Terry Marks-Tarlow**	Nonlinear Hypotheses in Education Research Methodologies **Dimitrios Stamovlasis** Chaos in the High School Classroom: Complexity as an Aid to Contextualizing Secondary High School Math **Phil Bertoni**
12:15-1:30	*Intermission*		



Day 3	Saturday Afternoon August 6		
	Sturm 186	*Sturm 187*	*Sturm 124*
	Medicine & Biology	***Economy 1***	***Short Workshop***
1:30 – 3:00	Diagnostic of Cardiac Diseases with Help of Nonlinear Time Series **Sohrab Behnia Afshin Akhshani, Hassan Hobbenagi & Hadi Mahmodi** Analysis of Cardiac Muscle Regeneration after Infarction from the Position of Chaos Theory **Anatoly Zhirkov, Victor Kostenko** Universal Mechanism of Highly Nonlinear Effects of Environmental and Medicinal Agents **Ol'ga P. Melekhova**	Hopf Bifurcation and Structural Instability in an Open Economy with Keynesian Rigidity **Edgardo Jovero** Simulating Barter and Financial Economy **Sary Levy-Carciente & Klaus Jaffe** Controlling Duopoly Chaos **Akio Matsumoto**	1:30 – 2:30 Do tell: Sharing a Chaotic Vision **Mark Filippi**
3:00-3:30	*Intermission*		
3:30 – 5:30	**Business Meeting**		

THIS IS IT!

IMPORTANT BUSINESS MEETING ON Saturday Afternoon.

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ABSTRACTS

15th Annual International Conference of the Society for Chaos Theory in Psychology and Life Sciences

Denver, CO, USA, August 4-6, 2005

Listed Alphabetically by First Author

Last Updated Sun July 19, 2005

Susan Aaron, University of Toronto

Where Chaos Dissolves.

Nonlinearity functions in a world view where boundaries are defined by such terms autopoiesis as a continual exchange between organism and environment. Persons and their environment, and indeed their engagement with a world are thus defined by this interchange in the world. Thus a worldview is created where boundaries are often the cultural norm. Nonlinear as a broad and nonmathematical concern relates to patterns, or social even perceptual constructions that are relatively loose or non-structured comparatively within this relationship. One can apply the concept of chaos to return us to order as an opposite of it. I am suggesting that perhaps we may never lose order or have a methodology in the world that exists more dynamically than the separation of individual and environment. We are actively engaged as a world participant but apply certain constructs to divide up the actions of a world, to what end and at what loss? I propose a discussion and a demonstration of art, technology and ecology and communication in relation to space that considers the need or not need of formation of boundaries relative to the individual s actions in the world. Here space is a cultural label rather than a guaranteed entity. In so doing I hope to consider how cultural constructions as framing or creating order exist. Likewise, alternatives that move beyond structures to interactivity in the perceptual creation of a worldview are considered. Those using notions of nonlinearity can review how they hold and manipulate structures and boundaries.

Please note: To see what paper(s) will be presented within the same session, see the Schedule. Those presenting papers should plan for 20-25 minutes for the presentation, leaving 5-10 minutes for questions and discussion.

Ralph Abraham, mathematics, University of California at Santa Cruz, www.ralph-abraham.org

Fred Abraham, Blueberry Brain Institute, www.blueberry-brain.org

Scott Draves, Spotworks, www.electricsheep.org

Clint Sprott, physics, University of Wisconsin, sprott.physics.wisc.edu/

Pablo Viotti, politics, University of California at Santa Cruz, www.viotti.com

Aesthetics and Fractal Dimension of Electric Sheep

Physicist Julien Clinton Sprott demonstrated a correlation between aesthetic judgments of fractal images and their fractal dimensions (1993). Scott Draves, a.k.a. Spot, a computer scientist and artist, has created a multidimensional space of two-dimensional colored fractal images called fractal flames, based on chaotic attractors of two-dimensional iterated function systems, and an algorithm that expands a flame into a brief animation called an electric sheep. His website, electricsheep.org, serves electric sheep to a large community of regular users, via the sheepserver, through a highly interactive client, a screensaver, involving generation of new sheep by both server and users. The users vote electronically for the sheep they like while the screensaver is running. In this report we proceed from Sprott to Spot. Data from Spot's website show significant correlations between aesthetic judgments for flames and their fractal dimension, similar to reports by colleagues of Sprott using his images. Presently, we are studying the variation of this correlation and the favorite fractal dimensions with time, to determine if there are similarities or differences in the evolution of aesthetic preferences with respect to fractal dimension as Taylor has found in the evolution of Pollock's art (2003). Details may be found at: http://www.vismath.org/research/sheep.

Sohrab Behnia, Department of physics of IAU

Afshin Akhshani, Department of physics of IAU

Hassan Hobbenagi, Department of physics of IAU

Hadi Mahmodi, Department of physics of IAU

Diagnostic of Cardiac Diseases with Help of Nonlinear Time Series Analysis

Usually ECG used as definitive indicators of the human heart healthy. The main purpose of the present work is observing on the application of the nonlinear time series analysis to the detection of diseases. We try to characterize ECG time series in 30 normal control subjects and 36 patients to gain an insight into the underlying dynamics of heart. We employ nonlinear time series analysis method to investigate human electrocardiogram recordings such as normal (sinus) rhythm, atrial fibrillation (AF), ventricular tachycardia (VT) and

ventricular fibrillation (VF). Two of the most important chaotic measures are Lyapunov exponent (LE) and dimensional analysis. The correlation dimension CD method is related to chaos theory and is used to quantify heart rate variability HRV. The CD is a measure for the amount of correlations present in the signal. D2, which is a measure of the complexity of a deterministic system, gives the number of independent variables necessary to describe the systems behavior. Lyapunov exponents are quantitative measures of the rate of exponential separation of trajectories in phase space. Our results confirm the previous studies, which indicate that technique from nonlinear dynamical systems theory should help us understand the mechanism underlying cardiac diseases and allow one to distinguish between different groups of patients with more confidence than the standard methods for time series processing accepted in cardiology.

Phil Bertoni, North Central Charter Essential School, Fitchburg, MA

Chaos In The High School Classroom: Complexity as an Aid to Contextualizing Secondary-School Math

Fundamental chaos concepts are experimentally integrated into the 9th- and 10th-grade math curriculum; they prove to be remarkably accessible and to advance the learning of core math skills. Chaos in the high school classroom, eh? You mean like The Blackboard Jungle? Or more like Welcome Back, Kotter? Well, actually, more like the Logistic Difference Equation. As a lifelong software engineer lately turned math teacher, I've been on a quest for approaches that will engage an extraordinarily heterogeneous group of students. I introduced the Logistic Difference Equation into the unit on exponential functions (at first, simply as parabola relief) and was happily amazed at the pedagogical results. With sensitive dependence on its growth parameter, iteration of the function generates a range of radically different behaviors, from slow extinction to the near-magical period doubling. I typically introduce one new behavior at a time, apropos of a real-life case study, and have the kids perform the generational computations themselves. For each case, they discuss emerging patterns and the fit of the model to reality, and try to predict what the next incremental change might bring. This approach has proved eminently accessible to the students because: * The kids already have some intuition about complex systems (from games and general ecological consciousness) * But not so much that they can t be surprised and interested by unexpected outcomes * With its simple iterative computations, the math itself is widely accessible * The emergence of new (and mostly unpredictable) behaviors with each new parameter change creates a certain suspense and the process acquires a narrative quality. (The kids, I've found, will follow the evolution of a stream of four-place decimals like it was an episode of the O.C.) And the educational payoffs include the following: * The kids gain an appreciation for complexity (with a particular fascination for emergence) * They perceive (sometime with great surprise) the links between math and real-world processes * Kids understand much better the fundamental notion of a function, and other core ideas * The approach stimulates participation (they whip out calculators, stampede to the workstation to google coelacanths, debate over projected outcomes) The novelty of the concepts and ease of relating them to real-world processes attracts student interest, while their mathematical simplicity and narrative qualities encourage hands-on application. Both contribute to making core ideas more comprehensible, and to giving math a real-world context often otherwise lacking. And since the concepts are new to everyone, but relatively simple to apply, they engage the entire savant-to-sweathog spectrum.

Yuriy Byelov, Prof. Dr. Head of Theoretical Cybernetics Department –

Faculty of Cybernetics –Kyiv National Taras Shevchenko University ,

http://www.unicyb.kiev.ua

Zinoviy Rabinovich, Prof. Dr., Institute of Cybernetics, http://www.icyb.kiev.ua

Conceptual Imagination of Thinking as of Structured Process of Emotional and Logical Information Processing by Human in Pattern Recognition and Problem Solving

The presented conceptual imagination is formed from the cybernetics point of view. It also encompasses the generalization and utilization of factual information and data from neuro-physiology and neuro-psychology and highly probable hypothesizes, which complete the lack of these data. Also a bilateral analytical concept from micro to macro (bottom-top) and from macro to micro (top-bottom) is adhered. These two approaches define structural components and general organization of hierarchical brain neural networks (statics) and correspondingly inductive and deductive processes in them (dynamics). Consequently, the principles of brain memory are strictly and precisely revealed. The whole information processing is divided into two phases: the one, which takes place outside the brain memory, and other one, which appears inside the memory and is defined by us as mental sight. This processing, which includes namely the thinking, is a subject of our report. The thinking is regarded as a combination of excitement of pattern and language memory structures, in particular on the levels of realization and intuition, mechanisms of which are examined for their application to the tasks of pattern recognition and problem solving. The role of learning and self-learning (self-organization) is defined in these mechanisms from synergetics point of view. We model the process of thinking in general as a complex (non-linear) dynamics of memory structures excitement via their logical connections with emotional impacts transmission, which namely specify the state of memory. This memory state influences the logical components of thinking process, which represents complex emotional and logical information processing.

Yuriy Byelov, Taras Shevchenko National University in Kyiv, http://tk.unicyb.kiev.ua

Sergiy Tkachuk, Taras Shevchenko National University in Kyiv, http://tk.unicyb.kiev.ua

Roman Iamborak, Taras Shevchenko National University in Kyiv, http://tk.unicyb.kiev.ua

Quantitative Analysis of Conceptual Model of Thinking Processes on Olfactory Bulb Model Using Computer Toolbox

More and more papers are dedicated to modeling of brain activity and thinking processes in particular lately. Because of the great complexity of research object, construction of conception, which doesn't conflict with wide variety of experimental data and conforms to known psychological and psychophysical phenomena, is hard enough. One of few such conceptual models is used as a base in this paper. Qualitative analyze of conceptual model was made by its authors. That is why authors of this paper have carried out certain qualitative analysis of conceptual model. A computer toolbox for simulation of informational processes in natural neural networks was developed. Olfactory bulb was chosen to carry out numerical experiments because of existence of deep research results in it. Some essential constituents of thinking such as appearance of learning and identification, memory, imagination occur in the olfactory bulb. Authors attention is concentrated just on them. Important hypotheses concerning conceptual model have been confirmed in the issue of carrying out of experiments by computer simulation: key function of quasisymbol neurons at the time of the identification of the pattern represented in environment, existence of mental view, functions of cyclic connections between symbol and quasisymbol neurons as short term memory. Important functions of synaptic plasticity in learning processes are confirmed also. Principal positions of conceptual model, which could be verified on olfactory bulb model, were confirmed in this paper. They confirm validity of fundamental backgrounds of conceptual model not only on qualitative level, but on quantitative one too.

Malcolm Dean, Author, journalist, independent scholar, n/a

Toward a General Theory of Cognitive Thermodynamics

Einstein refused to blame Gravitation for people falling in love, but he cautioned that Thermodynamics "is the only physical theory of universal content which...will never be overthrown." By the mid-20th century, thermodynamics was established in Communication Theory, but without adequate tools, initial enthusiasm for Thermodynamics in human communication waned rapidly. Recent advances in complexity science, Bayesian theory, and the neurosciences raise old questions: What would cognitive thermodynamics look like? What are its implications? Based on a general theory of Information, we present a simple model of cognitive systems and discuss the challenges a Thermodynamic worldview presents in science, culture, religion, and (contemporary Western) philosophy. Previous working papers in this series were presented to the Cognitive Affinity Group, UCLA, and the Society for the Scientific Study of Religion. Malcolm Dean is an author, editor, and a former Principal Editor at UCLA.

Linda Dennard, UCC/ETHOS, www.ucc.ie/acad/govt/ethos

Problem Ecologies & Regulatory Accretion: Habits that Pass for Dynamics

Problem ecologies and regulatory accretion: Habits that pass for dynamics Linda Dennard ETHOS The habits of public organizations in adapting to their own regulations creates complicated layers of regulatory accretion reflecting a lack of understanding by administrators of the dynamics by which a broad system of political and social relationships extends itself. While going about the business of problem-solving according to administrative and regulatory protocol, public agencies often create adaptive conditions for citizens in which individuals play a role as either victim, problem, or interest that is a patterning of bureaucratic culture in larger arenas of society in the emergence of problem ecologies organized by what is not working in the system. In particular, administrative structures seek a coherence that is natural to administrative logic, but dysfunctional for more diverse environments and for individuals. Administration tends to outscale in this sense creating complexity that is both unsustainable and that also appears disconnected from any purpose other than the survival of the regulatory environment - but which successfully patterns in the rest of society, creating bureaucratic and often hostile cultures, with recurring but regulated problems such as poverty and crime. The problem however of administrative accretion is not resolved by cutting regulations (agencies simply adapt) or by further reform (again agencies tend simply to adapt) but by (1) making administrators aware of what they are asking society to adapt to and (2) by seeking knowledge/resources from outside administrative frameworks as organizing principles for action. The ETHOS project efforts in this regard are described.

Glenda Eoyang, Human Systems Dynamics Institute, www.hsdinstitute.org

Complex Dynamics at Work: OD Theory and Practice

The field of organization development (OD) is relatively new, with roots that go back to the 60s and 70s. Almost any tool, methodology, or technique that can be used to shift individual or organizational understanding or behavior has been embraced by OD. The missing component for the field, however, is a coherent theoretical framework that is accessible to and accepted by practitioners across the discipline. Past efforts to establish a solid theoretical base for OD have

reached beyond past practices and defined new models and modes of intervention. The effect has been that each of these efforts has just added another to the plethora of OD methods without creating a theoretical base that can be shared across current methodologies. Our question is whether or not the nonlinear sciences can inform a solid and resilient theoretical foundation for OD. Such a theory base must apply to all existing OD practices, articulate the differences among them, explain when and how they can be complementary to each other, and identify gaps that need to be filled with innovative OD practices. In this paper, we will examine five widely accepted OD methodologies (large-scale technologies, socio-technical systems, T-groups, live system simulations, and team building). We will use the CDE Model of self-organizing in human systems, which derives from nonlinear sciences, to describe the underlying dynamics and the ways each method shifts those emerging dynamics. Based on our findings, we will recommend further questions to inform development of theory and practice in the field of OD.

Mark Filippi, Director, The Extended Self Program, www.markfilippi.com

Do Tell: Sharing A Chaotic Vision

Everyone who walks the nonlinear path carries a vision for how this plays out in their life and the lives of others. Sometimes it pays to go back to the point of origin and get some perspective about the journey so far. Whether you came upon chaos theory from a scientific, artistic or philosophical portal of entry, at some point the concepts took root in you and proliferated. When considered from a cultural standpoint, chaos theory gets re-told in many forms and in different lights. In reviewing my own personal experiences, examining the trends in pop culture and finally distilling the salient features of the current research, several provocative discontinuities have materialized. I will be focusing on the dynamics in the vibrant field consciousness studies. Participants will be given the opportunity to fill out a checklist that will review some of the authors, directors, bloggers, politicians, and celebrities who have been referencing chaos theory in the media in forms that are accessible to casual users of the internet since our last conference. The idea behind this informal exercise is to illustrate how pervasive and loose the boundary conditions for expanding the relevance of chaos theory are in contemporary society. Whole technologies are embracing and advancing what was once the sole province of the expert. By getting a sense of our baseline recognition of this phenomenon, I intend to use this feedback to show how a discontinuity is manifesting around the subject of consciousness studies. Out of all the possible topics, this one seems to best illustrate the spectrum of visions people hold for the future of chaos theory as a meme for others to carry. I'll explore the next steps in this process.

Frank Funderburk, InCompass Systems,

Cultural Change Supports Healthcare Improvement: Implications for Social Marketing Efforts

Changes in shared beliefs, expectations, perceptions, norms and patterns of reciprocal behavior among individual agents who interact with one another are sometimes broadly referred to as a cultural shift. The concept of culture has been linked in the literature to various aspects of organizational and small group performance including measures of team coordination (e.g., Guastello et al., 2005), membership dynamics (e.g., Arrow et al., 2000), therapeutic support (e.g., Rubenfeld, 2001; Burlingame et al., 1995), business unit profitability (e.g., Dennison, 1984; Fisher & Alford, 2000), organizational quality and safety (e.g., Dooley, 1997; Guastello, 1988; Zimmerman et al., 2001). Many of the tools, metrics, and heuristics developed for the study of cultural or organizational change processes from a nonlinear dynamic perspective have direct relevance for improving healthcare delivery systems. This paper will explore some of these issues. Key points of the presentation include: The social phenomena typically referred to as culture can be characterized rigorously by a variety of experimental and interactive modeling approaches that reflect the basic principles of complex adaptive systems. These models can help to explain seemingly counterintuitive results of many failed efforts to produce sustainable healthcare quality improvement. A variety of approaches have been suggested, but each of the models to be considered seemed tuned to a distinct set of healthcare issues. An overarching theme is that the structure of the networked agents has an important role in setting limits on the nature of the change that can be sustained Self-organization of social networks, which can guide the expression of the cultural change produced, suggest ways that health promotion and social marketing efforts could be enhanced.

Jaclyn P. Gisburne, Neural Therapist in Private Practice, CO

Identifying the Emergence and Convergence of Patterns Foundational to Mental and Social Disorder

The purpose of this paper is to introduce five conceptual and contextual patterns foundational to understanding both mental and social disorder. These patterns emerged from a systematic convergence of the general principles and functions of grounded theory and complexity (chaos) theories. In this paper the author will explore how these five insights can provide a unique framework in which to better understanding the dynamics of mental disorders, including but are not limited to: (a) how mental and social disorders are adopted: (b) the conditions under which adoption takes place including role of risk factors; (c) the transitional and instability indicators observable in the adoption process; (d) the role and significance of development and risk factors on individual mental health phase portraits (e.g., DSM-IV diagnosis) and behavioral trajectory, and (e) congruencies between fractal functions in individuals, collective behavior under stress, and regional conflict. The author s research perspective,

methodology, and findings have direct impact on prevention and intervention program development, efficacy, and intervention failure.

Hilik Goldstein & Michel Sonis, Bar-Ilan University, Israel

Captivity in Spouse Complaints to the Police as a Measure of Dependability of the Authorities: Regional Comparison.

This paper deals with the measurement of the authorities' dependability in Israel. The state authorities ability to introduce expectations for positive intervention into family decision-making is an important indicator of society s confidence in the authorities. The spread of this confidence can be regarded as a socio-spatial process of diffusion of the captive alternatives of social choice. It is important to stress that the degree of penetration of captive alternatives of individual choice cannot be presented as a measure of social correctness of such a choice. The central part of this paper presents an analytical description and a numerical method of the measuring the captivity of spouse complaints to the police on the level of six official police districts during the period from January 1998 to December 2001.

Jeffrey Goldstein, Adelphi University

Emergence, Self-transcending Constructions, and a Metaphysics of Hope

The phenomenon of emergence in complex systems hinges on the possibility that what is radically novel comes into existence. Radically novel in this sense refers to the characteristics of unpredictability and nondeducibility from lower level or antecedent components as well as irreducibility to this lower level. If such emergent phenomena actually exist, however, this poses a serious challenge to reigning versions of reductionism including those sundry metaphysical positions that claim radically novel entities and properties cannot come to be. In addition, although it might be thought that postmodernism, as, in part, a reaction against scientism and its accompanying reductionist mechanism, upon further scrutiny postmodernism can be understood as holding a species of reductionism in its failure to imagine the possibility of the radically novel appearing in the world. That is, postmodernism can be shown to share a similar nihilism along with modernism regarding the possibility of radical novelty. In this paper, I will lay out how emergence can be understood as a challenge to the nihilistic underpinnings of both modernism and postmodernism. This will include a critique of Heidegger s idea of Transendenz as lacking any genuine Transcendence. In its stead, I will offer a metaphysics of hope based on understanding emergence according to the framework of self-transcending constructions. I will also discuss my view of emergence in relation to modern theologies of process, themselves stemming from earlier ideas of emergence. Emergence will be offered as a critical element in an exposition of the new nature of nature.

Stephen Guastello & Robert W. Bond, Jr., Marquette University

Leadership Emergence in Coordination Intensive Groups

The process by which an initially leaderless group differentiates into one containing leadership and secondary role structures was found to be aptly described by the swallowtail catastrophe model and principles of self-organization in previous research (NDPLS, 1998, 2(4), 303-316; NDPLS, 2000, 4(1), 113-120). A subsequent study identified the control variables in the process of leadership emergence in creative problem solving and production-oriented groups (NDPLS, 2005, 9(3) forthcoming), which were found to be different in the two cases. The present study examined a different case of coordination-intensive groups. Coordination-intensive groups are particularly interesting because it is known that coordination can occur without talking and without leaders present, even though talking helps in some respects (NDPLS, 2005, 9(2), 175-208). Participants (N = 104, group size = 4) played a coordination card game in which 13 of the groups were not allowed to talk to each other, and 13 groups were allowed to talk. After playing the game, the participants rated each other on leadership behavior, styles, and variables related to the process of conversation. Participants could identify no one as the leader or contributor of particular conversational remarks. Ironically, the levels of leadership emergence were equivalent in both verbal and nonverbal groups. A swallowtail catastrophe model was obtained here also, showing that the three control variables were: a broad range of task participation behaviors, whether the group worked verbally or nonverbally, and behaviors specific to task control. The study also represents a convergence between two independent lines of nonlinear dynamics research in group processes.

Tim Holt, Clinical Lecturer, Warwick Medical School, UK

A Nonlinear Model for Type 1 Diabetes

Chaos theory is illuminating both the conceptual framework and the research methodology of the life sciences, particularly at the interface between psychology and physiology. The author has developed a nonlinear model for blood glucose variation in type 1 diabetes, both to assist in clinical care and as a research tool. People living with this condition benefit from maintaining blood glucose levels close to normal, through improved quality of life and reduced long term complications. However tight control risks hypoglycemia, in which the level may fall dangerously low. Replacing the missing physiological regulation mechanism with adaptive decision making strategies is a major challenge. Increasing evidence highlights the value of patient-centered approaches with support from practitioners. But how do we define normal dynamics, when traditional physiological modeling assumes an underlying equilibrium state? And how do we translate the

information arising from frequent blood glucose monitoring into effective patient-centered decision making? A number of models have been developed, including the author s chaotic control strategy, which recognizes that the psychological and behavioral elements regulating blood glucose levels in type 1 diabetes cannot be separated from the physiology, and that nonlinear interactions between blood glucose determinants produce an under-recognized source of unpredictability. The advent of frequent monitoring devices, which are now creating more adequate blood glucose datasets for time series analysis, may allow us to define healthy dynamics using nonlinear indices, including Lyapunov exponents, correlation dimension, and multiscale entropy. This paper will explore the implications for clinicians, patients and researchers.

J. Suzanne Horsley, PhD Student, UNC-Chapel Hill

The Method in Their Madness: Chaos Theory and the D.C. Snipers

This paper explicates chaos theory from a social science perspective. Using the Washington, D.C., area sniper shootings in October 2002 as a case study, this paper unravels chaos theory in terms of a public crisis that required a response from government officials. The series of events, which spanned the country and lasted for several weeks, were initially thought to be isolated crimes. However, the major characteristics of a chaotic system were in place: a nonlinear pattern, the generation of positive feedback, the occurrence of bifurcation points, and an elusive strange attractor. Each iteration of the shootings differed in the target, location, and time of day, and the only apparently consistent characteristic was a single shot fired by the same weapon. In addition, officials misinterpreted the scale of the series of events, with incorrect guesses ranging from a case of terrorism to a single suspect living in the D.C. area, while looking for the wrong vehicle all along. The paper concludes by discussing the implications of this case study for public sector crisis communication. As we all know, hindsight is 20/20, but some of the communication missteps taken by law enforcement and other government officials can serve as lessons for public communicators who find themselves dealing with similar crises in the future.

Stephen Guastello & Joseph Jacobsen, Marquette University

Innovation, Information Seeking and Innovation Adoption: Facilities and Plant Managers Energy Outlook Comparing Linear to Nonlinear Models

One focal point of concern, policy and a new research will involve identifying individual and organizational facilitative and obstructive factors within the context of energy innovation diffusion in the U.S. This interdisciplinary intersection of people, technology and change is one of serious consequence and has broad implications that span national security, energy infrastructure, the economy, organizational change, education and the environment. This study investigates facilities and plant managers' energy innovation information seeking and energy adoption evolution. The participants are managers who consume more electrical energy than all other groups in the world and are among the top users of natural gas and oil in the United States. The research calls upon the Theory of Planned Behavior, the Diffusion of Innovations and nonlinear dynamics in a study of adoption patterns for 13 energy-related innovations. Cusp catastrophe models and power laws were compared to linear multiple regression to examine and characterize data. Findings reveal that innovation adoption and information seeking differences are slight between private and public sector facilities and plant managers and that the group as a whole may resist change. Of the 13 innovations, 3 exhibit very strong cusp catastrophe distributions while moderate support for multiple linear regression and the power law were found. Control variables were attitude toward the energy innovations and organizational resistance.

Edgardo Jovero, Universidad Complutense de Madrid

Hopf Bifurcation and Structural Instability in an Open Economy with Keynesian Rigidity

Hopf Bifurcation and Structural Instability in the Open-Economy With Keynesian Rigidity* by Edgardo Jovero (Universidad Complutense de Madrid) This paper attempts to contribute to the debate in macroeconomic dynamics by presenting the neo-Keynesian challenge. Proof is presented regarding the behavior of an open-economy two-sector growth model in the neo-Keynesian tradition of non-market clearing. It has been shown that there possibly exists a Hopf-bifurcation type of structural instability in a nonlinear dynamical model of the macroeconomy by which a stable region is connected to an unstable region situated in a center manifold in the state phase of the resulting dynamical system. The Keynesian view that structural instability globally exists in the aggregate economy is put forward, and therefore the need arises for policy to alleviate this instability in the form of dampened fluctuations is presented as an alternative view for macroeconomic theorizing. JEL code : F41 (growth in open economies) Keywords: Hopf bifurcation, structural instability, neo-Keynesian economics

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The Effects of Irregular and Missing Data on Lyapunov Exponent Calculation

Lyapunov exponents are important invariant quantities used for characterizing the behavior of nonlinear systems: the

presence of a positive maximal Lyapunov exponent is considered a strong signature of chaos. Normally, maximal Lyapunov exponents are calculated from long, regularly sampled time series. In the case of human self-report time series data, irregularities in sampling rates are common; furthermore, these irregularities are typically natural outcomes of the data generation process. Relatively little has been published to assist with the analysis of irregularly sampled data using nonlinear time series analysis techniques. We recently completed a study comparing the performance of non-linear analytic tools on complete and patched sets, and concluded that powerful standard methods for characterizing attractors can be adapted to time series data even if only a subset of a regularly sampled series is available. In this paper, we report the results of a series of computational experiments on synthetic data sets designed to assess the impact of irregular time series data on Lyapunov exponent calculations. The behavior of a conservative quasi-periodic, a dissipative chaotic, and a self-organized critical dynamical system were sampled regularly in time and the regular sampling was disrupted by data point removal or by stochastic shifts in time. Missing data segments were then patched by means of segment concatenation, by segment filling with average data values, or by local interpolation in phase space. Comparative results of Lyapunov exponent calculations will be presented.

W.F. Lawless, Paine University

Perturbations, Measurement, and Non-linearity in the Social Interaction

A study by Department of Energy (DOE) of its Citizen Advisory Boards ("Boards") supported DOE's policy for consensus (CR) over traditional majority rules (MR), dismissing Board contributions to instrumental action (environmental remediation). But to support DOE's policy of CR, its study was confined to subjective evidence. In contrast, we proposed that social links between Boards and DOE sites affect cleanup. Field evidence disputed the claims in the DOE study but supported ours. We extended our findings to ANL's agent study (EMCAS) of electricity markets, also based on subjective data, with the field evidence again raising questions about subjectivity. The pursuit by researchers of subjective evidence raises a fundamental issue. We recognize that classical social information gives the appearance of being stable as if rationally constructed from an individual's perspective (Von Neumann & Morgenstern, 1953). However, the same is true if social reality is bistable or composed of two views with only one of the views collected as data (e.g., the old saying that "there are two sides to every story"). That is, the measurement of social or interdependent objects, like an organization, always produces classical information by breaking the interdependence that exists before the measurement, meaning that the collected data will be unable to recover the essence of a social object such as an organization (e.g., Levine & Moreland, 1998), what we term the measurement problem. It occurs when the nonlinear information contained within a social object or interaction is converted to seemingly linear, rational information during measurement. Thus, to measure social objects such as an organization, researchers must predict how the social object will react to a perturbation such as measurement. One such perturbation began when DOE called for an acceleration of the cleanup in 2002, including transuranic (Tru) wastes destined for the WIPP repository, NM. In response, DOE scientists and engineers developed 13 recommendations to accelerate the disposal of Tru wastes in WIPP. In 2003, these recommendations were submitted to representatives of the Boards for their approval. We predicted and found decisions by those Boards based on their decision structure and process (Lawless et al., 2005). References:

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Individuation as a Chaotic Process

The Individuation is an open-ended, non-linear, dynamic and complex process of psychological maturity. According to Jung the individuation is the establishment of a right relationship between the ego - "who I think I am," and the Self - "all that I really am." Consciousness and the unconscious form a complementary pair of opposites, similar to order and chaos in the chaos theory. The tension of opposites generates psychic energy and facilitates psychological growth. Conflict, confusion and suffering are symptoms of the transition between the natural and the cultural phase. The psyche reaches a level of complexity at which it bifurcates into new and complex structure. During the second half of life the ego is affected by the shadow and the anima/ the animus archetypes. The insurgence of the shadow is part of corrective effort made by the Self to bring the personality back into balance. The anima, feminine psychological tendencies in a man's psyche, is responsible for development of creativity. The animus, male personification of the unconscious in woman, develops enterprising spirit, courage, truthfulness and creative ideas. The two - dimensional view of psychological development postulates an interface on which dynamics, common to all

(synchronic) generates individuals with unique histories (diachronic). Art and verbal creativity are modes of the relationship between consciousness and the unconscious. Verbal creativity is a most important component in the process of individuation, by testing out our thoughts and feelings with others. Creativity is characterized by a psychological openness to interior and exterior experiences.

Ivelisse Lazzarini, Creigton University

NeuroOccupation: The Nonlinear Dynamics of Intention, Meaning and Perception

This presentation proposes revisiting and re-exploring the concepts of intention, meaning, and perception, which theoretically operationalize nonlinear brain dynamics and occupation. A review of theory and research suggests that intention, meaning and perception are instrumental to understanding the client s unfolding life experiences through a self-organized system. In describing the organization of the nonlinear dynamics of brain activity, it becomes apparent how intention, meaning and perception are the fundamental components of how human beings create meaning by engaging in self-directed and self-determined actions; hence, occupations. Through a fresh point of view and an improved understanding of the concepts intention, meaning and perception, occupational therapist and other rehabilitation practitioners may find common ground to integrate many diverse approaches into a more unified field.

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Klaus Jaffe, Simon Bolivar University

Simulating Barter and Financial Economy

Abstract: The influence of money creation is a key matter in economics. The goal of this work is to use computational tools to simulate societies of different levels of financial development in order to gain a better understanding of the dynamics underlying economic processes. We show that computer simulation of simple economic agents can generate a non linear dynamics that resembles real life features of known economic system, and that the type and nature of financial instruments is pivotal in the management of economic dynamics. Keywords: Simulation, Economy, Barter, Finance, Agents.

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Yi-Chen Huang, Psychology, Chung Cheng University, Taiwan,

Differential Movement Patterns but not Amount of Locomotion in Open Field Behavior of an ADHD Animal Model: The Spontaneously Hypertensive Rat.

Attention Deficit Hyperactivity Disorder (ADHD) is a heterogeneous group of behavioral disorders affecting around 5% of school children. Impulsiveness, inattentiveness and over-activity are presently regarded as the main symptoms of ADHD. The spontaneously hypertensive rat (SHR) is one of the most frequently used ADHD animal models. This is a strain that has been bred from progenitor Wistar-Kyoto rats (WKY). Although SHR shows ADHD-like symptoms in a variety of behavioral paradigms, its locomotion behavior in the open field paradigm has not been definitively identified as over-active. Previous studies indicated that some of the inconsistency regarding strain difference in behavior might be due to comparisons of SHR with WKY, which has been observed to show extremely passive behavior in several paradigms. It has been shown that the SHR has larger amount of locomotion activity in open field than the WKY; however, the comparison between SHR and Wistar rats failed to show significant difference. It has not been investigated whether or not open field behaviors of SHR and Wistar rats can be differentiated by the patterns of movements. In the present study, we compared among SHR, WKY and Wistar rats the temporal and spatial scaling exponents of locomotion in an open field. The analysis was based on the scaling hypotheses proposed by Paulus and Geyer, that measures the temporal and spatial organization of movements. Our results indicate that the temporal scaling exponent of WKY rats differed significantly from that of SHR and Wistar rats, whereas SHR and Wistar rats showed significantly different spatial scaling exponents. We conclude that the open field behaviors of the ADHD animal model, SHR, can be differentiated by the patterns, but not, by the amount of locomotion activity.

Patricia Lipscomb, Seattle Psychoanalytic Society & Institute

Tarasoff Dilemmas and the Problem of Counterfactuals

The Tarasoff duty is a judicially (or in some cases legislatively) created legal obligation imposed on psychotherapists to take reasonable steps to protect third parties from dangerous patients. It seeks to avoid potentially lethal but possibly unlikely outcomes to some at the expense of lesser but nearly certain harm to others (e.g., stigma, loss of confidentiality, loss of liberty, etc.). As public policy it should be subject to exacting and ongoing scrutiny of its benefits to the public versus costs to affected patients. Yet such analysis is hampered in theory by the so-called problem of counterfactuals and other logical considerations and in practice by the fact that the obligatory nature of Tarasoff interventions under certain circumstances cuts off some ordinary avenues of scientific investigation. Regardless of how clinically informed, a decision for or against a Tarasoff intervention is ultimately neither a logically motivated choice nor an essentially clinical one but rather a practical exercise in signal detection and as

such it reflects the individual clinician's biases with respect to a patient's individual's interests versus the (possibly) greater good. A clinical example illustrates theoretical and practical problems with the Tarasoff duty.

Jodinell Lyssy, CMI Research Assistant, AFRL/HEDR

Kimberly Thompson, CMI Research Assistant, AFRL/HEDR

Christina Hinojosa, CMI Behavioral Scientist, AFRL/HEDR

Crowd Behavior Modeling and Simulation

CB M&S seeks to incorporate groundbreaking behavioral data into a series of training modules for crowd management techniques used by today s fighting forces. These agent-based models will be used to predict the propensity for crowd gatherings, offer lessons learned from past occurrences, and give today s military an avenue for practical crowd behavior tendencies. Finally, these agents-based modeling variables will be transformed into usable data requirements for scenario rehearsals and validation on platforms such as OneSAF and JCATS currently being used by organizations such as the Defense Modeling and Simulation Office (DMSO). Additionally, CB M&S focuses on a variety of disciplines to achieve success. CB M&S centers on integrating multi-faceted programs that attempt to define keys to managing various crowds. CB M&S utilizes behavioral science, computer modeling and various cultures to identify what strategies military personnel should employ. Specific non-lethal weapon platforms are currently being examined, as CB M&S stands as an overarching umbrella for various non-lethal weapon systems. Over the past year, CB M&S researchers have conducted numerous Institutional Review Board-approved real-time experiments. This poster will highlight FY04/1QFY05 efforts, and give a colorful overview of the present and future of the CB M&S program. Distinct information will be provided covering the experiments themselves, collaboration with organizations such as DMSO and HECOE, as well as the latest on the procedures used to transfer real-time behavioral data into computer modeling and simulation.

Thomas Malloy, Psychology, University of Utah,

http://www.psych.utah.edu/malloy/index.html

Emergent Hierarchies in Perception

Mathematical models have formed a rigorous basis for defining emergence within the logic of the models. More problematic has been the mapping of mathematically defined emergence onto scientific phenomena. Bateson's difference-based epistemology can be simulated by a Boolean network model. Bateson proposed that taking differences in differences would produce emergent hierarchies of knowledge. Simulating this proposal, the Boolean model, by taking differences in differences, generates hierarchical categories of perceptual stimuli. The crucial result is that these model-generated categories correspond to human perceptual categorical judgments. Thus the model-defined emergence hierarchy maps to perceptual hierarchies. Three realms of description will converge on the concept of emergence: Batesonian epistemology, a Boolean model, and human perceptual experience. In this case at least, this convergence grounds model-defined emergence both to a broad epistemological framework and to human experience.

Thomas Malloy, Psychology, University of Utah,

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Resemblance in Morphogenesis

The resemblance of one form to another is a phenomenon of basic interest in perception. In a Boolean net model attractor cycles are coded as a sequence of state vectors (of 0 s and 1 s) easily expressible as visual forms. This expression corresponds to the idea of morphogenesis. Let the forms resulting from two attractor cycles be Parent 1 and Parent 2. Take two state vectors, one from each parent, and create a Child vector by splicing together half the 0 s and 1 s from one parent and half the 0 s and 1 s from the other to create a new state vector, analogous to gene splicing. Run the system starting from the new state vector. Under very broad constraints, the system will fall into a third, Child, attractor cycle, which expressed as a visual form will resemble both Parent 1 and Parent 2 while having its own unique form.

Terry Marks-Tarlow, Clinical Psychologist, Private Practice, CA, Training Faculty,

Southern California Counseling Center

The Myth of Psyche Through Nonlinear Eyes

An aspect of nonlinear science in context is how new ideas fit into old systems. One context vital to the pursuit of meaning in psychology is ancient mythology. With historical precedents set by Freud, Jung, May, and Hillman, clinical practice is frequently guided by originating myths that supply root metaphors and narratives. This paper analyzes the myth of Psyche, derivation of our field s name psychology and its subject matter the psyche. Nonlinear wisdom emerges through several important themes: the necessity of living in the dark with chaos; the self-organizing quality of nature, both inner and outer; interpenetrating, fractal boundaries between self, world, and other; and the paradoxical essence of psyche, where only through separation and individuation can we open ourselves to love and vital interconnection with others.

Akio Matsumoto, Economics, Chuo University

Controlling Duopoly Chaos

The recently developing theory of nonlinear dynamics reveals that any economic model can generate complex dynamics involving chaos if its nonlinearities become strong enough. The main purpose of this study is to consider economic implications of generating chaos as well as controlling chaos in a Cournot duopoly model with unimodal reaction functions. An equivocal characteristic of economic chaos is demonstrated. From the long-run point of view, one of the duopolists can be beneficial, and the other harmful in the chaotic market in a sense that the long-run average profit taken along chaotic trajectories is larger than the one of the latter. Then this study applies two distinctive control methods, the adaptive control method and the pole-placement method to the chaotic markets, in order to show that putting control reverses the situation: the beneficial duopolist in the chaotic market becomes disadvantageous and the harmful duopolist advantageous in the controlled market. This implies that either way of generating chaos or controlling chaos is unable to make both duopolists happy together.

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Stochastic Substrates of Animal Cognition

Animals are paradigms of complex systems. Because complex systems are often resistant to simple decomposition, we took an analysis-by-synthesis approach by creating a robotic analogue of such a system, the Norway rat (Rattus Norvegicus). One signature of complex systems is that even seemingly simple behaviors become much richer upon further inspection. For example, in an open arena, rat pups exhibit thigmotaxic behavior, a tendency to move towards the direction of tactile stimulation. Consequently, rat pups follow walls and burrow in crevices. These behaviors were initially modeled with a reactive architecture implementing thigmotaxis. Surprisingly, behavior emergent from such simple control rules provided a poor fit with the animal data. More surprisingly, however, an architecture which randomly selected one of nine possible simple movements, produced behavior that 1) was remarkably non-random in appearance and 2) provided a far greater match to the animal data. The morphology of the robotic agent, in interaction with the parameters of the environment, constrained behavior such that it actually appeared to be goal-directed (e.g. following walls). In contrast to chaotic systems, in which statistical regularities underlie apparently random outputs, we here implemented a random control system that produced regular outputs. We discuss the implications of this for understanding animal behavior and cognition.

Bill McKelvey, UCLA Anderson School of Management, www.bill.mckelvey.org

Beyond Averages: Extending Organization Science to Extreme Events and Power Laws

In power law functions the exponent stays constant whereas in normal exponentials the exponential varies. On occasion, deviation amplifying mutual causal processes among interdependent data points cause extreme events characterized by a power law. Power laws seem ubiquitous; we list 68 of them half each among natural and social phenomena. We draw a line in the sand between Gaussian (based on independent data points, finite variance and emphasizing averages) and Paretian statistics (based on interdependence, positive feedback, infinite variance, and emphasizing extremes). Quantitative journal publication depends almost entirely on Gaussian statistics. After noting that practicing managers live in a world of extremes, we draw on complexity and earthquake sciences to propose redirecting organization science. Conclusion: No statistical findings should be accepted into organization science if they gain significance via some assumption-device by which extreme events and infinite variance are ignored.

Ol'ga Melekhova, Biology Faculty, Moscow State University

Universal Mechanism of Highly Nonlinear Effects of Environmental and Medicinal Agents

Universal Mechanism of Highly Nonlinear Effects of Environmental and Medicinal Agents Effects of minor doses of physical/chemical agents as well as the mechanisms of those effects can be detected biologically on the cell level. And it may be indispensable to reveal these effects as early as possible both in the ecological and medicine terms. Therefore, selecting a most proper test organism and a monitored parameter (test-organism reaction) is of the critical importance. We find hydrobiont embryos and youngsters to make the most convenient test organisms and the level of free-radical reactions (registered using a radical-polymerization method) to be universal as a tool of measuring the adaptation stress. Our study showed the influence of water pollutants, medicines, and X-rays to be highly nonlinear, with the peak effects achieved in the range of the minor doses. The acquired data and the nature of the applied method allow one to regard the

temporary violation of the oxidation-reduction homeostasis and of the cell-signaling systems as the universal mechanism of the minor-dose effects.

Allison Reed Miller, English, Oxford University, UK

Complexity Theory and Postmodern Texts: Conclusion Does Not Imply Closure

Due in part to its emergence within the same cultural moment, complexity theory resonates with postmodern theories and practices, and has many implications for postmodern literature. Taking the open-endedness of contemporary texts as my focus, I will argue that complexity theory helps us to understand the dynamics of these texts, shedding light on their frequently confusing, violent or otherwise troubled endings, while at the same time assuring us that total understanding will always remain elusive. The complexity framework itself, of course, reflects this incompleteness; and while it encourages a holistic perspective, it at the same time discourages a totalizing one. Complexity always leaves interpretation undone. Although this indeterminacy may represent a frustration to many in the sciences, to those of us in the humanities it suggests infinite possibilities for meaning. In applying a scientific model to literature, I want to avoid the impression that I am importing scientific thinking to help legitimize a project in the humanities. Far from it; much postmodern theory (especially Lyotard) argues that legitimization is only possible through local sites, and that overarching meta-narratives are outdated. We must be careful to avoid selling complexity theory as another such narrative that provides the key to universal truth and meaning a position that would reinscribe a kind of Newtonian order which complexity theory, by definition, rejects. At the same time, the sciences and the humanities, broadly and in specific settings, can enrich each other and offer insights that only the crossing of disciplinary boundaries can make possible.

Allison Reed Miller, English, Oxford University, UK

Modeling the Margins of Complexity: Complexity Theory's Encounter with Postmodern Texts

Among the diverse cultural sites that it has penetrated and changed forever, complexity theory can now count postmodern literature and criticism. This recent encounter impacts a variety of issues that concern literary studies, but also has wider implications. First, if language is a complex system (according to Paul Cilliers and others), then all literary texts must be complex systems too. But complexity can manifest itself at other higher levels of a text (including narrative content and structure), making some texts more complex than others. Complexity theory helps to articulate how these complex systems (texts) interact with other systems (readers minds) across porous margins as they co-evolve in a larger, dynamic, signifying complex system called the reading process. These reading dynamics are particularly clear and forceful in postmodern texts which, due to semantic and/or temporal gaps, nonlinear organization, and heavy patterning, typically require a great deal of participation and adaptation on the reader s part. Taking the example of Donald Barthelme s short story, Margins, I will discuss the complex border between postmodern texts and their environment as well as the border between chaos and order within these textual systems. This complexification of traditional borders has several implications: if the text-world boundary is questioned, it affects the way we configure reality through narrative; if a reading dynamic that oscillates between order and disorder is considered the most adaptive, it affects the way we think about disorder in postmodern texts and the complex world they represent.

Daniel W. Miller, Clinical Psychologist, Private Practice

Bridging Science and Consciousness via Chaos, CAS and Homeodynamics

The purpose of this paper is to help to build a bridge between body and mind, science and consciousness, and to support a scientific basis for consciousness theory. We will offer an integration of scientific, chaos, CAS and consciousness studies, quoting supportive experiments and highlighting parallels between the disciplines. In that context, we will explore how the new concept of homeodynamics becomes the roadway for the bridge between body and mind. Many overlapping ideas exist. For instance, in Chaos, a crucial change in a system occurs at a bifurcation point at which a choice needs to be made whose outcome may determine the survival, functional effectiveness, or demise of the system. At the bifurcation an accumulation of energies derived from prior experiences have created a history that has become dysfunctional. Similarly, operations in consciousness with input from stores of unconscious memory, and with openness to external influences and internal needs, under stressful circumstances, brings a person to a critical choice point (a bifurcation). The system, structurally and mentally must make an advantageous choice that will make an effective change in the part-whole connections in the system. Consequently, the healthy psychophysiology of human organisms depends on the ability of psycho-structural components to effectively choose and facilitate change processes that affect its survival. Change in the human organism is critically dependent on internal communications, their responsiveness, and the mutual feedback between the body and consciousness variables of connectivity and, particularly, variables of the homeodynamic process that oversees and steers body-mind integration. Supportive experiments will be cited.

Tullio A. Minelli, CIRMANMEC-University of Padova I

Maurizio Balduzzo, University of Padova I

Madeleine Clifford, Imperial College of London GB

Francesco Ferro Milone, Day Hosp. Villa Rota-Barbieri-Vicenza-I

Valentina Nofrate, Research & Innovation-Padova-I

EEG Rhythms and Neurodynamics under Cell Phone Radiation

EEG rhythms and neurodynamics under cell phone radiation M.Balduzzo*, M.Clifford**, F. Ferro Milone***, T. A. Minelli*, V. Nofrate**** *CIRMANMEC-University of Padova-I, **Imperial College-London-GB, ***Day Hospital Villa Rota-Barbieri-Vicenza-I, ****Research & Innovation-Padova-I Perturbations by pulsed repetition of the GSM signal on neuron cell membrane gating and calcium oscillations, at endogenous frequencies, have been suggested as a possible mechanism underlying activation of brain states and oscillatory EEG modes. To explain possible effects of GSM radiation on brain rhythms, EEG records have been performed with a cell phone operating, as usual, in touch with a temporal region. In the corresponding channels the signal overcomes from three to four times the basal EEG values while in the contra-lateral ones the artifacts result negligible. Dynamical systems with two equilibrium points and bifurcated can account both for the regularization of the alpha activity and for the low intensity required by subjective sensitivity, typical of the stochastic resonance tuning. Neuron circuital models of this kind have been employed to reproduce the mentioned phenomenology. While the Hindmarsh-Rose model illustrates the stochastic resonance induced by a pulsate perturbation of near 1% the reversal potential or 5% the membrane voltage, more realistic simulations of cell membrane gating and calcium oscillations are in progress with the help of the Morris-Lecar, Dupont-Berridge-Goldbeter and Chay-Keizer nonlinear models.

Olga Mitina, Moscow State University, Russia

Mental Representation about Concepts Using in Nonlinear Dynamic System Theory.

In this paper results of experimental study will be presented. The study concerns mental representations about different concepts from Nonlinear Dynamic System Theory among researchers and students with different level of knowledge and experience in the field of NSD. Data were got using semantic differential technique. Subjects evaluate 24 basic concepts from NDS, among which Attractor, Catastrophe, Bifurcation, Repellor, Control parameter and so on, using 30 scales which concern understanding these concepts on different level: metaphoric, visual, formal and so on. They should answer from 1 to 7 the degree of their agreement how each statement-scale fits different concept. Further analysis of these multivariate three-mode data shows us latent constructs helping people to use these concept in their copying with chaos and NDS and research it. Results may be interesting for teaching NDS, because help to integrate different latent constructs of understanding and make transition from one to another during learn period in students minds easier and faster.

David Pincus, Department of Psychology, Chapman University, Orange, CA ,

http://www.chapman.edu/wcls/psych/faculty/pincus.asp

Bad Apples: The Relationship between Individual-level and Group-level Dynamics

A series of experimental studies were conducted to examine the putative impact(s) of intrapersonal conflict on interpersonal processes during small group interactions. Groups of four female strangers were created and given the task of getting to know one another during a series of four 30-minute videotaped discussions. Each member completed questionnaires assessing perceptions of control, closeness, and conflict between each discussion. In the experimental condition, intrapersonal conflict was induced by providing false-feedback to one or more of the members indicating that the other members perceived her as cold and abrasive. In the control condition, no feedback was provided. Orbital Decomposition was used to identify recurring patterns within turns-at-speech among the members in the groups. The complexity of these recurring patterns for each discussion was calculated based on Lyapunov dimension, information entropy, and fractal dimension. In addition, the self-report measures of control, closeness, and conflict were used as covariates to predict changes in complexity across the discussions that were not related to the experimental manipulation. Finally, within-discussion changes in patterning (i.e., stationarity) were examined through a linear regression of the sequencing of high versus low recurring patterns over each 30-minute time-period. Results included significant reductions in the complexity of turn-taking patterns following intrapersonal conflict induction in some groups, drops and increases in complexity within some discussions due intrinsic group relational processes, and relative stability in complexity measures across discussions in the control condition. These results may shed light on the connections among internal psychological processes and group dynamics.

David Pincus, Department of Psychology, Chapman University, Orange, CA,

http://www.chapman.edu/wcls/psych/faculty/pincus.asp

Dynamical Systems Theory and Pain Imagery: Bridging the Gap between Research and Practice

This paper uses nonlinear dynamical systems theory as a framework for understanding the psychosocial etiologies of pain, and the ways in which guided imagery treatments may achieve their benefits in pain reduction. Individual factors and general systems models are reviewed, followed by a brief examination of results from treatment outcome studies on the use of imagery suggesting that non-linear process are involved in people s idiosyncratic responses to treatment. Next nonlinear concepts including fractals, complexity, bifurcations,

and self-organizing processes will be discussed as they relate to pain processes. The intent of this discussion is to deepen, and at the same time simplify the clinical understanding of how so many causes and so many systems may interact to produce chronic pain. These nonlinear concepts might also provide a more satisfying explanation as to how imaginary mental processes can serve such a central role in a phenomenon as real and physical as pain.

Michael Radin, Rochester Institute of Technology

William Basener, Rochester Institute of Technology

Bernard Brooks, Rochester Institute of Technology

Tamas Wiandt, Rochester Institute of Technology

"Population of Easter Island", Modeled by Discrete Dynamical Systems

Population of Easter Island modeled by a system of Difference Equations. We will investigate the biology, the economics, history and the long-term behavior of solutions. In addition, discover opulence in the variety of dynamics that the system exhibits; in particular, periodicity, bifurcations and chaos.

Hector Sabelli, Chicago Center for Creative Development, http://www.creativebios.com

Arthur Sugerman, Chicago Center for Creative Development

Louis Kauffman, University of Illinois at Chicago, http://www2.math.uic.edu/~kauffman/

Lazar Kovacevic, Chicago Center for Creative Development

Bios

Bios Data Analyzer. A. Sugerman, H. Sabelli, L. Kovacevic and L. Kauffman. Chicago Center for Creative Development and University of Illinois at Chicago. Chicago, Illinois, 60614. art@ergodev.com The Bios Data Analyzer (Sugerman et al, CD-ROM in Sabelli, Bios, a Study of Creation, World Scientific, 2005) is a collection of computer programs for the analysis of creative characteristics of time series data. Several of these programs calculate recurrences of vectors of different lengths in the time series, and compare them with recurrences found in randomized copies of the same data, while others investigate the change in statistical properties over time. Using these methods, we have identified unique creative features in physical, biological, and economic processes (International Journal of General Systems 29: 799-830, 2000, Kybernetes: 32: 692-702,2003; Nonlinear Dynamics in Psychology, 7: 35-47, 2003). See also our website http://www.creativebios.com. Bios and Chaos: similarities and differences. L. Kauffman, H. Sabelli, A. Sugerman and L. Kovacevic. University of Illinois at Chicago and Chicago Center for Creative Development. Chicago, Illinois, 60614.kauffman@uic.edu. Here we will discuss a creative type of chaotic process, bios, characterized by diversification, novelty, and nonrandom complexity, features absent in chaotic attractors. Bios consists of aperiodic waves that display asymmetry, contiguity, diversification (increasing variance), episodic patterns (complexes), novelty (less isometry than their shuffled copies) and nonrandom complexity, features that differentiate it from simpler forms of chaos. Unpredictability characterizes chaos; novelty characterizes bios. Biotic patterns are generated by a number of equations modeling bipolar feedback. They are also found in many natural and human processes that are intuitively thought of as creative. We thus regard bios as a prototype for creative processes. Significance of bios is that innovation in the pattern is produced in a causal, self-generating way, and not by random interactions like is the case with stochastic series. Mathematical experiments show that for the existence of bios, bipolar feedback is necessary; unipolar feedback produces only equilibrium, periodicity or chaos. Other conditions necessary for existence of bios include the presence of a conserved term. These experiments allow one to infer what conditions may foster or hinder creativity. This may have practical application in human processes, ranging from mental health to social health. Creation Theory and the demonstration of biotic patterns in quantum and cosmological time series. H. Sabelli and L. Kovacevic. Chicago Center for Creative Development. Chicago, Illinois, 60614. Hector_Sabelli@rush.edu. Cosmological, biological and human evolutions demonstrate that natural and human processes are creative. Time series generated with the Schrödinger equation display novelty and nonrandom complexity. Cosmic background radiation shows novelty and arrangement but not other biotic features. Time series analysis of the distribution of galaxies recorded in two recent surveys (Las Campanas Redshift Survey, and the 2-degree Field Galaxy Redshift Survey) show a biotic pattern along the time-space axis, but not in the Right Ascension axis. These studies support the hypothesis that natural processes are causal and creative, and that bipolar feedback plays a major role in evolution. Evolutions are embryological-like developments: a small set of simple and deterministic principles creates complex and unique individuals and events. Bourbaki demonstrated that three "mother structures", lattice, group and topology could generate mathematics. Piaget discovered these same generators in the psychological development of children. Sabelli (Union of Opposites, 1989) proposed that lattice order (asymmetry), group opposition (symmetry) and topological transformation (spatial form) are embodied as action (energy flow in unidirectional time), cycling of energy and two-valued information, and material structure. Action and opposition generate chaos and bios, and presumably may also create higher levels of organization. These also contain these cosmic forms (self-similarity). Bios and bipolar feedback in socioeconomic processes: scientific foundations for human emancipation. H. Sabelli. Chicago Center for Creative Development. Chicago, Illinois, 60614. Hector_Sabelli@rush.edu. As illustrated by the biotic patterns

demonstrable in some economic series, social processes are creative and causal, rather than random or determined. Human action is thus possible and necessary. Scientific insight is desirable. We are developing theory and methods for human emancipation based on two concepts derived from our research: 1. Co-creation: biotic patterns are generated by positive and negative interactions between complementary opposites (co-creation bipolar feedback), at variance with conflict theories of change (Darwinian evolutionism, Marxist class struggle, and capitalist economics). (2). Biological priority and psychological supremacy: Human processes are co-created by the interaction of relatively simple physical and biological processes that have priority and greater energy, and complex (cultural and psychological) processes that acquire local supremacy with social and personal development. Neither material processes nor ideas have absolute primacy in human life, at variance with biological and economic materialism and with cultural and religious idealism. Health care, peace, and a healthy environment are political priorities around which to take the initiative, but to build a popular majority requires attending to collective (and diverse) cultural and emotional processes. These ideas are being developed through discussion at various places, including our website http://www.creativebios.com.

Roger Sambrook, University of Colorado, Colorado Springs, http://gis.nissc.org

Multi-fractal Validation of Geographical Settlement Location Models

Concepts from the field of multi-fractals were used to evaluate two important geographical models of human settlement behavior; central place theory (CPT) and the Uniform random model (URM), both of which have been used extensively in the field of Geography to explain spatial distributions of human settlement. Box-counting and pair-wise methods were used to estimate the dimension of the set of points of the largest and that of the smallest cities of the United States. Estimates of fractal dimension differed for a given data set, depending on whether a box-counting or pair-wise calculation was used. These differences were explained by describing human settlement patterns as multi-fractal. The multi-fractal spectra of the largest and smallest US cities were compared. The set of larger cities had a lower dimension than small cities, reflecting the greater apparent clustering of major settlements, and greater heterogeneity of scaling, reflecting that the clustering of large cities was greater in some areas than others. Both patterns were subject to the same physical factors, thus controlling for factors such as relief or proximity to water. Estimates of dimension were lower for the real data than would be expected from a URM or CPT model of settlement indicating they are poor models for locational behavior. The heterogeneity of large settlements also indicates that simple uni-fractal models are probably unsuitable for settlement location modeling. The study concludes that CPT, URM and simple uni-fractal models are probably insufficient to describe or explain human settlement behavior.

Schank Jeffrey, Psychology, University of California, Davis

May Chris, Psychology, University of California, Davis

Joshi Sanjay, Mechanical & Aeronautical Engineering, University of California, Davis

A Multi-Modeling Approach to the Study of Modeling Complex Bio-behavioral Systems

I discuss a multi-modeling approach using computer simulation and robotic models for the study of sensorimotor development in Norway rat pups. I begin by discussing dimensions of modeling in this context and consider the question of whether robotic models are necessary for modeling behavior. Robotic models are a type of simulation model, but do they do anything that computer simulation models do not do? One reason often sited is that many physical variables influence the behavior of a physical system and it is difficult if not practically impossible to represent all of these with adequate laws or rules for physical interactions in a computer simulation. Another, and perhaps more important reason, is that the process of designing, building, and testing robotic models leads to new problems, discoveries, and interpretations precisely because one is working with a physical model. To illustrate this point, I will discuss examples and results of modeling individual and groups of rat pups with robotic models.

Fariel Shafee, Princeton University

Altruism Extreme Behaviors in Social Networks and the Definition of "Self"

In this paper, we try to explain some extreme social behaviors such as altruism by extending the definition of "self" to include a correction term. We try to understand what an agent perceives as "self" by creating arrays that include self similar variables that are allowed to change under peer pressure and under certain circumstances. The variables include genetic and philosophical variables that may be easy or difficult to intercept by other agents. As a result, an agent identifies with members of dynamic clusters. The boundaries of the clusters are redrawn as the agents update their idea of "self." Each member tries to intercept the variables of other members correctly while trying to hide his own variables when advantageous in a manner similar to playing cards. This idea of "self" also modifies an agent's utility curve to add a group utility term. The idea of group utility is used to explain situations following and preceding defection.

Meg Spohn, University of Denver, Denver, CO

The Cantor Dust of Conflict

From the classic Cantor Dust, we understand that noise in data transmission tends to scale in a precise pattern. As described by Gleick in his classic book, a common representation of the Cantor Dust is a representation of a transmission with noise in, for example, its middle third, in a scaled iteration down to the bits. Similarly, the intensity of human conflict, as measured by battle deaths over time series, seems to follow scaling patterns not unlike the Cantor Dust, with its own pattern of terrible bursts and terrible silence. War is often described by the soldiers who were there as being composed of short periods of intense violent conflict interspersed with longer periods of quiet tension or tedium. This project examines these patterns, and considers some of the questions that must necessarily accompany them: With a descriptive pattern, what are the risks inherent in forecasting, ethical, philosophical, and otherwise? What are the human and policy implications of potentially using such a pattern, or of allowing it to be used?

Dimitrios Stamovlasis, Education Research Center, Ministry of Education, Athens, Greece

Nonlinear Hypotheses in Education Research Methodologies

The rapid changes of today s world present new challenges on our educational system. Education research dealing with a complex and continuously changing system may not be able to provide the proper support by implementing conventional linear, qualitative or quantitative, approaches. NDS theory and the science of complexity might provide more solid foundation for understanding and decision-making. The present work explores the applicability and the usefulness of Catastrophe Theory for testing nonlinear hypotheses in educational research. Cusp catastrophe models are proposed, which accounts for discontinuities in students' performance. These models implement psychometric variables from neo-Piagetian theories or information processing models, as controls and demonstrate nonlinear interactions between students' mental resources and mental tasks. In addition, cusp catastrophe is tested in others education research areas implementing other behavioral variables such as students attitudes and choices, or teachers selection in workforce recruitment. Measurements were taken at two points in time, and the data analysis involved dynamic difference equations and statistical regression techniques. The nonlinear models proved to be superior to the linear counterparts, and that shows the limitations of statistical modeling used so far in education. Utilizing nonlinear methods and making the paradigm shift realized in behavioral science, seems promising for education and pedagogy. This work demonstrates the feasibility of providing empirical evidences for nonlinear processes in education research, which will build bridges between NDS-theory concepts and pedagogical theories.

Claudio Tebaldi, Dipartimento di Matematica, Politecnico di Torino

Low-dimensional Analysis by Proper Orthogonal Decomposition

In the last years the study of many complex systems has taken strong advantage of the development of mathematical methods coming from the theory of nonlinear dynamical systems. Furthermore, for systems that show turbulent behavior like fluids, the concept of coherent structures, i.e. strongly persistent spatio-temporal structures, has provided an efficient descriptive tool as well as the possibility of low-dimensional reductions. The introduction of the Proper Orthogonal Decomposition (POD) has found to be a successful technique to find coherent structures. Briefly, POD consists in the orthogonal decomposition of the correlation associated with the state variable of the system and its representation, optimal in the least square sense, with respect to the orthonormal, complete set of eigenfunctions of the correlation operator. Differently from Fourier decomposition, the eigenfunctions obtained from POD can efficiently display possible spatial localizations, even strongly time dependent. In connection with Galerkin method, POD can also be the technique leading to useful low-dimensional ODE approximations of PDE models, allowing to take full advantage of dynamical systems theory. As a first example and to facilitate comparisons, POD has been directly applied to N-dimensional dynamical systems dependent on an external parameter, obtained from the two-dimensional Navier-Stokes equations as Galerkin truncations. The transition to periodic behavior with N=98 has been accurately described in a reduced 3-dimensional model. The case of quasi-periodicity has also been successfully considered.

Karl Toifl, Neuropsychiatric clinic, Medical University of Vienna, www.Karltoifl.at -- www.sienceofcomplexity.org

The Multidimensionality of Health: Two Tools, One to Estimate the Status of Health and Another One to Evaluate Therapeutic Goals

Based on a definition on illness and health, Which includes both individual bio-psycho-social complexity and dynamics of development, two tools will be presented, which are developed to be used in daily clinical practice. The first one should make possible to show the relationship between the estimated levels of the amount of demands a person is confronted with, the effectiveness of strategies to deal with these demands and the actual status of health. The second tool allows in daily clinical practice on one hand to document the multidimensional diagnostic and therapeutic process and on the other hand to evaluate the therapeutic goals. This tool supports the process of permanent qualitative improvement of diagnosis and therapy.

Karl Toifl, Neuropsychiatric clinic, Medical University of Vienna,

www.Karltoifl.at - www.scienceofcomplexity.org

Sense and Practical Use of Tools to Estimate the Status of Health and to Evaluate Multidimensional Bio-psycho-social-therapeutic Goals

In this workshop should be demonstrated and discussed the necessity and possibility of a multidimensional diagnostic and therapeutic approach to deal in the best way possible with the complexity and dynamics of individual states of health. In open discussion the sense and practical use of two tools, which should support the establishment of such a multidimensional approach should be demonstrated. The first tool allows the estimation of multidimensional demands, the effectiveness of strategies to deal with these demands and the state of health. The second tool allows the evaluation of individual therapeutic goals based on a multidimensional diagnostic process.

Rita M. Weinberg, Psychology-National-Louis University

Chaos Theory, Metaphor Processing And Complexity

Chaos Theory, Metaphor Processing and Complexity Rita M. Weinberg, Ph.D. Although the ubiquity and power of metaphors are well known, we still work to understand how our brains process such figurative non-literal language. Chaos theory provides insight into this aspect of brain processing, which describes a path from chaos to self-organization. Cognitive psychologists propose that metaphoric understanding involves taking two seemingly dissimilar things and finding similarities between them. They then map these similarities from the source that we already know to the target (new information). The outcome differs from both source and target. Metaphors can be understood at various levels of complexity. From chaos theory perspective, metaphors reflect two parallel systems, each stable in their own right. Mapping across destabilizes each system, leading to entropy and an emergent self organizing system. This re-organization produces new insight consciously or unconsciously. Metaphoric meaning produces different perceptions, reframing or a solution to a problem. One metaphor can alter perspective, attitude, self concept, motivation learning and behavior.

Anatoly Zhirkov, Society of Myocardial Regeneration

Victor Kostenko, Society of Myocardial Regeneration

Analysis of Cardiac Muscle Regeneration after Infarction from the Position of Chaos Theory

The possibility of cardiac muscle regeneration after ischemic damage has been rejected for a long time. A great amount of works about the possible cardiac muscle regeneration after damage using the stem cells has appeared recently. The purpose of our research is to study the effect of the regenerative myocardial infarction therapy from the position of chaos theory. 200 patients with ischemic damage were examined. A number of indices of cardio-vascular system, peripheral blood and immunological rules were studied. As exposure we used the stimulation of stem cells migration with the help of granulocytestimulating factor (n=22). No significant changes in results of treating by trial and control methods according to Caplan-Meyer curve were observed. Analysis of the studied indices revealed the peculiarities of the reaction of other systems, as well as the possibility to use the concepts of chaos theory. The role of the cells redifferentiation in harmonization of myocardium damage reaction was established. The indices in the groups of healthy subjects and patients can be described as golden ratio and mirror golden ratio . Using of the chaos theory ideas can be applied when explaining the data about the differently directed changes at stimulating of cardiac muscle regeneration.

CONFERENCE ANNOUNCEMENTS

Organization Development Network's 2005 Annual Conference: Advancing the Theory and Practice of OD. **November 13-16, 2005 Pre-Conference Intensives: November 11-13; Post-Conference Workshops: November 16-17 De Krengel**, Human systems Dynamics Institute writes that the Annual ODN Conference for 2005 is in Minneapolis. This exciting opportunity will be held at the Minneapolis Hilton and Towers, November 13 - 16**. Glenda Eoyang** will be presenting a joint keynote address with **Mary O'Hara Devereaux** to look at the future of organizations and what that future will mean for us as professionals. The whole conference program is specifically designed to meet your professional development needs as an OD practitioner, as well as those of you who are new OD practitioners, others with little or no background in OD and a desire to learn and apply its principles and tools. This year's Conference will also address the needs of those who seek an intensive immersion in the theory, skills and practice of Organization Development. Make connections among peers who share similar challenges, values and fresh ideas. Participate in discussions that offer best practices where the theory and practice of OD intersect. For more information go to http://www.odnetwork.org/conf2005/

Third Annual Complexity Science And Educational Research Conference. **Bill Doll** writes that the third CSER conference will be held in south Louisiana, Nov. 20 - 22nd. The conference theme will be Complexity and Learning with **Jacques Daignault** as the keynote speaker on Sunday evening and William Pinar as the conference summarizer on Tuesday am. The site of the conference will be the Solomon Episcopal Conference Center in Robert, LA. The complete center --lodge, dinning room, grounds, new cabins - will be exclusively ours during the conference. The cost, yet to be worked out, will include registration, lodging, food, snack breaks, and two wine and cheese affairs. Evening entertainment will be provided or maybe people can bring their own guitars. As always there will be reduced rates for graduate students. Firmer details will be forthcoming in early January. Until then consider what papers, presentations, panels, activities you would like to present. The conference center is very open and the lovely grounds are inductive to walking and conversing. Robert, LA is about 1 and 1/2 hours away from the New Orleans airport, across the lake in the lovely hinterlands of south Louisiana. Sharing a rental car would be the best way to go, but we will try to ferry some groups in a van if possible. Arrival times should be am on Sunday and latish pm on Tuesday. Moe information can be found at http://www.complexityandeducation.ualberta.ca/conferences2005.htm

W.F. Lawless and colleagues announce that an article published in a civil engineering journal (Lawless, W. F., Bergman, M., & Feltovich, N. (2005). "Consensus-seeking versus truth-seeking." ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management 9(1): 59-70), is to appear, expanded, in an economics book (Lawless, W. F., Bergman, M., & Feltovich, N., forthcoming in 2005, "Introducing the physics of uncertainty to organizations. Perturbations, measurement and extensions to computational agent models", to be published by Idea books). The same group has also revised and updated the first paper into a shorter version for a nuclear waste conference in Glasgow later this fall (Lawless, W. F., Bergman, M., Feltovich, N., & Staderman, W., 2005, forthcoming, "A physics of uncertainty for organizational decision-making: Consensus seeking versus truth seeking", to be presented at the International Conference on Environmental Remediation and Radioactive Waste Management, September 4-8, 2005, Glasgow, Scotland).

NEW APPOINTMENT We have heard that **Stuart G. Hall** will be the Web Editor at the General Medical Council in the UK, with a new GMC website launching on 8 August. Congratulations Stuart!

NEW BOOK ANNOUNCED

BIOS:A Study of Creation (With CD-Rom) by **Hector Sabelli** *(Chicago Center for Creative Development, USA)* (From publishers website, www.worldscibooks.com/medsci/5709.html) "This book focuses on a prototype of creative causal processes termed BIOS and how the concept can be applied to the physical world, in medicine and in social science. This book presents methods for identifying creative features in empirical data; studies showing biotic patterns in physical, biological, and economic processes; mathematical models of bipolar (positive and negative) feedback that generate biotic patterns. These studies support the hypothesis that natural processes are creative (not determined) and causal (not random) and that bipolar feedback plays a major role in their evolution. Simple processes precede, coexist, constitute and surround the complex systems they generate (*priority of the simple*). In turn, complex processes feedback and transform simpler ones (*supremacy).*"

2nd International Nonlinear Science Conference

Research and Application in Behavioural, Social & Life Sciences

The goal of the conference is to engage international groups of researchers and practitioners in an exchange of ideas about the emergence of nonlinear science and its impact in our diverse fields

University of Crete, Medical School,
Heraklion, Crete, Greece
March 10, 11 and 12, 2006

The topics covered by the conference include applications of nonlinear dynamics techniques to any area of the behavioural, social & life sciences including psychology, sociology, education, economics, management science, anthropology, art, biology, physiology, ecology, neurosciences and medicine.

Contributions on other disciplines such as computer science, mathematics & engineering are also welcome provided the paper takes a nonlinear dynamical systems approach to some topic in the behavioural, social or biological sciences.

Abstract Guidelines and Submission Instructions are at:
http://www.societyforchaostheory.org/insc2006/

Submission Deadline: November 15, 2005

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Heraklion, Crete, Greece

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The 2nd International Nonlinear Science Conference will be held at the University of Crete, Medical School, Heraklion, Greece.

CRETE, is the largest Greek island and the fifth largest island of the Mediterranean. It is divided into four Prefectures, each with its own capital - Chania (Hania), Rethymnon (Rethymno), Iraklion (Heraklion) and Lassithi (Agios Nikolaos). Crete was part of the Byzantine Empire from 325 AD to 824 AD. After the fall of Constantinople to the Turks (1453), artists and scholars from all parts of the former Byzantine Empire fled to Crete.

The prefecture of Heraklion follows the pattern of the rest of Crete mountains - bare at places, filled with cypress and oak trees elsewhere - plains, the most important one being that of Messara, fields covered with fruit trees of all varieties, sandy beaches and beautiful hidden coves. Heraklion is also home to unique samples of ecclesiastic architecture and the monasteries of Vrontissio, and Varsamonero as well as the church of Ag. Titos.

Organized by the Society for Chaos Theory Psychology and the Life Sciences and sponsored by the Società Italiana Caos e Complessità, INSC promises to be the ultimate destination in 2006. It will be the ideal forum to discuss new scientific developments, their applications as well as it will help promote international cooperation.

INSC 2006 FOR CALL FOR PAPERS AND OTHER INFORMATION ARE IN THIS NEWSLETTER

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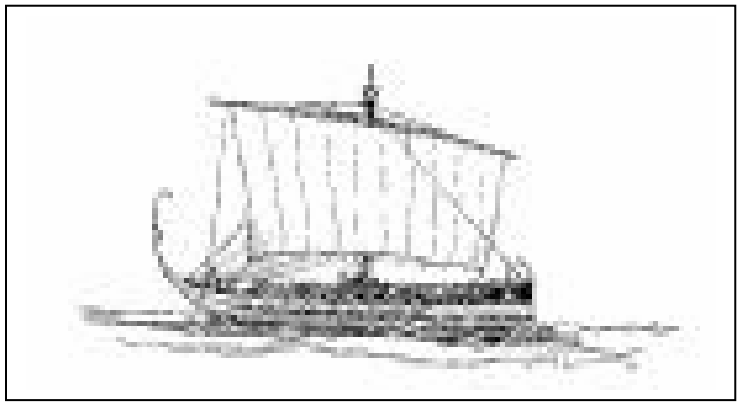

OUR NEXT GREAT ODYSSEY

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Fred Abraham (chair), Silliman University (Philippines) & Blueberry Brain Institute, (USA)
Holly Arrow, University of Oregon (USA)
Dick Bird, University of Northumbria (UK)
Greg Manos, Director's Cut, (USA)
Meg Spohn, University of Denver (USA)

May 2005

Our committee was formed in response to charges by the membership at the annual business meetings of the Society in 2002, 2003 and 2004. Formally, in response to those charges we present here, in accordance with existing Article IX of the current Articles of Organization, also known as the Constitution and Bylaws, amendments to the Articles of Organization that represent a systematic revision . They are being proposed in the form of 5 Motions to the membership, as detailed below.

The charges to the committee were as follows:
2002 charge: To review the constitution and bylaws [formally known as the Articles of Organization], identify areas for improvement, updating, and clarification, and propose specific amendments to the bylaws that would be voted on by the membership.
2003 charge: To also consider the Journal going to self-publication and the manner of appointment of officers.

We interpreted the 2003 charge as an amendment to the 2002 charge as areas that needed special focus. We have taken our charge to be to completely review the Articles of Organization and to produce a revised version if warranted. We felt it was warranted. The original Articles of Organization were well done and reflect hard work and attention to detail, but time has revealed some ambiguities and areas of governance and membership participation and recourse that needed improvement. We examined constitutions and bylaws of other scientific organizations for comparison. We felt that in the past few years the Society has had significantly increased involvement of members in governance and other affairs of the Society, and that our Articles of Organization should respond with increased democratization of the society. Some of our primary concerns were:

(1) We wanted to insure that all officers and members of the Executive Committee were elected. (This is not the case with the current Articles of Organization.)

(2) One of the problems was to give the Executive Committee a stable size by careful definition of its membership, by careful definitions of the officers and their duties, and by streamlining the scheduling of the election of officers. We eliminated the position of President-Elect by having the elections completed by the end of June, and having the President take office on September 1, the beginning of the Society's and the membership's year, just two months after the close of the election. We were especially concerned with the election of officers and their duties, the make-up and duties of the Executive Committee, election procedures, the oversight of the publications of the Society, and the nature of the privileges and recourse of members.

We offer the proposed Articles of Organization, which constitutes a systematic revision of the Articles of Organization, collected into 5 separate motions. They will be presented for voting at the annual business meeting of the Society during the annual convention in Denver this August.

In this report, we include the proposed Articles (on the left in the tables), along with the current Articles of Organization (on the right) to allow for easy comparison. Rationales for the proposed changes are stated after each Motion.

Respectfully submitted, Fred Abraham,
Holly Arrow, Dick Bird, Greg Manos, Meg Spohn
(concurrence of members verified by e-mails to the Society Secretary)

Link to the Society: http://www.societyforchaostheory.org/
Link to mirror page: http://www.blueberry-brain.org/SCTPLS/SCTPLS CRC reports.htm

Motion 1:

We move that Article I in the current AO be replaced with the revised Articles I & II .

Rationale for Proposed Changes:

Note: all roman numerals refer to the revised version unless otherwise specified:
1. The former Article I was split into separate articles for Name and Purpose, following standard practice as found in other Articles of Organization we consulted.
2. Article II §1 adds an educational purpose, and makes explicit the operation of the Society as a nonprofit organization.
3. Article II §2 updates the areas covered from the mainly psychological to include also social and biological disciplines. The language is simplified and streamlined, and communicates more clearly the interdisciplinary nature of the society.
4. Article II §3 adds educational projects.
5. Article II § "future" changed to "subsequent" for tense and timing aspects.

Motion 2:

We move that Article II in the current AO be replaced with the revised Articles III .

Rationale for Proposed Changes:

Note: all roman numerals refer to the revised version unless otherwise specified:
1. Article III renumbered in line with motion 1. (Note: If motion 1 does not pass, this would revert to Article II).
2. §2 updates reference to (renumbered) preceding definitions and eliminates reference to standards. No standards are articulated and no demonstration of meeting any standards has ever been required to join the Society.
3. §3 Secretary-Treasurer was changed to 'Secretary' to reflect current Society practice. There are now two positions, a Secretary, and a Treasurer, held by different people. (Note: The change in this office is also covered in proposed new Article IV §1)
4. §4 does not restrict voting to the Annual Business Meeting or mail ballots. This opens the way for the possibility of electronic voting should the Society decide to use this method in the future. Redefines what constitutes a quorum as 10% of the membership (Previously defined, in Current Article IV, §2, as 10 members). With a society membership close to 300,

we felt that it was not adequate for 10 members to decide matters for the society. The 10% criterion allows for a flexible number that will remain appropriate regardless of the size of Society membership.

Motion 3:

We move that Articles III, IV and VII in the current AO be replaced with the revised Articles IV and V.

Rationale for Proposed Changes:

Note: all roman numerals refer to the revised version unless otherwise specified:

Collectively, the changes presented in these two articles were aimed to increase democratization of the Society by making all offices elected and giving the membership more avenues of changing the actions and officers of their Society.

Article IV

1. §1. Establishes four officers, eliminating the President-Elect and splitting the Secretary-Treasurer into two separate offices, reflecting current Society practice. Establishes two-year terms with staggered alternate-year elections. Eliminates appointment of officers by the Executive Committee (old III §2) as this feature allowed members of the Executive Committee the potential to perpetuate themselves in office instead of being elected at annual elections by the members. The previous practice also left the term of the Secretary-Treasurer (now Secretary and Treasurer) unspecified. This was one of the most motivating factors prompting a need for change, and brings practice in line with the text of the Current Article V, which specifies that Officers shall be elected. The revision also clarifies that a Past-President cannot be the same as a President succeeding him or herself, which was unclear from the wording of the current Article III, §6. This was another major factor that made for instability in the size of the Executive Committee. The wording of the current AO (III, §1 & IV, §1) envisioned 4 officers, three of whom were elected, and one appointed, but the ratio of elected and appointed officers has in practice varied widely, and the EC has not necessarily agreed from one Presidency to the next as to whether the appointed Secretary/Treasurer position (now occupied by two persons) constitutes one vote or two, and whether the Past-President continues in his or her position if the current President is elected to a second term. The proposed revision sorts out and specifies all of these issues.
2. §2-§5 defines duties of the officers. It breaks down the separate responsibilities of the Treasurer and the Secretary, which have in practice become two positions.
3. §6 deals with vacancies of offices.
4. §7 concerns officers and the Executive Committee duties between Annual Business Meetings.
5. §8 specifies how actions of officers may be overturned. Previous AO provided no recourse to the Executive Committee or to members.
6. §9 specifies how an officer may be removed from office. Previous AO was silent on the appropriate procedures.
7. §10 defines the Board of Trustees, their duties, and their succession. It removes the requirement that only signatories to the initial AO of 1997 are eligible to serve, since this provision will eventually make it impossible to fill vacancies.

Article V:

1. §1&2 define the Executive Committee and its duties, with the adjusted membership as envisioned in Article IV §1, eliminating the President-Elect and treating the Secretary and Treasurer as two different positions. §2 also envisions the possibility of members to call for a review of actions taken at the annual meeting (which is typically attended by a minority of active members).

2. §3 provides means for the membership to rescind or modify an action of the Executive Committee. No procedure is specified in the current AO.
3. §4 defines standing and ad hoc committees, and the appointment of their members and their terms of office, and the methods of selecting the chairs of the committees. Existing Article VII, §2 states that Program Committee members serve for two years, but in practice this is an annual appointment. The revision brings the AO in line with Society practice.
4. §5-§7 define the duties of the standing committees. The revision removes restrictions on the number of members who can serve on each committee, allowing for greater flexibility. The revision also eliminates inconsistency in specified committee membership in the current AO. In the current AO, for example, Article VII, §4, specifies that the Program Committee consist of 2 members, a Chair designated by the President and the past Chair, while Article III, §4, specifies that the Secretary-Treasurer also serves on the committee. These requirements and restrictions have in practice not been followed.
5. §5 corrects the typo in Current Article VII, §3, which states that the Elections committee (not the Executive Committee) appoints members of the standing committees. New language specifies that the N&E committee should solicit nominees for vacancies, promoting broad participation in the society. Note: this text is based on a motion proposed by the N&E Committee and passed by the members at the 2004 Annual meeting.
6. §6 specifies how the editors of the Society journal and newsletter are appointed, and new languages specifies that both should serve on the Publications Committee.

Motion 4:

We move that Articles V and VI in the current AO be replaced with the revised Articles VI and VII.

Rationale for Proposed Changes:

Note: all roman numerals refer to the revised version unless otherwise specified:

Article VI.

1. §1&2 specify voting procedures. The requirement of a mail ballot has been removed so that other techniques of communication (electronic voting, for example) may be employed in the future without further change to the AO.
2. §3 provides voting on special issues, which is not addressed in the current AO.
3. §4 provides conditions needed for determining outcomes of elections, and clarifies how to proceed in the case that a quorum is not met in elections.

Article VII.

1. Article VII makes explicit the purpose and actions of the Annual Conference and Business Meeting, redefines the quorum from 10 members to 10 percent of the membership.
2. §3 specifies the preferred time window for the Conference and Meeting. It removes language specifying coordinating Society meetings with major psychology conventions, which is no longer the practice of the Society.
3. §4 makes explicit the openness of the business meeting for full participation by the membership.

NOTE: No changes are proposed for **Article VIII.**

Motion 5:

We move that Articles IX and X in the current AO be replaced with the revised Articles IX and X.

1. Article IX. Communication to members is no longer limited to snail mail, allowing for use of e-mail and posting on the web site as an alternative method of communicating to

members, and allowing for eventual use of electronic voting methods. Reference to “post office address” also seemed archaic, since many (most?) members do not have a post office address.

2. Article X §1. Refers back to the procedure used for Amendments in Article IX. Previous version referred back to Article III, but we could find nothing in the current Article III that gives explicit guidance re procedures for the demise of the Society.

Motion 1:

We move that Article I in the current AO be replaced with the revised Articles I & II .

Proposed Articles of Organization	Current Articles of Organization
Article I: Name The name of the organization shall be “The Society for Chaos Theory in Psychology & Life Sciences.” It will be referred to as "the Society" in the remainder of these Articles. **Article II: Purpose** Section 1. The Society is organized exclusively for scientific and educational purposes and shall be operated as a non-profit association within the meaning of Section 501 (c) (3) of the Internal Revenue Service Code. The Society was registered as an association in Milwaukee County, Wisconsin, on April 27, 1997. Section 2. The aims of the Society shall include but not be limited to application of nonlinear dynamical systems theory and related aspects of complexity theory to scientific and educational aspects of the psychological, social, and biological sciences. Section 3. To promote the above, the Society shall initiate and encourage constructive interaction and integrative efforts, including the development of publications and educational projects. Section 4. No substantial part of the activities of the Society shall be the carrying on of propaganda or otherwise attempting to influence legislation. The Society shall not participate in or intervene, including the publishing or distribution of statements for any political campaign, on behalf of any candidate for public office.	**Article 1. Name and Purpose.** 1. The name of the organization shall be the Society for Chaos Theory in Psychology & Life Sciences. It will be referred to as "the Society" in the remainder of these Articles. The acronym SCTPLS is an acceptable form for occasional use in Society communications. 2. The Society is organized exclusively for scientific and educational purposes within the meaning of Section 501 (c) (3) of the Internal Revenue Service Code. 3. The Society shall concern itself with the scientific and professional problems in psychology insofar as they pertain to nonlinear dynamical systems theory. The Society's scientific interests and commitments shall include but not be limited to: (a) integration of data and theory across specialty boundaries, (b) the relationship between psychology and other areas of human knowledge, particularly regarding ecological matters and other important human concerns; (c) the historical, systemic, and methodological aspects of psychology as a whole. 4. To promote the above, the Society shall initiate and encourage constructive interaction and integrative efforts, including the development of publications. 5. No substantial part of the activities of the

Section 5. Notwithstanding any other provisions of these Articles, the Society shall not carry on any other activities not permitted to be carried on (a) by an Association exempt from Federal Income Tax under section 501 (c) (3) of the Internal Revenue Code of 1986 (or the corresponding provision of any subsequent United States Internal Revenue Law), or (b) by an Association, contribution to which are deductible under section 170 (c) (2) of the Internal Revenue Code of 1986 (or the corresponding provision of any subsequent United States Internal Revenue Law).	Society shall be the carrying on of propaganda or otherwise attempting to influence legislation. The Society shall not participate in or intervene, including the publishing or distribution of statements for any political campaign, on behalf of any candidate for public office. 6. Notwithstanding any other provisions of these Articles, the Society shall not carry on any other activities not permitted to be carried on (a) by an Association exempt from Federal Income Tax under section 501 (c) (3) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue Law), or (b) by an Association, contribution to which are deductible under section 170 (c) (2) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue Law).

Motion 2:
We move that Article II in the current AO be replaced with the revised Article III.

Proposed Articles of Organization	**Current Articles of Organization**
Article III. Membership Section 1. The Society shall consist of a single class of membership. Section 2. Members must have an interest in the aims of the Society as stated in Article II, Sections 1 and 2. Section 3. New Members: Those persons who have requested membership and who meet the above criteria shall be made members upon receipt of the annual dues. The Secretary of the Society shall notify new members of their acceptance. Section 4. Except when otherwise specified in these Articles, all decisions calling for an action by the membership of the Society shall be determined by a majority of those voting provided that a quorum of at least ten percent of the Society membership participates in the voting. Voting by proxy	**Article II. Membership.** 1. The Society shall consist of a single class of membership. 2. Members must have an interest in the concerns of the Society as stated in Article 1, Section 2, and meet the minimum standards pursuant to Article 1, Section 2. 3. New Members: Those persons who have requested membership and who meet the above criteria shall be made members upon receipt of the yearly dues. The Secretary-Treasurer of the Society shall notify new members of their acceptance. 4. Except when otherwise specified in these Articles, all decisions calling for an action by the membership of the Society shall be by majority voting at the annual Society Business Meeting, or in the absence of a quorum, by mail ballot of the voting

shall not be allowed. Section 5. The membership year begins September 1st, and ends on August 31st of the following calendar year.	members. Voting by proxy shall not be allowed. 5. The membership year begins September 1st, and ends on August 31st of the following calendar year.

Motion 3:
We move that Articles III, IV & VII in the current AO be replaced with the revised Articles IV and V.

Proposed Articles of Organization	**Current Articles of Organization**
Article IV. Officers. Section 1. The Officers of the organization shall be: a President, a Past-President, a Treasurer, and a Secretary. The President and Treasurer will be elected to two-year terms so that the first year of the two-year term will begin in even-numbered years; the Secretary will be elected to a two-year term so that the first year of the two-year term will begin in odd-numbered years. The President becomes the Past-President when a new President is installed, and continues in this position until displaced by a new Past-President. If a President is elected to succeed her or himself, he or she is not to be considered the Past-President; rather, the person preceding him or her will remain as the Past-President. Section 2. The duties of the President are (1) to preside at all the meetings of the Society, (2) to be Chair of the Executive Committee, (3) to exercise supervision over the affairs of the Society with the approval of the Executive Committee, (4) to serve ex-officio as a member of the standing committees specified in Article V, (5) to establish other committees as needed, and (6) to perform such other duties as are incident to the office or as may properly be required by vote of the Executive Committee. It shall also be the duty of the President to prepare an annual report of the essential activities and decisions of the Society. Section 3. The duties of the Treasurer are (1)	**Article III. Officers.** 1. The officers of the organization shall be a Society President, a Society President-Elect, a Society Past President, and a Secretary-Treasurer. The functions of Secretary-Treasurer may be divided between two members should the workload evolve to a sufficient quantity. 2. The President-Elect shall be chosen by vote of the members of the Society. The Secretary-Treasurer shall be appointed by the Executive Committee. 3. It shall be the duty of the President to preside at all the meetings of the Society; to be Chair of the Executive Committee and to exercise supervision over the affairs of the Society with the approval of the Executive Committee; to serve ex-officio as a member of the Nominations and Elections, Program and Publications Committees; and to perform such other duties as are incident to his or her office or as may properly be required of him or her by vote of the Executive Committee. (See also Article IV-2). 4. It shall be the duty of the Secretary-Treasurer to issue calls and notices of meetings; to receive and transmit applications for Society membership; to keep records of the Society; to have custody of all funds and property of the Society; to collect any special dues that may be voted

to have custody of all funds and property of the Society, (2) to collect dues, (3) to make disbursements as authorized by the Executive Committee, (4) to prepare and present a budget outline for each fiscal year to the Executive Committee for approval, (5) to present a statement of accounts at the annual meeting, and (6) to make those statements available to the membership. The Treasurer will also serve as a member of the Program Committee. Section 4. The duties of the Secretary are (1) to issue calls and notices of meetings, (2) to receive and transmit applications for Society membership, (3) to keep records of the Society, (4) to serve as Secretary and member of the Nominations and Elections Committee, and in the name of the Chair of the Nominations and Elections, to issue calls for nominations of officers, or to arrange with the Executive Committee or Nominations and Elections Committee for the issuing of such announcements. It shall also be the duty of the Secretary to archive all reports of officers, the Executive Committee and all other committees to insure the availability of said reports the membership. Section 5. The duties of the Past-President are to serve as a member of the Executive Committee and to perform the duties of the President in the event of the absence or incapacity of the latter. Section 6. A vacancy or incapacity in the offices of the Treasurer, Secretary or Past-President will be filled by appointment of the President, in consultation with the Executive Committee. The office of Past-President should be selected from among the previous Presidents. A vacancy or incapacity in the Presidency will be filled by the Past-President until the Executive Committee votes a replacement. Any officer filling a vacancy will serve for the remainder of the term of the office vacated.	in accordance with Article VII-1 of the Articles; to make disbursements as authorized by the Executive Committee; to serve as Secretary and member of the of Nominations and Elections and Program Committees; and in the name of the Chair of the Nominations and Elections, to issue calls for nominations of officers and members-at-large of the Executive Committee, or to arrange with the Executive Committee for the issuing of such announcements. 5. It shall be the duty of the Society President-Elect to serve as a member of the Executive Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter. The President-Elect shall automatically become President at the close of the membership year in which the President-Elect was elected, as stipulated in Article VII-3 of the Articles, and will serve on the current Program Committee. 6. It shall be the duty of the Society Past-President to serve as a member of the Executive Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter and the Society President-Elect. The President shall automatically become Past-President at the close of the membership year in which that member began the term as President. 7. In case of the death, incapacity, or resignation of any of these officers (except the President), the Executive Committee shall elect a successor to serve until the close of the membership year after the next scheduled elections. 8. The Board of Trustees will consist of three persons who have held offices in the Society and who are among the initial signatories of this document. It is the duty of the Board to ensure the Society's compliance with its Articles, its obligations

Section 7. Between the annual meetings of the Society, the officers, acting within their individual responsibilities, and the Executive Committee, will conduct the business of the Society.

Section 8. Any Action of an Officer that affects Society policy may be reviewed and overturned by unanimous vote of the other members of the Executive Committee, or by a special vote of the membership based on a petition of ten percent or more of the members of the Society.

Section 9. The removal from office of any Officer may be made by special vote of the membership based on either (1) a petition of ten percent or more members of the Society or (2) the request of any two members of the Executive Committee. The special election should require the participation of at least 40% of the membership of the society, and a 2/3 majority vote for the removal to be performed.

Section 10. The Board of Trustees will consist of three persons who have held offices in the Society. It is the duty of the Board to ensure the Society's compliance with its Articles of Organization, its obligations to the Internal Revenue Service, and other legal obligations that might pertain to the Society's operation. The term of appointment terminates with death, incapacity, or resignation. Replacements are to be appointed by the Executive Committee.

Article V. Committees

Section 1. The Executive Committee shall consist of the President, the Secretary, and the Treasurer, who will be determined by the annual elections, and the Past-President.

Section 2. The Executive Committee shall have general supervision of the affairs of the Society, performing the duties and abiding by the limitations specified in these Articles. Actions of the Executive Committee

to the Internal Revenue Service, and other legal obligations that might pertain to the Society's operation. The term of appointment terminates with death, incapacity, or resignation. Replacements are appointed by the Executive Committee.

Article IV. Executive Committee.

1. There shall be an Executive Committee of the Society consisting of the Society President, President-Elect, Past-President, and the Secretary-Treasurer.

2. The Executive Committee shall have general supervision of the affairs of the Society, performing the duties and abiding by the limitations specified in these Articles. All actions of the Committee affecting Society policy shall be put to the vote of the membership at the annual Society Business Meeting (providing a quorum is present) or by a special mail

affecting Society policy are subject to approval by a majority vote of the members voting at the annual meeting, or by special mail ballots as decided upon by the Executive Committee. In the case of actions taken at the annual meeting a special mail ballot to review such actions may be requested by petition of five percent or more of the members. The ballot shall be circulated to the membership. Section 3. Any action of the Executive Committee may be rescinded or modified by special vote of the membership at the request of a petition of five percent or more members of the Society. Section 4. The Standing Committees of the Society shall consist of the following: (1) the Nominations and Elections Committee, (2) the Publications Committee, and (3) the Program Committee. At-large members of the Nominations and Elections and the Publications Committee serve 3-year terms. Program Committee members are appointed on an annual basis. The President may also establish special 'Ad hoc' Committees and choose the Chairs of all Committees with the approval of the Executive Committee; such responsibility of selecting the chairs may be delegated at the President's discretion to the Committees themselves. Ad hoc committees may be reclassified as standing committees by majority vote of the membership. Section 5. The Nominating and Election Committee shall conduct the voting for officers and shall conduct all other voting required by the Society as allowed by this Constitution and Bylaws as specified in Article VI. They shall establish the means by which all members are given an opportunity to participate in nominations and voting, giving reasonable deadlines for contacting all members and obtaining their votes. The Nominations and Elections Committee shall also solicit nominees for vacancies on all standing and special committees,	ballot. 3. All decisions of the Executive Committee shall be made by majority of the committee members present, except that on a mail ballot, the majority of those returning their ballots within 21 days of its mailing shall decide the issue(s). **Article VII. Committees.** 1. The committees of the Society shall consist of three standing committees: (a) the Nominations and Elections Committee, (b) a Program Committee, and (c) a Publications Committee. The Executive Committee may also charter special committees as needed and ratified by Executive Committee vote. 2. The members of the Nominations and Elections and Publications Committees shall serve for terms of three years. The members of the Program Committee shall serve for a term of two years. Appointments shall be made during and take effect at the end of the Annual Convention of the Society. 3. The Nominations and Elections, Program, and Publications Committees shall each consist of three members appointed by the Elections Committee. The Chairs of these Committees shall be designated by the President. 4. It shall be the duty of the Program Committee to make arrangements for the program at the annual meeting of the Society in accordance with Article VI of these Articles. The Program Committee shall consist of two members: (a) Chair designated by the President, and the (2) Past Chair of that committee. 5. It shall be the duty of the Publications Committee to encourage development of journals, books and articles of relevance to

specifying criteria such as expertise and diversity of perspectives. As many members as practicable should be given an equal chance to participate in governance. Section 6. The Publications Committee shall establish, maintain, and oversee the publications of the Society, including its professional journals and newsletters. The editors of Society journal(s) and the newsletter will serve as members of the Publications Committee, and will be appointed by the Executive Committee in consultation with the rest of the Publication Committee. It shall be the duty of the Publications Committee to encourage development of journals, books and articles of relevance to the Society and to establish policies for all publications. Section 7. The Program Committee shall plan the annual conference of the Society in coordination with the Executive Committee. Locations for the conference will be proposed by the membership at the annual business meeting or by other communications. Section 8. Committee Chairs shall present oral reports to the Executive on committee activities during the preceding year. In the absence of the Chair, another member of the committee may present the report. In either case, written copies of the report should be submitted to the Society's President and Secretary by the time of the Executive Committee's meeting at the Annual Society conference.	the Society and to establish policies for all publications. 6. Committee Chairs shall present oral reports to the Executive on committee activities during the preceding year. In the absence of the Chair, another member of the committee may appear to present the report. In either case, written copies of the report should be submitted to the Society's President and Secretary-Treasurer by the time of the Executive Committee's meeting at the annual conventions of the Society.

Motion 4:

We move that Articles V and VI in the current AO be replaced with the revised Articles VI and VII.

Proposed Articles of Organization	Current Articles of Organization
Article VI. Nominations, Elections and Voting on Special Issues. Section 1. Officers of the Society shall be	**Article V. Nominations and Elections.** 1. Officers of the Society shall be elected by a preferential vote of the members on a

elected by a preferential vote of the members using secret balloting. All candidates shall be members in good standing of the Society. Section 2. The Nominating and Election Committee shall issue a call for nominations for Officer positions whose incumbents are in the last year of their terms, and shall furnish a final slate of nominees to the Secretary by March 31. Ballots must be returned to the Chair of the Nominating and Elections Committee by a deadline to be announced for each election, but no later than June 30. Election results will be promptly following the deadline for receipt of ballots. Terms of office shall commence on September 1 following the election. Section 3. Voting on special issues allowed by other provisions of these Articles should similarly be established by the Nomination and Election Committee and announced by the Secretary. Section 4. Unless otherwise specified in the rest of these Articles, the outcome of voting on elections and special issues shall be determined by a majority of those voting, with a quorum of ten percent of the Society voting. If sufficient votes to obtain a quorum are not obtained by the deadline, the deadline for receipt of ballots may be extended and the membership so notified.	secret mail ballot. 2. The Secretary-Treasurer shall issue a call for nominations in the name of the Chair of the Nominations and Elections Committee, for the office of Society President-Elect. The nominations ballot shall have spaces for at least three names for President-Elect. 3. All officers and membership of the Executive Committee shall assume office at the beginning of the membership year as defined in Article II-5 above, and will continue to do so until their successors are installed according to the procedures stated in Article III above.
Proposed Articles of Organization	**Current Articles of Organization**
Article VII. Meetings and Conference. Section 1. There shall be an annual Business Meeting and a convention. The Business Meeting of the Society shall take place during the Annual Convention and in the same locality for the transaction of business. The Convention shall be for the presentation of scientific papers, and the discussion of questions of interest to nonlinear dynamical systems in psychology and the life sciences. Section 2. The business meeting shall require a quorum of ten percent of the Society	**Article VI. Meetings.** 1. The Business Meeting of the Society shall take place during the annual convention and in the same locality for the transaction of business, the presentation of scientific papers, and the discussion of questions of interest to nonlinear dynamical systems in psychology and the life sciences. 2. A quorum shall consist of 10 voting members. 3. The time and place of the annual

members for its decisions to be considered official. Failing a quorum, those wishing to present resolutions for consideration of the society, whether officers, the Executive Committee, or a petitioning group of members, may request a special ballot to be arranged by the Nominations & Elections Committee and announced by the Secretary. Section 3. The time and place of the annual conference will, as often as feasible, be prior to September 1, when newly elected officers begin their terms and the new membership year commences. Section 4. Any members attending the business meeting may participate in all discussion, make resolutions, and present petitions. The meeting shall be conducted by any rules of order acceptable to a majority of those present. **Article VIII. Dues and Income.** 1. Changes in annual dues and assessments of any special dues shall be recommended by the Executive Committee and shall be voted on at an annual Business Meeting or by mail ballot of the members. 2. No part of the net earning of the Society shall insure to the benefit of, or be distributed to, its members, trustees, officers or other private persons except that the Society shall be authorized and empowered to pay reasonable compensation for services rendered.	conference will, as often as feasible, be contiguous with the dates and locations of one of the major psychology conventions in North America. **NOTE: No changes are proposed for Article VIII. Reproduced here simply for reference purposes.** **Article VIII. Dues and Income.** 1. Changes in annual dues and assessments of any special dues shall be recommended by the Executive Committee and shall be voted on at an annual Business Meeting or by mail ballot of the members. 2. No part of the net earning of the Association shall insure to the benefit of, or be distributed to, its members, trustees, officers or other private persons except that the Association shall be authorized and empowered to pay reasonable compensation for services rendered.

Motion 5:

We move that Articles IX and X in the current AO be replaced with the revised Articles IX and X.

Proposed Articles of Organization	Current Articles of Organization
Article IX. Amendments. Section 1. The Society, at any annual Business Meeting, by a vote of two-thirds of the members present, or by a majority vote of the members of the Society voting by a	**Article IX. Amendments.** 1. The Society at any annual Business Meeting by a vote of two-thirds of the members present, providing a quorum is present, or by a majority vote of the

special ballot, provided that at least a quorum of ten percent of the membership vote, may adopt such amendments to these Articles as have been: (a) presented and read at the preceding annual Business Meeting, or (b) sent to the last known contact or address of each member at least two months prior to the final vote on the proposed amendments.	members of the Society voting by a mail ballot, may adopt such amendments to these bylaws as have been: (a) presented and read at the preceding annual Business Meeting, or (b) mailed to the last known post office address of each member, or published in the official journal of the Society, two months prior to the final vote on the proposed amendments.
Article X. Demise of the Society.	**Article X. Demise of the Society.**
Section 1. Conditions for determining the demise of the Society are subject to the same provisions as for Amendments specified in Article IX.	1. Conditions for determining the demise of the Society are subject to the provisions of these Articles concerning actions by members as stated in Article III.
Section 2. In the event of the dissolution of the Society, the Board of Trustees shall, after paying or making provisions for the payment of all the liabilities of the Society, dispose of all assets of the Society exclusively for the purposes of the Society in such manner, or to such organization or organizations organized and operated exclusively for educational and scientific purposes as shall at the time qualify as an exempt organization or organizations under section 501 (c) (3) of the Internal Revenue Code of 1986 (or corresponding provision of any future United States Internal Revenue Law), as the Board of Trustees shall determine. Any such assets not so disposed of shall be disposed of by the Court of Common Please of the county in which the principal office of the Society is then located, exclusively for such purposes, or to such organization or organizations, as said court shall determine, which are organized and operated exclusively for such purposes.	2. In the event of the dissolution of the Society, the Board of Trustees shall, after paying or making provisions for the payment of all the liabilities of the Society, dispose of all assets of the Society exclusively for the purposes of the Society in such manner, or to such organization or organizations organized and operated exclusively for educational and scientific purposes as shall at the time qualify as an exempt organization or organizations under section 501 (c) (3) of the Internal Revenue Code of 1986 (or corresponding provision of any future United States Internal Revenue Law), as the Board of Trustees shall determine. Any such assets not so disposed of shall be disposed of by the Court of Common Please of the county in which the principal office of the Society is then located, exclusively for such purposes, or to such organization or organizations, as said court shall determine, which are organized and operated exclusively for such purposes.

Critique of the Proposed Changes to the Articles of Organization

That were received for a vote 6 June 2005

Five members of the Society have proposed changes to the Articles of Organization (AO) that purport to change most aspects of the way SCTPLS and its Executive Committee (EC) conduct business. This is a critical review of those motions. The primary question is whether particular elements of the motions would incur substantial problems. Substantial problems were indeed found, including serious disruptions of the Society's services to its members, disfranchisement of the President-Elect, violations of the tax regulations that pertain to non-profit organizations, transfer of power from the members and the EC to political action groups, and the creation of a hostile work environment for the Society's volunteers. Remarks about the specific motions are given below, and they are preceded by some general remarks about the nature of the AO and the process by which the motions came about.

What is an AO Document?

An AO is a type of constitution that specifies the purposes of an organization, what forms of business it will conduct, and the general processes for doing business. Constitutions typically address all the topics that are covered in our present AO. A constitution or AO is not a set of by-laws. By-laws are specific pieces of policy that proceed from, and do not contradict the constitution.

An AO is a specific form of constitution that meets the requirements of the US Internal Revenue Service for non-profit organizations. As such, the Trustees must file changes to the AO with the IRS. It thus behooves the Trustees not to approve for forwarding any revisions that they know will be contrary to the IRS policy. After due consideration of the proposals, the Trustees have not issued an endorsement of any of the proposed changes to the AO.

The Constitutional Review Procedure

The first Constitutional Review Committee (CRC) was authorized by a vote of the members at the 2002 Business meeting in Portland at the request of Dr. Bird. Dr. Bird did not specify any purpose for the review. Nothing happened with this committee until May 2003 when Dr. Bird appointed a committee consisting of the EC and two other individuals. Dr. Bird offered three proposals for change, which drew no positive support from the committee.

One proposal that was offered to the committee was to erect a for-profit organization that would publish *NDPLS* and the *Newsletter* and would be open to investors. This proposal was introduced after the EC accepted the self-publication plan for *NDPLS* that is now in effect. It was the third such proposal presented to the EC within the foregoing year. The committee rejected this proposal.

Although there was no progress to report at the 2003 business meeting, Dr. Bird proposed to the members that they reauthorize the CRC. When I asked him at the meeting to state what problems were meant to be resolved, Dr. Bird offered two topics – election of officers and oversight of the journal. The topics were not problem statements, however. The membership approved a new CRC to study the two topics, but offered no problem statements of their own.

In October 2003, Dr. Arrow appointed Dr. Abraham as the chair of the reauthorized CRC. I was one of the appointees to the committee. Dr. Abraham announced it was his intention to have the CRC reorganize the Society by rewriting the "constitution." Soon thereafter, to my professional sensibilities, the discussion and decision process deteriorated, reflecting no purpose or plan except that suddenly we were supposed to go through the Articles in sequence, again with no problem definition or other criteria in mind. It became clear from the next round of discussion that the chair and other committee members were greatly unaware of business realities concerning the day-to-day operation of the Society. My explanations of the problems with the proposals at hand were dismissed by the chair, called obstructionist, and never brought to a vote. The task of straightening out the fast flow of errors was too time-consuming for me, and I resigned after two weeks. It turned out that I was difficult to replace; possible candidates declined because of the political overtones that they perceived.

The CRC announced the availability of some proposed changes to Articles I and II in the January 2004 *Newsletter*, which were characterized as works in progress and available on Dr. Abraham's web site. Like all other committees, CRC was expected to give a report to the members at the Annual Business Meeting in July 2004. No one from the CRC attended that meeting except for Dr. Arrow, and no one prepared a report. After a discussion of the situation, the members declined to reinstate the CRC and instead passed a motion requiring the CRC to deliver a completed work product to the EC by November 1, 2004, and for the EC to print and mail the document to the members.

The report was received on the due date, then printed and mailed as required. The CRC thus concluded its assignment, and its status as an ad hoc committee ended. Dr. Abraham and colleagues have acted on their own behalf since that time, made motions not included in the November 1 report, and presented them to the EC for consideration at the annual business meeting. Any member has a right to propose changes to the AO. The EC has not endorsed any of the five proposals.

Motion 1: Name and Purpose of the Society

The proposed motion trivially puts the name of the Society in a separate article and seriously changes the purpose of the society. Regarding the purpose of the Society, the new text is overly broad as it now refers to the purpose as including, but "not limited to the applications of nonlinear… sciences." This statement sets no limits whatsoever on the purview of the society, and as such would not pass IRS inspection. Failure to meet IRS standards could compromise our tax exempt status and subject us to excise tax. The current text of the AO is sufficiently broad as to include scientists from biology, mathematics and statistics, economics and ecology (our largest non-psychological interest areas). The new word "education" is not necessary because education is understood in our non-profit status. (For-profit organization use science for their commercial objectives.)

Proposed Section 1 is incorrect as stated. We are registered as an association with the US IRS operating in the State of Wisconsin. We do not do business with county governments.

In light of the deficits in the foregoing elements of the proposal, I recommend that the members vote against Motion 1.

Proposal 2: Membership and Voting

The removal of the membership requirement clause is nonsensical. A membership organization is expected to have membership requirements, even if they are lenient. Thus the proposed change does not meet IRS requirements. In fact, we do have simple membership requirements: sufficient interest in nonlinear dynamics to pay the membership fee for the benefits that we offer.

The proposed change in the quorum for the annual meeting is very misleading if not outright disturbing. First, the proponents raise the quorum for the Annual Business meeting from 10 to 10%, which is the range of 25 to 30 people. A quorum this high might make the start of a meeting possible, but it could shut down the meeting before business is finished. Additionally, if the proposed motions are adopted and later found to be inadequate, raising the quorum would increase the difficulty of reversing the changes.

The removal of the pertinence of the quorum to the Annual Meeting and mail ballots was rationalized as a means of facilitating electronic voting. This provision might seem benign, but we have never needed electronic voting in the past. Rather, other motions in the set artificially create such a need, first as a means of finishing business once the Annual Meeting has been shut down prematurely, and second for the provisions concerning petitions. The latter are objectionable for different reasons; see below.

In light of the deficits in the foregoing elements of the proposal, I recommend that the members vote against Motion 2.

Proposal 3: Executive Committee, Roles of Officers, and the Election Thereof

The proposals hold as a goal limiting the size of the EC to 4 people. For most years of our existence we have had four people, but sometimes there were 5: 3 presidents (past, present, and future), the treasurer, and the secretary. All 5 are provided within the existing AO, and when one person serves in two offices, the tradition has been "one person, one vote." The proponents have not stated any business reason for preferring 4 to 5. Requiring 4 members introduces the likelihood of deadlock. The proponents of the change have apparently solved the deadlock problem by giving members of the EC the new power to impeach each other.

President-Elect: It is bizarre that the proposals disfranchise the President-Elect. The President-Elect has been a critical contributor to the EC in the past, and uses this experience to enhance his or her performance during presidency. The President-Elect is also expected to take the role of President early if something unfortunate should happen to the President. The proponents have found a way to weaken the Presidents' performance and to exclude one of the hardest-working Society members from the decision-making process.

President: In the proposed revision of the presidency, a new duty appears, which is to "establish other committees as needed." That gives the President the singular right to authorize actions in the name of the Society without the approval of the members or the EC. Thus, answerable to no one between annual meetings, the President would have others of her choice act in the name of the Society. This provision conflicts with a standing rule explicitly approved by the membership that committees are to be staffed through open nominations collected by the Nominations and Elections Committee and approved by the EC.

Past-President: The proponents claim, "The revision also clarifies that a Past-President cannot be the same as a President succeeding him or herself, which was unclear from the wording of Article III, Sec. 6." Actually the text of the current AO has never created a problem. A re-elected president becomes both President and President-Elect and the Past-President remains Past-President. Under the proposed changes, a former Past-President would take over the role of Past-President. Three of the sponsors of the revisions could be reinstalled under the proposed provisions instead of the incumbent under the present provisions. In short, there are no advantages to the motions pertaining to the President and Past-President.

Secretary: The motion makes a permanent separation of the roles of Secretary and Treasurer. This provision does reflect a long-standing practice, but a revision in the AO is not needed to continue it.

The provision for the election of the Secretary and the Treasurer is more problematical. The proponents say in their introduction "We wanted to insure that all officers and members of the Executive Committee were elected." Their reasoning was to prevent the perpetuation of the Secretary and Treasurer in their appointed office.

Later in the narrative associated with Motion 3, they state that the proposal "brings practice in line with the

text of the Current Article V, which specifies that Officers shall be elected." This is not true. The current AO clearly states that the Secretary and Treasurer are appointed by the EC. Presidents-Elect, Presidents, and Past-Presidents are results of elections, and these elections occur annually. If ambiguity in the text were really a concern, it could have been resolved by changing the word "Officers" to "Presidents-Elect." The changes proposed are out of proportion to the minor problem cited. They show no comprehension of the actual time and skills required by the day-to-day duties of the secretary.

Treasurer: The way the proposal is written, the Society would have to change its central place of business and physical operation every two years, including its bank accounts, addresses, credit card services, postal permits, and tax-exempt status in any one of the 50 States. All these things would have to be done during a time of heavy business volume for the Society. This item alone could induce a repeated devastating impact on the Society's ability to render services. Continual moving of the Society's physical location would greatly impair its business credibility.

The Society is required by law to conduct its business within the United States, thus proposals to elect the Treasurer must include a stipulation that the Treasurer live and work within the US. Such a provision would give the Society a legal recourse in case something terrible happened to its assets. The US residency issue is not a problem with an appointed position, as the legal requirement can be met at the time nominations are considered by the EC. For an elected position, US citizenship would be required because it would produce the most enforceable compliance with the legal regulations and the Society's protective interests.

The proposed provisions for the Treasurer give the Treasurer "custody of all assets." This has been the current practice, except that custody is actually shared with the Trustees, and that assets are sometimes allocated to other Society members for a specific purpose as ordained by the EC – e.g. someone needs a supply of printed materials for a promotional activity, or a piece of software is bought for someone to carry out a Society activity of some sort. The current verbiage is archaic, and perhaps germane to a Society that has no, or no expectation of, any meaningful assets. The proponents did not acknowledge this point although they could have done so.

Committees: Any new provisions for committees, other than the new powers of the President, are consistent with current practices. Note, however, that revisions to the AO are not necessary to continue those practices.

Overturning EC decisions: The AO empowers the EC to act on behalf of members between annual meetings. Actions of the EC are subject to ratification or reversal in the annual meeting. The proposed changes are designed to make it possible to impede the operation of the EC by legitimizing a petition process by which a political action group might overturn EC decisions. We should remember that we are a volunteer organization with an EC who devotes considerable personal time to carrying out the will of the members as determined at the annual meeting or by constitutionally-specified roles, and by using their best judgment for the good of all. The EC has always had an open door policy to consider ideas from members without requiring a petition. Currently any member can raise an issue at the annual meeting so members have always had a venue for the redress of grievances. Under the new proposal, however, the EC will have to stop work, to process the petition request, and then possibly capsize an important piece of time-dependent business.

Consider this scenario: The EC, acting on the decisions of the membership makes a binding contract with another entity, such as conference facility. A group of 15 members decide they don't like the conference location, so they challenge with a petition. The Society would then be required to stop the conference preparations, publicize the petition, hold a referendum, and wait whatever time it might take to amass a number of votes equal to a quorum, in the meantime derailing the process of abstract submission and thereafter likely incurring losses through breach of contract.

The assumption behind the proposal for overturning EC decisions is that the petitioners are always logical and offering a benefit, and that the EC is always wrong about something. What if matters are the other way around? What type of efforts do the EC need to go through to process a petition and referendum vote? Win or lose, right or wrong, the petition-referendum system only sets the stage for a contentious social fabric that is quite unlike the social climate we have enjoyed for years, and that could easily be a deterrent to members to renew their membership. I know of no professional society that operates in this fashion. The proposal is a blueprint for calamity. It would make sense only if the goal is to create tension and stress.

Impeachment of officers: Under the proposed revisions, two members of the EC could oust a third if the third with no provision related to the continuity of Society business. If the EC would not oust one of its colleagues, a petitioning mob could do so. The proposals concerning impeachment offer no grounds to legitimate impeachment and no form of due process. Perhaps this is where the President's special committees would come in.

<u>In light of the deficits in the proposal elements, and the paucity of benefits to the Society, I recommend that the members vote against Motion 3.</u>

Proposal 4: Elections, Voting, Annual Meeting

Timing of Officers' Elections. The proponents of the revision gave no reason to establish the dates of the election between March 31 and June 30. Under the present AO, the Nominations and Elections Committee collects nominations, adds other nominations discussed at the Annual Business Meeting and quickly sends out ballots by mail. Nominations are an important part our Business Meeting agenda, and nominations are often facilitated by the opportunity to meet people in person. Under the proposal, however, the benefits of the face-to-face Annual Business meeting here are sacrificed with no justification given.

Quorums for referenda: Under the present AO, the voting deadline is definitive. The new proposal is to extend the voting for an indefinite period of time. We have had very few referenda in our history, but with the proposed

impeachment process and challenges to EC decisions, they could be far more frequent. More practically, EC business will be stalled until the requisite number of votes has been collected.

Annual Conference and Business Meeting: The current AO makes a clear connection between the timing and location of the Annual Business Meeting within the Annual Scientific Conference. The new proposal defines the meeting and conference as two distinct events. Under the proposal, a president could schedule the business meeting at an inconvenient location while the scientific portion of the program is in progress and constrain attendance to chosen individuals only. The implications do not require explanation.

The proponents' narrative explains that they removed the phrase about coordination with other major professional conferences where possible. What they did not mention, however, was that they removed the stipulation that the conference would be held in North America. We are required by the U. S. tax code to conduct our annual business meeting in the United States with some leniency for the occasional ventures into Canada.

Members' initiatives at the annual meeting. Currently any member can raise an issue at the Annual Business Meeting without a petition in hand. The new proposal, however, includes the use of petitions at the annual meeting. Both the current AO and new proposal prohibit the use of proxy votes in any voting matter. The proposal to include petitions Annual Business Meeting creates a contradiction with the rule against proxy votes.

In light of the deficits in the proposal, I recommend that the members vote against Motion 4.

Proposal 5: Amendments and Demise

The only apparent changes here from the original AO are that the proponents have cross-referenced the provisions of the Articles to the new proposed numbering system. In light of the deficiencies of Motions 1 through 4, I recommend that the members vote against Motion 5.

Summary

What happens if the members do not approve any of the proposals? Absolutely nothing bad happens. If the current AO remains in place, business, science and progress go on as usual. We have no business in front of us that would benefit from the passage of any of the motions. We have prevailed against some serious challenges over the years. The current AO has served us well, especially when we took full advantage of its provisions, as did the integrity of our personnel.

Dr. Abraham and his group have told us more than once that their primary goal for change was to increase the level of democracy in SCTPLS. It is a bizarre form of democracy that elects its leaders, then disfranchises its President-Elect, disrupts all the organization's services, undermines any decisions that are made by legitimate processes, and impeaches officers who object. But that is what they have handed us. The passage of any of the proposals would require substantial efforts in damage control. The proposals would give anyone planning any shenanigans a new means of removing any legitimate process or people who get in their way, and stall the work of the EC in the process.

The sheer number of proposed changes would induce a complexity catastrophe to the Society if we tried to implement them all. The extensive changes that are inherent in the five motions would produce a very different type of organization than the one we have now. It would be an organization that would offer very little benefit to its members, would be incapable of producing a scientific journal, and would produce a degraded conference experience. If we do not stick close to our scientific purview as we currently know it, what exactly will we be talking about at the conference? It would also become an organization where the work environment for our volunteers would be characterized by coercion, tension, and stress. There would be no need to impeach them. They would run for the hills.

Is there anything we *do* need? We have a labor shortage. We need more people to do more of the work that will get us ahead professionally as a group. We have experienced success so far; success breeds success and the willingness of more people to become a part of it. The kind of leadership that we need is the kind that comes from taking constructive action and doing work that serves the greater good. Volunteerism has increased in the recent past, and we did not need a new AO to make that happen. We have a firm foundation scientifically, organizationally, financially, socially and culturally. We have a bright future ahead as the recognition for our work increases in the broader academic world and private sector. Under these conditions, it is inevitable that someone would offer us the once-in-a-lifetime opportunity to shoot ourselves in the foot and render ourselves lame.

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**The views expressed here are my own and do not represent an official statement by the SCTPLS Executive Committee or Trustees.*