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SOCIETY FOR CHAOS THEORY
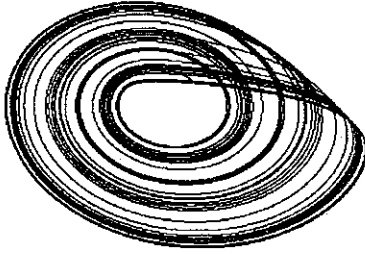
IN PSYCHOLOGY

& LIFE SCIENCES

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Ivelisse Lazzarini Elected SCTPLS President

By overwhelming majority, Ivelisse Lazzarini (Ph D.) has been elected President of SCTPLS Her term will run from 2007 to 2009 Ivy comes to the job with strong credentials, as she played a lead role in the organization of the Second INSC conference last year Serving as President-elect in the period between the election and taking office, she will coordinate the planning and organization of the annual conference that will take place at Chapman University, Orange, CA (July 27-29, 2007) At the business meeting in Orange, she will take over the Presidency of SCTPLS We are excited to have her on board and look forward to working with her.

Says Ivy: "Thanks for casting your vote and for the opportunity to serve as the Society's President-elect I look forward to joining and working with the Executive Committee in the upcoming year I would also like to take this opportunity to encourage all members to step forward and actively participate in helping build stronger committees to better serve our overall goals, including the sustainability of our leadership position, national and international I had your support; now I am asking for your commitment!"

Society committees and their chairpersons are: **Education,** Jayne Fleener fleener@lsu.edu; **Membership,** Sara Ross sara.nora.ross@gmail.com; **Program,** Ivy Lazzarini IvelisseLazzarini@creighton.edu; **Publications,** Stephen Guastello stephen.guastello@marquette.edu

The SCTPLS 17th Annual International Conference

Chapman University, Orange, California, USA
July 27 – 29, 2007

Call for Papers
Abstract submissions due by April 29, 2007

We invite all interested scholars to submit abstracts reporting work involving chaos theory, fractals, nonlinear dynamics, complex systems, and related topics The program will include symposia, panel discussions, a poster session, and sessions of individual papers Advances in basic or applied research, developments in theory, reports of empirical results and methodological papers are all welcome   We continue to encourage contributors to consider alternative presentation formats, such as product demonstrations, short workshops, debates around controversial topics, and roundtable discussions To submit an abstract, please visit http://www.societyforchaostheory.org/conf2007/cfp

SCTPLS Conference = Opportunities!

Special Guest Speakers
- Dr Bill McKelvey, on *Why Power Law Phenomena Serve to Integrate Chaos and Complexity Dynamics*

- Dr Bruce West, on *The Average Person is Truly Exceptional: Where Medicine Went Wrong*

Dynamic Workshops
- *Basic Nonlinear Dynamics* • Introductory Level
Facilitator: Stephen J Guastello, Ph D

- *Social Agents: Analyzing And Simulating Social-System Dynamics* • Advanced Level
Facilitator: Terrill L Frantz, Ph D.

- The Chaos, Inc ™ • Intermediate to Advanced
Facilitators: John and Jo Lee Loveland Link

Publication Opportunity
All presenting conferees are further invited to prepare their papers for review and possible publication in the Society's research journal Nonlinear Dynamics, Psychology, and Life Sciences NDPLS is peer-reviewed and abstracted in *Psycinfo (Psychological Abstracts), Medline (Index Medicus), and JEL/Econlit* NDPLS uses American Psychological Association (APA) style Click JOURNAL on the SCTPLS web site to access Instructions for Authors All SCTPLS members receive NDPLS and the SCTPLS Newsletter as a benefit of membership

Members' Publications

Kevin Dooley

Lichtenstein, B., Carter, N , Dooley, K , and Gartner, W (2007), "Dynamics of organizational emergence: Pace, punctuation, and timing in nascent entrepreneurship," *J of Business Venturing*, 22: 236-261

Abstract: We use theory and methods from complexity science to examine dynamic patterns among activities undertaken by nascent entrepreneurs in the Panel Study of Entrepreneurial Dynamics We develop hypotheses predicting that certain dynamic patterns in start-up activities will lead to the emergence of new firms when: (1) the rate of start-up activities is high, (2) start-up activities are spread out over time, and (3) start-up activities are concentrated later rather than earlier over time All three hypotheses are confirmed The paper concludes with some suggestions for the role of complexity science for furthering insights into the process of organization creation.

Tobi Zausner

When Walls Become Doorways: Creativity and the Transforming Illness, Tobi Zausner, Harmony Books, February 2007, 384p.

In Creativity and the Transforming Illness, long time SCTPLS member and NDPLS cover art illustrator Tobi Zausner, Ph D discusses how great art can emanate from persons, whose physical disorders enhance their creativity and whose illness turns out to be a shaping influence on the artistic process Ms Zausner, herself a cancer survivor, considers the story of how her own life changed course at the height of her illness – she initiated an interdisciplinary doctorate in art and psychology Recognizing the commonness of the phenomenon that life can take a productive turn when circumstances are extreme, the book also considers the cases of several well-known great artists including Leonardo da Vinci, Rembrandt, Frida Kahlo, Michelangelo, Georgia O'Keeffe and Henri Matisse Together, these case studies illustrate how fundamental creativity is to human functioning and resilience
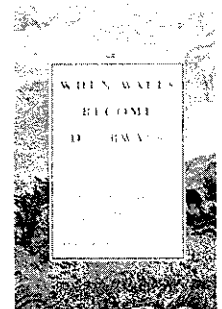
When Too Much is Funny: Chaos and the Path to Humor

Timothy Perper, PhD

Imagine an animated cartoon: Tom sees Jerry lurking mouse-like under a bureau With a wicked grin, Tom sneaks up but Jerry sees his ancient friend and enemy – and runs. Tom chases him and smashes into the bureau, knocking over a vase with flowers It crashes down on Tom's head, and Tom, head inside the vase, slams into a wall, another chair, and a lamp The lamp falls over –

It's a scenario any cartoon-loving kid in the world will recognize – a typical "Tom and Jerry" episode Given that we accept the initial premises, each moment arises with absolute determinism from the preceding moment If you knock over a vase, it can land on your head If your head is stuck inside, you smash into things. Chance plays no role at all But the end result is complete mayhem How did we get there?

In this article, I argue that much comedy and humor depend on an intuitive – but quite accurate - apprehension of chaotic dynamics The argument is strengthened by the fact that I invented the sequence above – it does not come from any Tom and Jerry cartoon I remember. Instead, the sequence was constructed using some quite elementary principles, which nonetheless lead to escalating complexity of higher and higher order and become increasingly funny as time progresses

Ideally, such a sequence begins plausibly A real example now: episodes 23-24 of Shinichiro Kimura's "Little Snow Fairy Sugar," a Japanese-made animated cartoon (2003) Greta, Phil, and their friends - they're about 12 years old - must return a grand piano to the music store where it came from They want to do so secretly, in order not to embarrass several people This premise we must accept, through our willing suspension of disbelief, for otherwise we cannot enter the story at all. They manage to get the piano onto a large flat-bed trolley, the kind that usually runs on tracks, but the piano looks like a grand piano on a trolley Clearly, it needs to be hidden Phil, an inventive young fellow, convinces the others to help him cover the piano with a large cardboard box, with the kids inside steering and pushing it along the streets

In this logic, each step seems quite plausible At the age of 12, they can't rent a truck Nor can they hire a professional piano mover – nothing private in that Their resources are limited, so they have to use cardboard to cover the piano Now, you can't push a huge box around without people becoming suspicious – "You kids steal that?" So the box has to look like something else, something self-moving, because boxes don't usually roll along streets on their own The answer is now obvious: and they start off down the street with the grand piano disguised as a giant robot

Every step is perfectly logical but the ultimate result somehow defies rational expectation *Of course* nothing works out. The trolley gets away from them as they go down a hill, and the robot crashes its head into a trumpet-shaped sign outside a store. Now, with horn-calls to announce itself, the robot rolls up and down hills until the cardboard falls apart, leaving Greta clinging to the piano screaming. Her parents drive by in a little sports car, see their beloved daughter being carried off, and give chase; Saga, whose mother's piano it was, starts chasing her beloved piano on a bicycle; and Saga's friends Sugar and the other Fairies start chasing Saga Saga and Phil catch up to the piano and leap aboard the trolley to help Greta stop, but the trolley's brake handle snaps off, with Greta screaming curses at this miserable piece of garbage trolley Finally the piano, now minus its trolley but with Greta clinging to it for dear life, cannons out over a drawbridge into midair - where Sugar and her Fairy friends catch it and deposit the piano (and Greta) demurely in front of the music store. Success!

The only genuine counterfactual is the Snow Fairies They act as a kind of *deus ex machina* to restore normality and resolve the escalating chaos. There's a curious implication here. The supernatural fairies are not the source of disarray, transgressive or disruptive: instead, something about the plans of *human beings* inevitably cause mayhem Deep philosophical issues are perhaps raised by this conclusion, but let us defer them to look at the sequence itself We can now draw a conclusion familiar to most members of this Society: chaos emerges sequentially when deterministic dynamics exceed certain limits

Mathematically, the conclusion is well known and can be described nowadays with considerable rigor Of course, the episode is not overtly mathematical, but even so we suggest that its structure obeys a latent mathematics of chaos Each individual transition within the episode is predictable and follows normal physical and psychological principles of cause-and-effect Nonetheless, the sequence *in toto* is neither predictable nor regular. Instead, it falls into unstable unpredictability that ultimately requires supernatural intervention to set matters aright. Overall, the outwardly apparent trajectory has an intuitive immediacy that marks it as comedy in the grand manner.

Another example: a piece of urban folklore from my home town of New York City. I heard it in high school from a friend who said he knew the cousin of the kid in the story This kid – he's maybe 16? – climbs up on the El train tracks where they come out on Park Avenue north of 110th Street on Manhattan's east side, clambering up a steel stanchion and over the cyclone

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fence and barbed wire. Pleased with his testosterone-fueled prowess, he decides to urinate on the third rail – ZAKKK – sparks flying, up into the air he goes. He spirals over the barbed wire fence down towards the street. A city bus is coming along, and hits the kid with the windshield – WHAMMO - knocking the kid sideways into the front window of a bar. The kid goes crashing through the bar window, hits the bar, slides along the whole length knocking people's drinks over, reaches the end of the bar, and falls off. The bartender ambles over and looks down at him. "Kid," he says, "you're flagged."

It could end differently – "Kid, you got ID?" – but the principle is the same as Greta, Phil, and their piano. Local events compile themselves not into stability but into escalating disaster where each event feeds the next and makes it worse.

It might seem perverse that we think such things are funny, but laughter can be sometimes considered as an adaptive response to the existence of chaos. Indeed, out-of-control escalation can sometimes be used with sharply satiric and political purposes. An example is Jonathan Swift's 1729 essay *A Modest Proposal For Preventing the Children of Poor People in Ireland from Being a Burden to Their Parents or Country, and for Making Them Beneficial to the Publick*. Swift's attack on the brutality of Irish landlords develops an initial assumption: that the reader, like these landlords, is also *naturally* completely indifferent to the welfare of children and to starvation. The result of Swift's step-by-step logic is one of the greatest satiric essays ever written in English (Anonymous, 2006).

Can we define "chaos" more sharply in these contexts? In colloquial English, "chaos" means disorder, disruption, and the breakdown of familiar, accepted principles of causation and sociality. We speak of the "chaos" of war or crime, and mean the *absence* of rule-obeying principles and norms of behavior. However, in the sciences, "chaos" has come to mean rapid and unstable shifts in outcome of a fully deterministic and rule-obeying process. Even if those rules are not fully known empirically or theoretically, we assume that heart-rate, for example, is rule-obeying at all stages and all levels of detail. One can gloss "rule-obeying" as a synonym for "logical," where we mean that the rules of inferential (Boolean) logic are never violated in physical, biological, and psychological processes. We do not infer from either the irregularity or complexity of heart-rate that the biology of heart function is intrinsically non-logical or unknowable, or that the heart, as a machine, violates the principles of logic or physics. Chaos theoreticians have added other criteria – e.g., sensitive dependence on initial conditions – but the basic idea seems clear: in its scientific usages, the term "chaos" refers to processes that seem to escape from stability and yet are non-stochastic and rule-obeying in all their details. If one accepts this kind of scientific definition – or

class of definitions, if one prefers – then the sorts of humor illustrated above are chaotic.

So there is nothing stochastic in humor. It depends not on chance or bad luck, but on how the protagonists attempt to deal logically and systematically with a system that will run out of control. But a caution is needed: only in human perception and desire is the system out of control. In its own terms, it is acting perfectly logically – it is just that we (participants or audience) do not *want* the system to behave in such ways. Greta does not want the piano to start to roll back downhill; she wants it to reach a stable point of attraction and sit still. But it won't. So part of the humor is human helplessness in the face of the ineluctable logic of instability – which anyone who has seen Charlie Chaplin as a waiter on ice skates will recognize. He teeters, starts to fall, regains his footing, skids, starts to fall again, all the while trying to balance a tray full of dishes and ice cream desserts – and, in the background, a woman with an ample, open dÈcolletage. We simply wait for the inevitable disaster – and when it occurs, it is funny.

Hence, part of the humor is human stubbornness in denying that chaos exists: we don't want chaos to *be*, and we act as if all events had a neat, clean basin of attraction – and they don't. I want to end with a spectacular example from the work of the great Japanese cartoonist Rumiko Takahashi.

It is from her "Revenge of the Protozoans" episode of "The Return of Lum*Urusei Yatsura" and needs a few words of introduction (Takahashi, 1997). Lum is a very pretty teenage alien princess who has come to Earth to live with her boyfriend Ataru's family and go to an Earth high school. She has much in common with a class of Japanese supernatural beings called *oni*, and so does her 6-to-8 year old cousin Ten, who can fly and breathe fire. The story starts plausibly enough with Lum and Ataru's class being assigned to clean out the school's outdoor swimming pool.

The concrete bottom of the empty pool is covered with green algae and slime that must be scraped off by the disgruntled boys. Little Ten floats by, cheerfully offering them some of his "vitamin-fortified" candy, but Ataru rejects Ten's alien food in disgust. Then Ten wants to play, riding their brooms and being a pest. Thoroughly annoyed, the boys finally chase him away. Now also annoyed, Ten blows flames at them.

Lum jumps in to save the day. She turns on the pool's filler system and a huge gusher of water nearly drowns the boys. When Lum pulls a drenched Ten out of the pool, he is crying. "I dropped my candy! I just opened it too!"

Now a tentacle snakes out of the water, followed by an explosion of gigantic protozoa. "Vorticella, Stentor, Euglena, Paramecia!" exclaims one of the girls. "They must have absorbed Ten's candy!" "Chock full of

nutrients," Ten agrees.

The boys run for it. But now the protozoa have a chance for revenge against the clean-up squad and seize mops and brooms to attack the humans. The story ends with the newly activist protozoa manning a barricade against their enemies to defend their swimming pool.

It's hard to locate exactly when this story goes over the top. Once again, the logic is impeccable, although we should note that the logic of the *story* is at issue here, not the logic of scientific or realistic truth. So when we accept the counterfactual, we risk slipping not merely into fantasy, but into an escalation in which protozoan liberation *follows from* the existence of aliens like Lum or Ten. Not even in hardcore science fiction is that a likely result, but we have seen it develop step-by-logical-step. Our intellectual and intuitive commitment to logic then forces us to accept the chaotic outcome. It is not the absurdity of the final outcome that makes us laugh. Nor is the result the reinforcement of logic or a denial of the narrative. Instead, concatenated events have emerged into chaos, and the World-As-We-Know-It has collapsed. And *that* is funny.

A great many questions now arise. Little has been written about chaos and humor or literature in general. Nor can we easily explain why the narrative itself isn't simply an example of schizophrenia or paranoia. After all, laughing at unintentionally electrocuted adolescents or believing in protozoa politics might be taken as an aberration of perceptual common sense, if not a lot worse. Nonetheless, it may sometimes be adaptive to laugh when everything is going to hell in a handbasket – after all, chaos has been around for a while. So as our sanity reassures us that *This is All Wrong*, we laugh and avoid outright psychosis. Ultimately, I do not know why these stories are funny, but they are. And therein resides their humanity.

References

Anonymous (2006) *A Modest Proposal*
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Kimura, Shinichiro (2003) *Little Snow Fairy Sugar*. New
    York: Geneon Entertainment (USA)
Takahashi, Rumiko (1997) *The Return of Lum*Urusei
    Yatsura. Creature Features* San Francisco: Viz
    Communications pp 71-86

■

We are looking forward to seeing you at the 2007 Conference! Register at http://www.societyforchaostheory.org/conf2007

Book Review

By Robert Gregson

This is a valuable collection of essays in the tradition of the mathematical psychology group headed by Luce and co-workers, and continues into their next generation. If it had been published twenty years ago it would have been a rich source of ideas that could have lead to novel work, but it is now almost of historical interest. Why do I say this? A clue is given us on pages 204-205, in a modest footnote:

"Probability theory and stochastic processes, and, especially for psychometricians, linear algebra, remain the model mathematical education for social scientists. However, this state of affairs is changing with increasing influences of many areas of applied and pure mathematics into social and especially cognitive science." So I went to the subject index to see if any of these 'many areas' got even a passing condescending listing; I put in terms that have featured in recent journal articles that I have scanned, and tried

> neural nets
> nonlinear dynamics
> hysteresis
> bifurcations
> chaos
> fractals
> divergence

Only the last one scored a hit, and that turned out to be something the authors had invented, not Jensen-Shannon divergence which has a lot more Google pages to itself. Can we work out what has happened here, as the authors are contentedly untouched by developments that interest readers of this newsletter?

I am not being unfair to this book, all of the topics I suggest above are now covered repeatedly with relevant biological applications in various journals such as Biological Cybernetics, Cognitive Processing, Neural Computation, Fractals, International Journal of Bifurcation and Chaos, and our own relatively less mathematical *NDPLS*

But how do the authors see themselves? They are what might be called neo-Fechnerians (e g : pages 48,61,84), and introduce a key idea they call Regular Minimality, to which they give the status of a fundamental law. This can be violated, apparently easily (page 15), and is tied to another principle called Nonconstant Self-Dissimilarity. As no one had yet tried to see if these ideas can be derived from ideas in nonlinear dynamics, the field is wide open for interesting

research But the collection of ogives and response surfaces of slightly variable form that they generate do bear some resemblance to those derived in nonlinear psychophysics, some of which have appeared in *NDPLS*.

I do have one quarrel with a chapter by Luce and Steingrimsson, which is meticulous but so grounded in one case in audition that I cannot see it has any of the psychophysical generality across sensory modalities that Fechner himself sought If for example one contrasts what they do and ask could it be reconciled with the most recent paper on taste psychophysics (Chandrashekar, Hoon, Ryba, & Zuker, 2006), the answer is almost certainly no

It is less legitimate now to separate sensory psychophysics and scaling from biology than it was in the 20th century, because we know now more about the substrate dynamics than we did It is worrying when psychophysics in the search for axioms seems to degenerate into a glass bead game, I am sure the German authors of this book are aware of that precedent

Reference

Chandrashekar, J., Hoon, M A, Ryba, N. J. P., and Zuker, C S (2006). The receptors and cells for mammalian taste. *Nature,* Vol 444, (16 Nov), 288-294.

Revisions to Articles of Organization approved at the 2006 business meeting

Rationale for changes:
These wording changes implement three motions adopted at the 2006 business meeting. They were:

- The Chair of the Publications Committee shall be a member of the Executive Committee.
- Officers shall serve until their successor is installed.
- In matters for which the Articles of Organization are unclear, Robert's Rules of Order shall be the authority.

Article III. Officers.

5. It shall be the duty of the Society President-Elect to serve as a member of the Executive Committee and the Program Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter. The President-Elect shall automatically ~~become~~ be installed President ~~at the close of the membership year in which the President-Elect was elected,~~as of the next annual business meeting following his or her election, ~~as stipulated in Article VII-3 of the Articles, and will serve on the current Program Committee.~~

6 It shall be the duty of the Society Past-President to serve as a member of the Executive Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter and the Society President-Elect. The President shall ~~automatically become Past-President at the close of the membership year in which that member began the term as President~~become Past President when a successor President is installed, consistent with Article V-3 of these Articles.~~.~~

7 In case of the death, incapacity, or resignation of any of these officers (except the President), the Executive Committee shall elect a ~~successor~~replacement to serve until ~~the close of the membership year~~ a successor is installed after the next scheduled elections.

Article IV. Executive Committee.

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

Article V. Nominations and Elections.

3 All officers ~~and membership of the Executive Committee shall assume office at the beginning of the membership year as defined in Article II-5 above, and will continue to do so~~shall serve until their successors are installed according to the procedures stated in Article III above.

Article XI. Parliamentary Authority.

The rules contained in the current edition of *Robert's Rules of Order Newly Revised* shall govern the Society in all cases to which they are applicable and in which they are not inconsistent with these bylaws and any special rules of order the Society may adopt.

Articles of Organization

Complete version reflecting changes approved at 2006 business meeting

Article I. Name and Purpose.

1. The name of the organization shall be the Society for Chaos Theory in Psychology & Life Sciences It will be referred to as "the Society" in the remainder of these Articles The acronym SCTPLS is an acceptable form for occasional use in Society communications.

2 The Society is organized exclusively for scientific and educational purposes within the meaning of Section 501 (c) (3) of the Internal Revenue Service Code.

3. The Society shall concern itself with the scientific and professional problems in psychology insofar as they pertain to nonlinear dynamical systems theory. The Society's scientific interests and commitments shall include but not be limited to: (a) integration of data and theory across specialty boundaries, (b) the relationship between psychology and other areas of human knowledge, particularly regarding ecological matters and other important human concerns; (c) the historical, systemic, and methodological aspects of psychology as a whole.

4. To promote the above, the Society shall initiate and encourage constructive interaction and integrative efforts, including the development of publications

5. No substantial part of the activities of the Society shall be the carrying on of propaganda or otherwise attempting to influence legislation. The Society shall not participate in or intervene, including the publishing or distribution of statements for any political campaign, on behalf of any candidate for public office.

6. Notwithstanding any other provisions of these Articles, the Society shall not carry on any other activities not permitted to be carried on (a) by an Association exempt from Federal Income Tax under section 501 (c) (3) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue Law), or (b) by an Association, contribution to which are deductible under section 170 (c) (2) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue Law)

Article II. Membership.

1. The Society shall consist of a single class of membership.

2. Members must have an interest in the concerns of the Society as stated in Article 1, Section 2, and meet the minimum standards pursuant to Article 1, Section 2.

3. New Members: Those persons who have requested membership and who meet the above criteria shall be made members upon receipt of the yearly dues The Secretary-Treasurer of the Society shall notify new members of their acceptance.

4. Except when otherwise specified in these Articles, all decisions calling for an action by the membership of the Society shall be by majority voting at the annual Society Business Meeting, or in the absence of a quorum, by mail ballot of the voting members. Voting by proxy shall not be allowed.

5 The membership year begins September 1st, and ends on August 31st of the following calendar year

Article III. Officers.

1 The officers of the organization shall be a Society President, a Society President-Elect, a Society Past President, and a Secretary-Treasurer The functions of Secretary-Treasurer may be divided between two members should the workload evolve to a sufficient quantity

2. The President-Elect shall be chosen by vote of the members of the Society. The Secretary-Treasurer shall be appointed by the Executive Committee

3. It shall be the duty of the President to preside at all the meetings of the Society; to be Chair of the Executive Committee and to exercise supervision over the affairs of the Society with the approval of the Executive Committee; to serve ex-officio as a member of the Nominations and Elections, Program and Publications Committees; and to perform such other duties as are incident to his or her office or as may properly be required of him or her by vote of the Executive Committee (See also Article IV-2).

4. It shall be the duty of the Secretary-Treasurer to issue

calls and notices of meetings; to receive and transmit applications for Society membership; to keep records of the Society; to have custody of all funds and property of the Society; to collect any special dues that may be voted in accordance with Article VII-1 of the Articles; to make disbursements as authorized by the Executive Committee; to serve as Secretary and member of the of Nominations and Elections and Program Committees; and in the name of the Chair of the Nominations and Elections, to issue calls for nominations of officers and members-at-large of the Executive Committee, or to arrange with the Executive Committee for the issuing of such announcements.

5. It shall be the duty of the Society President-Elect to serve as a member of the Executive Committee and the Program Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter. The President-Elect shall automatically be installed President, as of the next annual business meeting following his or her election.

6. It shall be the duty of the Society Past-President to serve as a member of the Executive Committee of the Society and to perform the duties of the Society President in the event of the absence or incapacity of the latter and the Society President-Elect. The President shall become Past President when a successor President is installed, consistent with Article V-3 of these Articles.

7. In case of the death, incapacity, or resignation of any of these officers (except the President), the Executive Committee shall elect a replacement to serve until a successor is installed after the next scheduled elections

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

Article IV. Executive Committee.

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

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

3. All decisions of the Executive Committee shall be made by majority of the committee members present, except that on a mail ballot, the majority of those returning their ballots within 21 days of its mailing shall decide the issue(s)

Article V. Nominations and Elections.

1. Officers of the Society shall be elected by a preferential vote of the members on a secret mail ballot.

2. The Secretary-Treasurer shall issue a call for nominations in the name of the Chair of the Nominations and Elections Committee, for the office of Society President-Elect. The nominations ballot shall have spaces for at least three names for President-Elect

3. All officers shall serve until their successors are installed according to the procedures stated in Article III above.

Article VI. Meetings.

1. The Business Meeting of the Society shall take place during the annual convention and in the same locality for the transaction of business, the presentation of scientific papers, and the discussion of questions of interest to nonlinear dynamical systems in psychology and the life sciences.

2. A quorum shall consist of 10 voting members.

3. The time and place of the annual conference will, as often as feasible, be contiguous with the dates and locations of one of the major psychology conventions in North America.

Article VII. Committees.

1. The committees of the Society shall consist of three standing committees: (a) the Nominations and Elections Committee, (b) a Program Committee, and (c) a Publications Committee. The Executive Committee may

also charter special committees as needed and ratified by Executive Committee vote.

2. The members of the Nominations and Elections and Publications Committees shall serve for terms of three years. The members of the Program Committee shall serve for a term of two years. Appointments shall be made during and take effect at the end of the Annual Convention of the Society.

3. The Nominations and Elections, Program, and Publications Committees shall each consist of three members appointed by the Elections Committee. The Chairs of these Committees shall be designated by the President.

4. It shall be the duty of the Program Committee to make arrangements for the program at the annual meeting of the Society in accordance with Article VI of these Articles. The Program Committee shall consist of two members: (a) Chair designated by the President, and the (2) Past Chair of that committee.

5. It shall be the duty of the Publications Committee to encourage development of journals, books and articles of relevance to the Society and to establish policies for all publications.

6. Committee Chairs shall present oral reports to the Executive on committee activities during the preceding year. In the absence of the Chair, another member of the committee may appear to present the report. In either case, written copies of the report should be submitted to the Society's President and Secretary-Treasurer by the time of the Executive Committee's meeting at the annual conventions of the Society.

Article VIII. Dues and Income.

1. Changes in annual dues and assessments of any special dues shall be recommended by the Executive Committee and shall be voted on at an annual Business Meeting or by mail ballot of the members.

2. No part of the net earning of the Association shall insure to the benefit of, or be distributed to, its members, trustees, officers or other private persons except that the Association shall be authorized and empowered to pay reasonable compensation for services rendered.

Article IX. Amendments.

1. The Society at any annual Business Meeting by a vote of two-thirds of the members present, providing a quorum is present, or by a majority vote of the members of the Society voting by a mail ballot, may adopt such amendments to these bylaws as have been: (a) presented and read at the preceding annual Business Meeting, or (b) mailed to the last known post office address of each member, or published in the official journal of the Society, two months prior to the final vote on the proposed amendments.

Article X. Demise of the Society.

1. Conditions for determining the demise of the Society are subject to the provisions of these Articles concerning actions by members as stated in Article III

2. In the event of the dissolution of the Society, the Board of Trustees shall, after paying or making provisions for the payment of all the liabilities of the Society, dispose of all assets of the Society exclusively for the purposes of the Society in such manner, or to such organization or organizations organized and operated exclusively for educational and scientific purposes as shall at the time qualify as an exempt organization or organizations under section 501 (c) (3) of the Internal Revenue Code of 1986 (or corresponding provision of any future United States Internal Revenue Law), as the Board of Trustees shall determine. Any such assets not so disposed of shall be disposed of by the Court of Common Please of the county in which the principal office of the Society is then located, exclusively for such purposes, or to such organization or organizations, as said court shall determine, which are organized and operated exclusively for such purposes.

Article XI. Parliamentary Authority.

The rules contained in the current edition of *Robert's Rules of Order Newly Revised* shall govern the Society in all cases to which they are applicable and in which they are not inconsistent with these bylaws and any special rules of order the Society may adopt

The Nonlinear Dynamical Bookshelf

Aziz-Alaoui, M. & Bertelle, C. (Eds., 2006). *Emergent properties in natural and artificial dynamical systems.* **New York: Springer.** c 280 pp, ISBN 3-5403-4822-0 Part of the science of complexity is the study of emergent properties The book is the outcome of a discussion strongly edited, at the first European conference on complex systems It presents multidisciplinary approaches to self-organization, synchronization, stability and robustness To me, it looks like an area in which most of us are quite familiar -- *RAMG*

Barnsley, M. F. (2006). *Superfractals, patterns of nature.* **New York: Cambridge University Press.** ISBN 978-0-521-84493-2 453 pp The long-awaited sequel to *Fractals Everywhere* A superbly illustrated book, with many subtle color figures, and a close relation shown between the generating mathematics and the fractal patterns at every section. An extensive use and explanation of Möbius transformations, and attractors and fractal transformations, and biological simulations abound I am pleased to own and recommend this book, it was written on my own campus, that of the Australian National University where Barnsley now researches and teaches It is also a delightful book to give as a present – *RAMG*

Brilliger, D., et al. (Eds. 1984). *Time series of irregularly observed data.* **New York: Springer-Verlag.** ISBN 3-540-96040-6 Time series is an area in which you just have to get at least some notion of the subtle differences that the math exposes before leaping in about cycles and periodicities. May I commend a book going back now a few years – *RAMG*

Chen, K., & Wang, L. (2006). *Trends in neural computation.* **New York: Springer.** ISBN 3-5403-6121-9 From the series: Studies in Computational Intelligence, Volume 35 Reflects recent developments in neural computation including biologically plausible neural modeling, computational cognitive science, artificial neural networks, and applications to real world problems Includes work on pattern classification, and on a hippocampus-neocortex model for chaotic association. --*RAMG*

Gilmore, R., & Latellier, C. (2006). *The symmetry of chaos.* **New York: Oxford University Press.** 560 pp, c 307 illustrations ISBN 0-1953-1065-9 Covers a lot of familiar ground, well illustrated, "chaos is about predictability in even the most unstable systems, and symmetry is a pattern of predictability," The book emphasizes the interplay between chaos and symmetry – *RAMG*

Magnitsk, N. A. & Sidorov, S. V, (2006). *New methods for chaotic dynamics.* Singapore: World Scientific ISBN 9-8125-6817-4 Uses partial differential equations extensively – *RAMG*

Nowak, M. A. (2006). *Evolutionary dynamics: Exploring the equations of life.* **Cambridge, MA: Harvard University Press.** ISBN 0-674-02338-2. The book covers a range of models that can be used to explore evolutionary dynamics, those can be chaotic in various ways It describes fitness landscapes, mutation matrices, genomic sequence space, random drift, quasi-species, replicators the Prisoner's Dilemma, games in finite and infinite populations evolutionary graph theory, games on grids, evolutionary kaleidoscopes, fractals, and spatial chaos There are chapters on HIV and AIDS and cancer, and language evolution The book is this a hybrid of biology and mathematics that brings an amazing diversity of topics under one evolutionary umbrella. Evolution theory is now mathematical and has moved on from its Darwinian verbal foundations, due to a lot of work in the last 20 years that has also influenced some of the thinking that has appeared in NDPLS. Some of the topics and methods will be familiar, such as Lotka-Volterra, or Markov Chains, or cellular automata, and Chomsky type grammars. It is the first time I have seen all this material given one coherent handling with the mathematics clearly expounded – RAMG

Parker, J. A., & Harris, P. (Eds., 2006). *Time and memory.* **Amsterdam: Brill.** ISBN-10: 90 04 15427 2 322 pp The nature of time has haunted humankind through the ages. Some conception of time has always entered into our ideas about mortality and immortality and permanence and change, so that concepts of time are of fundamental importance in the study of religion, philosophy, literature, history, and mythology. On one aspect or another, the study of time cuts across all disciplines. The International Society for the Study of Time has as its goal the interdisciplinary and comparative study of time This volume presents selected essays from the 12th triennial conference of the International Society for the Study of Time at Clare College, Cambridge The essays are clustered around themes that pertain to the constructive and destructive nature of memory in representations and manipulations of time. The volume is divided into three sections Inscribing and Forgetting, Inventing, and Commemoration wherein the authors grapple with the nature of memory as a medium that reflects the passage of time – Publisher
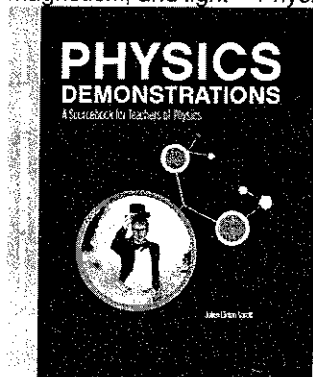
Sprott, J. C. (2006). *The wonders of physics.* **Madison WI: University of Wisconsin Press.** Few techniques are as effective at generating interest in science as dramatic demonstrations This fully illustrated sourcebook with two closed-captioned DVDs describes eighty-five physics demonstrations suitable for performance both in and outside the classroom These demonstrations will fascinate and amaze while teaching the wonders and practical science of physics Dr Sprott shares demonstrations tested by years of teaching in his popular lecture series Science teachers of all levels will find a wealth of detail showing how to present these
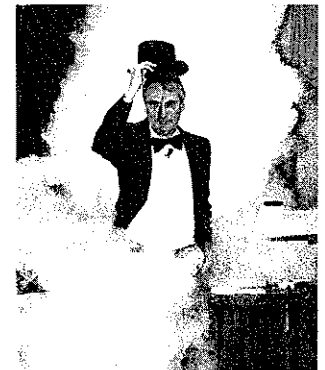
demonstrations to students with flair. Science professionals will find indispensable information for developing educational presentations for the public. Organized to teach the six major areas of classical physics -- motion, heat, sound electricity magnetism, and light -- Physics Demonstrations includes: a brief description of each demonstration materials lists with sources for common materials, preparation procedures, discussions of the physics principles demonstrated, potential safety hazards, and references for further information. Dr. Sprott's demonstrations will appeal to general audiences and students from grade school to graduate school. This book should be on the shelf of every educator who wants to make science come to life in the minds and hearts of students.

Sun, R. (Ed.) (2007). *Cognition and multi-agent interaction: From cognitive modeling to social simulation.* **New York: Cambridge University Press.** ISBN 0521839645. This book explores the intersection between cognitive sciences and social sciences. In particular, it explores the intersection between individual cognitive modeling and modeling of multi-agent interaction (social stimulation). The two contributing fields --individual cognitive modeling (especially cognitive architectures) and modeling of multi-agent interaction (including social simulation and, to some extent, multi-agent systems) -- have seen significant growth in recent years. However, the interaction of these two fields has not been sufficiently developed. We believe that the interaction of the two may be more significant than either alone, leading to better understanding of both individual cognition and sociocultural processes. It is possible that an integrative field of study in cognitive and social sciences is emerging and we are laying the foundation for it. Topics include: modeling with SOAR and ACT-R; social-cognitive behavior of several types; applications to robotics. – *Publisher (mostly)*.

Zausner, T. (2006). *When Walls Become Doorways: Creativity and the Transforming Illness,* **Harmony Books** [See page 2 above, where the book is featured.]

Articles of Interest

Lichtenstein, B., Carter, N., Dooley, K., and Gartner, W. (2007), "Dynamics of organizational emergence: Pace, punctuation, and timing in nascent entrepreneurship," *J. of Business Venturing,* **22: 236-261.** [See p. 2 above, where the article is featured.]

Orsucci, F. & Sala, N. (Eds., 2005). Special issue: Chaos and complexity in arts and architecture. Chaos and Complexity Letters, 1, 243-384. Contents -- J. Kappraff: Complexity and chaos theory in art; R. Taylor: Pollock, Mondrian and nature: Recent scientific investigations; I Yevin: Visual and semantic ambiguity in art; A. Taverna: Does the complexity of space lie in the cosmos or in chaos? M. A. Baez: Crystal and flame: Form and process: The morphology of the amorphous; G. Burkle-Elizondo, R. D. Valdez-Cepeda, & N. Sala: Complexity in the Mesoamerican artistic and architectural works; N. A. Saligaros: New paradigm architecture; F. Sembolini: Self-organized criticality in urban spatial development; X. Marsault: Generation of textures and geometric pseudo-urban models with the aid of IFS; R. S. Lunazzi: Pseudo-urban automatic pattern generation; V. E. Bonderenko & I. Yevin: Tonal structure of music and controlling chaos in the brain; D. L. MacPherson: Collecting patterns that work for everything.

Sardanyes, J., & Sole, R. V. (2006). Ghosts in the origins of life. *International Journal of Bifurcation and Chaos,* **16, 2761-2765.** A ghost is a region in phase space by which the flow is attracted although no fixed points are present. Ghosts are also called "delayed transitions" by some writers. The authors describe the so-called bottleneck or ghost that can appear after a saddle-node bifurcation; such ghosts actually cause a delay in the flow. Possible biological meanings for such a dynamical phenomenon are outlined. The important idea is that in the period of the earth's history when we had pre-biological molecules with some very necessary capacity for self-replication and persistence this would have been advantageous in the evolution from complex molecules to primitive organisms. There is now a large literature on the origins of life and primitive biochemistry, a whole and very technical symposium of the subject recently appeared in *Proceedings of the Royal Society of London Series B*. It is interesting that chaotic dynamics may play a key role in this topic. – *RAMG*
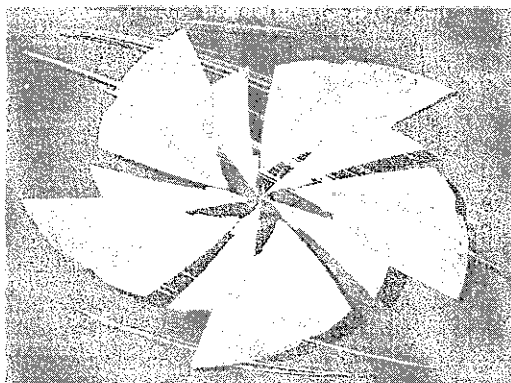
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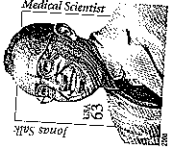
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