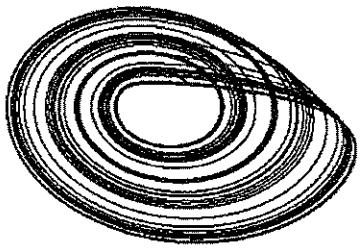

SOCIETY FOR CHAOS THEORY IN PSYCHOLOGY & LIFE SCIENCES

NEWSLETTER

▪ VOL. 15, NO. 1, OCTOBER 2007 ▪

IVELISSE LAZZARINI, PRESIDENT
SARA ROSS, EDITOR ▪ STEPHEN GUASTELLO, PRODUCTION EDITOR

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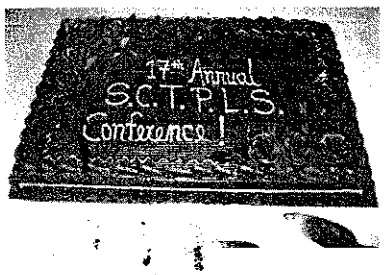
Another great conference



The Society's 17th Annual International Conference in Orange, California, hosted at lovely Chapman University in July 2007, is now part of our history. Hats off to all who made this conference successful: the Conference Committee, Keynotes, Presenters and Participants, and all at Chapman who played a role. Events like this stay in our memories... and naturally, we look forward to their formal content being converted to long-lasting form beyond the Conference Program (see July 2007 Newsletter). We hope conference papers are flowing into the NDPLS journal's peer-review process!

and great cake, too!

Post- conference Publication Opportunity

All presenting conferees were (and still are) invited to prepare their papers for review and possible publication in the Society's research journal Nonlinear Dynamics, Psychology, and Life Sciences. NDPLS is peer-reviewed and abstracted in *PsycInfo (Psychological Abstracts), Medline (Index Medicus), and JEL/Econlit*. Click JOURNAL on the SCTPLS web site to access Instructions for Authors.

Keep your eyes out  **for announcements of the 2008 Conference dates and place!**

PsycEXTRA Indexes SCTPLS Conference Abstracts

In its ongoing efforts to increase its visibility in the field, SCTPLS has agreed to have its conference abstracts included in *PsycEXTRA*. The first abstracts featured will be from the 2007 SCTPLS Annual International Conference in Orange, CA and from the 2006 International Nonlinear Science Conference in Crete, Greece. *PsycEXTRA* is a literature search engine produced by the American Psychological Association that allows keyword searches of the "gray" or "fugitive" literature in psychology, that is, materials that are not published in the usual sense of books and refereed journals, but are generated by professional institutions nonetheless. Examples of material include conference abstracts, technical reports, and APA's own news magazine, The APA *Monitor*.

The abstracts from the conferences are loaded into the system separately for flexible searching, in the same manner as journal articles and abstracts. Each bibliographic entry will show the author(s), title, abstract, and the citation to the conference at which the paper was presented. There is no content overlap with APA's other search engine, *PsycINFO*, which indexes all journals and books in psychology, including *NDPLS*. Because each abstract is entered in a separate bibliographic array, it is likely that the coverage in *PsycEXTRA* will not extend to topics that fall clearly outside of psychology, even though those topics are important to SCTPLS.

The Publications Committee will be preparing complete files of abstracts for *PsycEXTRA*. In addition, the completed files will be posted on the SCTPLS web site's Conferences page. One more reason to join the SCTPLS and share your scientific insights with our members. We are visible and *so are YOU!*

Report on 2007 Business Meeting

SCTPLS Business Meeting Minutes - Orange CA, July, 2007. Submitted by David Pincus, substituting for Joseph Jacobsen, Secretary.

President Koopmans opened the meeting and made introductory remarks and led the following discussions.

a. *This year's conference* Discussion – overtime on sessions, good and bad aspects of this. Format should be more clear – i.e., workshops versus talks. Nice facilities. Dorms – Horrendous beds, not suitable to adults; toilet paper problem, have to report it missing; one pillow isn't enough. Nice big rooms, own bathroom, private is good. Content – if content of presentations significantly changes, word should go out, particularly for workshops. Suggestion to remedy by using learning objectives and evaluating based on those objectives. Better signage is needed, or instructions at the desk. Better maps and so on. A coming together event at the end – i.e., closing ceremonies. Perhaps make it clearer to attendees that the business meeting is open.

b. *Next year's conference*: locations – A) Virginia Commonwealth University - Tarynn Witten volunteered to be our host; B) University of Toronto – David Kreindler (spelling?) volunteered to be our host if we go there. C) Pennsylvania State University, but members suggested not because it is too difficult to get there.

Other Business:

1) Nominations and Elections: Nominations for president elect – Ivelisse Lazzarini was nominated. Lynn Winter agreed to be nominated as a second candidate. Each will prepare a statement.

2) Treasurer's report – See report.

3) Publications Committee – See report. Several members discussed contributing toward renovating, promoting, etc for the website. A committee may be emerging from among these individuals.

Stephen Guastello's appointment as Editor – Discussion of procedure that was set up at last year's meeting, that Publications Committee would create a process for finding a replacement for the Editor once he leaves. Recommendation – Matt suggested to put out a call for members for the Publications Committee to replenish for members who have left. Unanimous vote for Guastello to continue as Editor for another year. 14 yea votes, 0 nays, 0 abstentions.

David Kreindler suggested that messages on listserve to membership should be identified in subject title (i.e., "official business") so as to avoid what he may consider 'spam.'

4) INSC – Dimitrios is going to co-chair the INSC Committee along with Ivy Lazzarini. Sara Ross has been asked to join committee. Discussion of conference logistics and planning.

5) Membership – See report. Ivy Lazzarini suggested a call for members of Membership Committee.

6) Education committee – Executive Committee will contact Jayne Fleener to check on status of committee membership, activities and future plans.

7) Public Relations – (no report submitted)

8) Ivy was inaugurated as the new president. Matthijs was thanked for his service.

9) New Business: No new business.

Treasurer's Report

This report summarizes the financial results for the Society for the fiscal year 2006 ending 31 March, 2007. The final net for this year was $2985 after encumbrances SCTPLS has been running at a modest surplus consistently since June 1994. The following sections of this report provide the financial details of the Society's operations and the status of special funds

The two main areas of financial operation were the annual conference in Baltimore (Line A, Table 1), and the membership-journal activities (Line D). A positive net was recorded for both areas. The total attendance at the conference in Baltimore in August 2006 was 96. The total attendance at the 2007 annual conference in Orange 2007 was 65; an early deposit is shown in Line B, and the registration fees received before April 1, 2006 are shown in Line J. The Third International Nonlinear Science Conference is planned for March, 2008 in Tokyo.

Table 1. Financial results for FY 2006.

Project	***Net Income***
A. 2006 Conference in Baltimore	$9999
B. Deposit on 2007 Conference in Orange	(780)
C. INSC conference in Tokyo	0
D. Membership fees, institutional subscrip-tions, individual book sales, minus expenses	1220
E. Donations to special funds	215
F. Advertising	(1525)
G. Interest on accounts	2506
H. General finance and accounting office	(2000)
Net before encumbrances	**$9635**
I. Donations to special funds (same as E)	(215)
J. Membership fees for 2006-07 and later years received before April 1, 2006	(3850)
K. Conference registration fees received before April 1, 2006	(495)
L. Start-up cost for new membership service projects	(1700)
Final net	**$2985**

Line D contains receipts from membership fees, institutional subscriptions to *NDPLS*, individual book sales, minus expenses to produce the journal and *Newsletter*, produce the annual art poster, purchase books, and related expenses for Public Relations and other membership operations. Our membership currently stands at approximately 285 active members as of July 20. The institutional subscription level for 2007 increased to 38 subscriptions. Institutional prices for 2008 will reflect a small increase to keep pace with inflation.

Line E: The Society established two special funds in April 2004. The Student Scholarship Fund provides for waivers of conference registration fees for student members who have a technical presentation accepted for the annual conference. The International Hardship Fund provides for reductions in conference registration fees for members who have a technical presentation accepted for the annual conference and who have made a reasonable claim for hardship; travel from a currency-impaired country is the primary example of hardship addressed by the fund program. Other than the qualifications described above, applicants are given awards on a first-come first-served basis to the extent that resources allow. The two funds were seeded by contributions from members and by the Society's own resources. Disbursements are reflected as a lessened amount in Line A. The total balance of the two funds was $565 at the beginning of FY 2006. Although some offers were made from this fund for the 2006 annual conference, the recipients were not able to attend the conference, so no deductions were made from the funds. Additional donations were received during the year and more awards were made and accepted for the 2007 conference. The total balance of the two funds was $890 at the end of FY 2006.

Line F: This amount was used for full-page print ads that publicized the Society and *NDPLS* in three journal publications of the Association for Psychological Science and American Psychological Association in early 2007.

Line L: Allocations are for the development of new publications and new features for the web site.

SCTPLS has no outstanding debts in the form of bank or other loans, bonds, or accounts payable in excess of 60 days.

Submitted by: Stephen Guastello
SCTPLS Treasurer and CFO

Publication Committee Report

The members of the publication committee at the start of the membership year were: Stephen Guastello (Chair), Koen DePrych, Terrill Frantz, Tim Haslett, and Matthijs Koopmans (ex-officio). Our activities involved *NDPLS*, the Newsletter, the web site, and new publication projects.

Institutional subscriptions were up 15% in the last year. Beginning with the July 2007 issue, the US Postal Service will be using air mail to deliver periodicals overseas instead of surface mail. Although the air mail system for periodicals is not expected to be as fast as first class air mail, changing the boat to an airplane should cut the delivery times substantially.

NDPLS produced a special issue in January, 2007: "Paradigm Shift or Normal Science." The special issue that is scheduled for January 2008 is "Dynamics of Civilizations." Tobi Zausner was our featured artist for 2007.

Scot "Spot" Draves will be the featured artist for 2008. Two members of the editorial board (Richard Taylor and Clint Sprott) organized an opinion poll where SCTPLS members and the general nonlinear community had the opportunity to vote for their three favorite images. The top 4 images were thus selected for the journal covers. It is noteworthy that viewer opinions are intrinsic to the fitness function that Draves uses in his genetic algorithm that generates fractal images.

Because of unexpected circumstances, Koen DePrych has turned the editorship of the *Newsletter* over to Sara Ross. Sara has already done two issues for us, and has come up with some ideas for new feature material that we should be able to see in the coming year.

The SCTPLS web site will be moving to a new server this month. The transition will afford faster response times and better accommodate new interactive features that are found in the latest wave of web site technologies. Plans have also started to overhaul the design of the web site.

There is a new publication development. We have a contract with Cambridge University Press for an edited book, *Chaos and Complexity in Psychology: Theory of Nonlinear Dynamics*. The editors are Stephen Guastello, Matthijs Koopmans, and David Pincus. The contributors are all active researchers in nonlinear psychology ranging from physiological to organizational topics. We expect the book to be published in 2008. Royalties accrued from this book will be paid to the Society. *Chaos and Complexity in Psychology* will be the first book that SCTPLS produced since Robertson and Combs (1995, publ. Erlbaum) and Sulis and Combs (1996, publ. World Scientific).

Membership Committee Report

Approximately 200 hard-copy membership invitations were mailed to people in a range of countries. A plan for increasing membership was developed, and presented to and approved by the Executive Committee. A formerly prominent MemCom task was transferred to student assistants overseen by Steve, that of "cleaning" data from the website server to retrieve email addresses to add to the general mailing list. A survey was posted to the member listserve to find out about other listserves with interests related to SCTPLS, and to solicit members' department or organization information to facilitate membership outreach. 12 members responded to the survey.

Activities in the plan yet to be implemented

- Develop global database of graduate departments, maintain current personnel contact info, and mail postal packets early in each year without duplicating Joe's promotions, and add new contact info to "big list" email list
- In January 2008 mailing, to supplement the 2007 request posted on listserve, survey existing members to gather list-serves through which they can disseminate promo and conference news material.
- Research additional (free) lists and join them for same purposes.
- Develop an "interest category list." Survey members' awareness of organizations that fit in those (or other) categories. Develop outreach and explore linkages tailored to those categories.
- For the February cycle of notices, Memcom members send personalized renewal messages to un-renewed members of INSC group and regular group
- Develop a Membership Recruiting Newsletter usable for one or more years by Memcom & Publicity. Produce in hard copy for inclusion in items 2 and 3 mailings and electronically for emailing to academic departments and kindred list-serves.
- Periodically initiate meaningful CHAOPSYCH discussions to attract members
- Per description on Oct. 22, 2006 report, instigate systematic plan to attract practitioners

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It's time to *RENEW* your *SCTPLS membership!*
Non-chaotic ease when you use the web
www.societyforchaostheory.org/membership.html

Members' News

Kevin Dooley has been appointed as a Dean's Council of 100 Distinguished Scholar beginning July 1, 2007. According to the announcement, "the designation and title "Dean's Council of 100 Distinguished Scholar" is given selectively to W. P Carey School faculty [Arizona State University] who have demonstrated the highest levels of excellence in scholarship, both research and teaching, throughout their careers, and who are not currently being recognized with a chair or professorship." Kevin also reports that Crawdad Technologies has launched Wonkosphere com, "the best place to keep your finger on the pulse of the 2008 Presidential election " The patented technology analyzes what's said in "the political blogosphere." Congratulations, Kevin!

■

Congratulations are also in order for **Mike Radin**, awarded tenure this past March at Rochester Institute of Technology, where he is Associate Professor of Mathematics. Mike also organized a workshop, held June 22-24, on dynamical systems and applications at the BIRS (Banff International Research Station) in Banff, Alberta. Lest the modest moniker "workshop" mislead, check out the program at the url below – it seems like it was a substantive conference. Kudos, Mike! http://www.birs.ca/birspages.php?task=displayevent&event_id=07w2001.

■

ForeWord Magazine recognized the work of **William Roetzheim** (also see one of his books in the *Nonlinear Dynamical Bookshelf,* this issue). His Level 4 Press (www.level4press.com) was featured in the magazine's article "The Rising Standards of Audiobook Publishing," and his *Poets Look at Eternity* (ISBN 978-0-9768001-8-7) was reviewed as Audio CD of the Month. The article concluded: "What makes these audiobooks compelling is the dramatic and emotional readings by the narrators Poetry was always an aural medium, and so these anthologies return poetry to its natural form." Lastly, his *The Giant Book of Bedtime Stories* (ISBN 978-1-933769-20-2) was recently reviewed on www.bookviews.com, World Voice News, and www.webweekly.com William, hats off for making such contributions to quality of life!

Re-View Corner

The *Re-View Corner* is a new feature to welcome and house diverse kinds of reviews Members have been generous with reviews that inform us by sharing their perspectives and alert us to noteworthy work. This space explicitly encourages more! It has a comfortable chair reserved for our long-time contributor Robert A. M. Gregson (ramgdd@bigpond.com; editor's suggestion: Google his name as listed here to find the correct person and get more acquainted with his work!). It represents an invitation to more of us to pull up a chair, sit down, and take time to share what we are reading, learning from, experiencing, reacting to, and critique-ing.

Workshop Review

American Psychological Association's (APA) Advanced Training Institute: Nonlinear Methods for Psychological Science. University of Cincinnati, June 11-15, 2007

By Sara Ross

This APA intensive was like a sandwich in a U S. Dagwood & Blondie Bumstead comic strip: stacked full with a variety of good things to digest in a time-limited sitting. With 25 or so other participants, I arrived with pre-reading assignment completed: a 407-page e-book *Tutorials in Contemporary Nonlinear Methods for Behavioral Sciences* (freely available at http://www.nsf.gov/sbe/bcs/pac/nmbs/nmbs.jsp). We relaxed and absorbed the week's opening and closing lectures, the bread that flanked delicious ingredients. Between those, we absorbed lectures that prepared us to stroll or race through numerous exercises with MatLab software and Excel. As we departed, we carried along a CD of MatLab executable files, a thick looseleaf of presenters' PowerPoint slides, and at least in my case, a lot of ideas and hastily scribbled notes

Claudia Carello's opening lecture set the flavor: "Letting the System Speak." If any linear thinking had entered the room, she generated a gentle yet effective dose of cognitive dissonance to loosen it up She, and other instructors, stressed that we need not contrive competition between traditional statistical methods and nonlinear methods: they are complementary in many analyses The objective is to... well, let the whole system speak, be analyzed, and be understood! Her husband, Michael Turvey, delivered the half-day closing lecture, covering a spectrum of issues and discussing which key thinkers' contributions he regarded as most relevant to consider and build upon. Intriguingly, I had the distinct impression from an allusion he made near the end of his talk that he will soon be publishing something that makes an assumption-altering contribution to nonlinear science We shall see!

The central ingredients of the training institute were ably delivered by Rick Dale, Michael Riley, Kevin Shockley, and Guy Van Orden, They covered basic concepts and introduced a range of topics and methods: nonlinear behavioral dynamics and time series methods; phase-space reconstruction; recurrence and cross-recurrence

quantification analyses; and fractal and spectral analyses. They said cross-recurrence analysis is new in the field, on the early side of exploiting its potential.

The *Tutorials* proved to be excellent preparation and a back-up reference for material covered in person. Although much of the material was new to me and I learned a lot that I can build upon, it seemed to me to be more an introductory than an advanced institute. Nonetheless, it was a well-planned program and I recommend it to anyone interested.

Yet, I came away with two concerns: one was methodological, one was pedagogical. From my perspective, both have to do with (not) letting systems speak. The methodological issue – involving more than just that, including the epistemological – arose in the course of the keyboard tapping time-series exercise and analysis. The first instruction was to examine the output and excise the data points at the beginning, which apparently characterize all outputs of the exercise. Question: Why? Answer: We don't want white noise cluttering the analysis of the dynamics. Question: We want to circumscribe how much of the system we listen to when it speaks? Hmmm. Granted, an inherent origin of the initial data points in this exercise may be the passage of time between launching the program and a participant's settling in and beginning the key-tapping. Could it be anything else, something more? My experience doing the exercise multiple times suggests "yes, it could." Such points will be developed in a paper I am preparing on fractal dynamics in decision processes. A preview I can give here is that during those initial seconds of my tapping, I was also observing the "chaotic" dynamics that were going on in me. I was trying to decide how I would do the exercise; if I would attempt one-second intervals as directed; if so, how would I gauge the interval; what method would I use to gauge the intervals' attempted consistency; would I even bother to attempt rhythmic consistency as directed or "just do it"? In my view, this wasn't white noise: this was my system speaking. I *did not* excise the initial data points from my file – they were speaking loudly! Is there a blinder-vision love affair with the beauty of the ubiquitous i/f, as if that's the only interesting "thing" dynamic systems are saying?

My pedagogical concern was different. Instructors knew to have participants go through the didactically-directed steps of each analysis. All new skill-learning needs this concrete, hands-on mechanical stage as a foundation. They also supplied instructional support via TAs. Great. Yet this adult learner needs to internalize the whole, e.g., what is to be done, and why, and the logic of the steps and their sequence, and how they build to and arrive at objectives. I didn't get a nanosecond to do that while racing through rote exercises: rote actions ≠ comprehension. At times I was torn between keeping up the pace of doing multiple trials' steps and an alternative of slowing down, making sufficient notes, and reasoning and asking about what each was for and how it related to the preceding and succeeding step and overall objective. That's what my system was speaking about!

By contrast, the man seated next to me all week seemed accustomed to such analyses and had no problem whatsoever. He was a generous helper to his seat-mate. Despite that, I found that this is where the course materials let me down. Later, I had to do a great deal of memory-mining, reconstruction, and trial and error to begin to employ the methods. Sadly, I discovered certain MatLab executables – well-behaved during the training but not later on my computer – did not save their output data files even when they indicated they were doing so: I lost several experiments to oblivion before properly diagnosing what to do differently. Such is life. Yet more careful pedagogy built into materials could have prevented such waste and alleviated such trials. Basic software operating instructions, along with published, instructional explications of the program sequences and their rationales, discussion of all the parameter-setting considerations, and step sequence instructions and logics for each analysis would have equipped me in a more enduring way.

I suspect I still am missing something(s) and find myself doing too much second-guessing; this lowers my productivity and indicates my sandwich may not have important ingredients. Although this training institute seemed to be at an introductory level in the conceptual domain, in the hands-on executable domain, it demanded more technical capacity than I brought. I'm not sure I'm well-enough equipped to independently make all the sandwiches I want to. That's where membership in this Society is gold; don't be surprised if I knock on your door, asking if you have some sandwich ingredients!

Article Comment-Review

Network theory and its relation to nonlinear dynamics

By Robert A. M. Gregson

Fang, J., Bi, Q., Li, Y., Lu, X., & Liu, Q. (2007). Toward a harmonious unifying hybrid model for any evolving complex networks. *Advances in Complex Systems, 10,* 117-141

This recent paper by five researchers from the China Institute of Atomic energy in Beijing explains some important results in the properties of complex networks,

an area that has become very active and has sponsored conferences from areas spanning physics through to the social sciences. Two important properties of connected networks, the small world effect and the scale-free property, have enabled theory and experiments to break free of the assumptions of random graph theory.

Networks grow and change their internal connectivity, and there are a number of measures that are needed and used to characterize what is happening within a network, such as averaged path length, clustering, and entropy. Fang and his colleagues bring together two mechanisms that were not usually considered together in previous models; these are mechanisms of random preferential attachment (RPA) and deterministic preferential attachment (DPA). They show that the ratio of these two mechanisms, d/r, plays a critical role in shaping the dynamical behaviour of networks, shaping the topological characteristics, and the forms of interaction between nodes. They remark that a HUHPM model (that means a harmonious unifying preferential model) may be similar to some chaotic networks, exhibiting sensitivity to initial conditions, and cover both un-weighted and weighted networks. The treatment of HUMPM is both algebraic, graphical and by simulation, and it is shown that the properties are closer to those of real networks than some previous restricted models that do not embody the hybrid structure with variable d/r.

This approach has been well set out to be the ground work of further modeling of situations that we know do arise in the social and life sciences.

Article Alert

Nakamura, T., Hirata, Y., Judd, K. and Kilminster, D. (2007). Improved parameter estimation from noisy time series for nonlinear dynamical systems. *International Journal of Bifurcation and Chaos, 17*, (5), 1741-1752.

The problem of estimating the parameters of a nonlinear dynamical system given a finite time series of observations that are contaminated by observational noise is considered. For nonlinear dynamical systems it is well known that the least squares methods can result in biased estimators, especially when the noise is large relative to the nonlinearity. By combining nonlinear noise reduction with least squares parameter fitting it is possible to get more accurate estimation results. If interested to contact authors, one may try Dr. Judd at kevin@maths.uwa.edu.au. RAMG

Book Review

By Robert A. M. Gregson

Ivancevic, V. G. and Ivancevic, T. T. (2007) Computational mind: A complex dynamics perspective *Studies in computational intelligence,* Vol. 60. Berlin: Springer. 691 pages, over 700 references
ISBN 978-3-540-71465-1; Also in an electronic edition: ISSN 1860-9503

This very large and solid book is written by two applied mathematicians who are based in South Australia, and is most unusual in its coverage, as it spans cognitive psychology, artificial and computational intelligence, and chaos theory, with quantum consciousness and computation. It is more of an encyclopedia than a readable review. Thus to evaluate it one needs some knowledge of a diversity of disciplines that are not often brought closely together under one cover. The authors claim the book is suitable for a one-semester course, I would have been amazed if anyone could digest it in less than three years, and that after at least a graduate-level education with a mainstream in mathematics.

The book is structured into three mega-chapters, the first on Human and Computational Mind, reviews cognitive psychology from Plato and Aristotle through Fechner and Wundt to Spearman and Burt and Hofstadter and Eccles, to name only some. Factor analysis gets a strictly mathematical treatment, Bayes is traced back to his original paper, Gauss and Lobachevsky are reviewed, Kohonen, Hopfield and fuzzy nets are there, and many of the names cited get a biographical footnote that extends up to two-thirds of a page.

The second chapter is devoted to Chaotic Brain/Mind Dynamics, and begins with a section on chaos in EEGs. What is virtually a short dictionary of technical terms in nonlinear dynamics leads into oscillations, conservative versus dissipative dynamics, attractors, repellers and fractal dimensions, and saddle-node bifurcations. Chaos control gets a useful detailed treatment, with Lyapunov exponents, and the various sorts of dimension discussed. This leads into entropy, and synchronization. An unusual sub-chapter on the complexity of humanoid robots, and the design of robots to match the human kinetics of locomotion is influenced by what is called the Human Biodynamics Engine, an area in which the authors have published three previous books, listed in the references section.

Chapter three is devoted to quantum computational mind. It begins with a review of Dirac-Feynman quantum dynamics, to set the ground for their exposition of a unified theory of matter and mind. This relies on the work of R. Mould, as (p.584) " no one knows what there is

about a conscious organism that gives rise to either consciousness or state reduction". They go on, "the model requires that a conscious organism spontaneously creates a profusion of macroscopic quantum-mechanical superpositions consisting of different neurological configurations . . . The result is a superposition of different neurological states, each of which may be accompanied by a different subjective experience".

Taking 584 pages with a profusion of heavy algebra to come up with this sort of smoke and mirrors explanation makes one wonder if it is worth the effort. It leads (p. 592) to 'motivational cognition in the life space foam', which seems to be a re-naming of Lewinian force-field theory. The authors are very firm-minded on what they think are measurable and useful properties of neuron-physiological data, which is still a contentious area of research when body-mind relationships are involved.

A long summary of quantum physics and its 19th century history leads into the Penrose-Hameroff theory of quantum chaos within cell microtubules as the basis of consciousness. It is uncritically reviewed, and Churchland's criticisms are ignored. As Churchland put it, "there is no dearth of crackpot theories on every topic, from consciousness to sunspots", and "the explanatory vacuum is catastrophic". The authors I think can be seen as having an inbuilt preference for anything created by physicists, and support the view that ultimately any explanation of consciousness must be grounded in quantum theory. Like string theory, it has a lot of literature and a paucity of unambiguous conclusions.

In trawling through the vast collection of references I did spot one citation of a paper in NDPLS, but mostly we are in different worlds

Reference

Churchland, P. S. (2002) *Brain-wise: studies in neurophilosophy*. Cambridge, Mass: MIT Press. (see pages 194-197 on microtubules).

The Nonlinear Dynamical Bookshelf

Once again, this feature is composed of material that people send to us. Thanks to all who do. If you found a new nonlinear book and would like to share the joy, please send the full citation with descriptive information to register@societyforchaostheory.org with the message heading "Nonlinear Bookshelf."

Allaire, G. (2007). Numerical analysis and optimization: an introduction to mathematical modelling and numerical simulation. Oxford University Press UK ISBN: 9780199205226. 450 pp. Based on the Author's teaching notes at the Ecole Polytechnique, Numerical Analysis and Optimization familiarises students with existing mathematical models (often partial differential equations) and their methods of numerical solution and optimization. The role of modelling and scientific computing has increased dramatically over recent years, and new applications of mathematical models have emerged in Biology, Environmental Science, Finance, Medicine, and Social Science, as well as the classic. Contents: Chapter 1. Introduction to mathematical modelling and numerical simulation. Chapter 2. Finite difference method. Chapter 3 Variational formulation of elliptic problems Chapter 4. Sobolev spaces. Chapter 5 The mathematical study of elliptical problems. Chapter 6 The finite element method. Chapter 7. Eigenvalue problems. Chapter 8. Evolution problems. Chapter 9. Introduction to optimization. Chapter 10. Optimality conditions and algorithms. Chapter 11. Methods of operational research. Appendices.

Anishchenko, V. S., Asrakhov, V., Neiman, A., Vadivasova, T. & Schimansky-Geier, L. (2007). Nonlinear dynamics of chaotic and stochastic systems: Tutorial and modern developments. Springer, 450 pp hbk., ISBN 9783540381648. This book is a complete treatise on the theory of nonlinear dynamics of chaotic and stochastic systems. It contains both an exhaustive introduction to the subject as well as a detailed discussion of fundamental problems and research results; it can be used as a textbook for graduate students or for reference. This second edition has been substantially enlarged to include sections on statistical properties of dynamical chaos, on effects of synchronization in oscillatory systems and on synchronization in living systems. I note that there are now sections on the beneficial role of noise in excitable systems, and noise induced transport. RAMG

Attwater, R., & Merson, J. (Eds., 2007). Sustaining Our Social and Natural Capital: Proceedings of the 12th ANZSYS Conference. Norwood, MA: ISCE Publishing. ISBN 978-0-9791688-8-8.

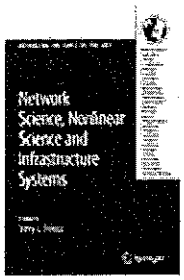
Cilliers, P. (Ed). (2007). Thinking Complexity: Complexity and Philosophy Volume 1. Norwood, MA: ISCE Publishing. 250pp + index - ISBN 978-0-9791688-7-1

Érdi, Péter. (2007). Complexity Explained. Springer. Hardback. ISBN 9783540357773. This introductory textbook explains why complex systems research is important in understanding the structure, function and dynamics of complex natural and social phenomena. It illuminates how complex collective

behavior emerges from the parts of a system. RAMG

Hazy, J. K., Goldstein, J. A., & Lichtenstein, B. B. (Eds.). (2007). Complex Systems Leadership Theory: New Perspectives from Complexity Science on Social and Organizational Effectiveness Norwood, MA: ISCE Publishing. ISBN 978-0-9791688-6-4.

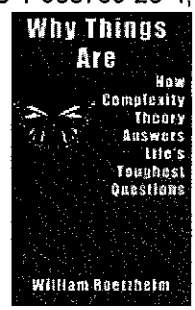
Network Science, Nonlinear Science and Dynamic Game Theory Applied to the Study of Infrastructure Systems (2007). Springer. ISBN 9780387710808.



Description: Network Science, Nonlinear Science and Infrastructure Systems has been written by leading scholars in these areas. Its express purpose is to develop common theoretical underpinnings to better solve modern infrastructural problems. It is felt by many who work in these fields that many modern communication problems, ranging from transportation networks to telecommunications, Internet, supply chains, etc., are fundamentally infrastructure problems. Moreover, these infrastructure problems would benefit greatly from a confluence of theoretical and methodological work done with the areas of Network Science, Dynamical Systems and Nonlinear Science. This book is dedicated to the formulation of infrastructural tools that will better solve these types of infrastructural problems. KEY FEATURES: * There is much interest in infrastructural problems these days, including the complexities of transportation, the Internet, supply chains, and many other infrastructural networks. This interest has generated mathematical modeling of physical and virtual infrastructure that emphasizes the nonlinear and dynamic nature of flow phenomena on infrastructure networks. Will attract considerable attention among researchers in many areas, such as: network flows, network optimization, dynamical systems, OR/MS, information technology, computer science, and regional science * Reviewer's comment: 'The book emphasizes the overall issue of modeling infrastructural networks arising in different, but related, domains. In particular, it seeks to focus on one of the main similarities between these, namely the nonlinear nature of the problems. Contents: A revolution in infrastructure network research and engineering? Modeling large scale and complex infrastructure systems as computable games. Networks and dynamics: the structure of the world we live in. Differential variational inequalities with controls and state-dependent time shifts. Characterization and monitoring of nonlinear dynamics and chaos in manufacturing enterprise systems. Evolutionary traffic flow landscapes: a fitness approach for ITS management. Network connectivity models: an overview and empirical applications in the space-economy. An application of complex network theory to German commuting patterns. Assessing critical components in transportation systems: economic models and complex network science approaches. A simulation-based dynamic intermodal network equilibrium algorithm. Modeling the transient nature of dynamic pricing with demand learning in a competitive environment. An evolutionary variational inequality formulation of supply chain networks with time-varying demands. Some amazing properties of road traffic network equilibria. Index.- *Publisher*

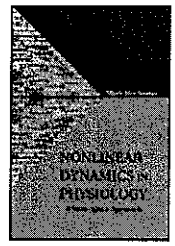
Pfeifer, R., & Bongard, J. C. (1999). How the body shapes the way we think: A new view of intelligence NY: Bradford Books. ISBN-13: 978-0-262-16239-5. How could the body influence our thinking when it seems obvious that the brain controls the body? In *How the Body Shapes the Way We Think*, Rolf Pfeifer and Josh Bongard demonstrate that thought is not independent of the body but is tightly constrained, and at the same time enabled, by it. They argue that the kinds of thoughts we are capable of have their foundation in our embodiment--in our morphology and the material properties of our bodies. This crucial notion of embodiment underlies fundamental changes in the field of artificial intelligence over the past two decades, and Pfeifer and Bongard use the basic methodology of artificial intelligence--"understanding by building"--to describe their insights. If we understand how to design and build intelligent systems, they reason, we will better understand intelligence in general. In accessible, nontechnical language, and using many examples, they introduce the basic concepts by building on recent developments in robotics, biology, neuroscience, and psychology to outline a possible theory of intelligence. They illustrate applications of such a theory in ubiquitous computing, business and management, and the psychology of human memory. Embodied intelligence, as described by Pfeifer and Bongard, has important implications for our understanding of both natural and artificial intelligence. Foreword by Rodney Brooks – *Publisher.*

Roetzheim, W. (2007). Why things are: How complexity theory answers life's toughest questions. Jamul, CA: Level 4 Press. ISBN: 978-1-933769-26-4, Hardcover, 240 pages. This book explores many aspects of the fascinating new field of complexity theory, taking the approach of explaining concepts through the use of examples and demonstrations rather than mathematics and theory. Complexity theory is thought by many to hold the key to understanding such diverse topics as stock market behavior, human memory, and the origin of life. Traditional science focuses on



understanding the individual pieces of a problem How does a cell work? How does a neuron work? How does an individual investor behave? Tremendous strides have been made in answering these questions The next logical step was to take knowledge about the individual components, and use that knowledge to understand the behavior of groups of components That didn't work No matter how thoroughly scientists analyze each of the types of cells in your body, they get no closer to understanding how these cells interact For example, what makes one cell decide to be a liver cell while a nearby cell decides to become part of a blood vessel? No matter how thoroughly scientists analyze each of the neurons in your brain, they get no closer to understanding how human thought works For example, how does memory get stored? No matter how thoroughly economists analyze individual investor behavior, they get no closer to understanding the behavior of a large market such as the stock market For example, what caused the market to suddenly and unexpectedly fall 500 points? The book addresses questions such as: What is complexity theory, and why is it important? Will computers ever be smarter than the human beings who program them? What is the "intelligent clock-maker" proof of the existence of God, and how does complexity theory refute this proof? Does complexity theory predict the existence of God? How does complexity theory predict that human memory work? How can insects such as bees and ants, with their tiny brains, build complex structures and exhibit complex behaviors?

Shelhamer, M. (2007). Nonlinear dynamics in physiology: A state space approach. Singapore: World Scientific. ISBN 981-270-029-3. 345p This book provides a compilation of mathematical-computational tools that are used to analyze experimental data The techniques presented are those that have been most widely and successfully applied to the analysis of physiological systems, and address issues such as randomness, determinism, dimension, and nonlinearity. In addition to bringing together the most useful methods, sufficient mathematical background is provided to enable non-specialists to understand and apply the computational techniques Thus, the material will be useful to life-science investigators on several levels, from physiologists to bioengineer Initial chapters present background material on dynamic systems, statistics, and linear system analysis Each computational technique is demonstrated with examples drawn from physiology, and one chapter is dedicated to oculomotor control applications Throughout the text, historical notes give a sense of the development of the field and provide a perspective on how the techniques were developed and where they might lead The overall approach is based largely on the analysis of trajectories in the state space, with emphasis on time-delay reconstruction of state-space trajectories The goal of the book is to enable readers to apply these methods to their own research. – *Publisher*



Written any good books lately?

The SCTPLS web site keeps a list of all books written by Society members, or at least we try to All members who have written books should check the file of listings at: www societyforchaostheory org/newsletter/members_books.html (or in Menu 3, "Resources for Students and Teachers") If you have written a book, no matter how long ago, and it is not yet in the file, please send the full citation to register@societyforchaostheory.org with the message heading "Books by Society Authors." For this exercise we are including only books of which you are the author or a co-author, or in the case of an edited collection, the editor or one of the co-editors. The listing does not contain listings for individual chapters or journal articles If your book was published in 2004 or later, there is an additional listing on the SCTPLS News page: "New Books by Society Members." www.societyforchaostheory.org/news.html.

Calls for Papers & Conference Announcements

Special Issue of *Nonlinear Dynamics, Psychology, and Life Sciences* (NDPLS) on Psychomotor Coordination and Control

NDPLS seeks manuscripts for this special issue by January 20, 2008 For the full Call for Papers and additional information please visit www.societyforchaostheory.org/ndpls/ Contributions may be theoretical or empirical A wide range of topics is welcomed, indicated in the full version of the call.

The 3rd International Nonlinear Sciences Conference (INSC)
Chuo University – Tokyo, Japan – March 13-15, 2008

Call for papers - due December 20, 2007 for individual papers, short workshops, symposium or panel discussion abstracts For conference and submissions information see www societyforchaostheory org/insc/2008 If you have never been a member of SCTPLS, you will receive a complimentary membership for 2007-08 when you register INSC-08. **Publication Opportunity!** Conferees giving presentations will be invited to submit a full paper to be considered for publication in NDPLS Visit the conference webpage above for more information.

The Fourth *Organization Studies* Summer Workshop: "Embracing Complexity: Advancing Ecological Understanding in Organization Studies" Pissouri, Cyprus – 5-7 June 2008

Call for Papers - due January 31, 2008. Papers should deal with the application of complexity science models and concepts to organizational theory and practice. A wide range of relevant topics are invited – see the website for more information: www.egosnet.org/os Interested participants must submit to the Editor-in-Chief (OSeditor@alba edu gr) an abstract of up to 1000 words and a brief biographical note by the due date.

First International Conference on Social Entrepreneurship & Complexity
Adelphi University – Garden City, New York USA – April 10-12, 2008

Call for papers – due January 31, 2008 Adelphi University & Institute for the Study of Coherence and Emergence (ISCE) publishers of *Emergence: Complexity and Organization (E:CO)*. Request submissions of academic papers and proposals for panels or symposia. Thus far, the growing area of social entrepreneurship lacks a useful theoretical underpinning. Recent advances in the sciences of complex systems hold promise. The need for a complexity theoretical perspective is noted in the most recent guidelines for applications for funding social entrepreneurship programs. **Publication opportunity!** Selected conference papers will be published in a special issue of the journal *Emergence: Complexity and Organization (E:CO)* and an edited book. For more information, visit http://www.emergence.org.

23rd Annual Adult Development Symposium
A Pre-Conference Affiliate of American Educational Research Association (AERA) Conference
New York City – March 22-23, 2008

Call for Submissions, due December 31, 2007. Society for Research in Adult Development. The Society is dedicated to the study of positive adult and life-span development from an interdisciplinary perspective. Challenges to conventional wisdom are especially welcome in submissions. For more information: http://adultdevelopment.org.

Communities and Healthcare: Opening the Dialogue
Harnessing Complexity Science and Relationship-Centered Care to Improve Health
Baltimore – November 1-2, 2007

Sponsored by Plexus Institute; Co-sponsored by the American Academy on Communication in Healthcare and the National Academies of Practice Through sessions on mindfulness, dialogue skills, complexity science and Relationship-centered Care, supplemented by experience with health systems-community dialogue, participants will be helped to foster change in their own communities. See http://www plexusinstitute.com/NewsEvents/Conferences/show cfm?id=348.

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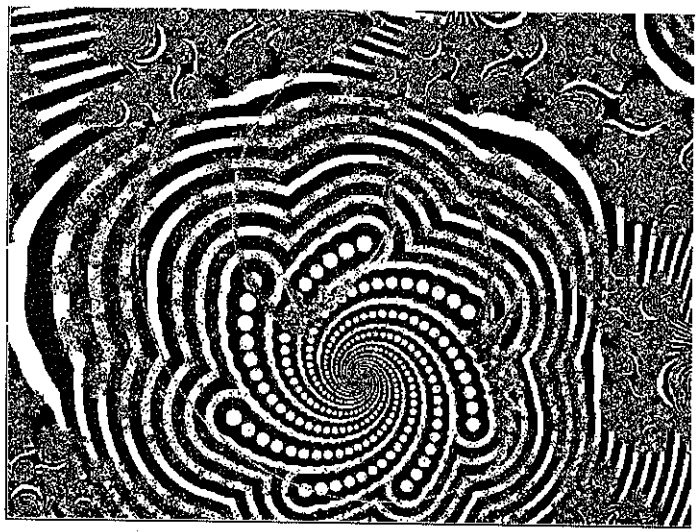

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