

Caltech336

T E S S M T W T F S S M T W

The campus community biweekly

May 2, 2002, vol. 2, no. 9

Caltech kids come to work



The Institute welcomed about 75 children of employees to this year's Take Our Children to Work Day—the largest group in recent years, according to coordinator Diana Alvarez. The event was sponsored by Human Resources and Public Relations.

The Turing test: Human or machine?

Kim Matsunaga

Imagine being told you would be playing online chess games against World Chess Champion Vladimir Kramnik and Deep Fritz, IBM's latest chess supercomputer. Do you think you could tell which was which? Perhaps both games would end too quickly to make any such determination, but the question being posed is: can a human be fooled by a machine?

This is the concept behind the Turing test, developed by English logician and mathematician Alan Turing in 1950, to test for intelligent behavior of a computer algorithm. In the test, a human judge, engaging in wide-ranging conversation, attempts to distinguish whether he or she is interacting with another human or with a computer imitating human responses.

Now, imagine that HAL, the intelligent computer in Stanley Kubrick's 1968 film, *2001: A Space Odyssey*, replaced you as judge. Do you think HAL could accurately detect whether its opponent was Kramnik or Deep Fritz? In other words, can a machine be programmed to distinguish the subtleties between natural human behavior and a sophisticated computer mimicking human behavior?

The same ideas can be used to develop and measure how good a social-scientific theory of human behavior is. Caltech's Jasmina Arifovic, visiting associate pro-

fessor, and the late Richard McKelvey, Wasserman Professor of Political Science (see far right column), have pointed out that the development of social-science theories can be likened to the task of building a computer to mimic human behavior, or equivalently, to building a computer that will pass the Turing test in the range of behavior covered by the theory. Thus, social science can be deemed to be successful when it is no longer possible for a computer judge to tell the difference between behavior generated by humans and that generated by the theory (i.e., by a machine).

Based on the above ideas, Caltech researchers this summer plan to run a two-sided computer tournament, the Turing Tournament, to try to simultaneously develop strong models of human behavior, and good ways of telling the difference between human and machine behavior. Arifovic and postdoctoral scholar Svetlana Pevnitskaya will apply this initially to the question of developing theories for how subjects play a repeated, two-person matrix-form game.

In the tournament, Caltech will solicit computer programs that can mimic human behavior, called emulators. Also solicited will be computer algorithms, called sniffers, designed to detect whether the ob-

see Turing, page 6



Yuen named trustee

In the near future, the number of cable and satellite television channels offered to viewers will have leaped from what was typically a few dozen to possibly more than 500. Putting aside what 500 channels could do to your brain, the question then becomes how to find out what's on, and when.

Henry Yuen has provided the answer. The 1973 Caltech graduate (PhD in applied mathematics) developed the on-screen television program guides already in use on most such systems. Now Yuen will bring his original thinking to his new position as a member of the Institute's Board of Trustees.

Yuen is the chairman and chief executive officer of Gemstar-TV Guide International, Inc., in Pasadena. He cofounded its predecessor, Gemstar International Group, Ltd., in 1989, after wrestling with a dilemma most of us have faced—programming a VCR.

In 1988, Yuen tried to tape a game of his favorite baseball team, the Boston Red Sox. In spite of his Caltech PhD and a JD from Loyola University Law School (he is a member of the State Bar of California), when he went to watch the game, he found that all he had recorded was a screen full of snow. Instead of simply shaking his head in frustration, Yuen invented the new technology called VCR Plus+. Still used today, it's the nearly foolproof way of recording shows by punching in a number listed in most television guides next to a particular program.

Prior to Gemstar, Yuen was a research scientist and technical fellow at TRW, Inc., held faculty positions at Caltech and New York University, and practiced law in California for over 10 years.

Yuen has maintained close ties to Caltech. In 1999, he was awarded the Institute's Distinguished Alumni Award. Yuen sponsors the annual Program for Law and Technology, a joint venture of Caltech and Loyola Law School that brings scientists and lawyers together to explore issues related to emerging technologies, and also brings academic, industry, and government leaders to both campuses for workshops and lectures.

•

Phone correction

The phone number for the Transportation and Motor Pool was printed incorrectly in the Caltech Directory. The correct number is 395-4703.

Caltech set to shine for 65th Seminar Day

What does the hypothesis that life could have hitched a ride from Mars to Earth via meteorite have in common with altruism customs among the Orma of northern Kenya? On the face of it, not much, but these are two of the intriguing seminar topics scheduled for Caltech's Alumni Reunion Weekend and 65th Annual Seminar Day, taking place from Thursday, May 16 through Sunday, May 19.

As usual, this year's four-day event is brimming with activities for Caltech alumni who wish to visit their alma mater, catch up with former classmates and professors, and learn more about the groundbreaking research being conducted here.

Seminar Day falls on Saturday, May 18, and offers six hour-long sessions. In addition to the seminars delivered by faculty and researchers, the alumni will be able to attend seminars by undergraduate students who participated in the Summer Undergraduate Research Fellowships and won the Doris S. Perpall SURF Speaking Awards. These students will discuss their research projects and describe their own contributions to their respective fields of study. In addition, the Everhart Lecture Series will feature seminars by graduate students who describe recent research developments, problems, and controversies.

At midday, Caltech will distribute honors to a number of alumni during the Distinguished Alumni Awards session in Beckman Auditorium. The recipients this

see Seminar Day, page 6



Richard McKelvey passes away

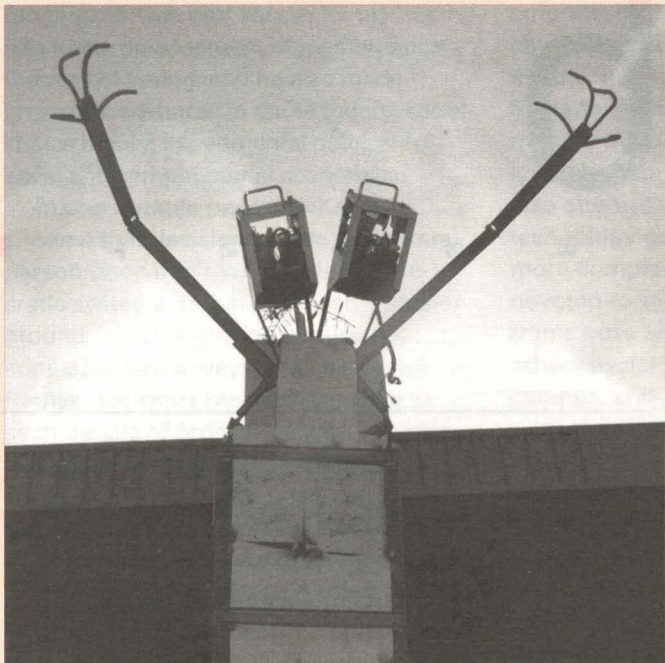
Richard McKelvey, Caltech's Wasserman Professor of Political Science and director of the William D. Hacker Social Science Experimental Laboratory, died of cancer at his Altadena home on Monday, April 22. He was 57.

"He was a leader in the development of a scientific approach to political science," said John Ledyard, chair of the Division of the Humanities and Social Sciences. "He also contributed significantly to theories of voting in committees and voting behavior."

"He was one of the nicest, most honest and unselfish people that you could have

see McKelvey, page 6

NewsBriefs



The latest beastly creations by Caltech senior Nate Austin recently began roaming Beckman Mall. Austin's dolphin sculptures briefly graced Millikan Pond two years ago.

Personals

Welcome to Caltech

March

Sam Couture, research assistant I, biology; **Stanley Baires**, associate financial analyst, Financial Services; **Ashfaq Khan**, senior system engineer, Laser Interferometer Gravitational-Wave Observatory (LIGO); **Anthony Malloy**, senior engineer-observatory planner-scheduler, Space Infrared Telescope Facility (SIRTF) Science Center; **Carolyn Ohno**, assistant biologist, biology; **Linda Krippner**, employee assistance counselor, Ombuds Office.

April

Brissa Almanza, accounts payable processor, Payment Services; **Malin Abrahamsson**, postdoctoral scholar in chemistry; **Gilberto Chacon**, bus person I, Athenaeum; **Russell Chrisman**, maintenance mechanic A, Physical Plant; **Donald Damon**, shop plasterer, Physical Plant; **Nancy Daneau**, senior contract and grant officer, Sponsored Research; **Loren Deck**, Help Desk computer support, Administrative Technology Center; **Chikara Dohno**, postdoctoral scholar in chemistry; **Maryam Fazel**, postdoctoral scholar in control and dynamical systems; **Angela Flowers**, telecommunications operator, Administrative Technology Center; **Michelle Fourney**, departmental lab assistant, engineering and applied science; **Michael Hall**, visitor in physics; **Karen Heyman**, senior administrative secretary, biology; **Jose Hurtado Jr.**, postdoctoral scholar in JPL's astrophysics research element; **Mili Jeon**, postdoctoral scholar in biology; **Brett Kiesel**, investment administrative assistant, Treasurer's Office; **Jeremiah Kloepper**, postdoctoral scholar in JPL's astrobiology element; **Chan Kwak**, postdoctoral scholar in materials science; **Cynthia LeBuda**, server, Athenaeum; **Choon Sup Lee**, postdoctoral scholar in JPL's in situ technology and experiments systems section; **Luis Montellano**, bus person I, Athenaeum; **Ken Museth**, scientist, computer science; **Yuki Onishi**, visitor in aeronautics; **Jonas Oxgaard**, postdoctoral scholar in chemistry; **Rosalba Perna**, visitor in physics; **Suresh Pillai**, postdoctoral scholar in materials science; **Ulrich Schatzschneider**, postdoctoral scholar in chemistry; **Vipa Teerawut**, general helper, Dining Services; **Cynthia Vaughn**, custodian, Physical Plant; **Kelin Wang**, visitor in LIGO; **SiQi Yu**, file associate, Human Resources; **Rachel Zimmerman**, education and outreach coordinator, engineering and applied science.

Michael Conover joined Development Records as its new records clerk. Most recently a Burger King franchise manager, he is expert in several computer applications, having trained in computer programming and database management through Citrus College.

New positions

Lee Lindblom, a visiting associate in theoretical astrophysics at Caltech since 1996, became a senior research associate in theoretical astrophysics effective April 1. He received his BS from Caltech in 1972 and his MS and PhD from the University of Maryland in 1975 and 1978, respectively.

Mark Wheeler, a science writer for Caltech media relations, will undertake the additional assignment of scientific technical writer in the Division of Engineering and Applied Science. He received his BA in journalism from Cal State Northridge and has completed course work for an MA in mass communications.

Retirements

Lawrence Begay retired on May 1 after 30 years at Caltech. He was a senior instrument specialist in electrical engineering.

Paul Messina, faculty associate in scientific computing, assistant vice president for scientific computing, and director, Center for Advanced Computer Research, retired on May 1 after 15 years at Caltech.

Paul Ware, senior patent counsel in the Office of the General Counsel (JPL), retired on May 1 after 17 years with the Institute.

Sophia Yen retired on May 1. An associate director of development, she had worked at Caltech for 36 years.

Honors and awards

Seymour Benzer, Boswell Professor of Neuroscience, Emeritus, has been chosen to receive this year's March of Dimes Prize in Developmental Biology. He is being honored "for research that addressed many of the mysteries of human biology and contributed to the design of new treatments for birth defects and other disorders." Specifically, using the fruit fly as a model organism, "his work has revealed basic genetic mechanisms regulating the early steps of eye formation, circadian rhythm or 'biological clock,' as well as the first known genes that control behavior, memory, and learning." Benzer has also been the subject of a book, *Time, Love, Memory: A Great Biologist and His Quest for the Origins of Behavior*. The prize's cash award of \$250,000 will be shared equally by Benzer and his corecipient, Sydney Brenner, Distinguished Professor at the Salk Institute.

Charles Elachi, Caltech vice president, director of the Jet Propulsion Laboratory, and lecturer in electrical engineering and planetary science, has been elected a fellow of the American Institute of Aeronautics and Astronautics "for his leadership and contributions in the field of spaceborne imaging radars." He has also been named the 2002 Distinguished Alumnus of UCLA's department of earth and space science—he received an MS in geology from UCLA, after receiving his PhD in electrical engineering from Caltech in 1971.

Alexander Kechris, professor of mathematics, has won a 2002 John Simon Guggenheim Memorial Foundation Fellowship; the award will support his work in "classification problems in mathematics, group actions, and equivalence relations." Guggenheim Fellows "are appointed on the basis of distinguished achievement in the past and exceptional promise for future accomplishment."

David MacMillan, associate professor of chemistry, has been selected to receive a Sloan Research Fellowship. Fellows are chosen by the Alfred P. Sloan Foundation "from among hundreds of highly qualified scientists in the early stages of their careers on the basis of their exceptional promise to contribute to the advancement of knowledge."

Dianne Newman, Luce Assistant Professor of Geobiology and Environmental Science and Engineering, has been selected by the Department of the Navy as a recipient of the Office of Naval Research Young Investigator Award. The program "is designed to attract young scientists and engineers who show exceptional promise for outstanding research and teaching careers."

Two students to receive Beckman Prize

The Mabel Beckman Prize—"awarded to an undergraduate woman who, upon completion of her junior or senior year at Caltech, has achieved academic excellence and demonstrated outstanding leadership skills, a commitment to personal excellence, good character, and a strong interest in the Caltech community"—this year is going to two students "who were both so excellent and so well fitting the award, we decided to honor them both."

Nadia Haq, a senior in chemistry who will attend graduate school next fall, has been an active member of the Associated Students from the Indian Subcontinent and has participated in the international student programs on campus. An orientation volunteer for the International Student Orientation for two years and an orientation assistant for one year, she has also served for three years as an upperclass camp counselor for New Student Orientation.

Hyunah (Emma) Kang, a senior in mechanical engineering who will also be attending graduate school in the fall, has been involved with the Society of Women Engineers since her first year at Caltech. She served as treasurer her sophomore year, has been president for the past two years, and has represented Caltech at the society's regional conferences. Under her leadership the society has taken on "many projects focusing on career, networking, and outreach."

Seniors win fellowships for study abroad

Five seniors have been honored with prestigious fellowships for study abroad.

Kristen Cook and **Dirk Englund** have both been awarded Fulbright grants by the J. William Fulbright Foreign Scholarship Board. Cook, a senior in geology, will spend a year at the University of Iceland, studying interactions between ice and volcanic eruptions. Englund, a senior in physics, will travel to the Netherlands to do optics research at either the Eindhoven University of Technology or at the Delft University of Technology.

Serena Eley, also a senior in physics, as a Luce Scholar will do research in Japan for a year at the Superconductivity Research Laboratory, which is part of the International Superconductivity Technology Center.

Robb Rutledge, a senior in biology, has received a Thomas J. Watson Fellowship, which will allow him to spend a year traveling throughout the Pacific region, retracing part of Darwin's route on the *Beagle* in order to study evolutionary issues.

Michael Shulman, a senior in mathematics, has been awarded a Winston Churchill Foundation Scholarship, which will allow him to undertake a one-year graduate course in mathematics at Churchill College, University of Cambridge, England.

Of wind power and the ancients

The upcoming Watson Lecture, on Wednesday, May 8, will feature research on a new theory of how the pyramids may have been built. Caltech professor of aeronautics and bioengineering Mory Gharib will speak on "The Wind and Raising the Obelisk," describing how an intriguing conjecture brought to his attention by a science hobbyist, Maureen Clemmons, led to a challenging project.

With the help of Caltech undergraduate student Emilio Castaño Graff, Gharib set out to demonstrate how the engineering knowledge of ancient civilizations could have been used to lift heavy objects with the power of the wind, in stark contrast to the Hollywood images of legions of slaves raising the pyramids. In June, the last of these successful field experiments was widely reported in the national and international media.

The lecture will take place at 8 p.m. in Beckman Auditorium and is free and open to the public; no tickets are required. A minimum of 700 seats will be available on a first-come, first-served basis, beginning at 7:30 p.m. For more information, contact Public Events at 1 (888) 2-CALTECH, (626) 395-4652, or events@caltech.edu, or visit online at www.events.caltech.edu. Individuals with a disability can call 395-4688 (voice) or 395-3700 (TDD).

Music fills the month of May

May is for May, and by coincidence, for music as well. Now that Caltech's spring music calendar is finalized, music lovers in the Caltech community have many reasons to rejoice.

Chamber music will be in the air in mid-May when the student chamber music program gets into full swing. A series of eight chamber music concerts will kick off on the evening of Friday, May 10. On Mother's Day, Sunday the 12th, a student ensemble will perform Brahms at an afternoon concert in Dabney Lounge.

What is special this year, according to Delores Bing, who teaches chamber music, is that her students will also present noon concerts in various venues across campus.

"The noon concerts are made possible by the Donald E. Hudson Chamber Music Fund," she said. "It's an endowment honoring the late Professor Hudson and his love of chamber music."

On Monday, May 13, an ensemble will perform Claude Bolling's "Suite for Flute and Jazz Piano" outside the Red Door Café. The Tuesday, May 14, concert will take place in Beckman Institute courtyard, with music for Celtic harp and strings. The program includes Schubert's Octet. On Wednesday, May 15, the program features quintets for flute and strings as well as for woodwinds, performed at Gates Library patio, located between Parsons-Gates and Crellin.

"We invite students, faculty, and staff to bring their lunches and enjoy some of the wonderful chamber music in these beautiful, shady spots on campus," Bing said.

The music of Mozart, Mendelssohn, and Chopin will fill Dabney Lounge on Thursday, May 16, and the Friday, May 17, noon concert features a program of all-Baroque music. Free lunches will be provided to the first 100 attendees on these two dates.

The closing performance is scheduled for Sunday, May 19, at 3:30 p.m. This concert will also take place in Dabney Lounge.

see Music, page 6

May 6–12, 2002

M T W T F S S

Monday, May 6

- Aeronautics Seminar**
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 1 p.m.—“Spaceflight Safety,” Jeff Claxton, NASA Dryden Flight Research Center. Information: www.galcit.caltech.edu/seminars.shtml.
- Thesis Seminar**
104 Watson, 1:30 p.m.—“Microfabricated Fluorescence-Activated Cell Sorter for Screening Bacterial Cells,” Anne Y. Fu, graduate student in chemistry, Caltech.
- Astronomy Tea Talk**
106 Robinson, 4 p.m.—Topic to be announced. Jack Welch, professor of electrical engineering and astronomy, UC Berkeley. Information: www.astro.caltech.edu/~kartik/tea_talks/.
- Computation and Neural Systems Seminar**
24 Beckman Labs, 4 p.m.—“Hierarchies and Reverse Hierarchies in the Visual System: A New View of Conscious Perception,” Professor Shaul Hochstein, department of neurobiology and Interdisciplinary Center for Neural Computation, Hebrew University, Jerusalem.
- Geology and Planetary Sciences Kliegel Lecture**
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Evolution of Sr and C Isotope Composition of Cambrian Oceans: Constraining Tectonic Events and Paleooceanographic and Biogeochemical Perturbation,” Professor Isabel Montañez, department of geology, UC Davis. Information: www.gps.caltech.edu.
- Inorganic-Electrochemistry Seminar**
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Aspects of Modern Coordination Chemistry,” Peter C. Wolczanski, Todd Professor of Chemistry, Cornell University.
- James Michelin Seminar Series**
Beckman Institute auditorium, 4 p.m.—“Art and Science: Adventures in Creativity,” C. E. Kohlhase, Cassini science and mission design manager, JPL. Refreshments.

Tuesday, May 7

- LIGO Science Seminar**
351 West Bridge, LIGO Science Conference Room, 11 a.m.—“The Virgo Seismic Attenuation and Suspension System,” Lee Holloway, University of Illinois at Urbana-Champaign.
- Caltech Library System Presents: Business Resources**
Sherman Fairchild Library, multimedia conference room, noon to 1:30 p.m.—Learn business research strategies and methods for finding information on companies and industries. Information and registration: <http://library.caltech.edu/learning/form.htm>.
- Institute for Quantum Information Seminar**
74 Jorgensen, 3 p.m.—Topic to be announced. Mark Srednicki, UC Santa Barbara.
- Joint Mechanical Engineering/Solid Mechanics Seminar**
206 Thomas, 3 p.m.—“Evolutionary Robotics,” Hod Lipson, assistant professor, mechanical and aerospace engineering, Cornell University. Refreshments, 210 Thomas, 2:45 p.m.
- Carnegie Observatories Colloquium Series**
William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“How Galaxies Get Their Spin,” Joel Primack, professor of physics, UC Santa Cruz. Refreshments, 3:30 p.m.
- Chemical Physics Seminar**
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Dynamics of Nanoscale Matters,” Professor A. W. Castleman Jr., Pugh Professor of Chemistry and Physics and Eberly Distinguished Chair in Science, Pennsylvania State University.
- General Biology Seminar**
119 Kerckhoff, 4 p.m.—“Early Anthropoids of Africa,” Elwyn Simons, Duke Professor, department of biological anthropology and anatomy, Duke University, and scientific director, Duke University Primate Center.
- USGS Public Lecture Series**
Baxter Lecture Hall, 8 p.m.—“Using GPS to Study Faults and Earthquakes in Southern California,” Dr. Nancy King, USGS Pasadena. Information: <http://pasadena.wr.usgs.gov/info/lectures/>.

Wednesday, May 8

- Mathematical Physics Seminar**
351 Sloan, noon—“Proofs of Discontinuous Phase Transitions via Mean-Field Bounds,” Marek Biskup, Hedrick Assistant Professor, department of mathematics, UCLA. Information: www.math.caltech.edu/events/mathphys.html.
- Abbott Laboratories Invited Lectures in Organic Synthesis and Biological Chemistry**
147 Noyes, Sturdivant Lecture Hall, 3 p.m.—“Development of a Catalytic, Asymmetric Addition of 1,3-Dicarbonyl Compounds to Nitroalkenes in the Synthesis of Endothelin-A Antagonist ABT-546,” David Barnes, senior research chemist, Abbott Laboratories.
- Abbott Laboratories Invited Lectures in Organic Synthesis and Biological Chemistry**
147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“New Synthesis Methods Based Upon Metal-Nitrogen Coordination,” Professor Jonathan A. Ellman, department of chemistry, UC Berkeley.
- Astronomy Colloquium**
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Extragalactic Stellar Astronomy,” Rolf Kudritzki, director, Institute for Astronomy, University of Hawaii. Information: <http://astro.caltech.edu/~jlc/colloquia.html>.
- Environmental Science and Engineering Seminar**
142 Keck, 4 p.m.—“Tracking the Flux of Carbon through Soils to Rivers and the Ocean,” Dr. Carrie Masiello, Center for Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory. Refreshments, Keck lobby, 3:40 p.m.
- Wiersma Lecture**
24 Beckman Labs, 4 p.m.—“Neuronal and Behavioral Plasticity in *Drosophila*: Past and Present,” Professor Chun-Fang Wu, department of biological sciences, University of Iowa.
- Earnest C. Watson Lecture**
Beckman Auditorium, 8 p.m.—“The Wind and Raising the Obelisk,” Morteza Gharib, professor of aeronautics and bioengineering, Caltech. Admission is free. Information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Thursday, May 9

- Geoclub Seminar**
151 Arms, Buwalda Room, 4 p.m.—“The Paleobiology of the Doushantuo Formation: Multiple Taphonic Windows into the Neoproterozoic Biosphere and the Early Evolution of Animals,” Shuhai Xiao, assistant professor, department of geology, Tulane University. Refreshments, 3:45 p.m. Information: www.gps.caltech.edu/seminars/geoclub/.
- Von Karman Lecture Series**
JPL, von Karman Auditorium, 7 p.m.—“The Odyssey to Mars,” Dr. Roger Gibbs, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture/.
- Fluid Mechanics Seminar**
101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—“Evolution of Some Fluid Dynamical Paradigms about the Oceanic General Circulation,” J. C. McWilliams, Slichter Professor of Earth Sciences, Institute of Geophysics and Planetary Physics, UCLA. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.
- Caltech/JPL Association for Gravitational-Wave Research Seminar Series**
155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Quantum Noise in Advanced LIGO Interferometers,” Yanbei Chen, graduate student in physics, Caltech.
- Inorganic-Organometallics Seminar**
151 Crellin, 4 p.m.—“New Insights into Phosphine and N-Heterocyclic Carbene Ligands: Implications for the Activity of Ruthenium Olefin Metathesis Catalysts,” Tina Trnka, graduate student in chemistry, Caltech.
- Von Karman Lecture Series**
Pasadena City College, 1570 E. Colorado, the Vosloh Forum (south of Colorado on Bonnie), 7 p.m.—“The Odyssey to Mars,” Dr. Roger Gibbs, JPL. Admission is free. Information: www.jpl.nasa.gov/lecture/.

May 13–19, 2002

M T W T F S S

Monday, May 13

Geology and Planetary Sciences Seminar

155 Arms, Robert Sharp Lecture Hall, 2 p.m.—Topic to be announced. Victoria Orphan, Monterey Bay Aquarium Research Institute. Information: www.gps.caltech.edu.

Inorganic-Electrochemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“The C-H Bond as a Functional Group: Remarkably Selective Catalysts for Aromatic Borylation,” Milton R. Smith III, associate professor, department of chemistry, Michigan State University.

Sloan-Swartz Seminar

24 Beckman Labs, 4 p.m.—“Uncovering Representation During Motor Learning: Theory and Experiments,” Reza Shadmehr, associate professor of biomedical engineering, Johns Hopkins School of Medicine. Refreshments, lobby, 3:45 p.m.

Applied and Computational Mathematics Colloquium

101 Guggenheim Lab, Lees-Kubota Lecture Hall, 4:15 p.m.—“Codon and Rate Variation Models in Molecular Phylogeny,” Kenneth Lange, professor of mathematics, UCLA. Refreshments, 3:45 p.m.

Tuesday, May 14

Caltech Library System Presents: Copyright for Researchers in Academia

Sherman Fairchild Library, multimedia conference room, noon to 1:30 p.m.—Rights and responsibilities under copyright law will be discussed by Kimberly Douglas, director of the Sherman Fairchild Library, and attorney Peggy Luh, Caltech’s Office of the General Counsel. Information and registration: <http://library.caltech.edu/learning/form.htm>. Open to Caltech community members only.

IR/submm/mm Sack Lunch

469 Lauritsen, 12:15 p.m.—“Supernova Remnants and Molecular Clouds,” Jeonghee Rho, Infrared Processing and Analysis Center (IPAC) and SIRTf Science Center, Caltech. Information: www.submm.caltech.edu/~motte/sacklunch.html.

Ulric B. and Evelyn L. Bray Seminar

25 Baxter, 4 p.m.—“Stated Beliefs and Play in Normal-Form Games,” Miguel Costa-Gomes, visiting assistant professor of economics, Caltech. Refreshments.

Carnegie Observatories Colloquium Series

William T. Golden Auditorium, 813 Santa Barbara Street, 4 p.m.—“The Red-Sequence Cluster Survey: Recent Results and Magellan Prospects,” Dr. Mike Gladders, Carnegie Observatories. Refreshments, 3:30 p.m.

Chemical Physics Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—Topic to be announced. Professor Robert Continetti, department of chemistry and biochemistry, UC San Diego.

Wiersma Lecture

24 Beckman Labs, 4 p.m.—Topic to be announced. Charles Stevens, investigator, Howard Hughes Medical Institute, and professor, Salk Institute.

Wednesday, May 15

Astronomy Colloquium

155 Arms, Robert Sharp Lecture Hall, 4 p.m.—“Morphological Evolution of Elliptical Galaxies,” Barbara Ryden, associate professor, department of astronomy, Ohio State University. Information: astro.caltech.edu/~jlc/colloquia.html.

Environmental Science and Engineering Seminar

142 Keck, 4 p.m.—“Transport of Colloids and Microbial Pathogens in Subsurface Environments,” Professor Menachem Elimelech, department of chemical engineering, Environmental Engineering Program, Yale University. Refreshments, Keck lobby, 3:40 p.m. Information: www.ese.caltech.edu/seminars.html.

NIMH Silvio Conte Research Center for Neurobiology Seminar

24 Beckman Labs, 4 p.m.—“The HPA Axis and the Pathophysiology of Depression: The Role of Early Adverse Experience,” Charles Nemeroff, professor and chairman, department of psychiatry and behavioral science, Emory University School of Medicine.

Organic Chemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“The Evolution of New Oxidation Reactions for Target-Directed Synthesis,” Professor Justin Du Bois, department of chemistry, Stanford University.

Thursday, May 16

Geoclub Seminar

151 Arms, Buwalda Room, 4 p.m.—“A Tale of Two Timescales: Footwall Denudation and Fault Growth During Continental Extension,” Alex Densmore, Trinity College, Dublin. Refreshments, 3:45 p.m. Information: www.gps.caltech.edu/seminars/geoclub/.

Joint BBSS/Biochemistry Seminar

147 Noyes, Sturdivant Lecture Hall, 4 p.m.—“Stamping Out Free Radicals: Signal Transduction in Oxidative Stress Responses,” Professor Bruce Dimple, department of cancer cell biology, School of Public Health, Harvard.

Physics Research Conference

201 E. Bridge, 4 p.m.—“The Neural Code of the Retina,” Markus Meister, Harvard University. Refreshments, 108 E. Bridge, 3:45 p.m. Information: www.pma.caltech.edu/~physcoll/PhysColl.html.

Science, Ethics, and Public Policy Seminar

25 Baxter, 4 p.m.—“Between Two Cultures: Differences of ‘Understanding’ in the Mathematical and Biological Sciences,” Evelyn Fox Keller, Moore Distinguished Scholar, Caltech. Refreshments. Information: www.hss.caltech.edu/ses/index.html.

Friday, May 17

Thesis Seminar

151 Crellin, 10 a.m.—“The Acyl-Claisen Rearrangement: Development of a Novel Metal-Catalyzed Claisen Rearrangement and Enantioselective Variants of the Acyl-Claisen,” Tehshik Peter Yoon, graduate student in chemistry, Caltech.

Thesis Seminar

Beckman Institute auditorium, 2 p.m.—“1:1 Motif for DNA Recognition by Beta Alanine-Linked Polyamides,” Adam Urbach, graduate student in chemistry, Caltech.

Fluid Mechanics Seminar

101 Guggenheim Lab, Lees-Kubota Lecture Hall, 3 p.m.—Topic to be announced. Professor Joe Klewicki, department of mechanical engineering, University of Utah. Information: www.galcit.caltech.edu/Seminars/Fluids/CurrentFluids/index.html.

Inorganic-Organometallics Seminar

151 Crellin, 4 p.m.—“Oxidative DNA Damage with a Family of Ruthenium Intercalators,” Sarah Delaney, graduate student in chemistry, Caltech.

Symposium to honor Bridges

The Caltech community and the public are invited to a symposium celebrating the 42-year career of William Bridges, Braun Professor of Engineering, as he retires after 25 years at Caltech.

The daylong event will begin at 9 a.m. on Tuesday, May 21, in the Beckman Institute auditorium. The program will include a number of presenters from Hughes Research Laboratories, where Bridges spent 17 years before joining the Institute, as well as from Caltech.

Symposium organizers are requesting guests to RSVP in order to plan refreshments. For more information or to reserve a place, call (626) 836-2065, e-mail lindamc@its.caltech.edu, or visit www.ee2.caltech.edu/People/Faculty/bbridges/.

Born in Inglewood, California, in 1934, Bridges attended UC Berkeley, receiving his BS ('56) and PhD ('62) degrees in electrical engineering. In 1961 he joined the Hughes Research Laboratories division of Hughes Aircraft, where in 1964 he invented the noble gas ion laser, still in use today in DNA sequencers, cell sorters, and laser light shows. Other laser projects included an airborne night reconnaissance system, space communications systems, early high-power laser weapons, and hydrogen maser clocks for global positioning systems.

Bridges became professor of electrical engineering and applied physics at Caltech in 1977, and Braun Professor of Engineering in 1983. “Caltech is a teacher’s dream come true,” he says. “The students are the brightest and most highly motivated in the world, and the Caltech honor code allows the students to become full partners in the learning process.”

The admiration has been returned by many students over the years, one of whom writes, “Professor Bridges developed an exemplary teaching reputation for his outstanding courses in electrical engineering and applied physics. These challenging and highly entertaining courses helped to shape a generation of young minds, and reaffirmed that Caltech was manufacturing thinkers and not automatons.”

Bridges has continued his research in various areas of electro-optical devices and applications; mm-wave dielectric waveguides; optical isotope separation; acousto-optic spectroscopy; waveguide gas lasers; and, most recently, in electro-optical modulation at mm-wave frequencies using novel techniques.

His many honors include fellowship in the IEEE, the Optical Society of America, and the Laser Institute of America, and membership in the National Academy of Sciences and the National Academy of Engineering.

CampusEvents

Monday, May 6

Baby Furniture and Household Equipment Pool

234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Beginners’ Hip-Hop Dance Class

Braun Gym, multipurpose room, 10 p.m.—Hip-hop classes, professionally taught, sponsored by the Caltech Dance Troupe. Fees: trial class, \$5; students, \$20 per term; nonstudents, \$30 per term. Attendees must have a valid gym ID or student ID. To register, e-mail troupe@caltech.edu.

Tuesday, May 7

Preschool Playgroup

Tournament Park, 10 a.m. to noon—Song and storytime, crafts and free play for toddlers and preschoolers (from walking to age 4). Information: (323) 550-8075 or jmph-p@pacbell.net.

Caltech Tai Chi Club

Winnett lounge, 7:15 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Caltech Folk-Dancing Club

Dabney Lounge, 7:30 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted. Open to the public.

Intermediate Jazz Dance Class

Braun Gym, multipurpose room, 10 p.m.—Sponsored by the Caltech Dance Troupe, this intermediate lyrical-jazz dance class is open to members of the Caltech community with Athletic Center membership. Some prior dance experience is required. The cost per term is \$20 for Caltech students and \$30 for nonstudents.

Wednesday, May 8

Baby Furniture and Household Equipment Pool

234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Wednesdays in the Park

Tournament Park, 10 a.m. to noon—Conversation and coffee for parents and caregivers, and playtime for children. Information: 744-9919 or cdd@its.caltech.edu.

Thursday, May 9

First Aid/CPR Training

Brown Gym classroom, 8 a.m. to 5 p.m.—Adult, child, and infant first-aid and CPR training will be offered by Caltech’s Safety Office in conjunction with the American Red Cross. Fee: \$15 for materials. Class size is limited; call extension 6727 to reserve a place.

Friday, May 10

Booksigning by Nobel Prize Winner Ahmed Zewail

Caltech Bookstore, 12:30 to 1:30 p.m.—Ahmed Zewail, Caltech’s Pauling Professor of Chemical Physics and professor of physics, will autograph his new book, *Voyage through Time: Walks of Life to the Nobel Prize*. Refreshments. Information: www.bookstore.caltech.edu.

Caltech Tai Chi Club

Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Armchair Adventures Series

Beckman Auditorium, 8 p.m.—*Brazil: Giant of the South*, narrated by Clint Denn. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Chamber Music Concert

Dabney Lounge, 8 p.m.—In the first event of their spring chamber music festival, Caltech students will perform trios by Beethoven and Brahms, and a variety of other music for small ensembles. Admission is free. Refreshments.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Saturday, May 11

Intermediate Ballet Class

Braun Gym, multipurpose room, 1 p.m.—The Caltech Dance Troupe offers free intermediate ballet classes to members of the Caltech community with Athletic Center membership and/or student ID.

Bandorama

Beckman Auditorium, 8 p.m.—The Caltech Jazz and Concert Bands, under the direction of Bill Bing, present their annual year-end concert. Guest soloist will be trombonist Les Benedict. The program includes selections by P. D. Q. Bach, Glenn Miller, and John Philip Sousa. Admission is free. Families are welcome.

Folk Music Society Presents James Lee Stanley

Dabney Lounge, 8 p.m.—Stanley is a veteran singer and songwriter noted for his fine vocals and biting sense of humor. Admission is \$12 for adults and \$4 for children and Caltech students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit the Folk Music Society at www.cco.caltech.edu/~folkmusi/.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Sunday, May 12

Mother’s Day Chamber Music Concert

Dabney Lounge, 3:30 p.m.—Caltech students will perform music for strings, winds, and piano, including Brahms’ First Piano Quartet. Admission is free. Refreshments.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Monday, May 13

Baby Furniture and Household Equipment Pool

234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Chamber Music at Noon

Red Door Café, noon—In the first of a five-day series of free noon chamber music concerts, Caltech students will perform Claude Bolling’s “Suite for Flute and Jazz Piano.” (In case of Ditch Day, the concert will be postponed to Monday, May 20.)

Beginners’ Hip-Hop Dance Class

Braun Gym, multipurpose room, 10 p.m.—Hip-hop classes, professionally taught, sponsored by the Caltech Dance Troupe. Fees: trial class, \$5; students, \$20 per term; nonstudents, \$30 per term. Attendees must have a valid gym ID or student ID. To register, e-mail troupe@caltech.edu.

Tuesday, May 14

First Aid/CPR Training

Brown Gym classroom, 8 a.m. to 5 p.m.—Adult, child, and infant first-aid and CPR training will be offered by Caltech’s Safety Office in conjunction with the American Red Cross. Fee: \$15 for materials. Class size is limited; call extension 6727 to reserve a place.

Preschool Playgroup

Tournament Park, 10 a.m. to noon—Song and storytime, crafts and free play for toddlers and preschoolers (from walking to age 4). Information: (323) 550-8075 or jmph-p@pacbell.net.

Chamber Music at Noon

Beckman Institute courtyard, noon—Caltech students will perform music for Celtic harp and strings, and Schubert’s octet for strings and winds. Admission is free. (In case of Ditch Day, this concert will be postponed to Monday, May 20.)

Caltech Tai Chi Club

Winnett lounge, 7:15 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Amnesty International Letter Writing

Athenaeum Rathskeller, 7:30 p.m.—An informal meeting at which we write letters on human-rights abuses around the world. All are welcome. Refreshments. Information: (818) 354-4461 or lkamp@lively.jpl.nasa.gov.

Caltech Folk-Dancing Club

Dabney Lounge, 7:30 p.m.—Meets every Tuesday until midnight. Drop-ins are welcome. Donations accepted. Open to the public.

Intermediate Jazz Dance Class

Braun Gym, multipurpose room, 10 p.m.—Sponsored by the Caltech Dance Troupe, this intermediate lyrical-jazz dance class is open to members of the Caltech community with Athletic Center membership. Some prior dance experience is required. The cost per term is \$20 for Caltech students and \$30 for nonstudents.

Wednesday, May 15

Baby Furniture and Household Equipment Pool

234 S. Catalina, 10 a.m. to 1 p.m.—Loans of kitchen and household necessities and baby furniture are made to members of the Caltech community. Information: 584-9773.

Wednesdays in the Park

Tournament Park, 10 a.m. to noon—Conversation and coffee for parents and caregivers, and playtime for children. Information: 744-9919 or cdd@its.caltech.edu.

Laser Safety Orientation

Keith Spalding Building, room 118, 11 a.m.—All laser operators and individuals working in areas where there may be exposure to laser radiation from Class 3b or Class 4 lasers are required to attend this training. Class size is limited; please call 395-6727 to reserve a space.

Chamber Music at Noon

Gates Library patio, between Gates and Crellin, noon—Caltech students will perform music by Haydn, Boccherini, and Ginastera. Admission is free. (In case of Ditch Day, this concert will be postponed to Wednesday, May 22.)

Thursday, May 16

Chamber Music at Noon

Dabney Lounge, noon—Caltech students will present trios by Mendelssohn and Chopin, and Mozart’s Piano Quartet in G Minor. Admission is free. Lunch will be provided to 100 people on a first-come, first-served basis. (In case of Ditch Day, this concert will be postponed to Monday, May 20.)

Caltech Orchestra Concert

Ramo Auditorium, 8 p.m.—The Caltech Orchestra, led by Allen Robert Gross, with flutist Andrea Vasconcellos, will perform Mendelssohn, Chaminade, and Bizet.

Friday, May 17

Chamber Music at Noon

Dabney Lounge, noon—Caltech students will present an all-Baroque concert with music by Corelli, Telemann, and others. Admission is free. Lunch will be provided to 100 people on a first-come, first-served basis. (In case of Ditch Day, this concert will be postponed to Monday, May 20.)

Caltech Tai Chi Club

Winnett lounge, 7 p.m.—Meets Tuesdays and Fridays weekly. Sessions are free. Information: www.its.caltech.edu/~taichi/.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Saturday, May 18

Intermediate Ballet Class

Braun Gym, multipurpose room, 1 p.m.—The Caltech Dance Troupe offers free intermediate ballet classes to members of the Caltech community with Athletic Center membership and/or student ID.

Caltech Y Community Service—Union Station

6 to 9 p.m.—Caltech Y volunteers will help prepare and serve meals for homeless men, women, and children at the Union Station Shelter in Pasadena. Reservations and information: 395-6163, gregf@caltech.edu, or www.caltechy.org.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

Sunday, May 19

Chamber Music Concert

Dabney Lounge, 3:30 p.m.—Caltech students will conclude their spring festival of chamber music with compositions by Fauré, Haydn, and Cui. Admission is free. Refreshments.

Lakeboat

Loading dock of Central Receiving (Building 85), 391 S. Holliston Ave., 8 p.m.—Theater Arts at Caltech offers a workshop presentation of the play by David Mamet. Outdoor seating; dress comfortably. Fee: \$5 general admission, \$3 students. Tickets and information: 395-4652, 1 (888) 2CALTECH, or events@caltech.edu. Individuals with a disability: 395-4688 (voice) or 395-3700 (TDD). Visit Public Events at www.events.caltech.edu.

McKelvey, from page 1

as faculty," said Ledyard, who had known McKelvey for 25 years. "He was a good person. You don't say that very often about people, but he was."

McKelvey's contributions to the social sciences were fundamental and wide-ranging. He was best known for his leading role in the development of mathematical theories of voting, and he also made important advances in game theory, social-choice theory, experimental political science, and computational economics.

In one notable paper, McKelvey showed that decisions made under one-person/one-vote, majority-rule democratic systems do not necessarily cluster around "middle-ground" policy outcomes, as had always been assumed. Rather, decisions are very sensitive to such details of process as who controls the agenda. As a result, nearly any outcome, even unpopular ones, can result from agenda manipulation.

For this and other contributions to political science, McKelvey was elected to the National Academy of Sciences in 1993. Other honors included election to the American Academy of Arts and Sciences and as a fellow of the Econometric Society, and he was named a Caltech Sherman Fairchild Distinguished Scholar in 1978, a year before joining the Institute faculty.

McKelvey was a pioneer in the use of laboratory experiments and computational techniques to test theories of voting and other group behavior. Most recently, he was in the process of initiating a contest called a Turing tournament, designed to improve the ability to predict people's behavior in strategic situations. (See article on page 1.)

Not only was McKelvey an innovative scholar, he will also be remembered as a devoted educator. Highly sought as a PhD advisor, he spent countless hours working with his students, many of whom now hold professorships at leading universities and carry on his approach to social-scientific inquiry.

Born April 27, 1944, McKelvey graduated from Oberlin College with a bachelor's degree in mathematics in 1966. He earned an MA in mathematics from Washington University in St. Louis in 1967, and a PhD in political science from the University of Rochester in 1971. After serving on the faculties of the University of Rochester and Carnegie Mellon University, he joined Caltech in 1979 as a full professor, and was awarded the Wasserman Chair in 1998.

He is survived by his wife, Stephenie Frederick, and three children, Kirk, Christopher, and Holly.

Seminar Day, from page 1

year are Milton M. Chang, PhD '69; David A. Evans, PhD '68; Gary Felsenfeld, PhD '55; Baldomero M. Olivera, PhD '66; and Kiyo Tomiyasu, BS '40.

Gordon Moore, PhD '54, chairman emeritus of Intel Corp., and chairman emeritus of the Caltech Board of Trustees, will deliver the general session talk, titled "The Semiconductor Revolution." In it, Moore will examine the development of the powerful technology underlying the semiconductor industry. He will also attempt to explain why consumer technology gets cheaper as it grows more complex. The rest of the day will be devoted to seminars, exhibits of the electronic nose and the new wind tunnel, other special programs throughout the campus, and a glee club concert at 8 p.m.

Just as interesting as the seminars are the special events scheduled on the days before and after Seminar Day. On the evening of Thursday the 16th, those alumni celebrating their 65th, 60th, 55th, and 50th class reunions are invited to a reception at President David Baltimore's residence, with dinner and dancing to follow at the Athenaeum. The same groups will be invited to take a campus architectural tour on the morning of the 17th. That day will be devoted to various reunions, including the classes of 1937, 1942, 1947, 1952, and other fifth-year reunions.

Preceding the reunion weekend, the Physics, Math and Astronomy division will host a special reunion from Monday, May 13, through Wednesday, May 15. This three-day event will feature talks by faculty, poster sessions, lab tours, and plenty of opportunities to socialize. It culminates with a trip to the Palomar Observatory. Further information is available from Michelle Vine at (626) 395-3817. A full schedule of events is available on line at www.pma.caltech.edu/GSR/reunion.html.

Music, from page 2

For those with slightly different tastes in music, the Caltech Jazz and Concert Bands offer "Bandorama" on May 11, beginning at 8 p.m., in Beckman Auditorium. Under the direction of Bill Bing, this annual year-end concert will feature selections from P.D.Q. Bach, Glenn Miller, and John Philip Sousa. The guest soloist will be trombonist Les Benedict, who has performed with such greats as Frank Sinatra and Elvis. In addition, the Caltech Glee Clubs will present a concert of opera choruses on May 17 and 18, beginning at 8 p.m., in Ramo Auditorium. The featured works will include Bizet's *Carmen*, Gounod's *Faust*, and Mozart's *The Magic Flute*. All concerts are free and open to the Caltech and JPL community.

Turing, from page 1

served behavior is generated by humans or by machine. After all entries are received, repeated rounds of a simple, matrix-form game will be played by humans and by emulators. The data generated from these rounds will be then presented to the sniffers, whose task it will be to determine whether data are human- or machine-generated. The winning sniffer will do the best job of distinguishing between the human and machine data, and the winning emulator will do the best job of fooling the best sniffer. Monetary prizes for the best emulators and sniffers will encourage the submission of entries representing the best current thinking on these questions.

The Turing Tournament raises fundamental, unsolved issues in game theory, computer science, econometrics/statistics, and experimental economics. Applications of this methodology include monitoring "program trading" in financial markets, modeling behavior in public-goods problems, evaluating machine-translation programs, and building decision-making robots to take the place of humans in economics experiments. Some of these topics will be the focus of the Turing Tournament in future years.

One particularly fertile area is the question of program trading—automatic computerized execution of securities trades, usually in large volumes—which tends to create very unstable situations. The Securities and Exchange Commission (SEC) has dealt with the problem by introducing market mechanisms such as "circuit breakers" to temporarily slow down or stop trading when prices become too volatile. However, these remedies introduce their own inefficiencies into the market. The Turing Tournament methodology could be used instead to provide a way to detect instability caused by program trading, possibly leading to more effective computer-based means by which the SEC can regulate it.

Another fruitful area of study is experimental economics. Here, with good models of human behavior in a voting setting, decision-making robots could be used in place of humans in experiments on candidate competition, to model voters' responses to candidate behavior. This would allow experiments on candidate behavior in large elections without having to pay thousands of subjects to play the part of the voters. Instead, the only subjects needed would be the candidates.

Turing Tournament organizers envision the event running for five years, beginning this summer. This year's tournament will focus on repeated games, and applications for subsequent years will be identified as the program evolves.

Kim Matsunaga is a staff writer in the Division of the Humanities and Social Sciences.

News extras...

Professor of Mechanical Engineering Melany Hunt chatted with prospective Caltech students over lunch during the recent Prefrosh Weekend, hosted annually by the Office of Admissions.



Political commentator Mark Shields, left, joined President David Baltimore and Ben Rosen, chairman of Caltech's Board of Trustees, at a lunch at the National Press Club in Washington, D.C., part of an East Coast tour to introduce the Institute to members of the media.



During Caltech's recent International Week celebration, staff member in astronomy Vidyullata Mahabal (left) and USC grad student Bhavna Hirani performed an Odissi dance, one of India's most popular classical styles. The events were sponsored by International Student Programs, the Caltech Y, Business Services, and student groups.

Caltech 336

T E S S E N T I A L S

The campus community biweekly
May 2, 2002, vol. 2, no. 9

Editor: Daryn Kobata
(626) 395-6240; daryn@caltech.edu
Assistant Editor: Javier Marquez
(626) 395-6624; jmarquez@caltech.edu
Calendar: Emily Adelson
(626) 395-4605; esa@caltech.edu
Administrator: Debbie Bradbury
(626) 395-3630; debbieb@caltech.edu
Graphic Artist: Doug Cummings
Photographer: Bob Paz
Published by the Office of Public Relations

California Institute of Technology
Pasadena, California 91125

ADDRESS SERVICE REQUESTED