



INSIDE SFI:

ON AND OFF THE COWAN CAMPUS

<http://www.santafe.edu/events/update/insidesfi.php>

Newman in *Atlantic Monthly*

In "Mapping Innovation," an article in the January/February issue of the *Atlantic Monthly*, P.J. O'Rourke examines the science of predicting innovation using Worldmapper software developed by the University of Sheffield and **Mark Newman** (SFI Faculty Member and Associate Professor, University of Michigan). Worldmapper turns "all sorts of obscure statistical information into vivid pictures," and is based in part on a 2004 paper by Newman and **Michael Gastner** (SFI Postdoctoral Fellow) entitled "Diffusion-Based Method for Producing Density Equalizing Maps." For more information, please visit the Worldmapper website.

Link to article (requires log in): <http://www.theatlantic.com/doc/prem/200701/orourke-innovation>

Link to Worldmapper: <http://www.sasi.group.shef.ac.uk/worldmapper/>

West to lecture at ASU

Geoffrey B. West (SFI President and Distinguished Professor) will give an invited Public Lecture at Arizona State University, co-sponsored by the School of Life Sciences, School of Human Evolution and Social Change, Center for Social Dynamics and Complexity, on January 23 entitled, "Universal Scaling Laws in Biology from Genomes to Ecosystems: Towards a Quantitative Theory of Biological Structure and Organization."

Summer Internship/Mentorship Student Headed to Harvard

Veronica Cordova (Santa Fe High School student) who participated in the Santa Fe Institute Summer Internship/Mentorship (SIM) Program in 2005 has been accepted (early admission) to Harvard and has received a full scholarship.

SFI Ideas Prominent in *HBR*'s "Breakthrough Ideas for 2007"

It is remarkable that two out of twenty of *Harvard Business Review*'s "Breakthrough Ideas for 2007" come from a small theoretical research institute. **Geoffrey West** (SFI President and Distinguished Professor) and **Duncan J. Watts** (SFI former Postdoctoral Fellow and Faculty and Associate Professor, Columbia University) were featured in the *Harvard Business Review*, published February 1.

West's feature, entitled "Innovation and Growth: Size Matters," details recent work on the application of well-known scaling phenomena to cities and social organizations, particularly the ramifications of the "superlinear" scaling phenomenon: "...by almost any measure, the larger a city's population, the greater the innovation and wealth creation per person."

Watts' ideas counter the popularly embraced "two-step flow of communication." In "The Accidental Influentials," Watts and colleague

Peter Dodds contend that "influentials have far less impact on social epidemics than is generally supposed. In fact, they don't seem to be required at all." The full list may be read online if you are an *HBR* subscriber. Business Network members will receive a reprint of the full article in the February mailing.

February Public Lecture

Felice Frankel (Senior Research Fellow, Faculty of Arts and Sciences, Harvard University) will present a Public Lecture on **Wednesday, February 7 at 7:30 p.m.**, at the James A. Little Theater. The title of the lecture is "More than Pretty Pictures: The Power of Images in Science." For more information and a 2007 schedule of lectures, please see <http://www.santafe.edu/events/talks-public-lectures.php>

BUSINESS NETWORK NEWS

<http://www.santafe.edu/events/update/businessnetwork.php>

Origins of Wealth Featured in *Financial Times*

Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics, by **Eric Beinhocker** (former SFI Business Network Fellow), was recently featured in the January 17 issue of *Financial Times*. In an article entitled "Evolution Can Provide a Missing Link to the Modern Economy," Martin Wolf referred to *Origins* as a "brilliant, thought-provoking and wide-ranging book." The full article can be found at <http://harvardbusinessonline.hbsp.harvard.edu/hbrsa/en/issue/0702/article/R0702A.jhtml;jsessionid=GBZUWQW5QKGIIAKRGWCB5VQBKE0YOISW?type=F>. Business Network members will receive a copy of the article in the February mailing.

New Business Network Members

The Business Network is pleased to announce its newest members, **HH Capital Partners LLC** and **Sleep, Zakaria and Company, Ltd.** **William Herrmann**, HH Capital's primary representative for the Business Network, is based in Santa Fe, NM. **Nicholas Sleep** and **Qais Zakaria**, both formerly of Marathon Asset Management, are based in London.

2007 Topical Meeting Schedule

February 20 – Collective Intelligence in Synthetic Environments, co-hosted by Cisco and MediaX at Stanford University, Santa Clara Techmart, San Jose, CA

March 16 – Diverse Teams, Wise Crowds, and Informed Experts with **Scott Page** and **Michael Mauboussin**, co-hosted by UBS, Chicago, IL

April 16-20 – Agent-Based Modeling and Simulation Course, Argonne National Laboratory, Woodridge, IL

TBD (July or August) – Flows on Distributed Networks with **David Krakauer**, co-hosted by Boeing, Seattle, WA

September 6-7 – Conflict, Robustness and Creativity with **Jessica Flack**, co-hosted with CNO-SSG in Washington, DC

September 26 – Adaptive and Resilient Computer Security Workshop (ARCS) 2007, Sixth Annual Workshop, co-sponsored by BT at Imperial College, London

November 2-3 – Annual Business Network and Board of Trustees' Symposium, at Bishop's Lodge, Santa Fe, NM

Synthetic Environments and the Enterprise—February 20, San Jose, CA

The first Topical Meeting of 2007, "Synthetic Environments and the Enterprise" will be held at the Santa Clara Techmart, February 20. We are late advertising but are confident this will be a great meeting and hope you can adjust your schedule to make this a priority. As this is something that most businesses will need to understand—probably sooner rather than later—we hope you will join our discussion on this provocative topic:

There's a lot going on right now in a place that doesn't really exist. Millions of people are spending part of every day engaged with others in intense collaboration, competition, and exploration in virtual online worlds. Some are playing massive multiplayer online games like World of Warcraft™ and others are meeting people via their computer-generated avatars in a virtual reality amusement park known as Second Life™. Entertainment applications are driving technology—as always for cutting edge media—but serious people are asking more and more thoughtful questions about how these new ways of connecting people and problems can be harnessed for real-world challenges. This meeting is a chance to see what business can learn from the rich tapestry of human behavior now playing out in synthetic environments. We will look at initial corporate efforts to meet customers in these worlds and attempts to address the challenge of managing collaborations across large scales of time and geography. We will explore how old models of leadership hold up in these brave new worlds and which of the successful game design principles can be integrated into enterprise workflow today. Invited participants will have a chance to place their own bets on the pace of innovation in enterprise application of game-like technology. Come play.

For more information, please see http://www.santafe.edu/events/workshops/index.php/Synthetic_Environments_and_the_Enterprise

Diverse Teams, Wise Crowds, and Informed Experts—March 16, Chicago, IL

Scott Page (SFI External Faculty and Professor, University of Michigan) and **Michael Mauboussin** (SFI Trustee, Business Network Member, and Chief Investment Strategist Legg Mason Capital Management) will co-host a Topical Meeting with UBS on Friday, March 16 in Chicago (location TBA).

Again, "diversity" is a topic that receives a lot of attention, but the implications for business are not clear. By continually stretching the boundaries of science, SFI research continues to touch upon the topics of most interest to businesses.

Over the past fifty years, the business world has become increasingly complex. Businesses can no longer consider their markets and competitive environments as stable backgrounds against which they

can deduce optimal actions. The economic landscape doesn't just change—it adapts. It's a complex system. Making long range and even medium range predictions in such an environment presents a challenge. Some firms rely on experts to guide their actions. Others put together teams of diverse thinkers. Still others have adopted internal prediction markets to help discern the future. Can any of these work? When does one work better than the others? Are there other, hybrid solutions?

For more information, please see http://www.santafe.edu/events/workshops/index.php/Diverse_Teams%2C_Wise_Crowds%2C_and_Informed_Experts

Agent-Based Modeling and Simulation Course, Argonne National Laboratory, April 16-20, Woodridge, IL

Back by popular demand, the sixth annual ABMS Course, Capturing Business Complexity with Agent-Based Modeling and Simulation: Useful, Usable, and Used Techniques, will be held at Argonne National Laboratory from April 16-20, 2007, in Woodridge, IL. This course is an intensive introduction to agent-based modeling and simulation (ABMS) with a focus on business applications. The first half of the course will focus on ABMS concepts from the perspective of company managers and analysts. The second half of the course will focus on ABMS implementation from the perspective of company software developers and will include extensive hands-on exercises. Participants are invited to attend the first session, the second session, or both, depending on their interests. For more information, please see <http://www.dis.anl.gov/abms/abms.html>

ARCS 2007 Call For Papers

The Adaptive and Resilient Computer Security Workshop (ARCS) 2007 will be held at the Imperial War College, London, on September 27. This is the sixth meeting of a workshop designed to bring together senior industrial researchers, policy makers, and leading academics in the area of adaptive approaches to computer security. The format of the meeting is one day of presentations and discussions. We are seeking high quality presentations that can educate as well as stimulate discussion. In order to attend, please submit a four-page paper to the Program Chair. The topic areas of relevance are broadly in adaptive and biologically inspired approaches to all aspects of computer security. For more information, please see http://www.santafe.edu/events/workshops/index.php/ARCS_2007_%28Adaptive_and_Resilient_Computer_Security%29_Workshop

Business Network Fellowship—Applications due Before March 31

The Business Network is pleased to announce that two Fellowships will be available in 2007. The Fellowships are open to individuals from member companies of the Santa Fe Institute Business Network. The position provides an individual with up to four weeks of residency at SFI over a two-year period to pursue research congruent to the research of the Institute.

The application period for the 2007 Fellowship runs from January 1–March 31, 2007. Applicants must submit a statement of purpose not to exceed four pages. The statement of purpose must include proposed research to be carried out at the Institute, an outline of the

technical and scientific benefits of the work, and how it relates to existing SFI research themes. SFI Faculty are responsible for evaluating all Fellowship applications. Application criteria and additional information are available online, please see <http://www.santafe.edu/network/fellowship.php>.

Complex Systems Summer School 2007—Deadline February 16

The deadline for requests for Business Network representatives to take part in SFI's signature Complex Systems Summer School (CSSS) has been extended to Friday, February 16. The CSSS will be held June 3-29, 2007 at St. John's College in Santa Fe. Please submit requests via email to **Kay Frew** (kftre@santafe.edu). Each interested company will be allowed at least one seat and additional seats will be allocated in early February. There is no tuition fee to take part in CSSS, but Business Network participants are responsible for their own housing, both on- and off-campus.

Held each summer since 1988, CSSS provides an intensive four-week introduction to complex behavior in mathematical, physical, living, and social systems through an intensive series of lectures, laboratories, and discussion sessions focusing on foundational ideas, tools, and current topics in complex systems research. These topics include nonlinear dynamics and pattern formation, scaling theory, information theory and computation theory, adaptation and evolution, network structure and dynamics, adaptive computation techniques, computer modeling tools, and specific applications of these core topics to various disciplines. Additional information as well as information from previous summer schools is available online, please see <http://www.santafe.edu/education/indexCSSS.php>

February Business Network Mailing

The February Business Network mailing will include recent articles from the *Harvard Business Review* and the *Financial Times* (see above), summary articles from the ARCS 2006 and 2006 Annual Business Network meetings, the 2007 Public Lecture Series Calendar, and the next installment of SFI Working Papers. Business Network Members will also receive *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*, by **Scott Page** (SFI External Faculty and Professor, University of Michigan).

Business Network Staffing and Community Update—Welcome to Atty Mullins

We are pleased to announce that **Atty Mullins** will be assisting with Business Network content delivery and online community issues. Due to technical difficulties we had to postpone the launch of the Community Platform but are working fast and furiously to have a replacement operational by March. If you have questions please contact Atty at atm@santafe.edu.

Please note that Peg Shearer is no longer employed at the Santa Fe Institute. Please direct any inquiries to Kay Frew or Shannon Larsen.

PUBLICATIONS

<http://www.santafe.edu/events/update/publications.php>

Working Papers

<http://www.santafe.edu/research/publications/working-papers.php>

07-01-004

Power

Samuel Bowles and Herbert Gintis

07-01-003

Social Preferences and Public Economics: Are Good Laws a Substitute for Good Citizens?

Samuel Bowles

07-01-002

Procedural Rationality and Equilibrium Trust

Robert Rowthorn and Rajiv Sethi

07-01-001

Language as Shaped by the Brain

Morten H. Christiansen and Nick Chater

06-12-056

Quasiclassical Coarse Graining and Thermodynamic Entropy

Murray Gell-Mann and James B. Hartle

Refereed Literature

<http://www.santafe.edu/events/update/publications.php>

Achlioptas, D., and C. Moore. "Random k-SAT: Two Moments Suffice to Cross a Sharp Threshold." *SIAM Journal on Computing* 36(3) (2006): 740-762.

Brown, J. H., and R. M. Sibly. "Life-History Evolution under a Production Constraint." *Proceedings of The National Academy of Sciences USA* 103(47) (2006): 17595-17599.

Codoner, F. M., J. A. Daros, R. V. Sole, and S. F. Elena. "The Fit-test versus the Flattest: Experimental Confirmation of the Quasispecies Effect with Subviral Pathogens." *PLOS Pathogens* 2(12) (2006): 1187-1193.

Ehrentreich, N. "Technical Trading in the Santa Fe Institute Artificial Stock Market Revisited." *Journal of Economic Behavior & Organization* 61(4) (2006): 599-616.

Fuentes, M. A., and H. S. Wio. "Stochastic Resonance: Influence of a f(-kappa) Noise Spectrum." *European Physical Journal B* 52(2) (2006): 249-253.

Hruschka, D. J. "Evolution and Culture: A Fyssen Foundation Symposium, by S.C. Levinson, P. Jaisson." *American Journal of Human Biology* 19(1) (2007): 148-149.

Mitchell, M. "Complex Systems: Network Thinking." *Artificial Intelligence* 170(18) (2006): 1194-1212.

Sardanyes, J., and R. V. Sole. "Bifurcations and Phase Transitions in Spatially Extended Two-Member Hypercycles." *Journal of Theoretical Biology* 243(4) (2006): 468-482.

Tsallis, C. "Is the Entropy S_q Extensive or Nonextensive?" *Astrophysics and Space Science* 305(3) (2006): 261-271.

Wilkins, J. F. "Unraveling Male and Female Histories from Human Genetic Data." *Current Opinion in Genetics & Development* 16(6) (2006): 611-617.

Library Acquisitions

For a list of recent purchases by the SFI Library, please see <http://www.santafe.edu/events/update/library.php>

CALENDAR OF EVENTS

<http://www.santafe.edu/events/calendar.php>

February 7, 2007

Public Lecture — “More Than Pretty Pictures: The Power of Images in Science,” **Felice Frankel** (Harvard University, Envisioning Science Program) organized by **Ginger Richardson** (SFI). Held at 7:30 pm at the James A. Little Theater, New Mexico School for the Deaf.

February 12-13, 2007

Working Group — “Ecosystem Models,” organized by **Carlos Castillo-Chavez** (Arizona State University). Held at the Santa Fe Institute.

February 15-18, 2007

Working Group — “The Inheritance of Inequality in Pre-modern Societies,” organized by **Sam Bowles** (SFI). Held at the Santa Fe Institute.

March 1-3, 2007

Working Group — “The Continued Study of Language Acquisition and Evolution,” organized by **John Holland** (SFI & University of Michigan, Ann Arbor). Held at the Santa Fe Institute.

March 1-4, 2007

Workshop — “Deception: Methods, Motives, Contexts & Consequences,” organized by **Brooke Harrington** (Brown University). Held at the Santa Fe Institute.

March 14, 2007

Public Lecture — “The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies,” **Scott E. Page** (SFI & University of Michigan - Complex Systems, Political Science & Economics) organized by **Ginger Richardson** (SFI). Held at 7:30 pm at the James A. Little Theater, New Mexico School for the Deaf.

April 18, 2007

Public Lecture — “Inevitable Life?” **D. Eric Smith** (SFI - Frontiers in Integrative Biological Research Program) organized by **Ginger Richardson** (SFI). Held at 7:30 pm at the James A. Little Theater, New Mexico School for the Deaf.

FEBRUARY VISITORS AND ARRIVALS

<http://www.santafe.edu/events/monthlyvisitors.php>

John Mark Agosta (2/12-16), Intel. Purpose of visit: Business Network. SFI host: Shannon Larsen.

Ganesh Bagler (2/15-3/15), Mathematical Modeling and Computational Biology Group, Centre for Cellular and Molecular Biology. Purpose of visit: International Fellow. SFI host: Shannon Larsen.

Felice Frankel (2/5-10), Arts and Sciences, Harvard University. Purpose of visit: Education. SFI host: Ginger Richardson.

Willemien Kets (2/3-7), Econometrics and Operations Research, Tilburg University. Purpose of visit: Research Collaboration. SFI host: Sam Bowles.

Eric Klopfer (2/28-4/11), Education, Massachusetts Institute of Technology. Purpose of visit: Education. SFI host: Ginger Richardson.

Dmitry Leschiner (2/1-6), Applied Research, Yahoo!, Inc. Purpose of visit: Research Collaboration. SFI host: Murray Gell-Mann.

Heather Leslie (2/6-9), Ecology and Evolutionary Biology, Princeton University. Purpose of visit: Graduate Studies. SFI host: Erica Jen.

Fabrizio Lillo (2/3-18), Dipartimento di Fisica e Tecnologie Relativistiche, University of Palermo. Purpose of visit: External Faculty. SFI host: Chris Wood.

Bob Moomey (2/26-28), Communications Training and Consulting, Bob Moomey. Purpose of visit: Development. SFI host: Shannon Larsen.

Franco Moretti (2/21-25), English, Stanford University. Purpose of visit: Colloquium. SFI host: David Krakauer.

Suresh Naidu (2/12-18), Department of Economics, University of California/Berkeley. Purpose of visit: Graduate Studies. SFI host: Sam Bowles.

Susanne Neckermann (2/7-3/23), Institute for Empirical Research in Economics, University of Zurich. Purpose of visit: Research Collaboration. SFI host: Charles Efferson.

Martin Nowak (2/13-24), Purpose of visit: Research Collaboration. SFI host: Chris Wood.

John Padgett (2/11-17), Dept. of Political Science, University of Chicago. Purpose of visit: Colloquium. SFI host: David Krakauer.

Ilia Peiros (2/1-4/30), Evolution of Human Language, Santa Fe Institute. Purpose of visit: Research Collaboration. SFI host: Chris Wood.

Arthur Robson (2/22-28), Department of Economics, Simon Fraser University. Purpose of visit: Research Collaboration. SFI host: Sam Bowles.

Henri Waelbroeck (2/5-9), Research, Pipeline Financial, Inc. Purpose of visit: Research Collaboration. SFI host: Doayne Farmer.

Andreas Wagner (2/10-3/5), Dept. of Biochemistry, University of Zurich. Purpose of visit: Research Collaboration. SFI host: Chris Wood.

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