NEWSLETTER

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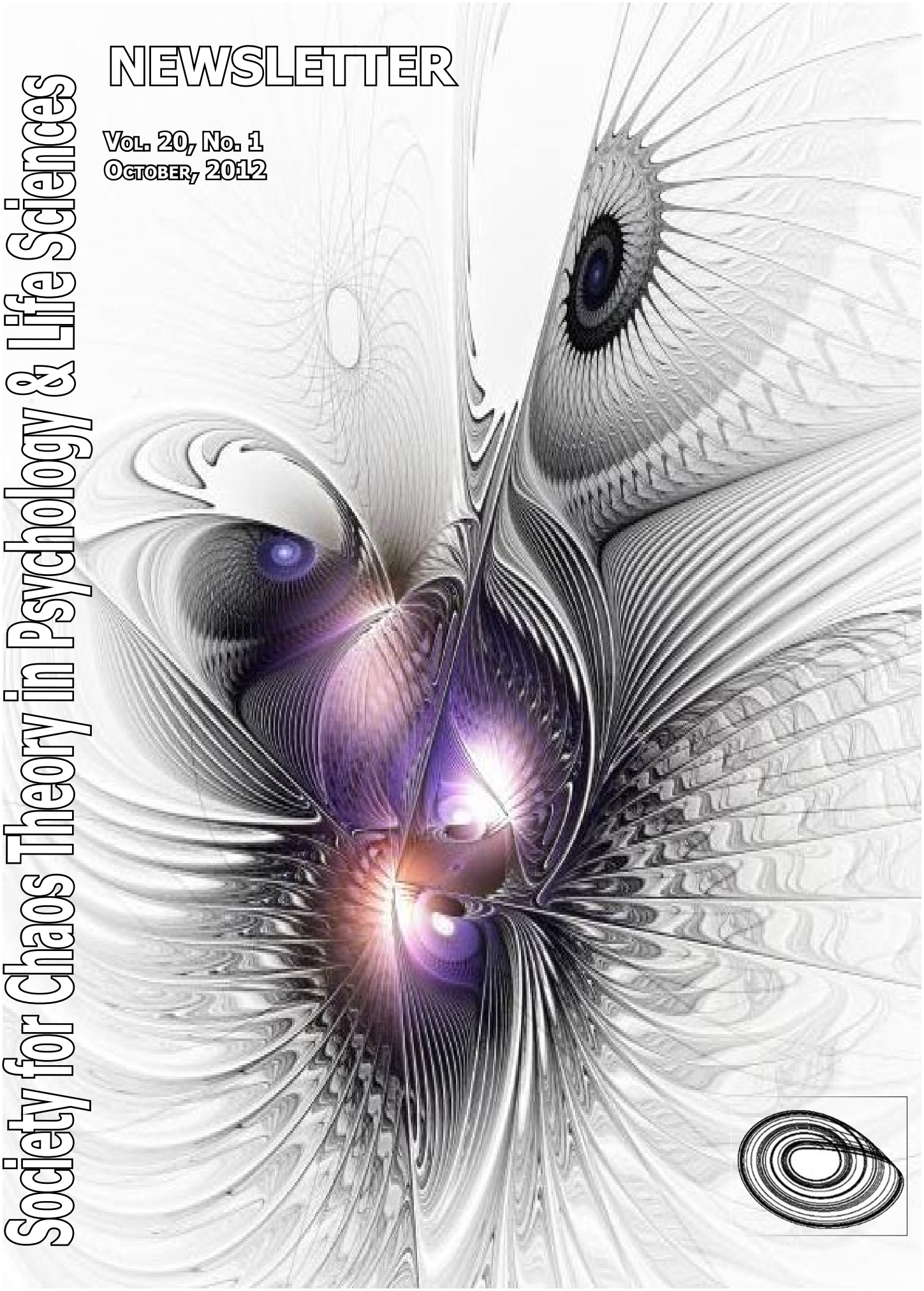
Society for Chaos Theory in Psychology & Life Sciences



Society for Chaos Theory in Psychology & Life Sciences

Trend Topics in Nonlinear Science Conferences

By **José Navarro** and **Shana Narayan**
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This year two important conferences in nonlinear science have been held: the 5th International Nonlinear Science Conference in Barcelona, Spain, and the 22nd Annual International Conference of the Society for Chaos Theory in Psychology and Life Sciences in Baltimore, Maryland, USA. The former from March 15-17 under the sponsorship of the SCTPLS and the University of Barcelona; the latter from July 26-28 under the sponsorship of the SCTPLS and hosted by the Johns Hopkins University.

Different keynotes, around ninety oral communications, posters, symposiums and workshops formed the final program of both conferences.

Figure 1: Trend topics at 5th INSC, Barcelona, Spain.

Figure 2: Trend topics at 2012 Conference, Baltimore, MD.

All of this documentation is available on the website http://www.societyforchaostheory.org/conferences.html. During these conferences academics, researchers, practitioners and also students from different countries around the world (Australia, Canada, European Union, Iran, Japan, Lithuania, Russia, Turkey, Singapore, USA, and Venezuela) and from several different disciplines (Biology, Ecology, Economy, Engineering, Finance, Languages, Management, Mathematics, Medicine, Pedagogy and Educational Sciences, Philosophy, Physics, Physical Education, Physiology, Psychiatry, Psychology, Public Policies, Sociology, etc.) shared their interests in nonlinear and complex behavior frequently present in their areas of interest.

In order to know what the main topics were, or the principal worries among the participants, we have performed a content analysis of all the titles, affiliations" authors and abstracts presented by them, including keynotes, posters, symposiums and workshops in both conferences separately. In other words, we were interested in knowing which issues more frequently appeared in the abstracts that the attendants had sent. The results can be seen in figures 1 and 2. In these figures, the larger words are those that appeared most frequently in the abstracts. These results provide us with many suggestions and reveal some important findings that we discuss briefly.

As we can see there are important similarities between the two figures and some interesting differences as well. Regarding the similarities, three major words attract our attention: "systems", "dynamics" and "University". Considering the word

"systems" we think the nonlinear dynamical systems and complexity theories follow the long tradition started by the general systems theory with the inclusion of the systems perspective as a way to see and analyse the world. Jointly with the "systems" word others appeared which, in our opinion, characterized very well the specific systems in which we are interested: "dynamics" (the second major word to be found in the figures), "change"(ing), "complex"-"complexity", "nonlinear", "chaos" and "networks". Most of these words were exactly the kind of descriptors that we asked for during the acceptance proposal period. Lacking at this point is a major appearance of the "fractal", "adaptive", "bifurcation", "attractor", "catastrophe" or "emergence" words; and even the presence of words like "fuzzy", because it is also an important property of the complex systems. We could interpret this as opportunities for future research in our field.

The third major word is "University". The appearance of "University" is obviously related with the fact that the majority of the attendants belong to university institutions. But it also has another important meaning in our opinion: these nonlinear conferences had an important bias towards the academic field, in comparison with the world of practitioners. On the other hand, this is a common occurrence in international conferences only organized by universities.

With respect to the differences, the appearance of the word "model" at the Barcelona conference was very interesting. We think this word reflect well the fact that an important number of contributions to that event were related with researches that model, or proposing to model, the behaviour of different processes. It is also related with the appearance of "University" (already described) as another large word, because most of the research was done in the academic field. "Complexity" and "process" were other important words often present during the Barcelona conference, and they did not appear so much in the Annual Conference held in Baltimore. As for the words that appeared in Baltimore but not in Barcelona, we can consider the major appearance of the word "time" interesting. Nonlinear science is clearly a timely sensitive science, and this was reflected better in the Baltimore conference.

Other important information that we can extract from these word-clouds are the main topics in which we are applying the nonlinear dynamical systems theory. Thus, for example, we find words such as "health", "financial", "education", "psychology", "work," "organization", "therapy", "language", "policy", and others which would reflect our main fields of interest. The majority of these belong to social sciences.

Summing up, the fast analysis that we have done reflects some important hot topics in our conferences and also provides clues about what the new trends in the future may be; these topics that now appear in small words or even do not appear.

2012 BALLOT For SCTPLS President

Candidate Statements

A. Steven Dietz

I am **A. Steven Dietz, Ph.D.,** and I am a candidate for the office of President for the Society of Chaos Theory in Psychology and the Life Sciences. I am primarily an academic, though I regularly work in both the public and private sector as a consultant. Both my academic and consulting work focuses on organizational dynamics from a complexity perspective. I am currently an Assistant Professor in the Department of Occupation, Workforce and Leadership Studies (OWLS) at Texas State University. I received my Ph.D. from the University of Texas at Austin in Adult and Organizational Learning, focusing on executive problem recognition and decision-making within a complex environment. I received my Bachelor of Applied Arts and Sciences, and Master of Science – Interdisciplinary Studies from Southwest Texas State University in San Marcos, Texas.

As a member of the Society since 2007, I presented a paper at the 2007 conference in Orange, CA and at all of the subsequent conferences since then (with the exception of the 2010 conference when I was in Afghanistan). The Society's conferences, web site, journal and newsletter have provided me with an avenue to put my own research into context, find like-minded colleagues, find resources that I may not have found otherwise, and – maybe most importantly – they have demonstrated how a single entity can help shape our understanding of the field of nonlinear dynamics.

Prior experience has helped me understand the expectations of group members for a society president. I served as a president for an academic group called the Society for Police and Criminal Psychology in 2001 This and other leadership experiences in academic groups give me a good foundation for moving into a leadership role with the Society and helping the Society to continue to move forward. I would be happy to bring those experiences and skills to SCTPLS.

Presently, I am serving as a co-editor for a special issue of the Society's journal, NLDPLS, which will focus on organizational dynamics. Working with the journal's editorial staff has given me a glimpse into the tremendous amount of work that goes into producing one issue of the journal. As president elect and president, I hope to be able to continue to work with the managing editor of the journal to identify other areas for

special issues that can help to improve the visibility of our journal as well as increase our membership. I would also like to work with the editorial staff to identify opportunities for easing the workload for those involved in the journal's production.

In addition to my academic life, I am happily married and have two young girls (4 and 5) at home. When I am not teaching or conducting research my time is devoted to my family – well, that and taking care of the pet they promised to take care of and explaining why the gold fish really isn't sleeping and will be much happier in the toilet bowl, etc. I also spend one weekend per month with the Texas Army National Guard.

My expectations for the future of the Society are quite simple – I would like to see the Society continue to grow, continue to attract first rate presenters and keynote speakers at our conferences, and continue to have the tier one journal in the field of complexity science. I think there are some other opportunities that can increase our prominence that I would like to explore with the members of the Society, such as hosting special interest workshop-symposia on the off years from the international conference or developing a monograph series for nonlinear methods. Above all else, my commitment to the Society is to work with our members to meet their expectations for the future. Thank you in advance for your vote.

J. Barkley Rosser, Jr.

J. Barkley Rosser, Jr. is a longtime member of SCTPLS and a member of the editorial board of NDPLS since the founding of the journal, who has delivered two plenary lectures at conferences of the society over the years. An economist, he has published over 150 books, papers, book chapters, and book reviews. Among his most recent books are *Handbook of Complexity Research* (Edward Elgar, 2009, edited) and *Complex Evolutionary Dynamics in Urban-Regional and Ecologic-Economic Systems: From Catastrophe to Chaos and Beyond* (Springer, 2011).

While willing to serve as President of the Society, he notes that he greatly respects his opponent and thinks that he would make an excellent president as well.

Minutes of the
July 26, 2012 Annual Business Meeting of the Society for Chaos Theory in Psychology and Life Sciences
Submitted by: **Sara Nora Ross**, Secretary

Current business

Members' review of the 22nd annual conference at Johns Hopkins University, Baltimore, MD. Appreciations: shrinking the number of concurrent sessions compared to previous; short walking distance between lodging and meeting rooms; A/V equipment was glitch-free; On-site coordinator was helpful. The day-long Thursday workshop on methods: gave an up to date view of what's going on in the field; confirmed value of decision to join Society and to come, which was motivated by having benefit of the workshop, especially because it's difficult to get training elsewhere; it gave increased accessibility to the later conference presenters' sessions by having the exposure to the methods during the workshop.

Suggestions for 2013: (a) Question: Should we keep the same offerings in the workshop or change which methods are presented? One suggestion: offer a refresher on recurrence plots. (b) Have a poster session run throughout conference for viewing any time. (c) Consider approach other conferences have used, that each session presenter also prepare a poster that's accessible throughout conference, making their work available to more people (particularly given concurrent session structure) and so session participants can re-visit the material.

Treasurer's Report

Treasurer Stephen Guastello delivered verbal report on the financial report for fiscal year April 1 through March 31, 2012. The written report is incorporated into these minutes.

Membership Committee Report

The committee has been operating as an ad hoc committee, needed a formal vote to reinstate it as formal committee in Society structure. The committee was reinstated for another year by acclaim of those present.

Heading the committee are Caroline Fielden, new member Adam Keifer, and Shanna Narayan. Victoria Gaeten started a facebook page for Society; Caroline started an Australian facebook page for it. Australia plans are to continue with facebook and talking with people, perhaps start a Sydney meet-up group. Adam suggested a Society Linked-In presence. The committee characterizes its approach as "cautious experimentation."

Publication Committee

Committee comprised of Stephen Guastello, Gaetano Aiello, Terrill Franz (website), and Dave Pincus. Stephen reported several announcements from the committee. The written report is incorporated into these minutes.

Nominations Committee

Nominations were opened for next president of Society for the term running from August 2013 through July 2014. Two candidates were nominated: (1) A. Steven Dietz: nominated by Sara Ross, seconded by Jeff Goldstein; and (2) J. Barkley Rosser: nominated by Dave Pincus, seconded by Stephen Guastello

Ballots will be mailed to all members; the deadline for receipt of ballots by nomination committee chair Jeffrey Goldstein will be mid-October.

New Business

Suggestions and discussion of 2013 Conference location. The suggested locations were: Marquette Univ., Milwaukee, WI; Portland State Univ., Portland, OR (one comment: "in past experience, it was great"); University of Michigan, Ann Arbor, MI; University of Wisconsin-Madison; Lewis & Clark Community College (near Chicago and St Louis). Members unanimously approved the executive committee proceed with investigating which location to choose for 2013.

Treasurer's Report

22nd Annual International Conference of the Society for Chaos Theory in Psychology & Life Sciences July 28, 2012

This report summarizes the financial results for the Society for the fiscal year 2011 ending 31 March, 2012. The net returns for this year were $23,220 before applying encumbrances and $15,905 after applying allocations for the next year. SCTPLS has been running at a modest surplus consistently since June 1994.

Table 1. Financial results for FY 2011.

Project	**Net Income**
A. 2011 Conference in Orange	$2154
B. Deposit on 2012 Conference in Baltimore, MD	(1000)
C. INSC conference in Barcelona	10,370
D. Membership fees, institutional subscriptions, book sales, minus expenses. Includes encumbered amount for advance membership fees brought forward from FY10	8678
E. Donations to special funds	1065
F. Advertising	(362)
G. Royalties, permissions, special sales	1241
H. Interest on accounts and investments	3004
I. General finance and accounting office	(2000)
Net before encumbrances	**$23,220**
J. Donations to special funds (same as E)	(1065)
K. Membership fees for 2012-13 and later years received before 4-1-12	(3680)
L. 2012 Conf revenue received before 4-1-12	(0)
M. Encumbrance for advertising and 2013 conference deposits	(2500)
Final net	**$15,905**

The three main areas of financial operation were the annual conference in Orange, CA (Line A, Table 1), the International Nonlinear Science Conference (INSC: Line C) and the membership-journal activities (Line D). A positive net was recorded for all three areas. The total attendance at the 2011 annual conference in Orange was 80, which was a substantial increase compared to 2010. The attendance for the conference in Baltimore was 50, however, which represents a return to the 2010 attendance level. SCTPLS does not fund travel expenses for the Executive Committee members to the annual conference.

The net revenue was particularly favorable at the 5th INSC in Barcelona, Spain, March 2012 with an attendance of 79. Special thanks go to our conference Chair Jose Navarro Cid, the generosity of the University of Barcelona for providing the facilities, and the graduate students of the psychology department there for generating a great deal of interest and attendance from across Europe.

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 that are resold at the annual conference, and related membership operations. Our membership stands at 255 active members as of July 28, 2012.

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 funds were expended at the end of the 2011 conference; new donations were received since then for the 2012 conference.

Line G: Royalties, permissions, and special sales were down this year, but supported by royalties from the nonlinear methods book. Royalties are subject to rapid

decays over time, so the forecast for this category of income is downward for next year.

Line H: Interest on accounts: This amount is down $91 since last year. Bank interest rates continue to fall, and we see the effect each time we renew a certificate of deposit. In response, the Trustees opened a brokerage account in August 2011 with Morgan Stanley Dean Witter to invest in high quality securities in an effort to bolster investment income.

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, Ph.D.
Treasurer and CFO for SCTPLS

Publication Committee Report
22nd Annual Conference , July 28, 2012

The members of the committee are Stephen Guastello (chair), Gaetano Aiello (Newsletter editor), Terrill Frantz (web manager), and David Pincus (NDPLS Permissions editor). The committee's purview includes the business aspects of Nonlinear Dynamics, Psychology, and Life Sciences (beyond the purview of the Editorial Board), the SCTPLS Newsletter (beyond the purview of the Executive Committee), the web site, and miscellaneous publication activities.

NDPLS - The cover artwork for 2012 featured the pen and ink drawings of Susan Lowdermilk of Eugene OR. The featured artist for 2013 is Ben Van Dusen of Boulder CO who specializes in tessellations of fractals.

The journal published a special issue on Bran Dynamics in January 2012 and one on Developmental Psychopathology in July 2012. A special issue on Organizational Dynamics is scheduled for January 2013. A call for papers for a special issue on Education is now open. Further details appear on the journal's web site.

NDPLS received its first Impact Factor from ISI, Journal Citation Reports, Social Science Division this year. Our impact factor was 0.960 using their two-year system. This value is approximately the median for over 124 psychology journals in the same data base that were sub-classified as "interdisciplinary," and above the median for the journal categories of "social science methods" and "economics."

ISI also computes a five-year impact factor for journals that have been in the system long enough. NDPLS, meanwhile, continues to produce its own five-year impact factor based on information contained in the ISI database for all journals that cited NDPLS that were published in 2006-2010 during the years 2007-2011. Our five-year impact, which includes citations in both the Social Science and Science domains, is 2.116.

ISI computes a relatively new index of the journal's half-life, which is meant to provide an individualized computation of a journal's long-run influence. The half-life of NDPLS for 2011 is 6.3 years, meaning that 50% of the citations to NDPLS articles are to articles that were published at least 6-7 years ago. None of the foregoing metrics include citations to NDPLS articles that would be found in books, non-ISI journals, or other non-journal sources.

The inclusion of NDPLS in the *Web of Science* and related reports demonstrates our dedication to providing the most relevant and influential nonlinear dynamics content to our community. NDPLS is also indexed in *PsycINFO, MathSciNet, Medline, JEL/Econlit, ScienceDirect* and *Scopus*.

NEWSLETTER - There are no specific events to report this year. As always, members are encouraged to send us substantive news articles that can be used as feature articles or contributions to our other columns or formats. The *Newsletter* editor reminds authors to remove all superfluous formatting from their submission files.

WEB SITE -We made the usual updates. The only event to report this year is that we discontinued the blog due to a lack of material received from members and a lack of substantive commentary from the general readership.

News from Members

An Appreciation of the Yellow book Past 20
Matthijs Koopmans (Mercy College)

To mark the 20th anniversary of the Winter Chaos Conference this past spring, a Festschrift was handed to Fred Abraham, who is a founding member of that group -- he also happens to be one of the founders of SCTPLS. The Winter Chaos Conference is an annually recurring opportunity for informal exchanges about chaos, complexity and related ideas, usually held in the New England area.

The Festschrift provided an opportunity to take note of another milestone in the annals of the history of nonlinear dynamical systems in psychology, which is the fact that one of Fred Abraham's most significant contributions to the field, *A visual introduction to dynamical systems theory psychology* (Abraham, Abraham & Shaw, 1990) also known as the yellow book, was published more than twenty years ago. The yellow book has become truly a classic, because of its rapid and effective, albeit sketchy coverage of the fundamentals of nonlinear dynamical systems in psychology, and because of the vivid way in which it visually portrays the more abstract mathematical foundations of the field. Below is an introspective account of the significance of the yellow book, slightly modified from what appeared in the Festschrift.

When I submitted a paper to a journal almost twenty years ago to discuss systems perspectives on family processes and their developmental repercussions, one anonymous reviewer encouraged me to review the work of Prigogine to get a better understanding of how change occurs in self-organizing systems. In response, I read *Order Out of Chaos* (Prigogine & Stengers, 1984), which turned out to be a true eye opener, because it offered such a radically different conception of how systems work.

While the discussion about chaos theory is what attracted most attention at the time, its more timeless contribution, in my opinion, is the cogent way in which it articulates a world view in which everything we know comes down to understanding processes of stability and change, and the origins of novelty, and that the understanding of these processes could therefore be a primary focus of our scholarly curiosity. This type of scholarship transcends traditional disciplinary boundaries and inspires people working within those disciplines to pose different types of substantive questions. Equally interesting is Prigogine's description of systems as turbulent with a propensity for unpredictable transitions, a notion which is in sharp contrast with the placid homeostasis models, such as those formulated by Lewin, von Berthalanffy and Bateson, which were the ones I discussed in the first draft of that paper.

This shift of focus in my scholarship brought me in contact with the Winter Chaos community. The first conference in which I participated was held on a very cold weekend in February of 2006, and I discussed the applicability of chaos theory to family systems. I was delighted by the incisiveness of the comments and responses I got from the audience and came to appreciate Fred's moderating skills and his ability to create an environment of warmth and receptiveness that is conducive to the fruitful exchange of ideas and to innovative scholarship; it has remained the hallmark of these meetings over the years. The feedback I received made it possible for me to rework the paper into a publication in *Nonlinear Dynamics, Psychology and Life Sciences* (Koopmans, 1998). While trying to figure out exactly how to conceptualize the processes of change as ultimately described in that paper, I cannot remember how many times I opened up the yellow book to scrutinize the various transition scenarios. The strictly mathematical formulation of these processes inhibited my capability at the time to apply these principles effectively to the processes of transformation that would characterize family interaction. However, the graphical presentation of these processes facilitated such applications, and that, in turn, facilitated my understanding of the underlying math. Therein, I believe, lays the importance of the yellow book to the field. If we only had the math, but not the yellow book, we probably could also have done all the things we have done, but it would have taken us much longer; it would have been more cumbersome, and fewer people would have been convinced that it would be a good idea to try their hand at these approaches. And the field would have been poorer as a result.

Over the years, there has been a lot of debate in the nonlinear dynamical community about the mathematical versus metaphorical applications of nonlinear dynamics (Abraham, 1995). Can we talk about chaos without reference to the mathematical formulation of sensitive dependence to initial conditions? Or speak of attractors outside of the measurement of time series to describe all things gravitational? Is a bifurcation the same as finding a fork in the road? The question is really whether non-formal languages can be an equally effective or better tool than formal ones as they can liberate us from the constraints that form imposes, and whether the increased analytical flexibility will yield better results, different results, or enables more people to participate in the nonlinear dynamical discovery process. I think it attests to the significance of the yellow book that it offers a better resolution to this issue, as the effective visualization of the dynamical processes articulated mathematically reduces the need to resort to the fuzzy ambiguity of natural language.

References:

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Koopmans, M. (1998). Chaos and the problem of change in family systems. *Nonlinear Dynamics, Psychology and Life Sciences*, *2*, 133-148.

Prigogine, I., & Stengers, I. (1984). *Order out of chaos: Man's new dialogue with nature*. New York; Bantam.

Obituaries

Fall is a time of change, the passing from summer to winter here in the Northern Hemisphere. This fall we honor the passing of three of our longtime colleagues over the past year: Hector Sabelli, Guy Van Orden, and Terence Oliva. Each of them will live on through their groundbreaking contributions to nonlinear science.

Hector Carlos Sabelli

I did not know Hector Sabelli as well as many of the other members of SCTPLS. But his passing this year impacted me, and sealed him in my memory among the short list of mentors I hold in my imagination. My memories of Hector begin with the first time I met him. I think it was around 1998 - my second SCTPLS conference in Berkeley, CA. I saw Hector in the crowd as I presented pilot data for my dissertation. He was totally engaged and nodding - like someone enjoying some good music. Without raising a hand or anything he called out loudly something like - "now this is real research...!" As a newbie at only my second science conference ever, I was blown away. His enthusiasm was like rocket fuel for my motivation and confidence. I was already a fan of his work using recurrence plots to differentiate diagnostic classes in psychiatry. Later at the banquet he told me stories about meeting Otto Loewi and how Loewi had solved the problem of discovering neurotransmitters through an insight that came to him in a dream. So Hector! Among other things, Hector has come to represent to me a person who is the epitome of balance between math-science and philosophy - one of his many personal 'unions of opposition.' He was equally as open-minded as he was critical in his thinking.

--**David Pincus**, Ph.D., President SCTPLS

The following is a reprint of Dr. Sabelli's obituary as submitted by his wife, Linnea Flynn Carlson-Sabelli, to the Chicago Tribune in June, 2012:

Dr. Hector Carlos Sabelli, PhD, MD, (74) died in Chicago of heart failure on Thursday May 24, in the presence of his son Martin. Dr. Sabelli was born in Buenos Aires, Argentina in 1937. He was a well-respected philosopher, professor, practicing psychiatrist and researcher. He detected and identified "Bios", a new pattern in nature. Bios is a creative pattern distinct from randomness and from chaos, detected in empirical time series data of human and natural process. The biotic pattern is prevalent and endemic, ranging from simple biological processes to profoundly complex social processes.

Dr. Sabelli authored ground-breaking studies in psychopharmacology and pioneered Co-Creation and Complexity theory. In addition to his clinical and faculty appointment at Rush University Medical Center, and his private psychiatric practice, he founded the Society for the Advancement of Clinical Philosophy (also known as the Clinical Philosophy Club) which met weekly for 33 years. More than 500 authors, professionals, academics, and others attended these meetings over the years. Dr. Sabelli was also the Director of the Chicago Center for Creative Development. http://creativebios.net/.

Dr. Sabelli's early research interests focused on neuropharmacology, the relations of biogenic amines and other endogenous transmitters and modulators and the behavioral effects of drugs. His most important neuropharmacology work was the discovery of phenylethylamine, a stimulant neurohormone reduced in depression that can be used for its treatment. His other contributions included Co-Creation theory (known earlier as Process theory) which integrates empirical research, clinical studies, and mathematics within the context of a process philosophy; the postulate that complexity occurs through co-creation and bipolar feedback; a comprehensive approach to patient care that gives priority to biology and supremacy to psychology and the application of co-creation theory to promote social change. With the help of his colleagues he created the bios data analyzer which can distinguish new pattern bios, from randomness or chaos and a mathematical iterative equation that models heart rate variation and provides cues to achieving creativity.

Dr. Sabelli graduated from the Colegio Mariano Moreno in Buenos Aires, received his MD in 1959 at the age of 22 from the University of Buenos Aires, and received his Ph.D. from the University of Buenos Aires in 1962. During 1959 he worked as a research follow under sponsorship of the Argentine Society for the Advancement of Science and from 1960 to 1961 he worked as a research assistant for the Argentine Council for Research (CONICET) under the direction of Dr. James Toman at Chicago Medical School in the USA He was named assistant professor in the department of pharmacology of Chicago Medical School and remained there until 1964.

Dr. Sabelli returned to Argentina in 1964 as a career investigator and professor of a neurophysiology course in the psychiatry department of the University of Buenos Aires. In 1966, at the age of 28, he was appointed professor and Chairman of the Department of Pharmacology at the University of Litoral, Rosario, Argentina. His offices were in one of the homes that had belonged to Evita Peron. He was a consulting member of the organizing committee for the VII Congress of the Latin American Association of Physiological Sciences, Mar del Plata, Argentina. After serving just one year as Chairman of Pharmacology in Rosario he escaped from Argentina to the United States because of a military coup. He returned to Chicago in 1966, serving as a visiting professor in the Chicago Medical School department of pharmacology. In 1967 he was named professor of Pharmacology at CMS; in 1970 he became acting chair of the department and in 1971 he was named chairman.

In 1976 Dr. Sabelli decided to become a practicing clinical physician. He left Chicago Medical School to attend a residency in Psychiatry. His choices were Anesthesia or Psychiatry – he selected psychiatry because he likes to sleep in, in the morning! He began his residency in 1976 at Mt. Sinai Hospital and completed it in 1979 at Rush University Medical Center. Upon completion he joined Midwest Neuropsychiatric Associates and was appointed Director of the Rush Medical Center Psychobiology lab. He was appointed Professor of Pharmacology and Associate Professor of Psychiatry, at Rush University Medical Center, Chicago, USA. He became a board certified psychiatrist in 1980. In a 1991 he was voted a Fellow of the American Psychiatric Association and of the American Association for the Advancement of Science.

Professor Sabelli has published numerous scientific articles in leading journals (Nature, Science, American Journal of Psychiatry, Archives of Internal Medicine, International Journal of General Systems, Journal of Neuropsychiatry, Complexity). He is the editor of the Chemical Modulation of Brain Function (1973), and author of five books, The Union of Opposites: A Comprehensive Theory of Natural and Human Processes (1989); Personalization: A new Vision for the Millennium (1991); Caos Argentino : Diagnostico Y Enfoque Clinico (1991); Maria Mary (1992) and Bios: A Study of Creation (2005).

Dr. Sabelli has received numerous awards in pharmacology, cybernetics and psychiatry, including the Bennet Award from the Society of Biological Psychiatry (1963), Best Teacher of the Year Award, The Chicago Medical School (1975), Best Article in Cybernetics and Medicine: How the Heart Informs the Brain: A process analysis of the electrocardiogram, Vienna, 1994. the Zerka Moreno Award (1993) for outstanding contributions to the field of Psychodrama, Sociometry and Group Psychotherapy. He received a Doctorate Honoris Causa from the University of Rosario, Argentina (1994). Professor Sabelli's Curriculum Vitae s available at http://creativebios.net/CV.html. His last lecture, produced by the HeartMath Institute (2011) , is available as an online video http://vimeo.com/31816053.

Hector's father, Antonio Sabelli, a physician and philosopher died when Hector was just 14 years old. Antonio's brother, Alberto, gave Hector the responsibility of publishing and continuing his father's work, no doubt to sustain him. He continued this work his entire lifetime. The other root for Hector's work was his mother, Elena Di Benedetto, PhD., a physiologist who worked on the research team of Nobelist Bernardo Houssay. His mother taught him to strive for high scientific goals, and to support his research with his clinical practice to be independent from academic hierarchies. Edmundo Fischer, a Hungarian-Argentine pharmacologist and psychiatrist was directly responsible for Dr. Sabelli's professional education in both pharmacology and psychiatry, James Toman, Director of the Division of Behavioral Science at the Chicago Medical School introduced Hector to neurophysiology and biocybernetics, and Nora Hojvat de Sabelli, first wife, educated him in the physical sciences. He learned mathematics from Louis Kauffman, of the University of Illinois. His work has been supported by generous grants from the Peter and Maria McCormick Foundation and from Maria McCormick. Hector was known as a great lover of dark chocolate -- particularly in the company of a unquestionably ripe banana -- and of swashbuckling stories of pirates which he read, or invented, for his sons on many a night. He was both intense, and playful. He is remembered by his family for his boundless energy, his love of travel and broadening his horizons, and his dedication to the intellectual life. Professor Sabelli is survived by his wife of 32 years, Linnea Flynn Carlson-Sabelli, two sons, Martin Sabelli of San Francisco and Rafael Sabelli, Rafael's wife Rochelle and two granddaughters, Olivia and Alessandra of Oakland California.

Guy Van Orden

Guy Van Orden (59) left this world on May 11th 2012. Psychological Science has lost a free spirit and I have lost my best friend in science. Born in Blackfoot Idaho, he moved to Oregon for his Bachelor in Psychology, continued his education at the University of San Diego for his PhD, and subsequently in 1987 he became a professor at Arizona State University. In that same year, his later to become famous paper "A ROWS is a ROSE: Spelling, sound, and reading" was published. It was the start of a new way of thinking about the reading process, at least by some of us. His extended visit in 1994 to Amsterdam, where I was a PhD student at the time, lead to my decision to become a postdoctoral fellow. I've spent the entire year of 1995 at Arizona State University, where Guy revealed to me the alternative for standard information-processing theory. If it had not been for Guy, I would have left academia. Our zealous, but failed attempts to apply catastrophe theory to word-naming behavior did not lead us away from the road to complexity, albeit we did not use this term at the time. In 1997, he went to the University of Connecticut (Center for the Ecological Study of Perception and Action), to learn about dynamics and complexity with his soon to become long-lasting friend Michael Turvey. They wrote wonderful and innovating papers on the dynamics of cognition. His philosophical attitude towards psychology and his generosity when it came to collaboration has brought the field forwards. He extended his view on science from psychology to biology, anthropology, mathematics, and physics and his group of American collaborator quickly became highly international. He worked with friends in amongst others the Netherlands, Germany, Belgium, France, Denmark, Latvia, and Cuba.

When I passed on the news about Guy's demise to people who used to know him, the most heard response was: 'He had a great influence on my thinking'. I know that he considered this a great compliment. One thing about science and art (I consider these domains to be soul mates) that makes death somewhat bearable is the existence of a tangible legacy. I catch myself rereading his papers to hear his voice and again learn something new every time. His profound view on psychology and science at large will inspire student generations to come. He said to me when I became a professor: Talk to your students about the lure of modern science. I took this advice to heart and Maarten Wijnants, our PhD student, graduated on June 26th 2012, cum laude on 'Fractal coordination in cognitive performances'. He dedicated his thesis to Guy with the following words: To the memory of Guy, who will always be in our hearts, minds and bodies.

--Anna M.T. Bosman, PhD (Nijmegen, the Netherlands)

Terence Oliva

A great pioneer of applied nonlinear science was lost to us in June, 2010. It is with further sadness that I did not hear about the death of Terence Oliva until this summer. Terry made his debut in nonlinear science (Behavioral Science, 1980) when he responded to the first

scathing criticisms of catastrophe theory with a brief but firm and clear message that there was nothing wrong with catastrophe theory that the right regression methods couldn't cure. He then went on to develop an analytic technique that could extract a catastrophe function from multivariate data. His GEMCAT program is still well known.

Terry's early work was especially encouraging, if not a candle in the darkness, to graduate students such as myself at the time who thought for sure that mathematical modeling and catastrophe theory in particular represented the future of social science, but had to reckon with stinging critiques early in the game that could have prevented viable applications from ever starting to develop. We met over the internet in the early 1990s before it was commercialized, exchanged what horror stories we had accumulated at the time, and became co-belligerents for nonlinear science ever since. Terry was a long-term member of SCTPLS ever since then and an irreplaceable member of the NDPLS editorial board.

Terry Oliva was a resident of South Philadelphia, where he died of complications related to lymphoma at the age of 67. His family shared a few insights with the world via Sally Downey from the Inquirer. Dr. Oliva had been on the faculty at Temple's Fox School of Business and Management since 1990. He was also an adjunct professor at the Wharton School of Business at the University of Pennsylvania. Though he cowrote a book, Operations and Production Management, and published more than 50 articles in professional journals, his primary career focus was on his students, his son Mark said. While at Temple, Dr. Oliva received five teaching awards, including two Sigma Kappa Phi Teacher of the Year awards and the Lindback Award for Distinguished Teaching.

Terry grew up in Sacramento, Calif., and earned a bachelor's degree from St. Mary's College of California. He served in the Air Force during the Vietnam War, from 1965 to 1969, as an aircraft maintenance officer. He spent 15 months in Vietnam and was awarded a Bronze Star. After his dis charge, he earned a master's degree in business administration from California State University and a doctorate in operations management from the University of Alabama. He taught at Louisiana State University, Columbia University, and Rutgers University before joining the Temple faculty.

Terry majored in math and art in college, and had varied interests and a great sense of humor, his son said. He was an enthusiastic film buff and movie-trivia expert and enjoyed attending his daughter Andrea's fencing matches at the Baldwin School in Bryn Mawr and later at Princeton University. In addition to his son and daughter, Dr. Oliva is a survived by his stepmother, Barbara Jean Oliva; a sister; a brother; a grandson; and his former wives, Barbara Jamison and Diana Day.

--**Stephen J. Guastello**, Ph.D., Professor of Psychology, Marquette University

Nightfall

It has been new to me, as Editor of the SCTPLS Newsletter, to include obituaries in the contents of this issue. Three fellow scientists left us. I did not know any of them in person. I do know they were scientists. As such, I was overwhelmed by the enormity of loss that death is. G. Tononi (*) defines death *The extinction not of life, not of movement, but the extinction of that inner light, which no external blaze could resurrect.* Perhaps the soul could survive. Whatever be the case, it is wiser not to rely upon uncertain aftermath. Life is what we have, our very own universe.
[*G. Tononi, *PHI, A Voyage from the Brain to the Soul*, Pantheon Books, N.Y. (2012), pp. 233-241]

Gaetano L. Aiello, Newsletter Editor

Nonlinear Dynamical Bookshelf

Barillot, E., Calzone, L., Hupe, P., Vert, J.-P., & Zinovyev, A. (2012). Computational systems biology of cancer. Boca Raton, FL: Chapman & Hall/CRC. 461p.
The future of cancer research and the development of new therapeutic strategies rely on our ability to convert biological and clinical questions into mathematical models—integrating our knowledge of tumour progression mechanisms with the tsunami of information brought by high-throughput technologies such as microarrays and next-generation sequencing. Offering promising insights on how to defeat cancer, the emergin g field of systems biology captures the complexity of biological phenomena using mathematical and computational tools. Highlights of this book include: a

comprehensive overview of the concepts and algorithmic methods in computational systems biology of cancer, bioinformatics resources relevant to a computational systems biology approach to cancer, clarifies the computational and design principles behind existing tools, describes the dynamic modelling of cancer-related networks and data mining approaches, provides real examples of biological applications, examines clinical aspects and biological questions.

Brown, R. C. (2012). The tangled origins of Leibnizian calculus: A Case Study of a Mathematical Revolution Singapore: World Scientific. 322p. ISBN: 978-981-4390-79-8.
This book is a detailed study of Gottfried Wilhelm Leibniz's creation of calculus from 1673 to the 1680s. We examine and analyze the mathematics in several of his early manuscripts as well as various articles published in the *Acta Eruditorum*. It studies some of the other lesser known "calculi" Leibniz created such as the *Analysis Situs*, delves into aspects of his logic, and gives an overview of his efforts to construct a Universal Characteristic, a goal that has its distant origin in the *Ars Magna* of the 13th century Catalan philosopher Raymond Llull, whose work enjoyed a renewed popularity in the century and a half prior to Leibniz. This book also touches upon a new look at the priority controversy with Newton and a Kuhnian interpretation of the nature of mathematical change. This book may be the only integrated treatment based on recent research and should be a thought-provoking contribution to the history of mathematics for scholars and students, interested in either Leibniz's mathematical achievement or general issues in the field.

Flynn, D., & Hay, J. M. (2012). Making social change: Understanding how complexity science explains, predicts & possibly controls major social change. London, Ont: Self-published. ISBN number 9780973933918.
Authors reveal their thinking on social behavior and social change based on quantifiable parameters. They propose that the examination of virtual discrete systems on computers can be related to the examination of real-life social changes we have seen historically and around the world today. In the world of computer generated studies we have the ability to analyze and understand changes in social systems. Thanks to the authors, we now have defined parameters that allow us to understand and perhaps control change in the real world! Through their years of interaction, numerous discussions and seminars, involving many individuals from varied academic disciplines, the authors have developed a theory which describes social changes and the major factors causing these changes. Just as matter exists in various states (solid, liquid or gas) that are crucial to its understanding, social systems also exist in various states – Order, Chaos and Complexity - which are key to the understanding of society in the world. Based on studies of computer models the authors propose that any social system must be in one of four possible states. The fact that two of the states are order and chaos is not surprising. However the fact that between the two is the complex state where creative things can emerge is exciting and the fact that there are two types of order is significant. The authors use two ideas from sociology, namely differentiation (inside structure) and centrality (outside impact), proposing that their relative values produce the state, or change of state, of the social system. The very broad application of these ideas is illustrated in this book through studies of the interaction of small groups, in studies of the history of two corporations, in the examination of economic cycles and in a study of changing art styles before, during and after the Renaissance. Thus the ideas of this book will be of interest to business managers, art historians, sociologists studying social change and indeed as Dr. Madeline Lennon, an art historian states "[to anyone] fascinated by how change and positive development occurs even in apparently static systems". This is a timely book, offering a positive approach to understanding and affecting social change in world.

Fuchs, C. (2012). *Implications of Deep Packet Inspection (DPI) Internet Surveillance for Society.* The Privacy & Security-Research Paper Series, edited by Emilio Mordini and Christian Fuchs. Research Paper Number 1. EU FP7 project "PACT – Public Perception of Security and Privacy: Assessing Knowledge, Collecting Evidence, Translating Research into Action". ISSN 2270-7467. 125 pages.
Abstract: Internet surveillance technologies have recently received attention when it became public that Western security companies exported such equipment to countries like Syria, Libya, Iran, Egypt or Bahrain, where they seem to have been used for repression against political activists. This research report focuses on the analysis of the political economy of one such communications surveillance technology - Deep Packet Inspection (DPI). It analyses societal implications of DPI Deep Packet Inspection (DPI) surveillance technologies are communications surveillance tools that are able to monitor the traffic of network data that is sent over the Internet at all seven layers of the OSI Reference Model of Internet communication, which includes the surveillance of content data. The analysis presented in this paper is based on product sheets, self-descriptions, and product presentations by 20 European security technology companies that produce and sell DPI technologies. For each company, we have conducted a document analysis of the available files. It focused on the four following aspects: (1) Description and use of the Internet surveillance technologies that are produced and sold. (2) The self-description of the company. (3) The explanation of the relevance of Internet surveillance, i.e. why the company thinks it is important that it produces and sells such technologies. (4) A

documentation of what the company says about opportunities and problems that can arise in the context of Internet surveillance.The assessment of societal implications of DPI is based on opinions of security industry representatives, scholars, and privacy advocates that were voiced in white papers, tech reports, research reports, on websites, in press releases, and in news media. The results can be summarized in the form of several impact dimensions: (1). Potential advantages of DPI. (2). Net neutrality, (3). The power of Internet Service Providers (ISPs) for undermining users' trust, (4). Potential function creep of DPI surveillance, (5). Targeted advertising (6). The surveillance of file sharers, (7). Political repression and social discrimination. The conducted analysis of Deep Packet Inspection (DPI) technologies shows that there is a variety of potential impacts of this technology on society. A general conclusion is that for understanding new surveillance technologies, we do not only need privacy and data protection assessments, but broader societal and ethical impact assessments that take into account the political economy of the security-industrial complex.

Giraitis, l., Koul, H. l., & Surgailis, D. (2012). Large sample inference for long-memory processes. Singapore: World Scientific. 596pp. ISBN 978-1-84816-278-5.
Box and Jenkins (1970) made the idea of obtaining a stationary time series by differencing the given, possibly nonstationary, time series popular. Numerous time series in economics are found to have this property. Subsequently, Granger and Joyeux (1980) and Hosking (1981) found examples of time series whose fractional difference becomes a short memory process, in particular, a white noise, while the initial series has unbounded spectral density at the origin, i.e. exhibits long memory. Further examples of data following long memory were found in hydrology and in network traffic data while in finance the phenomenon of strong dependence was established by dramatic empirical success of long memory processes in modeling the volatility of the asset prices and power transforms of stock market returns. At present there is a need for a text from where an interested reader can methodically learn about some basic asymptotic theory and techniques found useful in the analysis of statistical inference procedures for long memory processes. This text makes an attempt in this direction. The authors provide in a concise style a text at the graduate level summarizing theoretical developments both for short and long memory processes and their applications to statistics. The book also contains some real data applications and mentions some unsolved inference problems for interested researchers in the field.

Kadanoff, L. P. (2012). From order to chaos: Essays critical, chaotic, and otherwise. Singapore: World Scientific. 576 pp. ISBN (hc): 978-981-02-1197-4, (pb) 978-981-02-1198-1.
This book is a compilation of the review papers, expositions and some of the technical works of Leo Kadanoff, a theoretical physicist. The objective is to put together a group of not-too-technical writing in which he discusses some issues in condensed matter physics, hydrodynamics, applied mathematics and national policy. The volume is divided into four sections. The first section contains review papers on hydrodynamics, condensed matter physics and field theory. Next is a selection of papers on scaling and universality, particularly as applied to phase changes. A change of pace is provided by a series of papers on the critical analysis of simulation models of urban economic and social development. The book concludes with a series of recent papers on turbulence and chaos. Each major section has an introduction designed to tie the work together and to provide perspective on the subject matter. Contents: Fundamental Issues in Hydrodynamics, Condensed Matter and Field Theory, Scaling and Phase Transitions , Simulations, Urban Studies and Social Systems, Turbulence and Chaos.

Samoilenko, A. M., & Stanzhytsky, O. (2012). Qualitative and asymptotic analysis of differential equations with random purturbations. Singapore: World Scientific. 324pp. ISBN: 978-981-4329-06-4.
Differential equations with random perturbations are the mathematical models of real-world processes that cannot be described via deterministic laws, and their evolution depends on random factors. The modern theory of differential equations with random perturbations is on the edge of two mathematical disciplines: random processes and ordinary differential equations. Consequently, the sources of these methods come both from the theory of random processes and from the classic theory of differential equations. This work focuses on the approach to stochastic equations from the perspective of ordinary differential equations. For this purpose, both asymptotic and qualitative methods which appeared in the classical theory of differential equations and nonlinear mechanics are developed. Contents: Differential Equations with Random Right-Hand Sides and Impulsive Effects, Invariant Sets for Systems with Random Perturbations, Linear and Quasilinear Stochastic Ito Systems, Extensions of Ito Systems on a Torus, The Averaging Method for Equations with Random Perturbations.

Small, M. (2012). *Dynamics of biological systems*. Boca Raton, FL: CRC Press/Taylor & Francis.
Shows you how to apply a variety of techniques to model and analyze the temporal and spatial phenomena of biological systems. The book requires no advanced knowledge of mathematics and covers a range of models, including ECG signal processing, pandemic modeling, and population dynamics.

West, B. J. (2012). Complex worlds: Uncertain, unequal and unfair. Castroville, TX: Black Rose Writing. ISBN: 978-1-61296-130-9.
Author communicates the excitement regarding how networks form the way people live, think and make decisions. He observes that half the government argues for raising taxes, investing money to stabilize businesses, supporting the unemployed and keeping society stable. The other half argues for cutting taxes, reducing spending and lowering the deficit to stabilize society. Who is right? Can they both be wrong? How can they see things from such diametrically opposed non-overlapping views? Identifying the world as uncertain, people as unequal, and life as unfair is not new; it is the scientific evidence that ties them to complexity without regard to philosophy, theology or morality that is new. Dr. West clarifies why the future cannot be made certain, why the same people are always at the center of controversy, and why only a select few get ahead. Most people think uncertainty; inequality and unfairness are destructive if not outright evil and ought to be abolished. *Complex Worlds* explores why the emerging properties of complexity so prevalent in society stand in such sharp contrast to how the greatest thinkers of the past and present believe the world ought to be.

West, B. J., (2013). Fractal physiology and chaos in medicine. Singapore: World Scientific. 350pp. ISBN: 978-981-4417-79-2.
This exceptional book is concerned with the application of fractals and chaos, as well as other concepts from nonlinear dynamics to biomedical phenomena. Herein we seek to communicate the excitement being experienced by scientists upon making application of these concepts within the life sciences. Mathematical concepts are introduced using biomedical data sets and the phenomena being explained take precedence over the mathematics. In this new edition what has withstood the test of time has been updated and modernized; speculations that were not borne out have been expunged and the breakthroughs that have occurred in the intervening years are emphasized. The book provides a comprehensive overview of a nascent theory of medicine, including a new chapter on the theory of complex networks as they pertain to medicine.
Contents: Introduction, Physiology in Fractal Dimensions, Dynamics in Fractal Dimensions, Statistics in Fractal Dimensions, Applications of Chaotic Attractors, Physiologic Networks: The Final Chapter?

Wonderful Webpage

HRV Analysis & Beyond

The Biosignal Analysis and Medical Imaging Group from the University of Eastern Finland developed a new user-friendly program for analyzing heart rate variability and other time series that could be biometric, economic, or social in origin. Their Kubios software offers some relatively standard analyses in the time domain (mean/STD of RR intervals, RMSSD, pNN50, etc.) and frequency-domain (VLF, LF, and HF band powers and peak frequencies). In the frequency-domain analysis the power spectrum is calculated by using a traditional FFT based method and a parametric method based on autoregressive time series modeling. Several nonlinear methods are included also, such as Poincare plot, approximate and sample entropy, detrended fluctuation analysis (DFA), recurrence plot analysis, and correlation dimension. The program also offers advanced detrending options for removing disturbing low frequency baseline trend components. The detailed report sheets can be printed or saved in many Portable Document Format (PDF). Results can also be saved as an ASCII text file in two different formats (SPSS friendly format as a new feature) which can easily be imported into, e.g., Microsoft Excel. A sample output summary appears on p. 14.

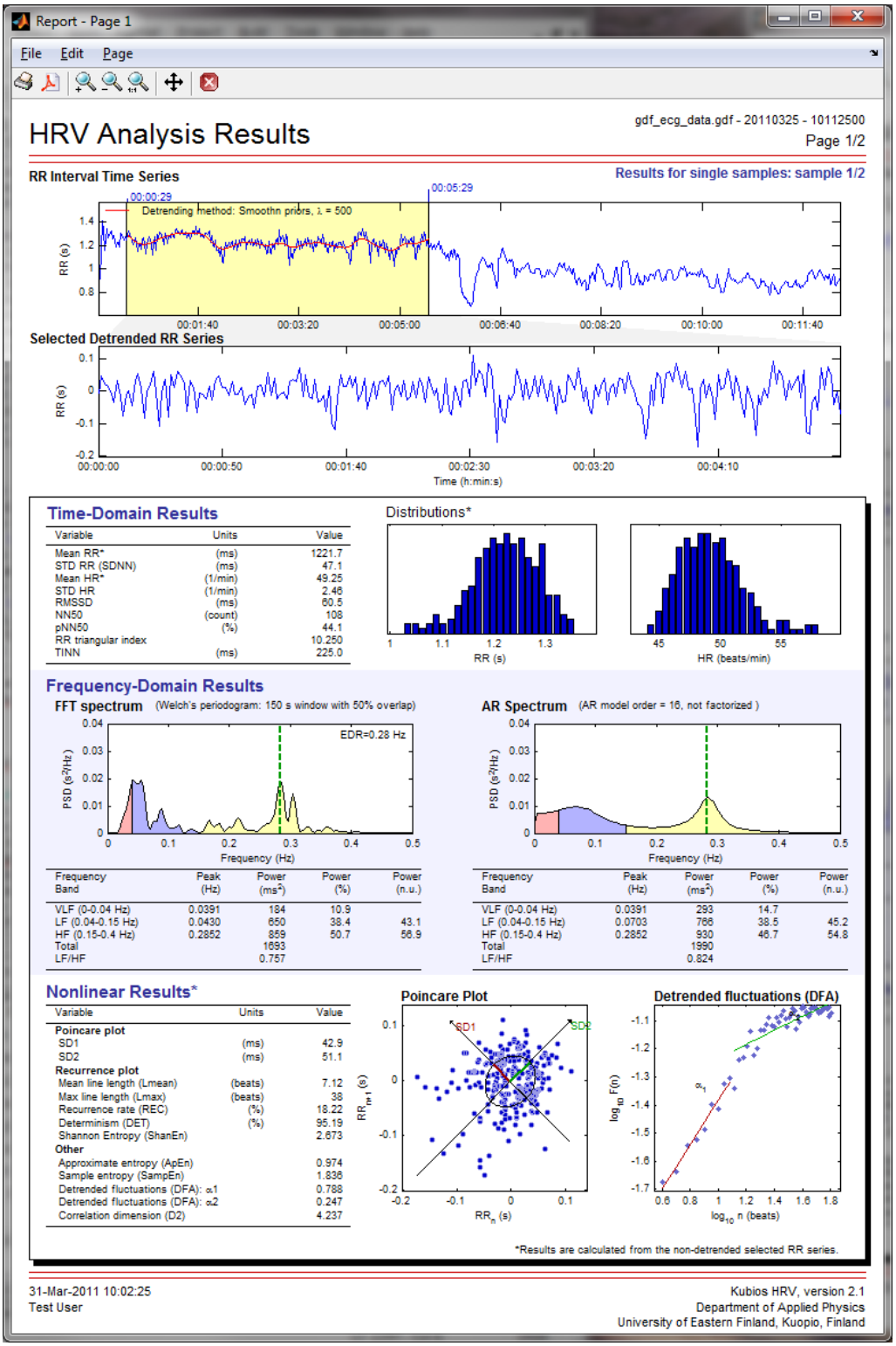


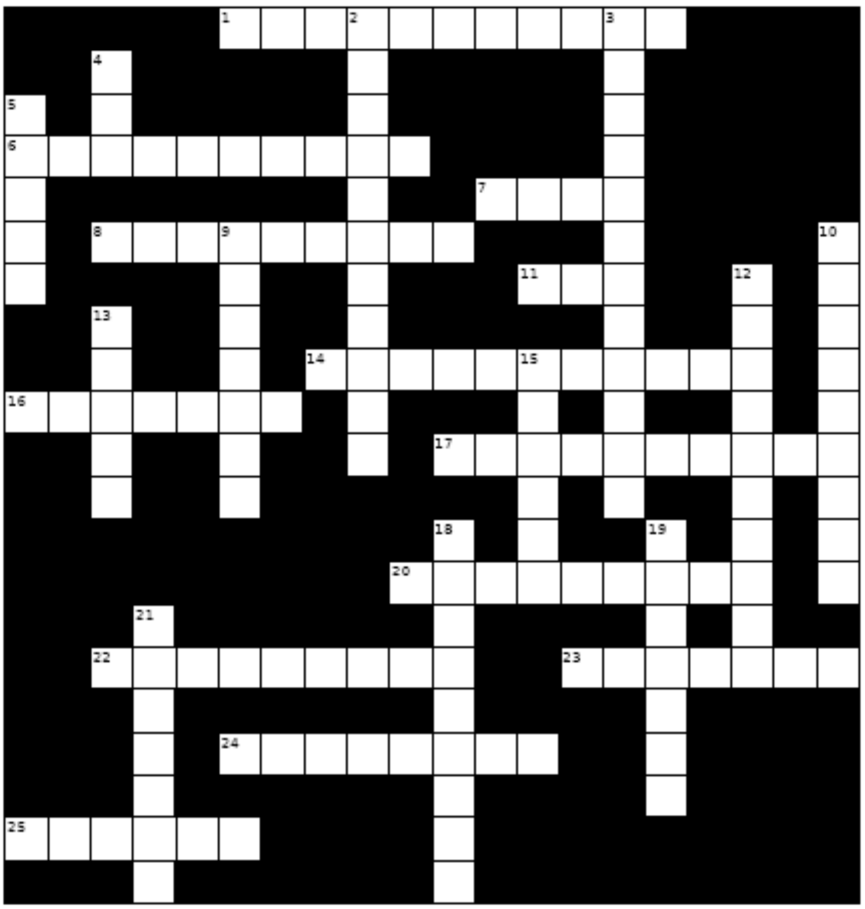
Fig. 3 - Screen captured image of Kubios HRV software

The software can be downloaded for free from http://kubios.uku.fi . It is recommended that users read through the FAQ on the web site, which will help to workaround difficulties that one might encounter when operating Kubios in conjunction with other programs.

Robert Gregson (ramgdd@bigpond.com) has been working with it extensively recently and has offered to help adventurous parties who would also like to get projects started with Kubios.

Chaos Crossword Puzzle

#1 by **Clint Sprott**

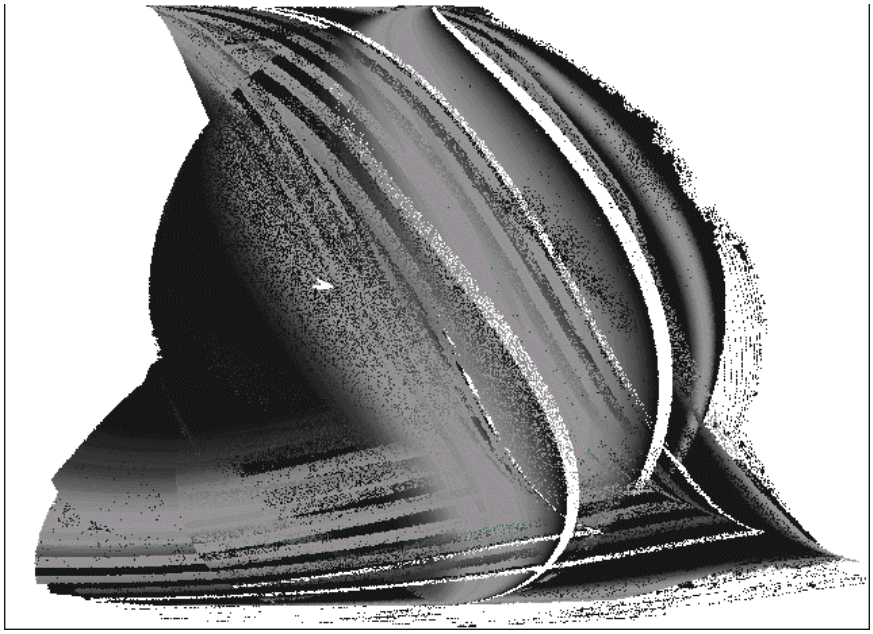


Across

1 The future is uniquely determined by the past
6 The failure to reproduce a behavior when a parameter change is reversed
7 Observed scale invariance in language
8 A computer method for optimizing a quantity
11 The tendency of complex systems to exhibit scale invariance
14 A qualitative change in the behavior of a system when a parameter reaches a critical value
16 A nonlinear wave that propagates without distortion
17 The result of a process governed by pure chance
20 The states which a dynamical system approaches after a long time
22 The whole is not equal to the sum of the parts
23 An object that contains miniature copies of itself
24 Invariance with respect to some mathematical transformation
25 The output is proportional to the input

Down

2 A system in which the forces are balanced
3 A method for studying dynamics by listening to the sound produced
4 The attractor for a set of rules applied repeatedly in every possible order
5 Sensitive dependence on initial conditions
9 A measure of the disorder in a system
10 The number of dynamical variables a system has
12 The set containing a map of all Julia sets
13 The set comprised of the basin boundary for bounded solutions
15 A set of points with zero measure
18 Repeated application of a mathematical procedure
19 An attractor produced by a chaotic process
21 Many variables



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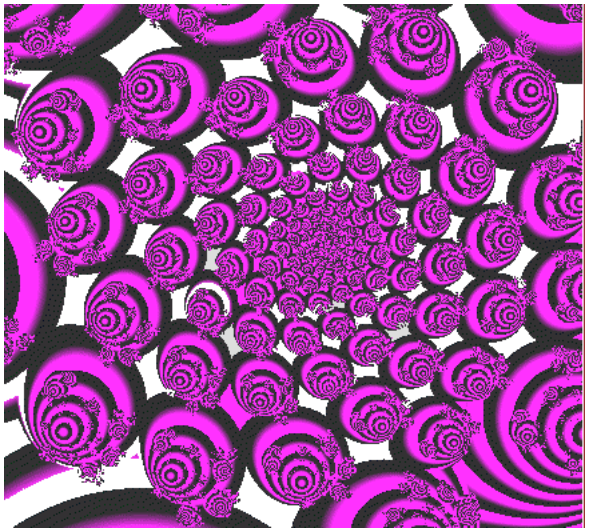
CONTENTS THIS ISSUE

Save The Date:

The 23rd Annual International Conference will be held at Portland State University, Portland Oregon, July 26-28, 2013

Watch for the Call for Papers and related information.



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