



## Holly Arrow Assumes Presidency

### New Committees Announced

#### Boston Pleases Members Once Again

SCTPLS held its annual meeting at Boston University on August 8-10. Registration exceeded 100 persons and sessions were well attended. We had the same good fortune when we met at BU in 1998. A new president was installed and a feeling of excitement pervaded the meeting as new science was discussed, new directions for the Society were explored, new members were welcomed, and old members celebrated. While some members overstuffed on "laabsta", others explored the historic district between sessions. (Some of us did both! -Ed)

A highlight of the meeting was the awarding of the Society's Career Accomplishment Award to Walter J. Freeman, Professor of Molecular and Cell Biology, University of California, Berkeley. The award was presented by Society President Dick Bird in recognition of Prof. Freeman's pioneering investigations of neural complexity and for his distinguished record of contributions to neuroscience and the Society. Prof. Freeman drew from events in his distinguished career to provide attendees with an overview entitled: *Where can chaos theory take us? Where do we want to go?*

Additional keynote speakers were Dr. Clifford T. Brown, Middle American Research Institute, Tulane University, who spoke on the application of nonlinear theory in the exploration of Central and South American archeology sites, and H Eugene Stanley, University Professor, Boston University, who discussed the concept of universality and scale invariance.

The meeting closed with a business meeting devoted to the installation of a new president, discussion of future meetings, and many other orders of business (see Minutes, below).

Holly Arrow is seen in the lead story photo with the set of nested dolls which are passed from president to president. Like fractal structures, the dolls represent how the largest and smallest are the same, and that the riddles of the universe are ever expanding into new ones even as the old riddles give way to science. -Ed.

#### Fall Book Catalog and Free Stuff

Once again SCTPLS is offering its members discount prices on popular nonlinear dynamics books. The catalog for the fall clearance sale appears in this issue of the Newsletter.

This year we are offering free stuff with qualifying purchases. Act now while supplies last.

#### VOTE FOR PRESIDENT-ELECT

Candidates' statements and ballot appear in this issue

#### New Education and Membership Committees

The Executive Committee has approved the creation of two additional committees to tackle the issues of education and membership. The charge of the education committee will be to assess the most pressing needs for education and training in our field, and explore possibilities for how SCTPLS could both do more education and training and serve a center of information on educational resources. The membership committee will pursue plans for membership growth and retention. The complete roster of personnel for these committees will be identified as soon as possible. Additional information concerning the objectives of these committees appears in the President's Letter this issue.

#### New 2-Year Membership Option

Members will have the option of renewing their membership for two years, beginning with this fall's membership drive. The SCTPLS executive committee recognizes that "time flies" and the new option will be both convenient and cost-efficient for all members, especially the students. The students can renew for two years at a total cost savings of \$30 relative to the one-year student rate. The idea originated as part of a broader interest in getting more students involved in nonlinear dynamics studies.

#### DENVER or MILWAUKEE in 2004

The 14<sup>th</sup> Annual International Conference of the Society could transpire in Denver or Milwaukee in 2004. The conference committee, which currently consists of Holly Arrow, Meg Spohn, and Steve Guastello are currently studying the options, and the decision will depend on where the best deal can be found.

The possible facility in Denver is a converted brewery that is now a college conference facility. Denver offers an exciting downtown area, a famous amusement park downtown, the ambiance of the Rocky Mountains, and a new location for an SCTPLS conference.

The possible facility in Milwaukee is the new Raynor Library of Marquette University which contains conference

rooms with state-of-the-art AV appointments. Milwaukee offers the Bastille Day street festival downtown, cosmic bowling on the MU campus, the ambiance of Lake Michigan and a short ride to Chicago, and one of the most highly attended SCTPLS conference locations of the past decade.

The probable dates of the 2004 conference are the weekends of July 16-18 and July 23-25.

## NSF Sponsors Workshop, E-Book on Nonlinear Methods

The National Science Foundation is sponsoring a small workshop session on methodology for nonlinear dynamics at the George Mason University in Fairfax VA, on Oct. 24- 25, 2003. The goal of the 1-1/2-day workshop is to provide to methodological toolkit for researchers who have an interest, but not necessarily any background, in applying nonlinear methods to problems in any area of psychology and related disciplines. An accompanying web-based, edited volume will consist of chapters by all of the speakers (listed below) as well as sample data sets and links to sites featuring commercial, shareware, and freeware analysis packages.

The workshop will primarily focus on three nonlinear methodologies: phase space reconstruction, recurrence quantification analysis, and fractal methods (e.g., scaling exponents). Tim Sauer, C. L. Webber, Jr., & Larry Liebovitch will respectively address those three topics. Each of those "methods" talks will be followed by one or more "applications" talks in which the method just presented will be discussed in the context of a specific application in psychology. Joy Mitra will discuss applications of phase space reconstruction to motor learning. Gerri Pellechia will discuss an application of recurrence quantification analysis (RQA) to concurrent perception-action and cognitive performance. Kevin Shockley will introduce an extension of RQA, cross-RQA, in the context of interpersonal synchronization during cooperative conversation. Jay Holden will discuss fractal variability in response time distributions in lexical decision tasks, and Deborah Aks will discuss fractal variability in eye movement data. In addition to those applications talks that are specifically tailored to match the three "methods" talks, additional applications of nonlinear methods in psychology will be presented. Betty Tuller will talk about nonlinear methods in speech perception & production, Paul van Geert will discuss nonlinear dynamics and developmental psychology, and Stephen Guastello will discuss nonlinear methods and industrial-organizational psychology. Michael Riley and Guy Van Orden will offer opening and closing remarks on nonlinear methods in psychology. Claudia Carello and Michael Turvey will write an introductory chapter to the accompanying web book.

The conference is expected to include a total of 50 people, many of whom are operatives of the National Science Foundation. Another large bloc of attendees will be students who will be helping to edit the e-book in exchange for their travel expenses to Fairfax. Gary Bodie and Stacey Pederson, who are two known SCTPLS student members, will be two of the student editors. The vision for the E-book is that it would be readable and instructive to graduate students. Expert editors will be involved as well.

## Springer-Verlag Sold, Publishers Consolidate

BertelsmannSpringer, a well-known academic publisher of nonlinear (and other) books and journals was purchased by the venture capital firm of Candover and Cinvin from the UK in August. Springer-Verlag is one its better-known imprints for nonlinear dynamics books. BertelsmannSpringer and Kluwer Academic Publishers will be consolidated into one entity under the name Springer before the end of 2004, according to Kluwer's website in September this year. C & C had purchased Kluwer Academic Publishers in October, 2002.

As a result of the consolidation of the two publishers, the new Springer will become the second largest academic publisher in the world. Elsevier is the largest.

Kluwer, meanwhile, is enthusiastic about the growing use of pay-per-view journal access, according to the news on their website in September this year. "The consolidations that have been occurring among publishers are expected to improve the organizations' financial viability and market presence, but the number of outlets for nonlinear dynamics authors is now reduced a bit," according to Stephen Guastello who has been watching the trends. "The purchase of BertelsmannSpringer probably explains the severe cutbacks in bookseller discounts that I noticed this summer when I was arranging books for the conference in Boston."

## Rugged Landscape Photo Series II – Canadian Rockies and Glacier Fields by Michael Radin



## President's Letter

Holly Arrow, President of the Society, 2003-2004

Dear Members and Friends:

Our field is endowed with a wealth of wonderful visual objects that portray (and in some cases constitute) the complex dynamics that we study. Among this rich endowment my favorite images are not, despite their undeniable appeal, the Mandelbrot and Julia sets. Instead, I return over and over to simpler images: the unfolding records of one-dimensional cellular automata in Wolfram's Class IV, which show long transients, repeating patterns with long period length, and endogenous change. To me, they are a sort of Burgess Shale, an image of what life in the solid state is like. Patterns emerge, repeat and shift, never quite settling into a fully predictable limit cycle. As researchers who study the time series of the human heart beats have discovered, too much regularity is not necessarily a good sign: health is associated with a mixture of predictability and change. I believe the same is true of groups and organizations.

After the first fluid years in the early 1990s, when it was still unclear what sort of collective being the Society would become, the patterns and regularities of an established organization emerged. In the past decade, SCTPLS has expanded member benefits with the establishment of NDPLS and the Newsletter. Thanks to the efforts of dedicated and energetic members, many of whom have contributed many years of service in a variety of roles, we have achieved organizational maturity and consistency with a well-run annual conference and reliable systems for handling other Society logistics. Thanks to the efficient systems staffed by our Treasurer, Membership Secretary, Newsletter Editor, and Webmaster (i.e., thanks to Steve Guastello, Mary Ann Metzger, Bob Porter, and Terrill Frantz), the Boston conference ran very smoothly, despite my own inexperience as conference coordinator. Those who were unable to join us in Boston can peruse the links to some of the papers and sessions from our home web page, recently redesigned by Terrill.



In the past year, I have also noted many signs of change. In fact, I see 2003 as the beginning of a new cycle of transformation, cued in part by external events, in part by endogenous initiatives. After Kluwer dropped our journal from their roster, we decided to publish NDPLS ourselves (see web page for images of the new cover design, a major leap forward aesthetically). We co-sponsored the first of what will likely become an ongoing series of International Nonlinear Science (INSC) conferences. Led by President Dick Bird, we also began a process of internal review. As president, I see my role as supporting, nurturing, and inspiring initiatives to encourage this current of change, which will, I hope, launch a new period of growth for the Society.

In the ceremonial transfer of power at the Boston meeting, I received the traveling Matrushka dolls, a custom inaugurated by long-time member Irina Trofimova in 1996. After unpacking the dolls and arranging them on my rolltop desk to provide large, medium, small or smaller guidance in my duties, one of my first steps as president (or so I thought) was to print out and read our bylaws. Among other surprises, I discovered that I was not, in fact, the president yet, but still the president-elect. The standing committees prescribed by the bylaws did not appear to be staffed. And there were other oddities, confusions, and internal contradictions. After sorting out who belongs on the reconstituted standing committees, my next step was to launch a new incarnation of the Constitutional Review committee, which is charged with identifying areas for improvement, updating, and clarification in our Articles of Organization. Fred Abraham has graciously agreed to chair this committee. The membership also approved a committee for planning the next INSC, which is projected to take place in 2006. Dick Bird and Bob Porter have agreed to co-chair the INSC Planning Committee.

The Executive Committee has approved the creation of two additional committees to tackle the issues of education and membership. The charge of the education committee will be to assess the most pressing needs for education and training in our field, and explore possibilities for how SCTPLS could both do more education and training and serve a center of information on educational resources. The charge of the membership committee will be to generate a list of innovative ideas for initiatives, strategies, and tactics we could try for reaching those who could benefit from joining the society. Along with recruitment, I'd like the committee to also consider issues in retaining existing and retrieving lapsed members. I will ask the committee to generate ideas with the following goals in mind: grow from our current 300+ to 450 by fall of 2004, to 650 in 2005, 900 in 2006, stabilizing at new attractor of around 1000 by 2007 or 2008. To achieve this, we will need to move from relative membership stability into a new trajectory of growth.

In line with the spirit of new developments, many members have shared with me their appetite for change and transformation. What people hope for differs. But I sense a collective readiness to move toward whatever will be the new version of SCTPLS after the next round of adaptive co-evolution. The Society has many members committed to preserving what is best about the current incarnation of the collective. They will wisely resist any changes likely to endanger the long-term well-being of the Society. My role will be, instead,



to encourage perturbations and the emergence of new forms of order. Some initiatives will succeed and some will not. Some will take hold and flourish, others will be selected out and wither. The expected outcome? A "fitter" Society, better adapted to the needs of its natural constituency: researchers, theoreticians, and practitioners who are currently applying any form of chaos, catastrophe, nonlinear dynamics, and/or complexity theories and methods to questions and issues in psychology and the life sciences (broadly defined), and all who aspire to do so once they are trained in, discover--or invent--the particulars of what to do and how.

--Holly, October 2003

*Holly Arrow is Associate Professor in the Department of Psychology and the Institute of Cognitive and Decision Sciences, University of Oregon, USA. She studies the emergence and transformation of structure in small groups.—Ed.*



## WHO'S WHO IN THE SOCIETY

### President 2003-2004

Holly Arrow, harrow@darkwing.uoregon.edu

### Immediate Past President

Dick Bird: dick.bird@unn.ac.uk

### Newsletter Editor

Bob Porter, rjporter@mindspring.com

### Treasurer and Journal Editor

Steve Guastello, 6155GUASTELL@vmsb.csd.mu.edu

### Secretary

Mary Ann Metzger, metzger@umbc.edu

### Web Site Manager

Terrill Frantz, terrill@org-sim.com

### CHAOPSYC Managers

Bob Porter, rjporter@mindspring.com

Fred Abraham, abraham@sover.net

## Minutes of the SCTPLS Business Meeting Boston, MA, USA, August 10, 2003

*Submitted by Mary Ann Metzger, Secretary*

President Dick Bird called the meeting to order with brief remarks and welcomed new President Holly Arrow.

**Motion. Minutes for the 2002 meeting approved as published in the Newsletter. Approved.**

President Arrow asked for comments on the current conference. Feedback 2003: Two-day conference maybe not enough, even with extra workshop day. Thirty-minute limit not well-enough observed; suggest session Chair. Poster sessions are desirable. Try for a site in which individual computers in workshops will not be too expensive. Need safe parking, good detailed information on parking, and permitted in-and-out. Visas have been a problem. Need long lead time. Three tracks a lot. Suggestions: Recording sessions. Full copies of papers. Posting papers on web. Links to presentations.

**Motion. Put a page on the web site that deals with the subject of visas. Adopted without objection.**

Location for conference 2004 was discussed. On-site volunteers were solicited.

**Nominated for consideration were Mexico (Brown), Canada (Sulis), Milwaukee (Guastello), Aurelia, Chicago, Denver (Spohn).**

Next INSC meeting, perhaps 2006. Society concerns of sponsorship include returns for SCTPLS funding, membership-drive, role of other sponsors. Use INSC for membership drive. Special membership offer, for example.

**Motion. President will appoint a committee for planning next INSC. Approved without objection.**

**Motion. There will be a budget, with amount to be determined by the Board after plan it submitted. Approved.**

Nominations were called for President.

**Nominated for president for 2004-2005 were Holly Arrow and Meg Spohn.**

Committee report by Dick Bird. Constitutional Review Committee. Topics are journal going to self-publication and manner of appointment of officers.

**Committee motion. Continue constitutional review. Friendly amendment. Empower president to appoint a constitutional review committee. Friendly amendment. Committee shall report to next business meeting. Approved.**

## Treasurer's Report

Steve Guastello, Treasurer

This report contains a summary of the Society's financial record current through the end of its last fiscal year, 31 March, 2003. The Society is qualified as a tax-exempt non-profit organization by the United States Internal Revenue Service as a Private Foundation and as Publicly Supported Organization. The former category recognizes that the Society is a membership organization that exists for the benefit of its members and exempts the Society from the public disclosure of its financial transactions. The latter category allows the Society to receive donations, as opposed to receiving only membership or conference fees, but such donations have been trivial since the Society's inception.

In the five-year period 1 April 1997 through 31 March, 2002, the Society accrued an average net income of \$4926 per year. This annual amount has been highly variable due to the size and timing of deposit payments for its annual conference. The Boston University facility required the largest demands for deposits. The Society has consistently operated "in the black" since 1994.

The Society's net on total operations for the fiscal year ending 31 March, 2003, was \$7037. This amount reflects three payments for INSC expenses that were made in May, 2003. The breakdown of income sources appears in Table 1. It is noteworthy that bank interest is now replacing dwindling royalties on intellectual properties.

**Table 1. Breakdown of sources of Income for FY 2002 ending 3-31-03**

| Source  | Amount        |
|---|---------------|
| Portland Conference Net                                     | \$3391        |
| INSC Conference Net   | \$6523        |
| Deposit for Boston Conference (Debit)                       | -\$12,000     |
| Membership, journal & book sales, related transactions, Net | \$8022        |
| Interest on accounts  | \$1101        |
| <b>Net for FY 2002</b>                                      | <b>\$7037</b> |

The Society has no indebtedness with respect to bank loans, bond issues, or accounts payable in excess of 60 days. Any receivables that were in default as of 31 March 2003 were not included in the income amounts shown in the table.

The standing policy for use of accumulated assets corresponds to standard business practices. (1) Protection of the Society from adverse economic conditions over which it has no direct control. (2) Generation of income as described above. (3) Cash flow for standard operations. (4) Cash flow for new ventures as determined by Society protocol. The Society's annual rate of asset accumulation has ranged between 10.0 and 13.5% of its adjusted gross receipts. This rate is less than the 15% allowed by the Internal Revenue Service for tax-exempt organizations.

The Society does not have any salaried personnel. Furthermore, the Society does not reimburse travel expenses for Officers to attend its annual conference.

Beginning in January, 2004, the Society's quarterly

research journal, *Nonlinear Dynamics, Psychology, and Life Sciences* will be published directly by the Society. The details of this transition were reported in the July, 2003 issue of the *Newsletter*. This transition will require an additional \$4000 per year in operations costs compared to current costs. The impact of this amount can be attenuated and reversed by a concerted program of growth for Society membership and the development of institutional subscriptions to the journal.



## REPORTS FROM THE CUSP

*Editor's Note: Short research articles, book reviews, and other items of interest are solicited from all members for consideration for publication in REPORTS FROM THE CUSP. Articles are reviewed by the editor and those selected may be edited for length. Ordinarily, only one item will appear per newsletter. Contributions are always welcome.*

## Useful Hints for Reordering the Universe

Gus Koehler, Principal, Time Structures, and Adjunct, School of Policy, Planning and Development, University of Southern California

Alfonso the Wise, King of Castile (1221-1284) said: "Had I been present at the Creation, I would have given some useful hints for the better ordering of the universe."

What would King Alfonso the Wise have to know about space/time ordering to make useful hints to God?

The problem of "better ordering" the universe is a challenging but important one. For example, King Alfonso might like his ministers to develop better government policies, or to help his health-care corps reduce family conflicts or improve patients' psychological or physiological functioning. The problems of existence and life are so chaotic, however, that the King's may be well be warranted in wanting to help God order it a bit better.

One problem God appears to have created is that social/psychological chains of activities are less a fixed sequence of handily separated elements than they are a process or continuous flow of changing patterns. These processes have many properties including stochasticity, sensitivity to initial conditions, and chaotic transitions and variation. In addition,

although these flows of growth and development occur at a place and at a time, the flows are *not* the same in every place and time. For example, Bateson pointed out that science is done in a particular kind of space/time labeled "a laboratory", which is a space/time with rules and assumptions about causality that may be quite different from "the wild's".

Given this chaos, we can understand that Alphonso the Wise might feel that the universe might be a better place with a more ordered, stable base. For example, he might propose that space itself be clearly ordered, with a fixed structure in the relationship between objects or fields (mapping of like qualities for example). However, if space is a fixed order, how could all spaces be ordered the same way? For example, there are spaces such as King Alfonso's royal space, his subjects' personal spaces, social space, legal jurisdictions, geographic space, the space between physical objects like neurons or atoms, fields of various types, and the relative space of Einstein. Each space would seem to have to have its own measures for representing "distance" (the concept could change from one space to another). In addition, some measures of some spaces are quantitative, others qualitative; some are continuous, some are discrete. God appears to have given each space its own order. Perhaps a powerful King could command spaces to order themselves in a uniform and in a corresponding fashion.

However, if spaces are ordered in comparable ways, the King of C. might be perplexed by questions such as: How does one type or level of space relate to other space-like representation of objects? For example, brain space vs. the space of sensed social objects? How do different spaces link? Are they separate, "small worlds" nested together, or do they exist in parallel? What effect does a change of scale of measurement for a space impact experimental results? Are there specific spatial effects that could affect experimental outcomes? How do we deal with heterogeneity of different types of space that are distributed across a study area? These problems cannot be solved by forcing spaces to order in a common fashion. His Majesty might, then, attempt to find some other way to force a common order in the relationships among spaces.

The King might notice (and also admire, Kings being conservative by nature) that a simple common property of spaces is that they seem to vary in time. Space sometimes appears to be, itself, a patterned formation in time (limit cycles, attractor, etc). Perhaps, then, the King might imagine he could order space with time. Time, after all, seems pretty orderly.

Seven hundred years before Alfonso, St. Augustine asked: "What is time? If no one asks me, I know but if I wanted to explain it to the one who asks me, I plainly do not know." Is time, as Bergson (1910) suggested, a psychological phenomena and not "out there"? Is consciousness a "now", emerging from an on-going blending of past-present-future related to action (Lloyd, 2002)? Is time absolute (background dependent) in the sense of Newton's absolute "t" time? Or is time an emergent from the interaction of two or more entities (background independent)? (Calendar and Edney, 2001)

The concept of time we choose has very important implications for the laboratory space/time in which we choose to collect data or to run our experiments. For example, "virtual computer time" is not "wild life time". The decision also has important implications for scientific explanation including the style of time supporting scientific writing (Ricoeur, 1983). Time

and space appear to be always changing. Alphonso the Wise (probably now Alfonso the Confused) may strain to understand the conflict between his internal time, conventional world time, and emergent, natural time.

If time does not stand still, can His Royal Highness order the universe? Can he order the universe by dangling between body, soul, and eternal times and spaces, or can he only do so outside of space and time, floating in an impossible Cantorian space outside of the universe itself.

There is a wider context that may help HRH firmly find his ordering place in the universe. J.T. Fraser (1975, 1998), in his book *Of Time, Passion and Knowledge*, offers a five-level, hierarchical theory of time and associated causality. Here are the levels from highest to lowest:

1) *Nootemporal* is the temporal reality of human mind or noetic intentionality. It is characterized by the ability of the intellect, as distinguished from sensible apprehension, to apprehend distinctions between categorical meanings, called past and the future, relative to the present. Its level-specific causation is "noetic intentionally in the service of symbolic causes."

2) *Biotemporal*: The inner developmental and growth organization of life. Requires "nowness" as reflexive causality. Biotemporality is the temporal reality of living organisms. The inner organization of life requires "nowness". The biological organism's characteristic distinction is the ability to distinguish past and future relative to the organization of its' own growth and development. The organism's level-specific causality is "intentionality in the service of biological needs", a kind of internal programming that provides internal coordination of a system of oscillators to maintain its continuously developing and growing structure as an open system. Thus every living system maintains by its behavior adopting its own "now" as an organic present, providing the perspective for a past and a future. "In sum: organic intentionality and its corollary, freedom of choice, came about with biogenesis. It cannot be identified in the inanimate world...." (Fraser, 2002, p. 235) In Biotime, causality is emergent.

3) *Eotemporal*: This is the time of the universe of large-scale matter. Its time is physicist's "t". It is characterized by a continuous and now-less flow of time. In Eotime, causality is deterministic.

4) *Prototemporal*: is the time of elementary objects such as quarks, photons, etc. In Prototime, causality is probabilistic and stochastic

5) *Atemporal*: the mode of time characteristic of a black hole. In Atemporality, there is no mode of causation

In the context of Fraser's formulation, King Alfonso could come to some understanding of space-time and its possible orderings. It could be a heterochronic, local ordering. Each local background independent time space—whatever its geometry—would have a particular nesting of Fraser's five temporalities and related causalities.

Of course the King's "now" would have to be seen to be an emergent property of his biotemporal and nootemporal state. HRH could see himself proceeding at a certain pace and tempo out of his past remembering events, at varying depths, as he moves in a stately way into an unfolding future. Being observant, Alfonso the Wise might see that velocity cones characterize information, resources, and energy propagation and



that exchanges of energies are occurring in background independent of space/time. He would of course understand that the way that sensate beings like himself "see-experience" space/time should not be confused or equated with how local space/time is nested and causally entangled; he would understand his perception to be one string in the entangled many (Koehler, 2003a and 2003b).

So, it seems, if King A the W had been present at creation, God could have given him a few useful hints about how usefully the universe is *disordered*.

## References

- Bergson, Henri (1910). Time and Free Will. New York: Harper Torchbooks.
- Callender, C. and Edney, R. (2001). Introducing Time. New York: Totem Books. Santa Cruz, CA: Aerial Press.
- Craig, William (2001). Time and Eternity. Wheaton, Illinois: Crossway Books.
- Fraser, J.T. (1975). Of Time, Passion and Knowledge. Princeton: Princeton University Press.
- Fraser, J.T. (1998). From Chaos to Conflict, in J.T. Fraser, M. Soulsby, and A. Argyros (1998). Time, Order and Chaos. Madison, Conn.: International University Press.
- Fraser, J.T. (2002). Human Freedom. KronoScope, Vol. 2, No. 2, pp. 223-247.
- Hyde, Lewis (1998). Trickster Makes the World. New York: Farrar, Straus, and Giroux.
- Klarwein, Abdul Mati (1976). God Jokes: the Art of Abdul Mati Klarwein. New York: Harmony Books.
- Koehler, Gus (2003a). Time, Complex Systems, and Public Policy: A Theoretical Foundation for Adaptive Policy Making. Nonlinear Dynamics, Psychology and the Life Sciences, Vol. 7, 1, January 2003.
- Koehler, Gus (2003b). Time and Simulation: Some Significant Issues. Prepared for The Second Lake Arrowhead Conference on Human Complex Systems - 2003, Wednesday, March 19th - Sunday, March 23rd, 2003.
- Lloyd, D. (2002). Functional fMRI and the Study of Human Consciousness. Journal of Cognitive Neuroscience, 14, 818-831., Aug.15, 2002
- Ricoeur, Paul (1983). Hermeneutics and the Human Science. New York: Cambridge University Press.

## NEWS FROM MEMBERS



2<sup>ND</sup> ANNUAL SESSION ON DYNAMICAL SYSTEMS at the Canadian Mathematical Society's Summer 2003 Meeting in Edmonton, Alberta in June 2003 was organized by Michael A. Radin from the Rochester Institute of Technology. 12 speakers participated in this session; about half were from Canadian Universities and half from American Universities.

Mike reports that he developed the idea for the session when he attended and spoke at the CMS Winter 2001 Meeting in Toronto, Ontario in December 2001. He liked the Meeting so much that we wanted to attend and speak at the CMS Summer 2002 Meeting in Quebec City, Quebec in June 2002. However, there was no session organized that was related in his field of research. That is why he decided to organize his own session and called it "SESSION ON DYNAMICAL SYSTEMS".

He successfully recruited 17 speakers. The main four categories of the talks were:

- Pure Dynamical Systems; Discrete and Continuous
- Dynamical Systems and Bifurcations
- Dynamical Systems and Mathematical Biology
- Dynamical Systems and Physics and Fiber Optics

The speakers were given opportunities for sharing their research followed by discussions and exploration of collaborations

as well. Mike repeated this successful process in June 2003 at the CMS Summer Meeting in Edmonton, Alberta, and is already planning for the 3<sup>RD</sup> ANNUAL SESSION ON DYNAMICAL SYSTEMS at the CMS Summer 2003 Meeting in Halifax, Nova Scotia. Mike encourages readers to contact him for more information. <marsma@osfmail.isc.rit.edu>



Above and Right, Upper: Pyramid Lake.  
Right, Lower: Pyramid Mountain.



# Nonlinear Dynamical Book Catalog

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|-------|---|---------------------------|------------------|
|       | <b>Arrow, McGrath &amp; Berdahl: Small groups as complex systems.</b> Sage. 2001. Pb. 336p. Authors integrate complexity concepts with the state of the science in group dynamics and organizational behavior. Topics feature coordination, stability and change. List: \$36.   | \$35<br><i>order 2/26</i> | A                |
|       | <b>Aruka: Evolutionary controversies in economics.</b> Springer-Verlag 2001. Hc. 252p. Edited collection features well-known SCTPLS authors plus many more, markets, agents, institutions, labor, all dynamical and non-classical. List: \$80.  | 65                        | A                |
|       | <b>Crutchfield &amp; Schuster: Evolutionary dynamics.</b> 2003. Oxford Univ. Press. Pb. 452. From the Santa Fe Institute series. Macroevolution, epochal evolution, population genetics and dynamics, evolution of cooperation. List: \$40.   | 35                        | A                |
|       | <b>Goldberg: Robot in the garden: Telerobotics and telepistemology in the age of the internet.</b> MIT Press. 2000. Pb. 366 p. Edited collection explores a complex system composed of optics, robotics, PCs, and the world wide web from philosophy to ergonomics with occasionally shocking implications. List: \$22. | FREE<br>ITEM*             | A                |
|       | <b>Gregson: On the necessity of being sufficient.</b> VIDEO produced by author & SCTPLS. VHS Format only. 51m. An excellent tool for any professor to introduce dynamics and cognition to graduate students.  | FREE<br>ITEM*             | A                |
|       | <b>Guastello: Managing emergent phenomena: Nonlinear dynamics in work organizations.</b> Erlbaum. 2002. Hc. 391p. Author's second covers new advances in motivation, personnel selection and turnover, networks, creativity, group coordination, leadership, and strategic decision making. List: \$100.                | 65                        | A                |
|       | <b>Hardy: Networks of meaning: A bridge between mind and matter.</b> A scholarly examination of the formation and change of verbal cognitive networks. Greenwood. 1998. Hc. 213 p. List: \$65.  | 60                        | A                |
|       | <b>Heath: Nonlinear dynamics: Techniques and applications in psychology.</b> 2000. Erlbaum. Pb. 379 p. Starts with basic time-series concepts, and moves forward to nonlinear statistical analysis and applications in clinical and cognitive psychology. List: \$45.   | 40                        | A                |
|       | <b>Iannacone &amp; Khoja: Fractal geometry in biological systems.</b> CRC Press. 1996. Hc. 360 p. Edited collection features classic contributions by Ary Goldberger, Larry Liebovitch, H. Eugene Stanley, Bruce West, and many others on fractals, DNA, tissue, cells, organs, EEGs. List: \$85.                       | 50                        | A                |
|       | <b>Kohler &amp; Gimerman: Dynamics of human and primate societies.</b> 2000. Oxford Univ. Press. Pb. 398. From the Santa Fe Institute series. Dynamicists' window to primitive cultures and their evolution. Anasazi, Polynesian, and many other cultures. List: \$40.  | 35                        | A                |
|       | <b>Loye: The evolutionary outrider: The impact of the human agent on evolution.</b> Praeger, 1998. Pb. 281 p. Edited collection of essays honoring Ervin Laszlo and his behavior-based evolutionary paradigm from one of SCTPLS' earliest members. List \$25.   | FREE<br>ITEM*             | A                |

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| <b>McKnight, Valler, &amp; Katz: Creative destruction: Business survival strategies in the global Internet economy.</b> MIT Press, 2001. Hc. 289 p. Asks whether the current chaotic state of the telecommunications and Internet industries is evidence of Schumpeter's creative destruction or simply the result of organizations wasting valuable resources with limited benefits to society. List: \$25. | 20         | A |     |
| <b>Nowak &amp; Vallacher: Dynamical social psychology.</b> Guilford Press, 1998. Hc. 318 p. Illuminates the nonlinear dynamical processes by which individuals, groups, and societies evolve and change in a systemic, self-sustaining manner, at time independent of external influences. List \$42.  | 35         | A | ?   |
| <b>Orsucci: Complex matters of the mind.</b> World Scientific, 1998. Hc. 210 p. Edited collection covers a range of applications of nonlinear science to mental processes; culminates in a blueprint for a comprehensive psychology based on nonlinear dynamics. List: \$64.   | 35         | A |     |
| <b>Orsucci: Changing mind.</b> World Scientific, 2002. Hc. 202. Hc. 209 p. Describes how nonlinear dynamics in psychology are changing our basic view of the mind itself. List: \$52.  | 45         |   |     |
| <b>Peterson: Newton's Clock: Chaos in the solar system.</b> W. H Freeman, 1993. Pb. 317 p. As the title indicates! List: \$16.   | FREE ITEM* | A |     |
| <b>Poole, Van de Ven, Dooley, &amp; Holmes: Organizational change &amp; innovation processes.</b> Oxford University Press, 2000. Hc. 406 p. This is the theory and analytic strategy that allowed Kevin Dooley to figure out the connections between 9/11, al-Qaeda, and G. W. Bush in the news media; culminates in chaos-complexity theory. List: \$45.  | 35         | B | Get |
| <b>Rattray: Strategic warfare in cyberspace.</b> 2001. MIT Press. Hc. 517 p. Author combines military experience, cybertechnical expertise, and tacit knowledge of complex systems to define strategies for the US government and military to define effective defensive positions against cyberattacks on government, banking, and other institutions. List: \$50.  | 40         | B |     |
| <b>Sprott: Chaos and time series analysis.</b> Oxford Univ Press, 2003. Pb. 507 p. Comprehensive and accessible textbook for beginners and old warhorses alike. List: \$45.  | 40         | B | Get |
| <b>Sulis &amp; Combs: Nonlinear dynamics in human behavior.</b> World Scientific, 1996. Hc. 411p. This edited collection encompasses a wide range of foundational material on nonlinear dynamics in psychology. The publisher is now sold out; SCTPLS hold the last new copies on Earth. List: \$86.   | 50         | A | out |
| <b>Vose: The simple genetic algorithm.</b> MIT Press, 1999. Hc. 251 p. Find out why genetic algorithms are superior to conventional search strategies. List: \$40.   | FREE ITEM* | A |     |
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# Nonlinear Dynamical Bookshelf



## BOOK REVIEW CREDITS – July 2003 issue

The review of Sprott's book was written by Fred Abraham. The review of Steeb's book was written by Robert Gregson. The *Newsletter* apologizes for these omissions.

## HOW THE N.D.B. WORKS

The *Nonlinear Dynamical Bookshelf* section of the *Newsletter* is composed of new book announcements that we receive from our members from time to time. Although we try to keep some relative regularity in the amount of text devoted to each one, the forces of chance and availability often prevail. Sometimes we scarf postings from CHAOPSYC. Sometimes we scarf text from publishers' web sites if we happen to be going there for some reason. Sometimes the material just crawls into our hand.

Book reviews for the Bookshelf are always welcome. Please keep them brief in the neighborhood of 1000 words or less. (Yes, we know, you get excited and you want to say more.) Some of the reviews that appear in the *Newsletter* will also appear (later) in *NDPLS*. Items that are double-printed are chosen for topic, timeliness, and availability of alternative material for the *Newsletter*. So toss a four-sided coin and see what happens.

## NEW BOOK ANNOUNCEMENTS

**Bohner, M., & Peterson, A. (2001). Dynamics equations on time scales. Boston: Birkhaeuser. ISBN 3-7643-4225-0.** It contains a massive bibliography on dynamics, including nonlinear, that are not based on either the Reals or the Integers, so not as differential or difference equations in the more familiar treatments. One needs the ideas of measure chains. Contains examples from the biological sciences that seem to have practical potential.

– R. A. M. Gregson.

**Bunde, A., Kropp, T., Joachim, H., & Schellnhuber, H. J. (2002). NY: Springer-Verlag. ISBN 3-540-41324-3.**

The sections on cardiac activity and, quite separately, panic in crowds, are both very important to psychologists. What is shown is that if you use linear analyses on a nonlinear cardiac process then not only will you be utterly uninformative, but can be clinically very damaging. Just read it and be surprised.

–RAMG.

**Edgar, G. A. (1998). Integral probability and fractal measures. NY: Springer. ISBN 0-387-98205-1.** Draws distinctions between "fractal in the sense of Mandelbrot," "fractal in the sense of Taylor," and discusses "fractal measure" including the usage by Barnsley as a probability measure on a metric space. –RAMG.

**Gilmore, R., & Lefranc, M. (2002). The topology of chaos: Alice in stretch and squeezeland. New York: Wiley. ISBN 0-471-40816-6.** Describes how strange attractors are classified and presents simple algorithms for extracting this information from experimental data. –RAMG.

**Goerner, S. (2001). After the clockwork universe: The emerging science and culture of integral society. Floris Books. ISBN- 0-863152902.** Second book by SCTPLS' 3<sup>rd</sup> president. Earned two 5-star customer reviews on Amazon.

**Gregerson, N. H. (2002). (Eds.). From Complexity to Life: Explaining the Emergence of Life and Meaning. NY: Oxford University Press. ISBN 0-19-515070-8.** "An excellent introduction to the science of complexity. The presentation of the science is serious though not impenetrable and well signposted with crisp definitions. As you would expect when the leading representative of 'intelligent design' (William Dembski) meets the leading representative of 'theistic naturalism' (Arthur Peacocke), the philosophical and theological exchanges are pointed and charged. Still, one has the sense that a new paradigm is taking shape in these ages: the model of nature as complex, open-ended, emergent. When scientists and theologians together dig in their spades in defense of the worldview of emerging complexity, how can it not transform the old warfare between science and religion into a new and revolutionary partnership?" –Phillip Clayton; Publisher's piece.

**CONTENTS.** Introduction 1. Towards an Emergentist Worldview, Paul Davies 2. Defining Complexity 3. Randomness and Mathematical Proof, Gregory J. Chaitin 4. "How to define Complexity in Physics, and Why?", Charles Bennett 5. The Concept of Information in Physics and Biology 6. The Emergence of Autonomous Agents, Stuart Kauffman 7. Complexity and The Arrow of Time, Paul Davies 8. Can Evolutionary Algorithms Generate Specified Complexity?, William A. Dembski 9. The Second Law of Thermodynamics and the Fourth Law of Thermodynamics, Ian Stewart 10. Two Arrows from a Mighty Bow, Werner R. Loewenstein



Philosophical and Religious Perspectives 9. Emergence of Transcendence, Harold Morowitz 10. Complexity, Emergence and Divine Creativity, Arthur Peacocke 11. From Anthropocentric Design to Self-Organized Complexity, Niels Henrik Gregersen.

**Harari, R. (2003). El fetichismo de la torpeza: y otros ensayos psicoanalíticos. Rosario, Santa Fe: Argentina: Homo Sapiens Ediciones.** The latest collection of essays on psychoanalysis from a prolific Society author.

**Hsiao, C, Kimio, M., & Powell, J. L. (2001). Nonlinear statistical modeling: Proceedings of the Thirteenth International Symposium on Economic Theory and Econometrics: Essays in Honor of Tekeshi Amemiya. NY: Cambridge University Press.** This collection includes contributions on parametric, nonparametric, and semi-parametric approaches to qualitative and sample selection models, and nonlinear estimation of cross-sectional and time series models. The advances achieved here can have important bearing on the choice of methods and analytical techniques in applied research. – *Publisher.*

**Jackendoff, R. (2002). Foundations of language: Brain, meaning grammar, evolution. NY: Oxford University Press.** The goal of this study was to reintegrate the theory of generative grammar into cognitive sciences. Generative grammar was correct to focus on the child's acquisition of language as its central problem, leading to the hypothesis of an innate Universal Grammar. However, generative grammar was mistaken to assume that the syntactic component is the sole course of combinatoriality, and that everything else is "interpretive." The proper approach is a parallel architecture in which phonology, syntax, and semantics are autonomous generative systems, linked by interface components. The parallel architecture leads to an integration within linguistics, and to a far better integration with the rest of cognitive neuroscience. It fits naturally into the larger architecture of the mind/brain and permits a properly mentalistic theory of semantics. It leads to a view of linguistic performance in which the rules of grammar are directly involved in processing. Finally, it leads to a natural account of the incremental evolution of the language capacity. – *Author.*

**Kowalik, Z., J. (2002), Biomedizinische Zeitreihen und Nichtlineare Dynamik (Biomedical Time Series and Nonlinear Dynamics), Mnster-Hamburg-London: LIT-Verlag; ISBN 3-8258-6245-3 (In German).** This book is intended for students who want to understand not only "Biomedical Signals" but also problems that follow these: Especially, The nonstationarity of "life-signals". Life *ex definitione* is a process in open systems that have the advantage of shrinking, rather than growing entropy. Something special exists in the "living systems" that changes the rules that govern the physical assemblies. What is it? How should we apply our physical methods to living systems? Are our mathematical theories and methods adequate to these? The book presents some methods that do not assume the stationarity or the ergodicity of investigated responses. The goal is to show that it is still possible to analyze time series

even if some of the assumptions are not fulfilled. The book presents the nonlinear analysis of signals recorded from the human body (ECG;MCG;EEG;MEG etc.). The question, "What is a proper value of correlation dimension or Lyapunov exponent?" is not important. Rather it is important to determine whether these indices are different in pathologic compared to "normal" states. This book gives examples from pathologic brain signals ( arrhythmic ECG/MCG, schizophrenia EEG, tinnitus MEG, etc.) and shows that we are beginning to establish applying methods of physical systems to biological ones. – *Author*

**Lin, Z., & Carley, K. M. (2003). Designing stree resistant organizations. Boston: Kluwer.** Demonstrates how computational organization theory can be applied to advance the field of management with its successful integration of theory and practice. At the theoretical level, the contains a comprehensive computational framework call DYCORP, which simulates dynamic and interactive organizational behaviors by incorporating multiple factors such as organizational design, task environment, and stress and which penetrates consistent and insightful propositions on organizational performance. – *Authors.*

**Locher, M. (2003). Noise-sustained patterns: Fluctuations and nonlinearities. Singapore: World Scientific.** This book investigates the impact of noise upon the emergence and sustenance of patterns. "Patterns" loosely refers to coherent spatial structures, including fronts, as well as temporal patterns. The crucial role of nonlinearities is highlighted and expanded upon in the context of dynamical system frameworks. The author's familiarity with chaos theory, statistical physics and nonlinear science is reflected in the highly interdisciplinary character of the text. Model equations and experiments taken from fluid dynamics, semiconductor devices, biophysics and statistical mechanics complement theoretical concept. – *Publisher.*

**Oyama, S., Griffiths, P. E., & Gray, R. D. (Eds.) (2003). Cycles of contingency: Developmental systems and evolution. Cambridge, MA: MIT Press. ISBN 0-262-65063-0.** The nature/nurture debate is not dead. Dichotomous views of development still underlie many fundamental debates in the biological and social sciences. Developmental systems theory (DST) offers a new conceptual framework with which to resolve such debates. DST views ontogeny as contingent cycles of interaction among a varied set of developmental resources, no one of which controls the process. These factors include DNA, cellular and organismic structure, and social and ecological interactions. DST has excited interest from a wide range of researchers, from molecular biologists to anthropologists, because of its ability to integrate evolutionary theory and other disciplines without falling into traditional oppositions. – *Publisher.*

**Pelligrini, C., Cerrai, P., Freguglia, P. Benci, V., & Israel, G. (Eds.). (2003). New York & Dordrecht: Kluwer Academic Publishers. ISBN: 0-306-47472-7. 414 p.** This volume is the proceedings of a workshop to discuss the recent work on complex systems in physics and

biology, its epistemological and cultural implications, and its effect for the development of these two sciences. The workshop is geared towards physicists, biologists, and science historians.

**CONTENTS.** Preface. **Part I: Physics.** Complexity and emergence of meaning; F.T. Arecchi. A geometric optics experiment to simulate the betatronic motion; A. Bazzani, et al. Some remarks on the arrow of time and the notion of information; V. Benci. How real is the quantum world?; M. Cini. Decoherence and classical behaviour in quantum mechanics; G. Dell'Antonio, et al. Scaling laws: microscopic and macroscopic behavior; R. Esposito. Measure of diffusion entropy of weak turbulence; L. Galeotti, et al. Complexity in physics of an adhesive tape; B. Giorgini, et al. Reflections about the time arrow; A. Lepschy. The big computer. Complexity and computability in physical universe; I. Licata. On the uniqueness or multiplicity of physical theories; C. Pellegrini. An interplay between determinism and one-parameter semigroups; S. Romanelli. From dynamical systems to complex systems; G. Turchetti. **Part II: Biology.** Shape and size in biology and medicine; V. Capasso. Assessment of the quality of waters and the environment; N. Ceccopieri, R. Banchetti. Synchronization of neocortical interneurons; S. Chillemi, et al. The fractal borderland; G. Damiani. Emergent properties and complexity for biological theories; P. Freguglia. Ignoring complex interactions in natural ecosystems; M. Giovannetti. A compression algorithm as a complexity measure on DNA sequences; G. Menconi. Reductionism and history: the biology between Scylla and Charybdis; R. Morchio. A characterization for a set of trinucleotides to be a circular code; G. Pirillo. Deterministic and random components of over time evolution; G. Pulina, et al. Toward creating life in a test tube; M. Rizzotti. Phylogenies and the new evolutionary synthesis; F. Santini. Cell system complexity and biological evolution; M. Sarà. Self-organization and prebiotic environment; S. Traverso. **Part III: History and Philosophy of Science.** James and Freud on physical determinism; P. Casini. Probabilistic aspects in George D. Berkhoff's work; L. Dell'Aglio. The metamorphosis of holism; E. Gagliasso. Early approaches to the management of complexity; A. Millán Gasca. The dignity of the natural sciences; P. Omodeo. Holism: some historical aspects; S. Procacci. Towards a history of complexity; T.M. Toniatti. - *Publisher*

**Press, S. J. (2003). Subjective and objective Bayesian statistics (2<sup>nd</sup> Ed.). NY: Wiley Interscience. ISBN 0-471-34843-0. Multiple modelling is an integral part of the modern Bayesian practice. - RAMG.**

**Raju, C. K. (2003). Eleven pictures of time. Thousand Oaks, CA: Sage. Time is a mystery that has perplexed humankind since time immemorial. Resolving this mystery is of significance not only to philosophers and physicists, but is also a very practical concern. Our perception of time shapes our values and way of life, it also mediates the interaction between science and religion both of which rest fundamentally on assumptions about the nature of time. The book contrasts linear and cyclical views of time and their origins of these concepts. - Publisher.**

**Ritter, F. E., Shadbolt, N. R., Elliman, D., Young, R., Govet, F., & Baxter, G. D. (2003). Techniques for modeling human and organizational behavior in synthetic environments. Ohio: Wright-Patterson Air Force Base. <http://iac.dtic.mil/hsiac/SOARS.htm>. We summarize selected recent developments and promising directions for improving the quality of models of human performance in synthetic environments. The potential uses and goals for behavioral models in synthetic environments are first summarized. We focus on the topics of providing more complete performance, on providing better integration of the models with synthetic environments and with each other (reusability), and improved usability of the models, and important but neglected aspect of their performance. Within this context, we review relevant, current work related to modeling. Examples include: emotion, advanced techniques for testing and building models of behavior, new cognitive architectures including hybrid architectures, and age and Belief, Desires, and Intentions (BDI) architectures. - Authors**

**Skar, J., & Coveney, P. (2003). Self-organization: The quest for the origin of evolution of structure. London, UK: Royal Society & FirstCite. The official proceedings of the Nobel Symposium on self-organization. The symposium was organized around 17 specially invited lecturers, all world leaders in their fields, spanning from physics and cosmology to biochemistry, biology, and physiology, mathematics, and computer science. - Publisher. We tried to arrange copies of this book for the 2003 conference, but the publisher wouldn't respond to our e-mail. - SJG.**

**Slovova, A. (2003). Cellular neural networks, dynamics, and modeling. Boston: Kluwer. ISBN 1-4020-1192-X. 232 p. Contains sections on hysteresis and examples in the biological and neurophysiological sciences. Topics in nonlinearity, delay and control are featured. - RAMG.**

**Zhusubaliyev, Z. T., & Mosekilde, E. (2003). Bifurcations and chaos in piecewise-smooth dynamical systems. Singapore: World Scientific. Technical problems often lead to differential equations with piecewise-smooth right-hand sides. Problems in mechanical engineering, for instance, violate the requirement of smoothness if they involve collisions, finite clearances, or stick-slip phenomena. Systems of this type can display a large variety of complicated bifurcation scenarios that still lack a detailed description. - Publisher.**

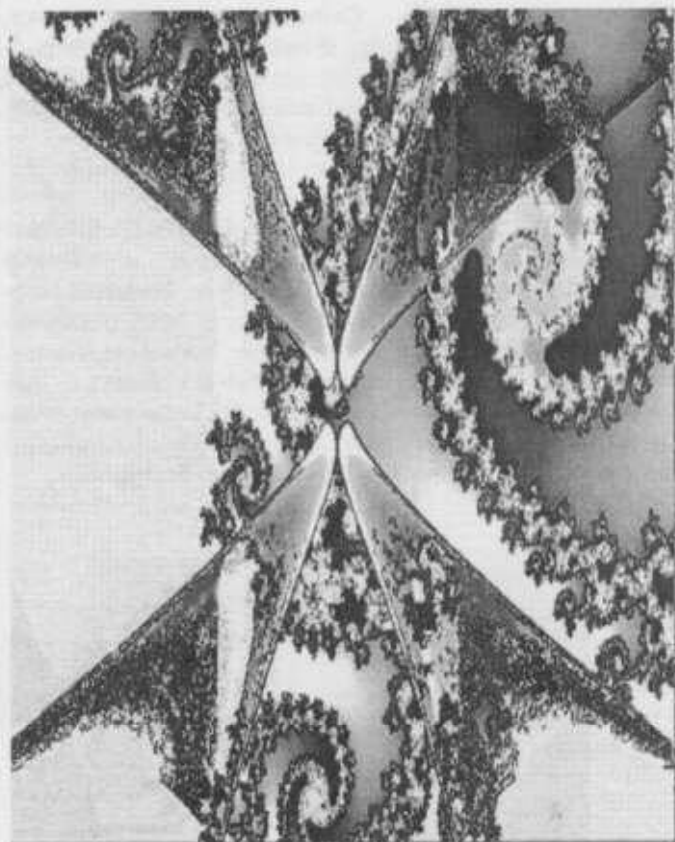


**Meg Spohn**  
**Nominated for President of the Society**  
**Candidacy Statement**

*Each candidate was invited to provide a statement.—Ed.*

First, I want to say thanks. I'm really very honored to be nominated again. If elected, I'd like to continue to expand on the good efforts of the last couple of administrations (the only ones I've had the pleasure to know) in growing the organization and networking with other ones, with special attention toward expanding our international membership and contact base. I think the best way to accomplish this is by getting us more attention as an organization. I think we're large enough, diverse enough, and interesting enough to warrant it in any case, and I'd like to put some future time and energy into asserting our presence as an organization in the larger academic/research/intellectually curious community. I've had some success creating larger-community excitement about other organizations I've served in leadership capacities, and it's both gratifying and fascinating to watch the momentum grow from a few well-placed dollops of publicity into a veritable buzz. I don't have to tell you about the almost magical qualities of the phenomenon of increasing returns: Excitement begets more excitement, membership draws broader membership, attention and curiosity arouse greater attention and curiosity. I think as a group, our interesting work provides a more than adequate substantive basis for all those things. Thanks again for your support.

—Meg



*Fractals this issue by J. C. Sprott!*

**Holly Arrow**  
**Nominated for President of the Society**  
**Candidacy Statement**

*Each candidate was invited to provide a statement. Holly was nominated for a second term.—Ed.*

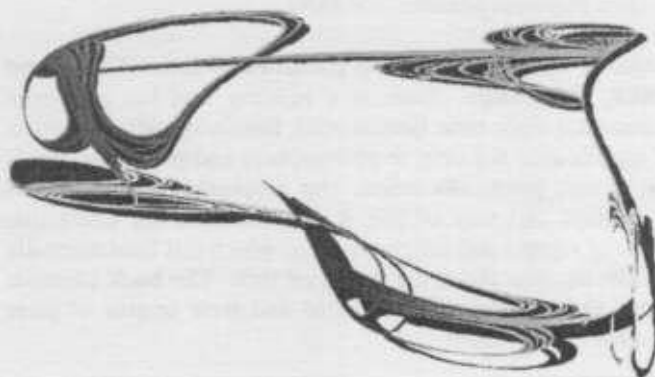
Having officially assumed the presidency on September 1st, I am just beginning my term. Elsewhere in this Newsletter, I describe my first steps in this role. Since Members can peruse my letter to the membership to assess my brief track record as president, I will focus here instead on my aspirations should I become, once again, the president-elect—making me, in an echo of T. H. White's rendering of the Arthurian legend, the once and future president.

My nine months as President-Elect in 2003 were primarily devoted to planning and coordinating the 2003 Annual Conference in Boston. While the conference was a success by many measures (over 100 attendees, many inspiring talks and posters, tremendous diversity of topics, new connections among colleagues), it fell short on other measures (time for discussion, speaker adherence to time limits). We replicated what I see as a common weakness of conferences. Our time was skewed toward listening to others speak, often at greater length than they were supposed to, with limited opportunities to engage in a sustained collective conversation. I think this failing is much more serious for a conference that is so thoroughly interdisciplinary, because the need for (and hence benefits of) follow-up conversation and clarification is much higher.

If I become President-Elect again next year, I will try once again to achieve what I failed to accomplish in Boston. I would like to design a conference in which the majority of people's time and energy is spent sharing and discussing ideas and research, in which formal talks inspire sustained collective discussion, rather than falling into a pattern of serial monologues. This will mean fewer individual talks and a greater emphasis on symposia, poster sessions, and roundtable formats. In short, I would like the dynamics of our annual meeting to be more complex. If elected, I will try some new strategies (many suggested by other members) to accomplish this goal.

That's my President-Elect platform. Like Arthur, I would like to coax us away from the monologue model, in which speakers proclaim from the podium, and toward the more dynamic, complex, and generative model of the round table. I failed once. I would like to try again.

—Holly





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**For President Elect**

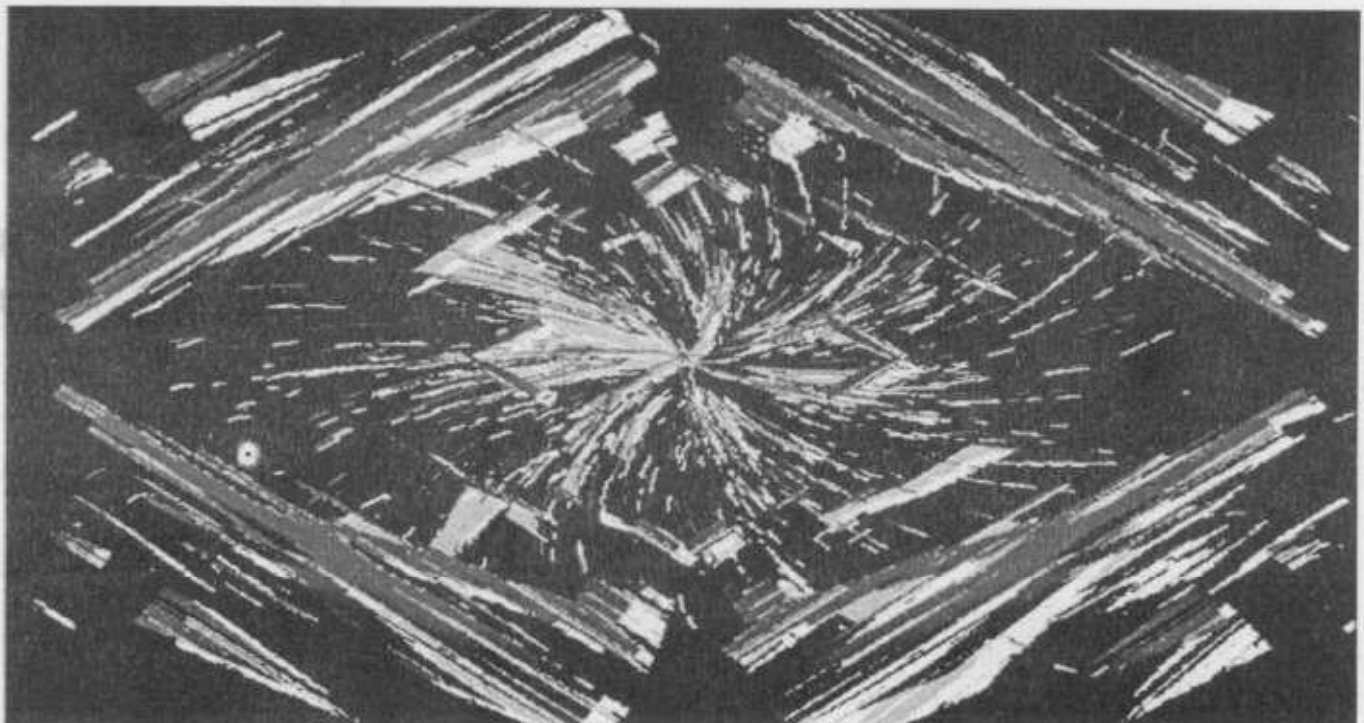
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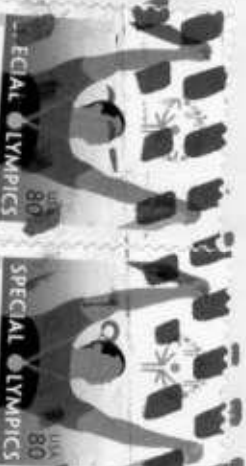
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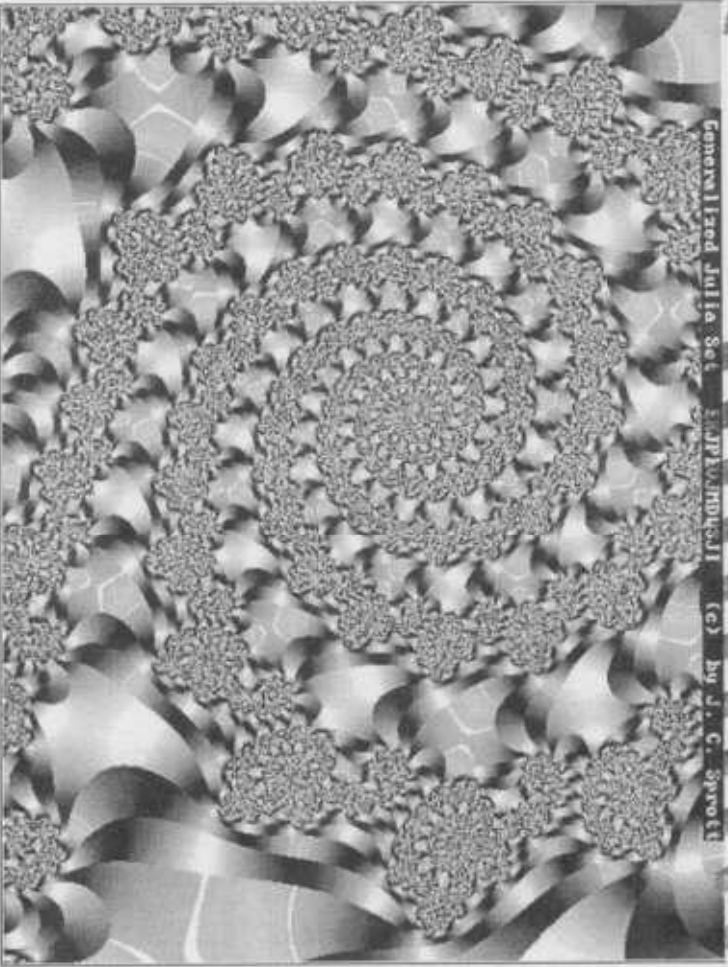
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