2008 SFI Community Lectures

SFI has exciting lectures lined up for this year. The March talk explores how genetic aspects of the brain influence our behavior. April and May presentations focus on cutting-edge topics in information and computing. Summer events are devoted to art and science—dance, the visual arts, and music. In the autumn we consider various aspects of human social behavior.

Los Alamos National Bank provides major underwriting for this program.

3/19

Wednesday, March 19, 7:30 pm; James A. Little Theater

Jon Wilkins, Professor, Santa Fe Institute

Devil or Angel: Genetic Conflicts in Brain and Behavior

The genes that we inherit from our mothers and fathers favor two different sets of behavior, and clash both during brain development and in real-time decision-making. This talk will discuss the causes and consequences of this conflict, as well as what these discoveries mean for our understanding of the human mind and our notion of the unified "self."

The following lectures in April and May are underwritten by RedfishGroup, Santa Fe. Both lectures take place at the Armory for the Arts, 1050 Old Santa Fe Trail.

4/23

Wednesday, April 23, 7:30 pm; Armory for the Arts

Seth Lloyd, Professor, Mechanical Engineering, and Principal Investigator, Research Laboratory of Electronics, Massachusetts Institute of Technology; author, *Programming the Universe: A Quantum Computer Scientist's Takes On the Cosmos*

Programming the Universe

Is the universe a giant computer? If so, how does it compute? It has been known since the nineteenth century that every atom in the universe carries with it bits of information, and that every time two atoms collide, those bits flip. The universe is carrying out a computation at the most microscopic level. This talk discusses the implications of the computing universe, ranging from quantum computation and quantum gravity, to the problem of free will and the ultimate future of life.

5/14

Wednesday, May 14, 7:30 pm; Armory for the Arts

Peter Norvig, Director of Research, Google Inc.

Practice Makes Perfect: How Billions of Examples Lead to Better Models of Language, Pictures, and Other Things

A computer might not learn in the same way that a person does, but it can use massive amounts of data to perform selected tasks very well. In this talk, Norvig explores the way that a computer can correct spelling mistakes, translate from Arabic to English, and recognize celebrity faces about as well as an average human—and can do it all by learning from examples rather than by relying on programming.

6/2

Monday, June 2, 7:30 pm; James A. Little Theater

Liz Bradley, Professor, Computer Science, University of Colorado, Boulder
David Capps, Professor, Dance, Hunter College

Con/cantation: Chaotic Variations

Bradley and Capps present a dialog between computer and dancer in a performance piece revolving around a simple movement phrase, its mathematical refraction, and its reconstitution into a structure inspired by the theme and variation form. They describe the piece as "an unfurling of the possibilities of order, kinetic logic, and cause and effect."

This lecture is underwritten by the National Dance Institute of New Mexico.

7/16

Wednesday, July 16, 7:30 pm; James A. Little Theater

Charles Falco, UA Chair of Condensed Matter Physics and Professor of Optical Sciences, University of Arizona

Art, Optics and Human Vision

Falco—working with painter David Hockney—has identified a variety of optical evidence within a number of paintings demonstrating that artists as early as Jan van Eyck used optical projections as aids for producing portions of their images. While making these discoveries, Falco and Hockney developed new understanding about how more recent artists, such as Monet, Pissarro, and others, have created some of their iconic images.

This lecture is underwritten by Gerald Peters Gallery.

8/13

Wednesday, August 13, 7:30 pm; James A. Little Theater

Dimitri Tymoczko, Arthur Scribner Bicentennial Preceptor and Assistant Professor, Music, Princeton University

The Geometry of Consonance: Music and Mathematics

Musical chords live in interesting geometrical spaces called "orbifolds"—spaces that contain unusual twists and strange "singularities," analogous to the black holes of general relativity. Tymoczko provides an accessible, multimedia introduction to this new way of thinking about music.

2008 SFI Community Lectures

9/16,17,18

Tuesday, Wednesday and Thursday, September 16, 17, 18
7:30 pm; James A. Little Theater

Samuel Bowles, Professor, Santa Fe Institute; Professor, Economics, University of Siena

Stanislaw Ulam Memorial Lectures: A Cooperative Species—How We Got to Be Both Nasty and Nice

Humans are remarkably cooperative animals. We frequently engage in joint projects for the common benefit on a scale extending beyond the family to include total strangers. We do this even when contributions to the project are costly and yield little private benefit. Examples include upholding social norms even when a transgression would not be noticed, engagement in warfare, and actions to preserve the natural environment.

Lecture 1. A cooperative species (or are we just afraid someone may be looking?)
Drawing on archaeological, genetic, climatic, and other information about the conditions under which our distant ancestors lived, Bowles will show why standard explanations of human cooperation are inadequate.

Lecture 2. Altruism, parochialism, and war: Rambo meets Mother Teresa
Bowles uses computer simulations to generate artificial histories of humanity over tens of thousands of years, tracing alternative trajectories that could explain how we got to be both nasty and nice.

Lecture 3. Machiavelli's mistake: why policies designed for "wicked men" fail
The final lecture will show why taking account of our ethical dispositions and the conditions necessary to both enhance and empower cooperative motivations is essential if we are to face the challenges of environmental sustainability, control of epidemic disease, the governance of the information-based economy, and political violence.

10/7

Tuesday, October 7, 7:30 pm; James A. Little Theater

Frans B. M. de Waal, Director, Living Links, Yerkes Regional Primate Research Center; Professor, Psychology Department, Emory University

Our Inner Ape: On the Possibility of Empathy in Other Animals

De Waal explores expressions of empathy in animals, especially nonhuman primates, and presents a "Russian doll" model of how animals perceive others. The model comes from a core emotional linkage arising from a direct mapping of another's behavioral state onto the subject's representations. This "Perception-Action Model" provides the basis for an increasing distinction between self and other, so that the other is recognized as the source of felt emotions.

This lecture is underwritten by Wayne and Barbara Coleman.

11/5

Wednesday, November 5, 7:30 pm; James A. Little Theater

Daniel Gilbert, Harvard College Professor of Psychology at Harvard University and Director of Harvard's Hedonic Psychology Laboratory; author, *Stumbling on Happiness*

Stumbling on Happiness

People want to be happy. To achieve this they must do two things. They must predict how they will feel in a variety of possible futures, and they must act to bring about the best of these and avoid the worst. Gilbert describes what science has to teach us about why we seem to stumble on (and not upon) happiness.

All lectures begin at 7:30 p.m. Most lectures are Wednesday nights—with the exception of June, September, and October. (See schedule above.) April and May lectures take place at the Armory for the Arts, 1050 Old Pecos Trail, Santa Fe; all other lectures take place at James A. Little Theater, 1060 Cerrillos Road, Santa Fe. Admission is free but seating is limited.

For a more expanded explanation of the talks, visit **www.santafe.edu/events/talks-public-lectures.php** or call 505/984-8800.