

UPDATE



August 2006

SANTA FE INSTITUTE

INSIDE SFI: ON AND OFF THE COWAN CAMPUS

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

BOWLES, DURLAUF, AND HOFF PUBLISH *POVERTY TRAPS*

Poverty Traps, just published by Princeton University Press, is the result of a workshop at the Santa Fe Institute funded by a grant from the Russell Sage Foundation to study "persistent inequality." The appearance of *Poverty Traps* reflects an increasing interest among social scientists and policy makers in the processes contributing to inequality among people, nations, and ethnic groups. The volume is edited by **Samuel Bowles**, Research Professor and Head of the Behavioral Sciences Program at SFI and **Steven Durlauf**, former Head of the SFI Economics Program and External Faculty member, and **Karla Hoff**, Senior Research Economist at the World Bank. The essays by Bowles, Durlauf, Hoff, and five other leading contributors to this field seek to understand why seemingly small differences in talents, resources, and luck often lead to large and persistent differences in economic fortunes and well-being, and how, in light of these divergent processes, more equitable outcomes might be achieved. **Kaushik Basu** of Cornell University commented: "This topic will dominate the research agenda in economics in the coming years and *Poverty Traps* is one of the best introductions to the subject."

SFI TRUSTEE FEATURED

SFI Trustee and eBay Founder Pierre Omidyar was featured in the July 3/10 issue of *Newsweek's* "The Giving Back Awards: 15 People Who Make America Great." Omidyar was highlighted at #2. The family foundation was converted by Pierre and his wife in 2004 to the Omidyar Network, "a philanthropic

venture-capital fund that, unlike traditional charities, can invest in profit-making businesses as well as non-profits." *Newsweek* writes that this "philosophy has put Omidyar on the cutting edge of foundation work and created an eclectic portfolio of good works." The full article may be viewed at: <http://www.msnbc.msn.com/id/13530551/site/newsweek/?page=2>

WEST FEATURED IN *NEW MEXICO MAGAZINE*

Geoffrey West, SFI President and Distinguished Professor, is pictured and quoted in the Profiles section of *New Mexico Magazine* (August, 2006) <http://www.nmmagazine.com/FEATURES/current.html>

RAINFALL AND MAGNETISM

SFI Postdoctoral Fellow **Ole Peters** and UCLA climatologist **J. David Neelin** have published their findings in the June, 2006, issue of *Nature Physics* as well as on the NSF website http://www.nsf.gov/news/news_summ.jsp?cntn_id=107070&org=NSF&from=news

See also UCLA Press Release <http://newsroom.ucla.edu/page.asp?RelNum=7142>

AXTELL AND EPSTEIN IN *THE ECONOMIST*

"The Cambrian Age of Economics" in the July 20, 2006 issue of *The Economist* mentions SFI External Faculty **Rob Axtell** and **Joshua Epstein** (the Brookings Institution).

For more information, please see http://www.economist.com/finance/displaystory.cfm?story_id=7189617

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ULAM LECTURES SEPTEMBER 12, 13, & 14

Nina Fedoroff (Evan Pugh Professor of Biology, Willaman Professor of Life Sciences, Pennsylvania State University and SFI External Professor) has recently been in residence at SFI pursuing her research. She will be giving the Ulam lectures this year, a continuing lecture series dedicated to the memory of the great mathematician Stanislaw Ulam of the now legendary Polish School of Mathematics. Upon his passing in 1984, Françoise, his wife, donated his entire book collection to the SFI Library. Françoise lives in Santa Fe and usually attends the lectures. They will be held on September 12, 13, and 14, at the James A. Little Theater beginning at 7:30 pm Tuesday, September 12, 2006.

Tuesday, September 12, 2006

Lecture I: How Plants See, Feel, and Smell: The Perceptual Apparatus of the Plant Kingdom

Plants sense light, touch, gravity, humidity and the myriad chemicals they encounter in the air and soil. The first lecture describes how plants perceive these signals and respond by moving and changing the way they grow, progressing from the whole plant down to its cells and molecules.

Wednesday, September 13, 2006

Lecture II: The Jumping Genome: Changing Ideas about Heredity and Evolution

Genetics traces its origins to monk Gregor Mendel's experiments on common pea plants. The 20th century witnessed the explosive growth of genetics from the naming of genes to the identification of DNA as the stuff of heredity by Nobel Laureates Watson and Crick to the sequencing of whole genomes. The second lecture explores the revolutions in ideas of genes and chromosomes from beads on a string to the jumping corn genes of Nobel Laureate Barbara McClintock to contemporary ideas of a dynamic genome.

Thursday, September 14, 2006

Lecture III: Genetically Modified Foods: Monsters or Miracles?

We're bombarded with conflicting claims about genetically modified (GM) foods. Some claim that they will provide the food to sustain humanity on an increasingly crowded planet. Others claim they're toxic to people and the environment. What are we to believe?

The third lecture examines the history of food plants, describes the differences between previous and present methods of modifying them, and addresses common food safety and biodiversity concerns about GM crops and foods.

BUSINESS NETWORK NEWS

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

CISCO SYSTEMS CO-HOSTS TOPICAL MEETING

CISCO Systems and SFI co-hosted a Business Network Topical Meeting entitled "Adaptive Computation and Evolvable Software" in San Jose, California, on July 18. The meeting featured talks by **David Ackley** (University of New Mexico), **Stephanie Forrest** (UNM and SFI), **Chen Ding** (University of Rochester), **Graham Spencer** (JotSpot and SFI), **John Koza** (Stanford University), and **Richard Gabriel** (Sun Microsystems). About 40 Business Network members from the area attended the meeting.

NOTES FROM THE INTERNATIONAL PROGRAM

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

COMPLEX SYSTEMS SUMMER SCHOOL (CSSS) IN BEIJING

For the second year the Complex Systems Summer School (CSSS) was held in July at the Institute of Theoretical Physics in Beijing. Fifty-five Chinese and international students attended the four-week intensive introduction to complex behavior in mathematical, physical, living, and social systems. Co-directors of the program were Dr. **David P. Feldman** (College of the Atlantic and SFI) and Dr. **Chen Xiao-song** (Institute for Theoretical Physics, Chinese Academy of Sciences).

PUBLICATIONS

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

WORKING PAPERS

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

06-07-026

Stochastic Independence of Crosstalk Variables in the Hopfield Model

Nihat Ay and Gerald Struck

06-07-025

Minimal Model of Self-Replicating Nanocells: A Physically Embodied Information-Free Scenario

Harold Fellersmann and Ricard V. Solé

06-07-024

Synthetic Turing Protocells: Vesicle Self-Reproduction through Symmetry-Breaking Instabilities

Javier Macia and Ricard V. Solé

06-07-023

The Dynamics of Statistical Discrimination

Lawrence E. Blume

REFEREED LITERATURE

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

Baldovin, F., L. G. Moyano, and C. Tsallis.

"Boltzmann-Gibbs Thermal Equilibrium Distribution for Classical Systems and Newton Law: A Computational Discussion." *European Physical Journal B* 52(1) (2006): 113-117

Crutchfield, J. P., and O. Gornerup. "Objects that Make Objects: The Population Dynamics of Structural Complexity." *Journal of the Royal Society Interface* 3(7) (2006): 345-349.

Ehrenfreund, P., S. Rasmussen, J. Cleaves, and L. H. Chen. "Experimentally Tracing the Key Steps in the Origin of Life: The Aromatic World." *Astrobiology* 6(3) (2006): 490-520.

Jost, J. "Temporal Correlation Based Learning in Neuron Models." *Theory in Biosciences* 125(1) (2006) 37-53.

Jun, S. C., J. S. George, S. M. Plis, D. M. Ranken, D. M. Schmidt, and C. C. Wood. "Improving Source Detection and Separation in a Spatiotemporal Bayesian Inference Dipole Analysis." *Physics in Medicine and Biology* 51(10) (2006): 2395-2414.

Meyers, L. A., and D. A. Levin. "On the Abundance of Polyploids in Flowering Plants." *Evolution* 60(6) (2006): 1198-1206.

Montoya, J. M., S. L. Pimm, and R. V. Solé. "Ecological Networks and Their Fragility." *Nature* 442(7100) (2006): 259-264.

Weaver, E. A., Z. J. Lu, Z. T. Camacho, F. Moukdar, H. X. Liao, B. J. Ma, M. Muldoon, J. Theiler, G. J. Nabel, N. L. Letvin, B. T. Korber, B. H. Hahn, B. F. Haynes, and F. Gao. "Cross-Subtype T-Cell Immune Responses Induced by a Human Immunodeficiency Virus Type 1 Group M Consensus Env Immunogen." *Journal of Virology* 80(14) (2006): 6745-6756.

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>

August 14, 2006

Working Group — "Cognition and Cosmology: New Models for Understanding Mesoamerican Southwestern and Southeastern Relations and Culture Change during the Prehistoric Era," organized by **George Gumerman** (SFI). Held at the Santa Fe Institute.

September 10 - 12, 2006

Workshop — "Probing the Limits," organized by **Doug Erwin** (Smithsonian and SFI). Held at the Santa Fe Institute.

September 12 - 14, 2006

Public Lecture — Thirteenth Annual Stanislaw Ulam Memorial Lecture Series: "On Plants—From Genes to Genomes to Genetically Modified Foods," by **Nina Fedoroff** (Pennsylvania State University and SFI) organized by **Ginger Richardson**. Held at the James A. Little Theater.

September 15 - 19, 2006

Working Group — "Global IP Fellows Meeting," organized by **Shannon Larsen** (SFI). Held at the Santa Fe Institute.

September 28 - October 1, 2006

Working Group — "Unifying Current Theories of Ecology," **Drew Allen** (University of California-Santa Barbara); **Jessica Green**, Organizer (University of California-Merced); **Steve Hubbell** (University of Georgia and Smithsonian Tropical Research Institute); **Pablo Marquet** (Catholic University of Chile and former SFI International Fellow). Held at the Santa Fe Institute.

October 4, 2006

Business Network Meeting — “Complex Adaptive Systems Applications Seminar — London,” Co-hosted by SFI and BT.

October 19, 2006

Business Network Meeting — “Financial Risk — New York,” Co-organized by SFI, Michael Mauboussin (Legg Mason), and Eric Beinhocker (McKinsey Global Institute)

November 1 - 2, 2006

Workshop — “ARCS (Adaptive and Resilient Computer Security) Workshop BusNet,” organized by **Robert Ghanea-Hercock** (BT) and **Shannon Larsen** (SFI). Held at the Santa Fe Institute.

November 3 - 5, 2006

Meeting — “Annual Business Network and Board of Trustees Meeting,” organized by **Bill Miller** (Legg Mason), **Geoffrey West** (SFI), and **Chris Wood** (SFI). Held at the Santa Fe Institute and the Inn at Loretto.

November 15, 2006

Public Lecture — “Forecasting Natural Disasters in the Chaotic and Complex Earth,” by **John Rundle** (University of California-Davis) with **Geoffrey West**, organized by **Ginger Richardson**. Held at the James A. Little Theater.

AUGUST VISITORS AND ARRIVALS

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

Morten Christiansen (8/11-5/30), Department of Psychology, Cornell University. Purpose of visit: Sabbatical. SFI host: Chris Wood.

Jeannette Colyvas (8/19-27), Stanford University School of Education. Purpose of visit: Research Collaboration. SFI host: Woody Powell.

Charles Efferson (8/9-10/7), Environmental Science and Policy, University of California, Davis. Purpose of visit: Post Doc. SFI host: Chris Wood.

Doug Erwin (8/16-9/13), National Museum of Natural History, Smithsonian Institution. Purpose of visit: Resident Faculty. SFI host: Chris Wood.

Emily Gamber (8/20-19), Mathematics, The University of North Carolina at Chapel Hill. Purpose of visit: Post Doc. SFI host: Chris Wood.

Haim Goldberg (8/1-9), Technology, Northeastern University. Purpose of visit: Research Collaboration. SFI host: Geoffrey West.

Anita Govindjee (8/11-5/15) Purpose of visit: Visiting Research. SFI host: Chris Wood.

Jon McCullers (8/17-18), Department of Infectious Diseases, St. Jude Children’s Research Hospital—Memphis. Purpose of visit: Research Collaboration. SFI host: Alan Perelson.

Roger Guillemin (8/24), Nobel Laureate, Molecular Biology, Salk Institute. Purpose of visit: Colloquium. SFI host: David Krakauer

Jon McCullers (8/17-18), Department of Infectious Diseases, St. Jude Children’s Research Hospital - Memphis. Purpose of visit: Research Collaboration. SFI host: Alan Perelson.

Paul McLean (8/21-25), FAS - Sociology, Rutgers University. Purpose of visit: Research Collaboration. SFI host: John Padgett.

Stephan Mertens (8/6-20), Institut für Theoretische Physik, Otto-von-Guericke Universität. Purpose of visit: Research Collaboration. SFI host: Cris Moore.

John Padgett (8/17-9/1), Dept. of Political Science, University of Chicago. Purpose of visit: Research Collaboration. SFI host: Chris Wood.

Woody Powell (8/17-9/1), Scandinavian Consortium for Organizational Research, Stanford University. Purpose of visit: Research Collaboration. SFI host: Chris Wood.

Steven Schwager (8/13-17), Biological Statistics and Computational Biology, Cornell University. Purpose of visit: Research Collaboration. SFI host: Joshua Ladau.

Ruth Segel (8/7-17), retired from private law firm. Purpose of visit: Research Collaboration. SFI host: David Krakauer.

Charles Stevens (8/6-9/2), Molecular Neurobiology Lab, The Salk Institute and SFI External Faculty. Purpose of visit: External Faculty. SFI host: Chris Wood.

Balazs Vedres (8/8-9/20), Department of Sociology and Social Anthropology, Central European University. Purpose of visit: International Fellow. SFI host: Shannon Larsen.