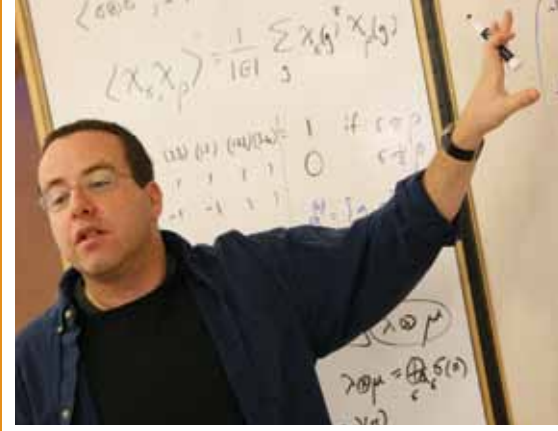




Update

January / February 2010



State of the Institute: SFI President Jerry Sabloff outlines directions and challenges for 2010



The *Update* sat down recently with President Jerry Sabloff for his thoughts on SFI's status and future.

Update: Looking back on your first months at SFI, what stands out for you?



Jerry: What an intellectually exciting place this is and the palpable intellectual excitement I see and feel at lunch, at tea, at the various symposia, and in informal chats. I think that's the strongest impression I've had. To feel that excitement on a daily basis is terrific.

The second is the sense of community. We're a relatively small place. But the staff and the

faculty and the external faculty really identify with SFI. That's a great feeling as well.

Also, obviously, the dedicated work of SFI's people. This has not been an easy year, at the least, and everyone has really pulled together. I think we're now back on the upswing from the bottom we hit early in 2009.

Another thing that impresses me is the strong scientific reputation SFI has outside the Institute. I see it when I'm traveling and meeting with people. We have an outstanding reputation at the National Science Foundation, for example. I am very pleased with the broad knowledge and appreciation of what we do.

An additional impression I've had is the willingness to take risks here – especially in regards to transdisciplinary research – and that really sets us on a different path from research universities, which I'm most familiar with. This

is a much more interesting place because of it. And it's not just rhetoric. People really walk the walk on transdisciplinary research. There is constant interplay among a number of fields. What really excites me as a social scientist is to see how much physics, chemistry, and biology are looking toward the social and behavioral sciences, and vice versa. These efforts by our outstanding faculty have been getting a lot of visibility and a lot of support.

All that mixes together to make this a very stimulating place to be. I look forward to coming to work in the morning. This obviously is my very biased impression, but I keep saying this country needs a vibrant, thriving SFI. We've made some great contributions in the past. The first 25 years were ones of significant accomplishment. I'm confident that the next 25 years will be more so. We really have a lot to contribute.

> more on page 3

IN THIS ISSUE

- > Lit Bits 2
- > Traub NSF grant 2
- > \$250,000 typewriter 2
- > Arthur award 2
- > Wood leads BNet 2
- > SFI in the News 3
- > Rutt elected chairman 3
- > New trustee 3
- > 2010 public lectures 4
- > Podcasts via iTunes U 4
- > SFI book news 4
- > West, Miller honors 4

RESEARCH NEWS

Wealth inequality in human societies: The first 100,000 years



Persistent economic inequality is based on wealth inheritance, according to SFI Professor Sam Bowles. In other words, as groups began to make their living from forms

of wealth that could be transmitted readily across generations – such as livestock and land – wealth disparity became increasingly entrenched.

“Our hunter-gatherer ancestors essentially abandoned their egalitarian ethos when they became farmers and herders,” he says,

> more on page 2

INSIDE SFI

First Miller Scholar arrives at SFI

Scientist philosopher Daniel Dennett has joined SFI's research community as the Institute's first Miller Scholar. He is in residence at the Cowan campus from January through May 2010.

Faculty Chair David Krakauer says the fellowship was created to “entice to SFI high-profile senior academics whose research interests span the physical sciences, social sciences, and humanities.”

Former Board Chair Bill Miller's generous provision of \$250,000 a year for the next four years makes the fellowship possible, he says. Each Miller Scholar appointment will be for a few months to a year.

David hopes such intellects amid the research community will help catalyze scientific interactions and crystallize ongoing research activities.

Daniel's research centers on philosophy of mind, philosophy of science, and philosophy > more on page 2

RESEARCH NEWS

Conflict: Looking at data to end war

In the first federal stimulus-funded grant for SFI, Research Professor Jessica Flack and Faculty Chair David Krakauer will receive half a million dollars to model innovative approaches to resolving major conflict.

The two will examine an overlooked factor in conflict research – namely, the role of memory, individual decision-making, and conflict strategies in generating cascades and tumultuous periods. They also will develop a theory of conflict management, predicting when different interventions should work given a conflict's nature.

“Rather than relying on simple models with strong assumptions to deduce individuals' strategies, we can extract the strategies and their effects on social stability directly from data,” says Jessica.

Both researchers specialize in emergence in evolution as well as computation in complex systems. They plan to harness creative solutions from nature – for example, drawing ideas for managing conflict in society from the immune system – as it has been refining conflict > more on page 2



Images spray painted on concrete by Morgan McConnell, dangerboydesign.com

LIT BITS

Evolution and construction of moral systems; **Jessica Flack; David Krakauer; Games, Groups, and the Global Good**, 2009

Beyond enlightened self-interest: Social norms, other-regarding preferences, and cooperative behavior; **Sam Bowles; Herbert Gintis; Games, Groups, and the Global Good**, 2009

Random intersection graphs with tunable degree distribution and clustering; Deijfen, M.; **Willemien Kets; Probability in the Engineering and Informational Sciences** 23 (4), 2009

Identifying community structures from network data via maximum likelihood methods; Copic, J.; **Matthew Jackson; Kirman, A.; B E Journal of Theoretical Economics** 9 (1), 2009

Vote buying: Legislatures and lobbying; Dekel, E.; **Matthew Jackson; Wolinsky, A.; Quarterly Journal of Political Science** 4 (2), 2009

Complexity perspectives in innovation and social change introduction; **David Lane; Pumain, D.; Sander van der Leeuw; Complexity Perspectives in Innovation and Social Change** 7, 2009

The innovation innovation; Read, D.; **David Lane; Sander van der Leeuw; Complexity Perspectives in Innovation and Social Change** 7, 2009

Power laws in urban supply networks, social systems, and dense pedestrian crowds; **Dirk Helbing; Kuhnert, C.; Lammer, S.; Johansson, A.; Gehlsen, B.; Ammoser, H.;**

Geoffrey West; Complexity Perspectives in Innovation and Social Change 7, 2009

Complexity perspectives in innovation and social change conclusion; **David Lane; Pumain, D.; Sander van der Leeuw; Complexity Perspectives in Innovation and Social Change** 7, 2009

From population to organization thinking; **David Lane; Robert Maxfield; Read, D.; Sander van der Leeuw; Complexity Perspectives in Innovation and Social Change** 7, 2009

A theory for the evolution of other-regard integrating proximate and ultimate perspectives; Akçay, E.; **Jeremy Van Cleve; Marcus Feldman; Roughgarden, J.; Proceedings of the National Academy of Sciences**, April 21, 2009

The self similarity of human social organization and dynamics in cities; **Luis Bettencourt; Lobo, J.; Geoffrey West; Complexity Perspectives in Innovation and Social Change** 7, 2009

An agent-based model of information flows in social dynamics; Ferrari, D.; Read, D.; **Sander van der Leeuw; Complexity Perspectives in Innovation and Social Change** 7, 2009

Defining genes: A computational framework; **Peter Stadler; Prohaska, S.J.; Forst, C.V.; David Krakauer; Theory in Biosciences** 128 (3), August 2009

A fungal phylogeny based on 82 complete genomes using the composition vector method; Wang, H.; Xu, Z.; Gao, L.; **Bailin**

RESEARCH NEWS

Traub receives NSF grant



SFI External Professor Joseph Traub and Columbia University colleague Henryk Wozniakowski have received a National Science Foundation grant for "Tractability of High

Dimensional Problems for Quantum and Classical Computers."

The researchers hope to show that the Schrodinger equation is solvable on a quantum computer. Success in this research would mark the first instance of a proven exponential quantum speedup for an important non-artificial problem. The grant is for \$473,000.

Joe is the Edwin Howard Armstrong Professor of Computer Science at Columbia University. ■

> Miller Scholar continued from page 1



of biology, particularly as those fields relate to evolutionary biology and cognitive science. He sees evolution by natural selection as an algorithmic process that often incorporates a significant degree

of randomness. He also has written about and advocated the notion of memetics as a philosophically useful tool, most recently in his "Brains, Computers, and Minds," a presentation through Harvard's 2009 Distinguished Lecture Series.

At Tufts University he is co-director of the Center for Cognitive Studies and is the Austin B. Fletcher Professor of Philosophy. More about his research interests is available at http://en.wikipedia.org/wiki/Daniel_Dennett. ■

CREDITS

Editorial staff

John German
Ginger Richardson
Della Ulibarri

Contributors

Rachel Feldman
Krista Zala
Julie Rehmeier

Design and production

Michael Vittitow

The SFI Update is published bi-monthly by the Institute to keep our community informed about current work and activities. Please send comments to Ginger Richardson at grr@santafe.edu.

INSIDE SFI

Castoff typewriter sells for a quarter million

A broken down typewriter destined for the trash heap ended up benefiting SFI to the tune of \$210,000.

Renowned author and Institute regular Cormac McCarthy's light blue Olivetti manual typewriter, which he bought second-hand more than five decades ago, auctioned for \$254,500 in New York on December 3 – to the shock and delight of those at SFI following the sale.



Cormac McCarthy and SFI President Jerry Sabloff congratulate each other following the typewriter's auction. Background Ginny Greninger.

Cormac typed all of his manuscripts on the machine from 1958 until 2009, including *The Orchard Keeper*, *The Outer Dark*, *Child of God*, *Suttree*, *All the Pretty Horses*, *The Crossing*, *Cities of the Plain*, *Blood Meridian*, *No Country for Old Men*, *The Road*, two plays, one screenplay, and three unpublished works.

He bought the clacker in a Tennessee pawnshop in 1958 for \$50. By the fall of 2009, he says, it was beginning to show serious signs of wear.

His friend and SFI Professor John Miller offered to buy him a new one, "which he did," Cormac says. "Then he asked what I intended to do with the old one and I said I didn't know and he said: 'Why don't you auction it off and give the proceeds to the Institute?' I thought that was a good idea."

Prior to the sale, Christie's Fine Art Auction House in New York estimated the typewriter's value at just \$15,000 to \$20,000.

After sales commissions the final sum to SFI is about \$210,000.

Following the sale, SFI President Jerry Sabloff said it was a great day for Cormac and SFI.



A "very pleased" Cormac is now working on the replacement typewriter – the same Olivetti model, which John Miller purchased for just \$20. ■



Livestock is one form of wealth in the Sukuma of Tanzania (Image: Monique Borgerhoff Mulder)

> Wealth inequality continued from page 1

interpreting the results of his recent research report in *Science* (October 2009).

Sam, Director of the Institute's Behavioral Sciences Program, collaborated with a group of 26 anthropologists, statisticians, historians, and economists to study the inheritance of nine kinds of wealth – from hunting skills to owning cattle – in 21 small-scale societies.

The research grew out of an ongoing SFI-hosted working group coordinated by Sam and Monique Borgerhoff Mulder, an evolutionary anthropologist at UC Davis, and is supported by SFI's Behavioral Sciences Program.

The report shows that a prehistoric version of "the silver spoon effect" was found in some of these economies but not others. The progeny of the wealthiest 10 percent of herders, for example, proved to be 20 times more likely to be wealthy than the children of the poorest 10 percent. Among hunter gatherers, by contrast, the inequality of life chances was less than one-fifth of this ratio.

The group is publishing six papers on their project in *Current Anthropology* early in 2010. Their working meeting at SFI from February 5-7 – titled "Persistent inequality: The dynamics of wealth inequality in pre-modern societies" – will plan the next round of data collection and analysis. ■

PEOPLE

Arthur awarded honorary doctorate



SFI External Professor W. Brian Arthur was awarded an honorary doctorate at Lancaster University's graduation ceremony on December 9.

Widely regarded as one of the most creative economists today, he is best known for his theoretical work on increasing returns in the economy. Recently he has turned his attention to questions of the evolution of technology and its role in shaping our world.

He holds a PhD in operations research from Berkeley and a masters in operational research from Lancaster, along with other degrees in economics, math, and electrical engineering. In 1990 his work won the Schumpeter Prize in economics and in 2008 he won the Lagrange Prize in complexity science. ■

> Looking to end war continued from page 1

in biological systems for the last 3.5 billion years.

"With our empirically-grounded, immune-system-inspired models, we hope to offer new perspectives on how conflict control influences evolutionary processes," she says, "and, more practically, how an evolutionary theory of conflict control could benefit national security."

The two will include their work among ideas explored in SFI's Complex Systems Summer Schools. The project is funded by the American Recovery and Reinvestment Act of 2009. ■



INSIDE SFI

SFI meets 2009 Omidyar Challenge campaign goal

SFI President Jerry Sabloff announced on January 11 that due to the generosity of SFI's donors, the Institute reached its first-year goal of the Omidyar Challenge campaign.

"We are happy to announce that we raised more than half a million dollars in 2009, which will be matched by Pierre and Pam Omidyar," he said.

In 2008 SFI announced the expansion of its post-doctoral fellowship program, prompted by a challenge gift from Pierre and Pam Omidyar to help establish a permanent endowment in support of the Omidyar Fellows program. The Omidyar's pledged \$7.5 million, to be matched dollar-for-dollar with Institute fundraising over three years.

In 2010, SFI must raise \$2 million to leverage a \$2 million match from the Omidyars. Currently, SFI has 2010 commitments totaling more than \$900,000. ■

LIT BITS (CONT.)

Hao; *BMC Evolutionary Biology* 9, August 10, 2009

Generalized-generalized entropies and limit distributions; **Stefan Thurner**; Hanel, R.; *Brazilian Journal of Physics* 39 (2A), August 2009

Nonadditive entropy and nonextensive statistical mechanics: An overview after 20 years; **Constantino Tsallis**; *Brazilian Journal of Physics* 39 (2A), August 2009

A fast and efficient gene-network reconstruction method from multiple over-expression experiments; Stokic, D.; Hanel, R.; **Stefan Thurner**; *BMC Bioinformatics* 10, August 17, 2009

Time's barbed arrow: Irreversibility, crypticity, and stored information; **Jim Crutchfield**; Ellison, C.J.; Mahoney, J.R.; *Physical Review Letters* 103 (9), August 28, 2009

Specialized or flexible feed-forward loop motifs: A question of topology; Macia, J.; Widder, S.; **Ricard Solé**; *BMC Systems Biology* 3, August 31, 2009

Computer systems are dynamical systems; Mytkowicz, T.; Diwan, A.; **Elizabeth Bradley**; *Chaos* 19 (3), September 2009

Googling food webs: Can an Eigenvector measure species' importance for coextinctions? Allesina, S.; **Mercedes Pascual**; *PLOS Computational Biology* 5 (9), September 2009

SFI IN THE NEWS

Several news media outlets covered the work of SFI External Professor Mercedes Pascual (University of Michigan, Ann Arbor) and Stefano Allesina (University of Chicago) to create a ranking algorithm similar to Google's page-ranking algorithm that predicts which species losses will trigger the fastest collapse of a food web. SFI Research Professor Jennifer Dunne comments on the work favorably in *Science News* and *Wired*.

http://www.sciencenews.org/view/generic/id/47005/title/Google_works_on_a_different_web

<http://www.wired.com/wired-science/2009/09/googlefoodwebs/>

http://www.nytimes.com/2009/09/08/science/08obextinct.html?_r=1&em

Omidyar Fellow Aaron Clauset is quoted in a December 16 *Nature* review of a paper in the same issue by Neil Johnson (University of Miami) and colleagues. The paper, and review article, examine mathematical models that attempt to discern common underlying patterns and predictability in conflicts.

<http://www.nature.com/news/2009/091216/full/462836a.html>

A December 18 *Business World* article mentions some of the pioneering work at SFI in the 1980s to explore complex financial market behavior through computer simulations.

<http://www.bworldonline.com/main/content.php?id=3465>

> Sabloff interview

continued from page 1

Update: How do you see the Institute's research portfolio evolving in the coming few years?

Jerry: Nothing radically different. But there are a series of ongoing projects that we will build on and that I think have great promise. One is conflict, looking at conflict from the cellular level right up to the societal level. There is interest across the board from a number of our colleagues. I think we'll see that developing in an exciting way. You know, if we can find general principles of conflict on different scales and on conflict management, that would be terrific.



Left to right: Elisabeth Johnson, Jerry, and Sam Bowles look over a working paper.

Innovation is another area I see burgeoning. Also the whole area of econophysics – and the use of a variety of modeling approaches to look at broad aspects of the economy – has a very promising future. The whole question of the nature of cities, their development, their sustainability, through modern cities as well as past urban development. I could go on. But there are a host of exciting pursuits that are being nurtured and that I think have great promise to really be developed into important new theoretical insights in the future.

The main emphasis I've been talking with our faculty about, and they've seemed receptive to, is just to make certain that when we do have new results that are relevant to policy, we make them available to policy makers, that we do a better job of outreach of our insights and new theoretical understandings. Not that we haven't been doing that already. I think we can do more of that. We won't turn into a scientific Brookings, but I do think that where relevant, we should make sure our ideas are available to policy makers in Washington and elsewhere. In several broad areas I think we can add useful and important new understandings and insights that decision makers will look at and find interesting.

Update: As you look further into 2010, what are some of the primary challenges you see SFI facing?

Jerry: I think the good news is that we are proactively managing our budget. Our 2010 budget is a very lean, conservative one, but it puts us back on an upward trajectory. That

said, the 2010 budget is still lower than the 2008 budget, so we're not back yet, though we have those ambitions.

Clearly what we need to do in the coming years is find ways to increase contributions and support. We've done very well with federal grants and particularly with the NSF. The faculty has been terrific in terms of producing the science that spawns that support. We need to look more into the foundation world as well as in the federal arena. And then we need to work hard to meet our Omidyar Challenge, as we have an ambitious set of goals over the next three years. Fortunately Pierre Omidyar was

very supportive and allowed us to extend [the timeline] this past year. But we're excited to have met our 2009 goal and are well on our way toward our 2010 goal. Hopefully within three years we will have raised \$7.5 million and Pierre will have matched that dollar for dollar. We'll then have a \$15 million endowment to support the

Omidyar Fellows, which is a key and almost lifeblood program for us.

I should point out that our annual donors, providing unrestricted support year in and year out, are very important to the vibrancy of SFI. We are targeting benefits for local donors and are collaborating in new ways to increase our visibility.

"Where relevant, we should make sure our ideas are available to policy makers in Washington and elsewhere."

We also have to find new major donors. We've been incredibly fortunate that we've had a series of terrific supporters in recent years – for example [SFI Co-Founder and Founding President] George Cowan, [Past Chairman of the Board] Bill Miller, and our Board of Trustees as a whole. But we've got to find the next generation of donors who are going to be able to support us in significant ways. Nancy Deutsch, our new Vice President for Development, and her excellent team are working very hard planning for that.

Jim Rutt, our new Chair of the Board of Trustees, and I are committed to a three-to-four year budget planning cycle, looking at both expense

and revenue projections, and really trying to get a handle on longer-term budgetary planning. This is an important change for us. We're going to do the same in the realm of scientific resources, looking ahead at what we're going to need to not just support what we have, but to expand on our science.

So the budget is still really quite tight. But I hope that with better planning, and if our expectations are exceeded in terms of revenues, then we can start to bring back, for example, salary increases for the staff and faculty. We've already made some good strides in bringing back pension contributions. And with the right kind of unrestricted revenues we hope to not just support existing commitments but also expand.

That's kind of a good news, bad news scenario. It could be worse. I think the Board and the whole SFI community faced some serious challenges this past fiscal year. I must say that the staff and faculty really pulled together through this, and my sense is that the morale is gratifyingly high given all the circumstances. People have really been terrific. And I think everyone is looking to better days. One of the things I've been trying to do is inform the staff as fully as possible about the things that affect us all.

Update: What about the recent changes to the Business Network and its leadership?

Jerry: The result of our search for a new Business Network manager was the realization that we had the best person for the job in house, particularly someone who could really tighten the administrative and organizational side and also someone who can be the best kind of liaison on the science side. I was delighted that Chris Wood [SFI Vice President for Administration] stepped forward. He and Nancy Deutsch, in a relatively short period of time, have done a lot of planning and are taking something that has been incredibly successful and seeing how we can increase its impact and make its financial contributions more secure while providing more value to Business Network members, all without increasing demands on the research faculty. We've had a lot of good feedback to ideas that Chris and Nancy have presented to members at the recent Business Network and Trustees symposium, and we've had terrific feedback on the intellectual content of those meetings. I'm really optimistic.

Update: Any other thoughts?

Jerry: I think 2010 will be very exciting. People are telling me that I keep using two words to encapsulate my own feelings about the requirements of this job: "exhilarating and exhausting." That hasn't changed in four months.

Finally, Paula and I really love being back in New Mexico. Santa Fe is a great place. The people have made us very comfortable. When we pull out of our driveway every morning and we see the view of the mountains with the snow on them and the early morning sun, we look at that view and say "Wow! We made the right decision." ■

PEOPLE

Jim Rutt elected Board Chairman



SFI's Board of Trustees has elected Jim Rutt as its Chairman. Former Chair Bill Miller stepped down in November.

Jim is director of the Proteus Foundation.

He is studying complex adaptive systems as they manifest themselves in financial markets, social science, and games.

Prior to his retirement in 2001 Jim was CEO of Network Solutions, Inc., which administered the .com, .net, and .org domain namespaces on the Internet. In 2000 Network Solutions was acquired by VeriSign, where Jim served as chief strategy officer.

He either founded or played a key role in several significant information services and network companies: THE SOURCE, Business Research Corp., First Call, Pinpoint Information, and The Thomson Corporation. He has been involved as an investor or advisor to numerous early stage technology-based companies.

He received his B.S. in management from MIT in 1975. ■

PEOPLE

Kay Taylor Burnett named to Board



Kay Taylor Burnett has been appointed to a three-year term on SFI's Board of Trustees. Kay served as an Institute Trustee from 2003 to 2006.

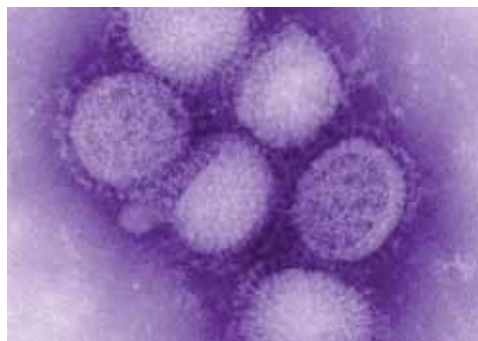
Currently she is CEO of a small energy development company and president of a charitable foundation. She serves on the editorial advisory board for the *Texas Observer* and on the President's Cabinet for The University of Texas Medical School in Galveston. She is founder and former CEO of The Arts Alliance Center at Clear Lake (Houston area), a former magazine editor, and author of the 2009 murder mystery *No Odes to Widows*.

She stepped down from the SFI Board of Trustees in 2006 to devote significant time to helping bring public radio to the trans-Pecos region in West Texas. ■

INSIDE SFI

2010 public lectures kick off with H1N1

SFI's lineup of public lectures for 2010 will continue to explore the frontier of complex systems science and its relevance to the big challenges our world faces.



The series kicks off January 13 with "The swine flu and you: Determining a response to the H1N1 pandemic." SFI External Professor Lauren Meyers, an associate professor in integrative biology at the University of Texas at Austin, will describe how

mathematical models of influenza transmission are being used to improve our understanding of this new virus and support real time public health decision-making. (7:30 p.m., James A. Little Theater, 1060 Cerrillos Road, Santa Fe)

On February 24 SFI President Jerry Sabloff will describe new archaeological, epigraphic, and environmental information that have enabled archaeologists to form better models that provide more systemic perspectives on the rapid decline and abandonment of key Mayan cities around A.D. 800. He will discuss the relevance of these new data and models to problems human civilization face today. (7:30 p.m., James A. Little Theater, 1060 Cerrillos Road, Santa Fe)

Other 2010 public lectures will explore such topics as the evolution of religion, the future of terrorism, the science of bias, and cooperation, among others. For more information, see www.santafe.edu. ■

INSIDE SFI

Podcasts now available via SFI's iTunes U

A selection of digital audio and video downloads featuring Institute seminars, colloquia, and lectures is now available via Apple's iTunes University system.

According to SFI Information Architect Atty Mullins, the new SFI iTunes U site allows both Mac and Windows users to view the files via the iTunes application or download them to iPods or iPhones.

"iTunes U will make the Institute's unique content available to a much larger audience than ever before," he says.

To find SFI on iTunes U, site search for "Santa Fe Institute" in the iTunes store. ■

PEOPLE

Institute book news

Two books by members of SFI's external faculty are receiving wide acclaim.



Amazon.com has selected SFI External Professor Melanie Mitchell's *Complexity: A Guided Tour* (Oxford University Press) as number three on its list of Top 10 science books of 2009. Melanie is a professor of computer science at Portland State University and is a member of SFI's

Science Board and Science Steering Committee.

New York Times science reporter John Markoff reviewed SFI External Professor W.

Brian Arthur's *The Nature of Technology: What It Is and How It Evolves* on October 13. "In [Dr. Arthur's view] all technological breakthroughs emerge as novel combinations of existing technological components, which have themselves come into existence through the same process," the review said. Brian is a visiting researcher at the Palo Alto Research Center's Intelligent Systems Lab.



PEOPLE

West, Miller get surprise honors

Geoffrey West and Bill Miller were honored during the Business Network and Trustees Symposium dinner at the Institute in November.

Geoffrey, an SFI Distinguished Professor, served as SFI's President from June 2005 through July 2009. Bill Miller served as SFI's Chairman of the Board during the same period.

During the November 13 dinner, current SFI President Jerry Sabloff and current SFI Chairman of the Board Jim Rutt surprised Geoffrey with a signed team jersey from his favorite UK soccer team, the Tottenham Hotspurs.

Bill was presented with a framed original pen,



Bill Miller (left) and Geoffrey West following their surprise recognition

ink, and watercolor illustration of SFI's main building by artist Laszlo Kubinyi of New York. SFI also provided engraved bound journals for both in which members of the SFI community jotted notes of thanks. ■



SANTA FE INSTITUTE

1399 Hyde Park Road
Santa Fe, New Mexico 87501
T 505.984.8800
F 505.982.0565
www.santafe.edu

Other recently released books



Former SFI Trustee Stewart Brand has released his new book, *Whole Earth Discipline: An Eco-pragmatist Manifesto*, a vision for engineering our collective future.



Total Engagement: Using Games and Virtual Worlds to

Change the Way People Work and Businesses Compete, co-authored by SFI Trustee J. Leighton Read and Byron Reeves, outlines how games will transform work and why individuals must start building a game strategy now. ■