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# TechTalk

S E R V I N G   T H E   M I T   C O M M U N I T Y

## Institute brimming with energy

Experts, industry leaders, students convene at annual energy conference

David Chandler  
News Office

“Scale” was the keyword as hundreds of people gathered this past weekend for the fourth annual MIT Energy Conference. The event, organized entirely by student groups, has evolved “essentially from a standing start to become one of the premier energy events,” said President Susan Hockfield at the meeting’s opening.



While there has been rapidly growing enthusiasm in recent years about a variety of approaches to improving the world’s energy systems, “no matter how bright many of these new technologies seem, most of them wither around questions of scale,” Hockfield said.

The magnitude of the world’s dependence on fossil fuels, and of the problems associated with those fuels, makes it difficult for any new approach to make a significant impact.

Thus, the conference’s title, “Solutions that scale to meet the energy challenge,” addressed the often-overlooked heart of the matter. And while the dozens of talks, panel discussions and exhibits in the two-day conference and exhibit acknowledged the daunting nature of the challenge, a sense of shining but realistic optimism pervaded the event.

The sheer magnitude of the problems can translate into an equally vast opportunity, said John Doerr, a pioneer venture capitalist whose firm bankrolled some of the biggest winners in the computer and Internet booms, including Sun, Google, Compaq and Symantec. In his opening keynote address, Doerr predicted that “the market for energy technology is larger, maybe 10 times larger,” than the Internet boom that preceded it. “We’re at the beginning of a green technology boom.”

In order to kick-start that process, there is a need for much greater investment in research, he said. Today, the total annual research and development budget for new energy technology is about equal to just one day’s profits from a single fossil-energy

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EARTH DAY 2008

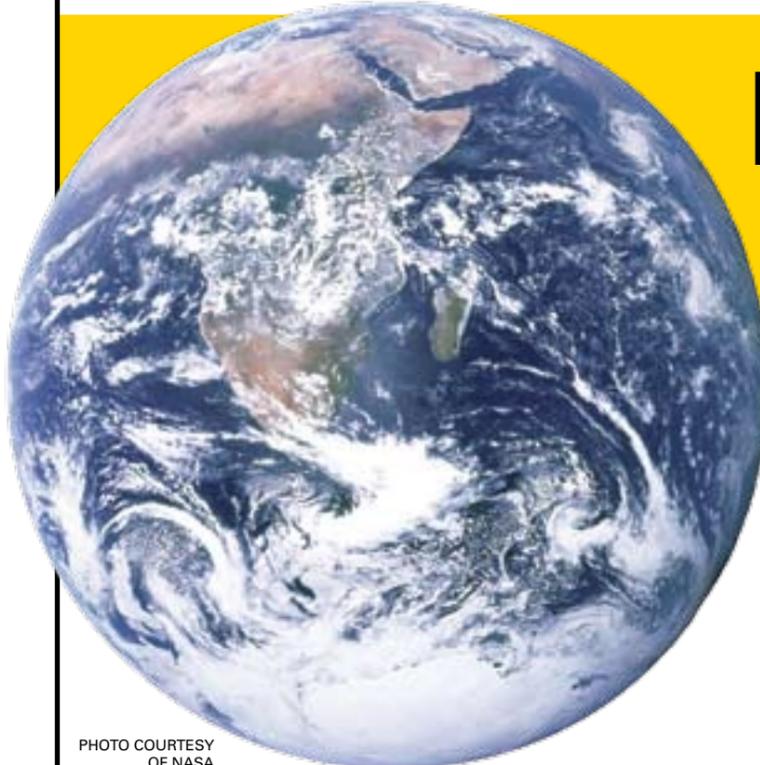


PHOTO COURTESY OF NASA

## Leaving our mark

MIT class tracks carbon footprint of different lifestyles; finds even the smallest U.S. footprints are relatively large

David Chandler  
News Office

Whether you live in a cardboard box or a luxurious mansion, whether you subsist on home-grown vegetables or wolf down imported steaks, whether you’re a jet-setter or a sedentary retiree, anyone who lives in the U.S. contributes more than twice as much greenhouse gas to the atmosphere as the global average, an MIT class has estimated.

The class studied the carbon emissions of Americans in a wide variety of lifestyles—from the homeless to multimillionaires, from Buddhist monks to soccer moms—and compared them to those of other nations. The somewhat disquieting bottom line is that in the United States, even people with the lowest energy usage account for, on average, more than double the global per-capita carbon emission. And those emissions rise steeply from that minimum as people’s income increases.

“Regardless of income, there is a certain floor below which the individual carbon footprint of a person in the U.S. will not drop,” says Timothy Gutowski, professor of mechanical engineering, who taught the class that calculated the rates of carbon emissions. The results will be presented this May at the IEEE International Symposium on Electronics and the Environment in San Francisco.

While it may seem surprising that even people whose lifestyles don’t appear extravagant—the homeless, monks, children—are responsible for significant greenhouse gas emissions,

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GRAPHIC / PATRICK GILLOOLY

A representation of different estimated annual carbon footprints. Government services were a major reason for the relatively large U.S. average, according to an MIT class led by Professor Timothy Gutowski of mechanical engineering.

### FOCUSING ON ENERGY

Massachusetts Gov. Deval Patrick will speak at MIT on Earth Day.  
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MIT helps to develop a carbon-neutral community in Abu Dhabi.  
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The formation of the MIT-Fraunhofer Center for Sustainable Energy Systems is announced during Saturday’s energy conference.

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# Jacks named president of American Association for Cancer Research

Tyler E. Jacks, director of the David H. Koch Institute for Integrative Cancer Research at MIT, has been named president-elect of the American Association for Cancer Research (AACR), the world's largest scientific organization dedicated to preventing and curing the deadly disease.

Jacks, also the David H. Koch Professor of Biology at MIT and an investigator with the Howard Hughes Medical Institute, took over the position on Monday, April 14, at the AACR Annual Meeting in San Diego.

Jacks' research interests are in the genetic events that contribute to the development of cancer. His laboratory has engineered a series of novel mutant mouse strains that accurately mimic human cancer and thus serve as animal models for exploring the cellular pathways regulated by cancer-associated genes.

"We are experiencing an unprecedented and truly remarkable pace of discovery in cancer



Tyler Jacks

research today," Jacks said. "As the leading cancer research organization in the world, the AACR plays a vital role in promoting the flow of information from these discoveries between scientists and clinicians which ultimately impacts on the lives of people with cancer."

Jacks has served in several leadership positions for the AACR, including the Board of Directors and the Nominating

Committee. He serves on the editorial board of Molecular Cancer Therapeutics and was a senior editor of Molecular Cancer Research. Jacks has co-chaired several AACR Special Conferences, was a co-chair of the 2003 AACR Annual Meeting and served as faculty for the "Molecular Biology in Oncology" Educational Workshop. Jacks has also received several awards recognizing his scientific accomplishments, including the AACR Award for Outstanding Achievement in Cancer Research.

## Memorial service planned for Menand

A memorial service is planned to celebrate the life of Louis Menand III, who died at age 85 of complications from cardiac surgery on Jan. 30. Menand was a senior lecturer in MIT's Political Science department, where he touched the lives of many students and also served as special assistant to the provost under presidents Howard Johnson, Jerome Wiesner and Paul Gray.

The service will be held on Tuesday, April 22, at 3 p.m. in the MIT Chapel. Parking will be available in the Kresge parking lot, and a reception will immediately follow the service at McCormick Hall.

Gifts in memory of Menand may be made to Tutoring Plus, a neighborhood educational organization serving low-income children in Cambridge that Menand helped to found and which benefitted tremendously from his leadership over the years. Such gifts can be sent to: Ellen McLaughlin, Executive Director, Tutoring Plus of Cambridge, 225 Windsor St., Cambridge, MA 02139.

Gifts may also be directed to MIT in Menand's memory for the MIT Retirees Association Undergraduate Scholarship Fund.



PHOTO / DONNA COVENEY

## Initiatives at the Institute

Gov. Deval Patrick and MIT President Susan Hockfield appear together before the governor unveiled a plan to pump \$3.8 billion into the state's economy as a safeguard against worsening economic conditions. Patrick's speech at the MIT Sloan School of Management was his first appearance at MIT since being sworn in as the state's 71st governor last year.

## Three MIT faculty named Guggenheim fellows

Three MIT professors were named Guggenheim fellows for their "stellar achievement and exceptional promise for continued accomplishment," the John Simon Guggenheim Memorial Foundation announced this month.

Robert Kanigel, professor of science writing; Susan S. Silbey, the Department of Anthropology head; and Alexander van Oudenaarden, an associate professor of physics, were named as fellows.

Kanigel's fellowship will be focused on his upcoming book, set on the Blasket Islands in the west of Ireland; Silbey's focus will be on trust and surveillance in the cultures of science; and van Oudenaarden will study stochastic gene expression in development.

The Guggenheim foundation named a total of 190 fellows at 81 different academic institutions for 2008. Each fellow receives different grants based on need, with more than \$8 million awarded this year for an average grant of \$43,200.

## MIT's Makan wins prestigious Rome Prize

Sarah H. Wright  
News Office

MIT professor Keeril Makan, a musician and composer acclaimed for his technique of layering recorded and live sounds, has been awarded a prestigious Rome Prize by the American Academy in Rome for 2008-2009.

The prize, announced Thursday, April 10, in New York, carries a stipend of \$24,000, and work and living accommodations for 11 months at the academy.

"Keeril Makan has emerged as an exciting and inspiring young composer, with commissions from the Kronos Quartet, Bang on a Can All-Stars, Carnegie Hall, and many other groups. I am delighted to see his tremendous achievements recognized in this way," said Deborah Fitzgerald, Kenan Sahin Dean of the School of Humanities, Arts, and Social Sciences.

Makan, assistant professor of music, originally trained as a violinist. He describes his music as an outgrowth of the Western classical tradition, using familiar instruments and other musical traditions in new ways.

Makan's music moves fluidly among disparate sounds, weaving them into instrumental combinations that range from small chamber ensembles to works for orchestra. Innovative

and exploratory, it has required the composer to develop hieroglyph-like notations for musicians performing his work. In a saxophone piece, "Voice Within Voice," for example, a row of jagged markings that look like shark's teeth means "put your teeth on the reed and grind."

But notation is not where the process of composing starts for Makan, a 36-year-old native of New Jersey.

"I write by physically interacting with the instrument I'm composing for. If I'm writing for the oboe, I'll play it in as many ways as I can imagine," he says. "As I work, new musical possibilities develop. This is how I get the raw materials for a piece; I record myself, then I figure out how I'll work with the material."

Makan will devote the 11-month residency in Rome to working on three major pieces, he says.

One project will be to compose "Tracker," a five-part chamber opera in which technological instruments of the past, such as 19th-century contraptions for measuring pulse and motion, are linked thematically to current technologies and to the impact of technology on the imagination and emotional experience.

Sketches for "Tracker" are now taped in five columns to the wall of Makan's MIT office, a small room packed with books and musi-

cal gear. Photographs by 19th century scientist Etienne-Jules Marey top each column; poem-shaped segments of Jena Osman's libretto spill downward like adding machine paper. There are no visible musical notes.

In addition to the opera, Makan's plan for Rome is to complete a work for electric guitar and orchestra, commissioned by the American Composers Orchestra, to be premiered this November. He will also finish a trio for flute, viola and harp, commissioned by the Harvard Musical Association, for violin and MIT professor Marcus Thompson.

A tall order for 11 months, but Makan, who owns neither a car nor a television, finds economy in technology. He relies on Finale, a notation program, for experimenting with time and modeling, and on a digital audio workstation for analyzing the frequency components of prerecorded sounds, en route to creating new ones.

Recent MIT winners of the Rome Prize include Pulitzer Prize-winning novelist Junot Díaz, associate professor in Writing and Humanistic Studies, and John Ochsendorf, associate professor of architecture.

A national competition, the Rome Prize is awarded annually to 15 emerging artists in various fields.



PHOTO / DONNA COVENEY

Assistant Professor of Music Keeril Makan, who recently won the Rome Award for his compositions, uses a multitude of instruments, including the violin and piano.

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## Student conference targets global poverty

Former senator and presidential candidate John Edwards will be among the speakers at an MIT conference this weekend involving more than 1,000 students from around the country dedicated to fighting the problems of extreme poverty in the world.

The inaugural Millennium Campus Conference, organized by a coalition of student groups including MIT's Global Poverty Initiative, will feature talks and discussions about international development and steps toward developing sustainable strategies against poverty. The group was founded with a goal of furthering the United Nations' Millennium Development goals.

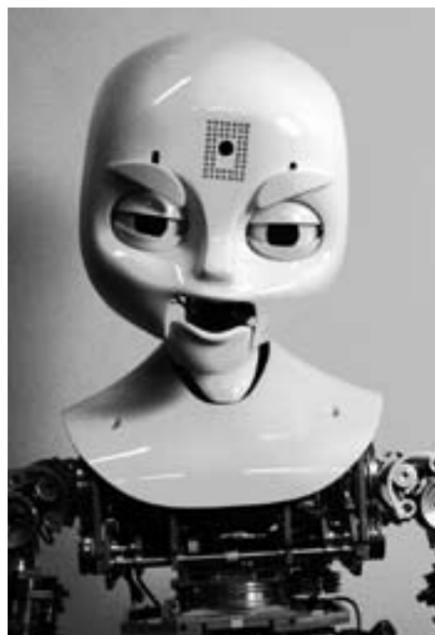
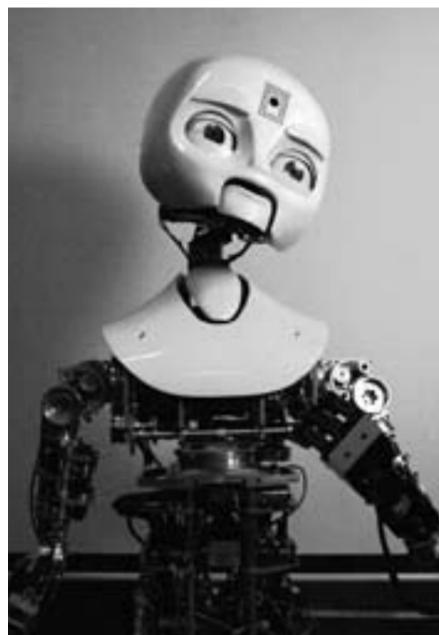
Edwards is scheduled to deliver an opening keynote speech at 10 a.m. Friday in Kresge Auditorium. Other scheduled speakers during the three-day conference include MIT senior lecturer Amy Smith, anthropologist and physician Paul Farmer and economists Jeffrey Sachs and Paul Romer.

Henrietta H. Fore, administrator of the United States Agency for International Development and director of United States Foreign Assistance, will also be participating in the meeting's opening ceremonies.

The conference will feature a variety of luncheons, workshops and exhibits to promote networking among college campus organizations. Other major programming activities include the Millennium Campus Concert, hosted by Brad Corrigan of Dispatch, which will take place on April 19 at the Roxy, and the Millennium Campus Cup—a soccer tournament to benefit Grassroots Soccer HIV/AIDS education in Zimbabwe.

For more info, visit <http://www.mcnpartners.org> or <http://gpi.mit.edu/>.

## Meet Nexi: the Media Lab's latest robot star



PHOTOS / DONNA COVENEY

The many faces of Nexi, the Media Lab's newest robot, which can make a wide range of expressions.

**David Chandler**  
News Office

A new experimental robot from the MIT Media Lab can slant its eyebrows in anger, or raise them in surprise, and show a wide assortment of facial expressions to communicate with people in human-centric terms. Called Nexi, it is aimed at a range of applications for personal robots and human-robot teamwork.

Nexi has become something of an Internet celebrity after a preliminary video demonstration of its facial expressions using prescribed movements was posted this month on YouTube. The spot has been accessed more than 110,000 times, and viewers have reacted with comments ranging from awe and bemusement ("This robot seems more humane than most humans") to shock and alarm ("Creepy. Very creepy").

Created by a group headed by Media Lab's Cynthia Breazeal, known for earlier

expressive robots such as Kismet, the new product is known as an MDS (mobile, dextrous, social) robot. Unlike Kismet, which consisted only of a robotic head, the Nexi MDS is a complete mobile manipulator robot augmented with rich expressive abilities. It is designed to ultimately ride on self-balancing wheels like the Segway transporter, but it currently uses an additional set of supportive wheels to operate as a statically stable platform in its early stage of development. It has hands to manipulate objects, eyes (video cameras), ears (an array of microphones), and a 3-D infrared camera and laser rangefinder to support real-time tracking of objects, people and voices as well as indoor navigation.

The development of Nexi was led by the MIT Media Lab's Personal Robots Group in collaboration with Professor Rod

Gruppen at the University of Massachusetts-Amherst and two MIT robotic spin-off companies. The project was originally funded by an Office of Naval Research Defense University Research Instrumentation Program (DURIP) award to develop a novel class of robots that can engage in sophisticated forms of peer-to-peer teamwork with humans in uncertain environments. A recent ONR Multidisciplinary University Research Initiative (MURI) award, for which Breazeal is the PI, aims at developing technologies and demonstrations for teams comprised of humans and autonomous aerial robots in addition to the MDS robots. Several MIT faculty are part of the MURI effort (Nick Roy and Jon How in aero-astro, and Deb Roy at the Media Lab) in addition to other collaborators at Stanford, Vanderbilt, UMass-Amherst and University of Washington.

## Second annual Cambridge Science Festival kicks off April 26

The second annual Cambridge Science Festival, an annual citywide celebration of science and technology, will take place Saturday, April 26, through Sunday, May 4. The festival will feature more than 200 events ranging from lunch with a different Nobel laureate each weekday, to building and launching your own rocket, to theatrical and opera performances.

The festival kicks off with a free Science Carnival at Cambridge City Hall from noon until 4 p.m. on April 26.

The Cambridge Science Festival showcases Cambridge as an internationally recognized leader in science and technology. A multifaceted, multicultural event modeled on art, music and movie festivals, the event promises to make science accessible, interactive and fun, highlighting the impact of science and technology in all our lives.

This year's festival—spanning nine days—will include more than 200 events open to the public and held at different venues throughout the city of Cambridge. Festivalgoers can participate in workshops, behind-the-scenes tours, talks, performances, debates and film festivals. Many of the events are interactive and geared to kids and their families. But there will also be adult-focused events, such as exploring whether neuronal enhancements could or should be used to make you smarter, with neuroscientist and Harvard Provost Steve Hyman, Picower Institute Director Mark Bear and MIT Neuropharmacology Professor Richard Wurtman.

Some MIT-centric events during the

festival include "A Hack's How-To; MIT Museum Family Day" all day on Sunday, April 27, featuring hands-on fun family activities; the Arts & Science Mixer on Thursday, May 1, and the Energy Night Mixer on Friday night, May 2—both at the MIT museum and free for the MIT community.

Last year the event drew an estimated 15,000 people from across New England. "The festival aims to make world-class science and technology—and the people who do it—directly accessible to the community," said festival Executive Director and MIT Museum Director John Durant. "Science is relevant to absolutely everyone; but we hope that in particular our festival will inspire curious young minds to explore the world about them in new ways."

The Cambridge Science Festival is a collaboration among MIT, Harvard University, the City of Cambridge, Cambridge Public Schools, Cambridge Public Library, WGBH and the Museum of Science. The festival is generously supported by MIT, the Massachusetts Cultural Council, the City of Cambridge, Larry and Diane Bock, Wyeth Research, Biogen Idec, Harvard University, Novartis, Genzyme, Merck, Millennium, Pfizer, Vertex, Alnylam, Alexandria Real Estate Equities, Boston Properties, Draper Labs, MathWorks, Shire, the Cambridge Community Foundation, CDM, Cubist and Schering-Plough.

For a complete schedule of events, visit <http://www.cambridgesciencefestival.org>.

# SMART

### SMART UROP

The Singapore-MIT Alliance for Research and Technology (SMART) is pleased to sponsor paid summer undergraduate research opportunities in Singapore. This research opportunity will enable undergraduates to participate in an MIT's faculty member's Singapore research project and, through an international experience be exposed to a foreign culture and interact with students and faculty from diverse backgrounds. Each undergraduate will have an MIT faculty member as a mentor/supervisor and conduct research within the faculty member's Singapore research program. The undergraduate will have access and use of the faculty's laboratory and equipment.

#### Eligibility:

Undergraduates in good standing who have already or will have successfully completed their first year are eligible to apply.

#### Requirements:

Applicants should contact an MIT faculty member participating in the SMART program (refer to <http://mit.edu/smart/urop/> to view the list of faculty participants) and based upon interaction with that faculty member, submit an application that contains:

- A 1-3 page description of the research that you would like to conduct in Singapore.
- A recommendation from the MIT faculty.
- An indication of your supervisor(s) while in Singapore (faculty member, staff, graduate students).
- The period you propose to spend in Singapore, in general not less than two (2) months.
- Upon your return to MIT two evaluations: one from you faculty supervisor and the other from you. The faculty evaluation should assess your progress and inform us about your contributions to the research program. Your evaluation should describe the progress of your research project, both accomplishments and challenges, as well as an assessment of your academic and personal experience in Singapore.

#### Compensation:

- Hourly rate of US\$11.00 per hour
- Roundtrip economy class airfare
- US\$25.00 per diem per day (food and transportation)

Assistance will be provided for securing housing in Singapore.

#### Applications:

Applications should be submitted by May 1<sup>ST</sup> to Jocelyn Sales at [jsales@mit.edu](mailto:jsales@mit.edu).

## MIT and Fraunhofer announce center for sustainable energy systems

Center aims to significantly reduce cost of solar energy over next five years

MIT and Fraunhofer, a German research organization, have signed an agreement to establish a research center in Massachusetts focused on significantly reducing the cost of solar energy over the next five years. The MIT-Fraunhofer Center for Sustainable Energy Systems will develop cutting-edge technologies and materials for designing and producing better solar modules.

Located adjacent to the MIT campus, the center will be active in other areas of sustainable energy research as well, including developing new technologies to substantially reduce the energy consumption of new and retrofitted structures by adapting state-of-the-art building technology. The center also aims to develop a portfolio of new efficiency and solar technologies that maximize MIT's world-class capabilities in advanced materials research and development and computer simulation.

Professors Ernest Moniz, director of the MIT Energy Initiative, and Eicke Weber, director of the Fraunhofer Institute for Solar Energy Systems, announced the agreement that will lead to the creation of the new center Saturday, April 12, at the MIT Energy Conference. Also participating in the ceremony were MIT President Susan Hockfield, German foreign minister Frank-Walter Steinmeier, Karl Weiss, chair of the board of the Massachusetts Technology Collaborative, Ian Bowles, Massachusetts secretary of energy and environmental affairs, and Larry Reilly with National Grid.

"This partnership will pair the outstanding basic energy research capabilities at MIT with the world-class applied research capabilities of the Fraunhofer Institute," said Moniz, the Cecil and Ida Green Professor of Physics. "The research focusing on solar energy and on building efficiency address extremely important technologies for both long- and short-term response to global energy challenges. Also, the strong support of the Commonwealth, the Massachusetts Technology Collaborative and National Grid represents the kind of public-private partnership that we will need to succeed."

Start-up costs of the center will be funded with \$5 million from the Massachusetts Technology Collaborative. National Grid, the principal member of the Center's Partnership with Industry, also committed to support the center with a pledge of \$1 million over five years.

"The Fraunhofer Institute for Solar Energy Systems has been highly successful over 25 years in developing technologies in the areas of renewable energy and energy efficiency, and transferring these innovations to industry," Weber said. "I expect that our new Center for Sustainable Energy Systems at MIT will be as successful here in Massachusetts and help achieve the state's goals in climate protection."

Nolan Browne, MIT alumnus and founder of the MIT Energy Conference, will serve as the center's managing director. In addition, Tonio Buonassisi, assistant professor of mechanical engineering at MIT and the center's planned scientific director, is one of the leading solar technologists in the United States today. Roland Schindler, the center's executive director, is a 24-year Fraunhofer veteran who will serve as a liaison between the MIT team and Germany, ensuring that activities are aligned. Four out of the nine members of the board of advisors are MIT professors.



IMAGE COURTESY OF FOSTER + PARTNERS

An artist's rendering of the proposed carbon-neutral community being developed in Abu Dhabi.

David Chandler  
News Office

**A**bu Dhabi is a tiny nation with huge reserves of oil and, as a result, a lot of wealth. But this Persian Gulf emirate is taking the long view, and planning right now for a future beyond oil.

The most dramatic piece of Abu Dhabi's futuristic planning is its creation of a whole new city from scratch, centered on an institute of technology modeled after, and created in collaboration with, MIT. The new city, Masdar, is perhaps the most ambitious attempt in the world today to create a community with a total net energy use of zero—without sacrificing any of the amenities of modern technology. Carbon emissions and

waste output are also intended to be kept at or near zero.

The city, designed to house 50,000 people with the Masdar Institute of Science and Technology at its center, will be completely car-free, with walkways and personal transportation systems instead of roads and parking garages. Some of the walkways will be topped with solar panels, which will offer shade from the blistering tropical sun while also providing electricity for the city.

"Every building will be designed and constructed to provide a model for sustainable living and working," the Masdar Institute's web site declares. Power will come from photovoltaic panels and surrounding wind farms. And the city will be built with the "fullest use of innovation in energy-efficiency, sustainable practices, resource recycling, biodiversity, transportation and green building standards," they say.

## FOOTPRINT: MIT research discovers that in the United States, even the smallest carbon footprints can b

Continued from Page 1

one major factor is the array of government services that are available to everyone in the United States. These basic services—including police, roads, libraries, the court system and the military—were allocated equally to everyone in the country in this study. Other services that are more specific, such as education or Medicare, were allocated only to those who actually make use of them.

The students conducted detailed interviews or made detailed estimates of the energy usage of 18 lifestyles, spanning the gamut from a vegetarian college student and a 5-year-old up to the ultrarich—Oprah Winfrey and Bill Gates. The energy impact for the rich was estimated from published sources, while all the others were based on direct interviews. The average annual carbon

dioxide emissions per person, they found, was 20 metric tons, compared to a world average of four tons.

But the "floor" below which nobody in the U.S. can reach, no matter a person's energy choices, turned out to be 8.5 tons, the class found. That was the emissions calculated for a homeless person who ate in soup kitchens and slept in homeless shelters.

The analysis was carried out by Gutowski and 21 students in his 2007 class, "Environmentally benign design and manufacturing." They derived a system for making such comparisons, which they call ELSA—environmental life style analysis.

Unlike some other attempts to quantify carbon-emission rates, Gutowski and his students took great care to account for often-overlooked factors, such as the "rebound

effect." That's when someone makes a particular choice—for example, buying a hybrid car instead of a gas-guzzler—but then uses the money saved from their reduced gasoline costs to do something else, such as taking a long trip by airplane. The net impact, in such a case, may actually be an overall increase in carbon emissions.

"When you save energy, you save money," Gutowski explains. "The question is, how are you going to spend that money?"

The students looked at the factors within each person's control that might lead to a reduction in carbon output. They found that achieving significant reductions for the most part required drastic changes that would likely be unacceptable to most people. As a result, they said, "this all suggests to us very significant limits to voluntary actions to reduce

impacts, both at a personal level and at a national level."

In a continuation of the class this semester, another group of students are exploring this question in more detail, looking at just what kinds of things people really can do to limit their environmental impact. The question they are addressing, Gutowski says, is "can average Americans tighten their belts" in a way that would make a significant difference. Once again, the class will be interviewing people living in a wide variety of ways, including an Amish farming lifestyle. Then, after analyzing the results and possible changes, they will go back to the same people and ask, "Would you consider these alternatives?"

In general, spending money on travel or on goods that have substantial energy costs in their manufacture and delivery adds to a

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“It’s a pretty exciting project,” says MIT’s Charles Cooney, professor of chemical engineering and a member of the Masdar Initiative’s executive committee. “The university will be living inside many of the experiments it is conducting.”

“It will provide a unique opportunity both for education and for research on a full-scale, integrated approach to energy efficiency and sustainability,” Cooney says. “There are a lot of things going on around the world in the way of future energy projects—alternative energy efficiency, alternative energy devices. But they’re not typically all going on in the same place at the same time.” Masdar, he says, is “bold, it’s big and it’s unique.”

The whole could be much greater than the sum of its parts, he suggests. “You not only get to do experiments on the individual alternative energy ideas, but you also do experiments around the system as a whole. One of the biggest challenges is the systems engineering. We underestimate how difficult it is to get everything working together.”

MIT will maintain a close association with the Masdar Institute, whose faculty will spend a year here before beginning their teaching there. But the involvement with the creation of the new city and campus is more limited. One of the initial ideas for the zero-energy plan came from the MIT collaboration, says Leon Glicksman, professor of building technology and mechanical engineering and director of MIT’s Building Technology Program. “We did work with them when they were writing proposals for the architecture,” he says, but they’re on a really fast track for construction, so the British architectural firm, Foster + Partners, which is the principal design work, is taking the lead.

Once the project is built, MIT will have an ongoing role in monitoring the actual energy performance of the city, Glicksman says. And that could provide an extraordinary opportunity for students to learn about the practicalities of such large-scale integrated approaches to alternative energy production and use.

The Masdar Institute itself, at the heart of the new city, is being modeled very closely on MIT, says Fred Rezaee, the James Mason Crafts Professor of Mechanical Engineering and Civil and Environmental Engineering. “MIT is really a research-driven institution. The education here is highly interactive with the faculty,” he says. “That style of education is very much missing in most countries,” but plays an important role in generating innovative ideas that can spur a nation’s economic development, he says.

Rezaee says that “energy and environment are the frontiers of research,” and so it makes sense for the institute to put those at the center of its program—its setting. But while the program is modeled on MIT, he says, it is also essential that its programs be oriented toward the local environment and local needs. While details of the long-term relationship remain to be determined, Cooney says, once it is up and running, it will hopefully become an incredibly significant opportunity for MIT faculty and students.

People involved in the Masdar Initiative, from Masdar and from Abu Dhabi, will present details of the project in a May 6 symposium in the Wong Auditorium. Details of the meeting are at <http://tinyurl.com/2hwy26>.

...relatively large person’s carbon footprint, while expenditures on locally based labor-intensive services—whether it’s going to a therapist, taking an art class, or getting a massage—leads to a smaller footprint.

ENERGY CONFERENCE

ENERGY: MIT hosts annual conference

Continued from Page 1

company, Exxon Mobil. And last year, the U.S. government slashed spending on one of the most promising energy technologies, geothermal power, to just \$5 million, despite the fact that geothermal may have the largest-scale possibilities of all, with “the potential to equal our total energy use,” Doerr said.

That emphasis was echoed by MIT Professor of Chemical Engineering Jefferson Tester, whose studies of geothermal resources showed the vast scale of this resource—which, unlike many forms of sustainable energy, is available virtually everywhere, and all the time. “The numbers are staggering” for the amount of geothermal energy that could ultimately be harnessed, he said, and developing the technology to enable widespread deployment could be accomplished for about the price of a single new coal-fired power plant.

Another area with enormous potential is energy efficiency, as several speakers emphasized. J. Michael McQuade, a senior vice president at United Technologies, cited an example of a single manufacturing plant his company built in China for elevator manufacturing. In the design of

the million-square-foot facility, planners were asked to spend up to an additional 10 percent of the building’s cost, in order to achieve up to 15 percent reduction in energy costs. In fact, they were able to achieve a 28 percent energy improvement, at a cost increase of just 4 percent. That’s typical, McQuade said. Surveys showed that managers overestimate the costs of efficiency, and underestimate the benefits.

That’s an error that businesses, corporations, or nations, can ill afford, said James Rogers, chair of Duke Energy, one of the nation’s largest utility companies. “I think the most successful economies of the future will be the ones that are most energy efficient,” he said. “Energy efficiency should be your first option,” but is often treated as an afterthought.

John Holdren, professor of environmental policy at Harvard, agreed with that assessment, saying that “the easiest, fastest,

cheapest leverage is to be found on the demand side”—that is, by improvements in efficiency.

But to bring about the changes that are needed will require a major shift in national priorities, said James Woolsey, former head of the CIA. The oil industry, he pointed out, currently gets \$1 trillion a year in subsidies—despite the fact that it is enjoying all-time record profits. “We need to pay attention to the existing subsidies,” he said, but “when you do the real computations, renewables are a lot closer than people think.”

Making the right choices on energy, he said, can not only prevent devastating damage to the planet and the dangers of reliance on unstable regimes around the world, it can create jobs and profits at the same time, contrary to claims that it will have great costs. “You can make money, instead of losing it, by doing things environmentally,” he said.

“You can make money, instead of losing it, by doing things environmentally.”

John Holdren, professor of environmental policy at Harvard



IMAGE / SHIMAHARA ILLUSTRATION

MIT Sloan’s green future

Once it is completed in 2010, the new MIT Sloan building (E62, pictured in this artist rendering) should be the greenest building on campus. The six-story structure will incorporate a number of environmentally friendly features including daylighting, chilled beams and radiant ceiling panels.

News you can ooze

David Chandler  
 News Office

The slow, incremental unfolding of the evidence for global climate change is one reason it has been such a difficult subject for journalists to cover, and for the scientists who try to explain it. To put it another way: “This is a story that doesn’t break, it oozes,” said Boyce Rensberger, director of the Knight Science Journalism Fellowships at MIT.

Rensberger’s remark came in the introduction to the first of four panel discussions that made up last week’s “Disruptive Environments” conference, held at the MIT Museum. The opening panel tackled the topic of “Communicating Climate Change: Science, Advocacy and the Media.”

MIT’s Kerry Emanuel, professor of atmospheric science, spoke as part of the climate-change panel. Emanuel had attracted worldwide attention and controversy in 2005 when, just a few weeks before Hurricane Katrina slammed into New Orleans, he published a paper that predicted an increase in the intensity of hurricanes as a result of global warming.

When it comes to explaining complex scientific work to the media and the public, scientists are “not very well trained,” Emanuel said. Science is built

on nuance and incremental progress, he said, while conveying the information to nonspecialists makes it necessary to boil things down into relatively simple terms. “You’re reduced to using metaphors,” he said, and that invites criticism from other scientists because no metaphor is exact. “Science is by nature equivocal,” he said, and that often gives people a misleading sense of uncertainty about its conclusions.

Naomi Oreskes, a historian of science at University of California, San Diego, wrote a widely quoted report in Science in 2004 in which she studied the published scientific literature on climate change and found, to her surprise, not a single paper that dissented from the consensus that climate change is happening, and is human induced. “As a historian of science, it was kind of a shock to me,” she said. “It has the quality of plate tectonics literature after 1973,” she said—that is, something that had once been very controversial but has now become firmly established.

The panel also featured Andrew Revkin, environmental reporter for The New York Times, who, as Rensberger said in his introduction, has probably written more stories about climate change than any other journalist, and Kevin Conrad, the ambassador of environment and climate change for Papua New Guinea, who made headlines by confronting the United States for its inaction on climate change at an international meeting earlier this year in Bali.

The Disruptive Environments conference was organized by students and faculty from the graduate program in History, Anthropology, Science, Technology, and Society.

UPCOMING ENERGY EVENTS

Gov. Patrick to speak at MIT on Earth Day

Massachusetts Gov. Deval Patrick will deliver a major public address at MIT’s Kresge Auditorium on Earth Day, Tuesday, April 22. The governor will discuss his vision for the future of clean energy in the Commonwealth.

Gov. Patrick’s administration and the Massachusetts Technology Collaborative have been working actively with the MIT Energy Initiative, MIT students and MIT faculty on energy innovation and the development of an energy cluster in Massachusetts. In his address, which is open to the public, Gov. Patrick will elaborate on these and other key energy policy plans and initiatives of his administration.

U.S. Sen. Bingaman to deliver energy talk

U.S. Sen. Jeff Bingaman, D-N.M., will deliver a 2008 Compton lecture titled, “Forging a Clean Energy Future,” at 3:30 p.m. Friday, April 25, in Kirsch Auditorium (Room 32-123).

Sen. Bingaman has represented New Mexico since 1982. Among other responsibilities, he is chair of the U.S. Senate Committee on Energy and Natural Resources, which has jurisdiction over national energy policy and the public lands of the nation. He led the Congressional effort to pass major energy legislation in 2007 and is author of one of the Senate’s leading climate-change “cap-and-trade” bills. In addition, he was the Senate leader in passing the America Competes legislation last fall that calls for major new investments in federal research and development and in science education.

The Karl Taylor Compton Lecture Series was established in 1957 to honor the late Karl Taylor Compton, who served as president of MIT from 1930 to 1948 and chairman of the Corporation from 1948 to 1954. The purpose is to give the MIT community direct contact with the important ideas of our times.

This event in the series is sponsored by the MIT Information Center and the Office of the President.

Sen. Bingaman’s talk is open to members of the MIT community.

## NEWS YOU CAN USE

## Joining the Quarter Century Club

The MIT Quarter Century Club Induction Ceremony and Luncheon for new members will be held this year on Wednesday, May 7. New membership in the club is offered to the faculty and administrative, research, support and service staff who will celebrate their 25th anniversary with the Institute on or before June 30, 2008. If you believe you are eligible but have not received an invitation to attend the Induction Luncheon, contact the Quarter Century Club in the Community Services Office at (617) 253-7914 or [tswartz@mit.edu](mailto:tswartz@mit.edu).

## MIT Retirement Benefits Seminar – Supplemental 401(k) Plan

Mark your calendars for Wednesday, April 23, from noon until 1 p.m. Representatives from MIT's Retirement Benefits office and Fidelity Investments will be in the Bush Room (Building 10-105) for a presentation titled, "Investing in Uncertain Markets." This presentation reviews strategies for investing in light of the current market volatility.

## Libraries' book sale April 30

MIT Libraries' book sale will be held from 10 a.m. to 3 p.m. April 30 in the Bush Room (10-105).

The sale offers a selection of material from diverse areas including aero-astro, art, architecture, engineering, fiction, math, management, music, physics, political science and social science. Proceeds benefit the Libraries' Preservation Fund. Open to the MIT community only.

For more info, contact Charlene Follett or Betsy Granese at 617-253-5693 or e-mail [gifts-lib@mit.edu](mailto:gifts-lib@mit.edu).

## Langer a finalist for Millennium prize

### MIT alumnus Viterbi also in the running

MIT Institute Professor Robert Langer has been chosen as a finalist for the Millennium Technology Prize, the world's largest prize for technology innovation.

Langer was chosen "for his inventions and development of innovative biomaterials for controlled drug release and tissue regeneration that have saved and improved the lives of millions of people," according to the Technology Academy Finland, which gives the award every other year.

The award goes to developers of a technology that "significantly improves the quality of human life, today and in the future."

This year's winner will be announced June 11. Winners receive 800,000 euros (approximately \$1.2 million), and the other finalists each receive 115,000 euros (approximately \$180,000).

Andrew Viterbi '56, SM '57, founder of Qualcomm, is also a finalist. He was honored for creating an algorithm that became "the key building element in modern wireless and digital communications systems, touching lives of people everywhere," according to the Technology Academy Finland.

The other finalists are Alec Jeffreys, who developed DNA fingerprinting techniques, and a trio of scientists who developed an optical amplifier that transformed telecommunications: David Payne, Emmanuel Desurvire and Randy Giles.

Previous winners include Tim Berners-Lee, creator of the World Wide Web and senior research scientist at MIT, and Shuji Nakamura, inventor of light-emitting diodes.



PHOTO / DONNA COVENEY

Institute Professor Robert Langer

## MIT crowned regional champs in annual ICPC 'battle of the brains'

### Team takes second overall in international competition

A team of MIT students was named regional champions—and placed second overall—in the 32nd annual International Collegiate Programming Contest, held recently in Alberta, Canada. The IBM-sponsored competition, also known as the "Battle of the Brains," challenged students to solve a semester's worth of computer programming problems in just five hours.

MIT's team, comprising freshman Bohua Zhan, junior Xuancheng Shao and graduate student Andrew Lutomirski, was the only U.S. team to place in the top five overall.

Martin Rinard, a professor in the Department of Electrical Engineering and Computer Science and a member of the Computer Science and Artificial Intelligence Laboratory, coached the MIT team, which netted a gold medal for its performance.

Each team was faced with solving 11 computer-programming problems modeled on real-world business scenarios. Students were challenged to develop software code to determine the length of a city skyline, map the size and capacity of a new building design and provide support for an embedded neural network for cell phones.

More than 6,700 teams, representing 1,821 universities from 83 countries, competed in the fall regional competition this year, compared to 840 teams who competed in 1997 when IBM first sponsored it.

The first place winner overall, from Russia's St. Petersburg University Mechanics and Optics of IT, took home IBM prizes, scholarships and bragging rights to being the "world's smartest."

This year's top 12 teams that received medals are:

1. St. Petersburg University of IT, Mechanics and Optics (Gold, world champion)
2. Massachusetts Institute of Technology (Gold, 2nd place)
3. Izhevsk State Technical University (Gold, 3rd place)
4. Lviv National University (Gold, 4th place)
5. Moscow State University (Silver, 5th place)
6. Tsinghua University, (Silver, 6th place)
7. Stanford University, (Silver, 7th place)
8. University of Zagreb, (Silver, 8th place)
9. University of Waterloo, (Bronze, 9th place)
10. Petrozavodsk State University, (Bronze, 10th place)
11. St. Petersburg University, (Bronze, 11th place)
12. Belarusian State University, (Bronze, 12th place)

## DIGITAL TALK: Where IT's at



## A new era for telephones on campus: MITvoip rollout begins

Voice over Internet Protocol (VoIP) technology enables telephones to use networks such as MITnet to transmit calls. VoIP supports standard telephone features while providing advanced, web-based functionality. To bring the benefits of this technology to campus, Information Services and Technology (IS&T) has created the MITvoip service, which will be generally available for departments, labs and centers (DLCs) and is intended to replace MIT's traditional telephone service.

IS&T engaged the MIT community in both the design and transition planning process for MITvoip. This past fall, IS&T offered a series of outreach events and demonstrations and created a VoIP Advisory Board to provide input on the service and the campus deployment.

IS&T will transition the MIT community to MITvoip in a phased rollout that will include faculty, administration and staff. The transition began in early 2008 with the Sloan School of Management and MIT Resource Development. This quarter, the transition will include Human Resources, the Libraries, the Publishing Services Bureau and the



Student Center (W20). To see the current transition schedule and the criteria for readiness, visit <http://web.mit.edu/ist/topics/voip/update.html>.

### Benefits

By converging voice and data, VoIP enables web interface features that enhance productivity. For example, the VoIP system can send e-mail letting you know that someone has left you a voice-mail message or even send the message itself as an audio file attachment that you can play. With MITvoip's call-forwarding options, you can have your calls ring at multiple phones at the same time or in sequence. The online conference-call feature supports up to six participants. You can also place and receive calls from a remote location as if you were at your desk.

If you are already on the MITvoip service, you can explore these features at [sylantro.mit.edu](http://sylantro.mit.edu).

### Transition Process

IS&T has designed a process to ensure an efficient, smooth transition with little or no service interruptions. Each DLC will partner with IS&T to create its own transition plan to ensure that the implementation meets both business and technical requirements. IS&T will review the plan with the DLC in detail and work collaboratively to address any concerns before the new phones are installed.

The Telephone Network Service Center (TNSC) will cover the cost of the transition. After a DLC has transitioned, it will be responsible for the cost of installing new VoIP phones or network jacks, or activating existing network jacks. This is similar to the existing model.

Just-in-time training and on-site support will be available to each DLC as part of the transition. IS&T will also provide online documentation and MITvoip Telephone Quick Start Guides.

Additional training sessions can be scheduled as needed.

### Want to Learn More?

For more information, visit [web.mit.edu/ist/topics/voip](http://web.mit.edu/ist/topics/voip). You can contact the MITvoip Transition Team at [voip-transition-team@mit.edu](mailto:voip-transition-team@mit.edu).

## DAPER worker's rare cancer spurs fundraiser

MIT Recreational Sports and the Department of Athletics, Physical Education and Recreation (DAPER) are sponsoring an April 26 fundraiser to benefit R.J. Lipsky, a DAPER employee who is fighting a rare form of cancer.

Lipsky, 29, was diagnosed last November with desmoplastic small round cell tumor (DSRCT), a form of cancer that strikes young adults and children, usually males.

Lipsky is undergoing aggressive chemotherapy treatments at Dana Farber Cancer Institute and is unable to work at his job as associate director for fitness programs for MIT Recreational Sports.

Proceeds from the fundraiser, to be held from 1 p.m. to 5 p.m. on Saturday, April 26, at Union Street Grill in Newton, will go toward



R.J. Lipsky

Lipsky's medical and living expenses.

The cost for the fundraiser is \$25 per person, free for children under 12. There will be food and drinks, a raffle and a balloon prize pop. DSRCT wristbands will be available for purchase.

For more information, or to make a donation online, visit <http://www.rjlipsky.com>.

## Harbison's 'Symphony No. 5' to premiere

The Boston Symphony Orchestra will present the world premiere of "Symphony No. 5" by MIT composer John Harbison on April 17 and 18 at Symphony Hall. James Levine will conduct.

"Symphony No. 5," commissioned by the Boston Symphony, is Harbison's sixth BSO commission.

Winner of a 1987 Pulitzer Prize and a 1989 MacArthur "genius" Award, Harbison is renowned among critics and colleagues for his resourceful, accessible style as well as his love of the voice as an instrument.

Created for mezzo-soprano, baritone and orchestra, "Symphony No. 5" sets texts from three poems based on the tragic tale of Orpheus, a brilliant musician who tries to rescue his lover, Eurydice, from the underworld.

"The dominant theme of the narrative is how a survivor of trying and arduous events can live and find pleasure in the world," said Harbison, an Institute Professor.

Harbison says he knew the work's musical theme—the symphony's "spine"—early in his composing process. But the fullest expressive journey required both deepening and lightening the tale of two lovers' grief, so Harbison used three different texts in the symphony's final version.

This weekend's BSO audiences will hear Nobel laureate Czeslaw Milosz' poem, "Orpheus and Eurydice," setting the symphony's dark opening mood, with Orpheus bereft in life. Louise Gluck's poem, "Relic," shifts the focus to Eurydice, providing a woman's voice and a boost out of the abyss. Rainer Maria Rilke's "Sonnet to Orpheus II" will offer an affirming, if ambiguous, close.

The premiere of "Symphony No. 5" concludes a week of musical appearances for Harbison: He conducted Bach's "B Minor Mass" and attended premieres of two of his own compositions, "Cortege" and the chamber version of "Milosz Songs."



John Harbison

## MIT Libraries unveil new exhibit space

A once-blank wall outside the Institute Archives, in Building 14's first-floor corridor, has been transformed into a literal window into MIT's remarkable special collections. Construction is complete on the Maihaugen Gallery—a secure, climate-controlled space that will showcase some of the extraordinary items from the MIT Libraries' collections. The first exhibit, *A Celebration of Gifts*, opens Friday, April 18, with a community celebration beginning at 1 p.m.

The exhibit will feature rare and unique items donated to the Libraries by MIT alumni, faculty and friends. Among the treasures that will be exhibited to the public for the first time are items from the collection of the Institute's founder, William Barton Rogers. These include his personal copy of the 1713 edition of Sir Isaac Newton's *Principia Mathematica*, an albumen print of a trilobite discovered by Rogers in Braintree, Mass., and his map of *The Geology of Virginia*, which was well used in the Department of Geology & Geophysics and Lindgren Library before being transferred to special collections.

The exhibit will highlight two examples from the many collections of faculty papers that can be found in the Institute Archives: an original notebook belonging to Harold "Doc" Edgerton along with a large-scale reproduction of the 1938 stroboscopic photograph of golfer Bobby Jones; and publications and research tapes of indigenous languages by linguist Kenneth Hale.

The exhibit will include milestones in the history of science and American literature as well. Several rare books contributed by I. Austin Kelly '26, including a first edition of Walt Whitman's *Leaves of Grass* and a book of illustrations from the 1553 volume *Historiae animalium* by Konrad Gesner, founder of modern zoology, will be shown. Also featured in the exhibition are examples from the personal library of architect Charles Bulfinch, balloon prints from the Vail Collection, books by architect Santiago Calatrava with original artwork, and examples from the Aga Khan Program for Islamic Architecture.



PHOTO COURTESY OF MIT LIBRARIES

## MIT grad student's study challenges notion of 'pandemic' flu

The widespread assumption that pandemic influenza is an exceptionally deadly form of seasonal, or nonpandemic, flu is hard to support, according to a new study in the May issue of the *American Journal of Public Health*.

The study challenges common beliefs about the flu—in particular, the Centers for Disease Control and Prevention claim that "the hallmark of pandemic influenza is excess mortality."

Peter Doshi, a graduate student in the History, Anthropology, and Science, Technology and Society program at MIT, based his study on an analysis of more than a century of influenza mortality data. He found that the peak monthly death rates in the 1957-1958 and 1968-1969 pandemic seasons were no higher than—and were sometimes exceeded by—those for severe nonpandemic seasons.

Doshi says the pandemic-equals-extreme-mortality concept appears to be a generalization of a single data point: the 1918 season, a period in which "doctors lacked intensive-care units, respirators, antiviral agents and antibiotics." He argues that, "had no other aspect of modern medicine but antibiotics been available in 1918, there seems good reason to believe that the severity of this pandemic would have been far reduced."

As may be expected given improvements in living conditions, nutrition and other public health measures, influenza death rates substantially declined throughout the 20th century. Doshi calculates an 18-fold decrease in influenza deaths between the 1940s and 1990s, a trend that began far before the introduction of widespread vaccination.

Noting the gap between evidence and fear, Doshi identifies possible reasons that pandemic flu might be so misunderstood, including the possibility that commercial interests may be playing



PHOTO / WIKIMEDIA

A typist wears a mask in New York during the 'Spanish flu' influenza pandemic of 1918. A new study by MIT graduate student Peter Doshi finds that death rates in pandemic were no higher than those for severe nonpandemic seasons.

a role in inflating the perceived impact of pandemics. With public policies such as universal vaccination being discussed and more than \$5 billion of federal money spent on preparing for the next pandemic, the study raises many important questions of public policy.

"Should the trends observed over the 20th century continue to hold in the 21st, the next influenza pandemic may be far from a catastrophic event," he concludes.

### CLASSIFIED ADS

Members of the MIT community may submit one ad each issue. Ads should be 30 words maximum; they will be edited. Submit by e-mail to [ttads@mit.edu](mailto:ttads@mit.edu) or mail to Classifieds, Rm 11-400. Deadline is noon Wednesday the week before publication.

### FOR SALE

New w/tags: Dooney & Bourke Doodle purse, white, \$100. Fully lined interior, full length zip pocket, cell phone pocket, trigger clip key hook on leather strap, serial number inside. Vachetta leather trim, piping, back straps. Photos avail. x2-5687 [forsale@media.mit.edu](mailto:forsale@media.mit.edu).

2003 Harley Davidson FLHRCI Road King Mint! About \$2,500 in extras, Low miles. 100th anniversary silver and black, awesome bike! \$14995.00 contact Jim 617-334-4802 or [jdaley@nano.mit.edu](mailto:jdaley@nano.mit.edu).

4 Rod Stewart Tickets For Sale. Tweeter Center August 15 at 8:00 pm. \$148.00 per ticket Seats are in Section 8, Row G, Seats 1-4. If interested please respond by July 28th. Gale 617-258-4484.

Sears 24194 drop spreaders, 100# cap. 36" wide, 12" pneumatic wheels, 18 ga. construction. Like new. \$50. Call George at 781-684-0701.

### RENTALS

Belmont—Large elegant four bedroom, two baths (whirlpool tub), hardwood floors, dishwasher, disposal, washer, dryer. Parking. Convenient public transportation. Excellent Schools. \$3,500/month furnished. Available in June or July 1. Lease. Call 617-489-2403 or e-mail [stewart@wi.mit.edu](mailto:stewart@wi.mit.edu).

Studio apartment for rent in private home in Lincoln, MA. Attractive & very quiet. Separate entrance. Parking and utilities included. \$1000/mo. Please call 781-259-8988

Ocean front summer cabin, Mount Desert Island, ME: 2BD/1BA w/living/kitchen area; picture windows, deck overlooking water; stairway to beach. Mins from Acadia National Park, Bar Harbor. \$1,000/week June-Sept. Steve at 253-5757 or [chorover@mit.edu](mailto:chorover@mit.edu).

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Sweet house on lake, 15 minutes to ocean beaches. Sleeps 6, abuts conservation forest. Private beach, fireplace, screened porch, separate studio/bedroom in the woods. Some June, July, Aug weeks still available. \$1,200/week. Andy, 617-876-6257

### HELP WANTED

Paid, live-in, Cambridge companion needed for MIT vision impaired Research Affiliate. 4/22/08-5/5/08. Driving a plus, dog walking required. Contact Mike Epstein at LFE 617-253-3784.

E-mail your classified ads to [ttads@mit.edu](mailto:ttads@mit.edu).  
Deadline is noon  
Wednesday the week  
before publication.



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INSTITUTE OF SCIENCE AND TECHNOLOGY معهد مصدر للعلوم والتكنولوجيا

### Graduate Engineering Educational Opportunities in Abu Dhabi

Be an active participant in changing and saving the world.  
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You are Cordially Invited to Explore Academic and Research Opportunities at the Masdar Institute of Science and Technology (MIST), Abu Dhabi.

Tuesday, May 6, 2008  
12:30 p.m. – 4:45 p.m.

MIT  
Bartos Theater, Wiesner Building, E15  
20 Ames Street  
Cambridge, MA

Refreshments will be served.

Join the Masdar Institute of Science and Technology which is established with the support and assistance of MIT. Participate in cutting-edge research opportunities in alternative energy and sustainable technologies while living in the world's first zero carbon, zero waste city.

For more information, please call: 617-324-0094,  
email: [tdpmail@mit.edu](mailto:tdpmail@mit.edu), or visit: <http://www.masdar.ac.ae>

**Q:** *Can you comment on how you see the role of SHASS at MIT?*

**A:** This is an exciting time for SHASS and the school has never been more crucial for the MIT mission. MIT champions the power of combining a world-class science education with the critical thinking and cultural literacy of the humanities, arts, and social sciences. We have all seen the tremendous advantage this approach gives MIT students, how crucial it is for their success as leaders and global citizens.

MIT is one of the most significant knowledge centers in human history. At SHASS, we are inspired by that and dedicated to providing future leaders with rigorous training in the methods and perspectives of the arts, social science and humanities disciplines. MIT students thrive on their multidimensional education, and we are gratified that alums report that the experience and perspectives they gain at SHASS are enduring and crucial to their success and satisfaction.

**Q:** *Could you give us a glimpse of your major goals for the school?*

**A:** We are focusing on a cluster of goals, all of which strengthen our critical contributions to MIT education and research. Several goals I'm focusing on especially are international education, interdisciplinary research and teaching, strengthening our graduate programs and public understanding of science and technology. And no set of goals would be complete without mentioning the need for facilities that match the excellence of our faculty and curriculum.

**Q:** *What role does SHASS play in MIT's approach to international education?*

**A:** All of us at MIT, and all our peer institutions around the country, are alive to the demands of the globalizing economy and knowledge systems. Giving MIT students deep knowledge about languages and cultures of other countries, and engaging students in international opportunities, is a vital part of a 21st-century education and critical to the Institute's leadership position. SHASS has a central role in this mission as much of MIT's international education is housed in our school. The great majority of MIT faculty involved in international education are at SHASS; the school is home to Foreign Languages and Literatures, where students become fluent in the languages and cultures they need to be global citizens. All of the SHASS disciplines have an international flavor and many of our faculty have deep relationships abroad. They spend substantial research time in other countries, in libraries and archives, and interviewing people and forming cross-cultural partnerships. So, SHASS brings enormous depth and breadth of expertise to this 21st-century mission.

MISTI (MIT International Science and Technology Initiatives) is our standard-bearer, a hugely successful program and one of the principal ways MIT students gain the cultural understandings that prepare them to be global citizens. In the MISTI program, students first become "country literate," developing language skills and cultural knowledge before they embark on wonderful in-country internships. These are tailored, hands-on professional experiences—great opportunities for students to engage with the world. Through MISTI, we can match the passion of students with the excitement of our international partners and with alumni who know how important it is for students to understand what's going on in the world as they form their careers and lives. MISTI has been leading the pack for years and is a model for other schools. It's also a sterling example of interdisciplinary collaboration. Each of the MISTI country programs draws faculty and students from across the campus. I envision even more support and growth for this program, and we look forward to celebrating MISTI's 25th anniversary in October.

Another standout in our international program is the Abdul Latif Jameel Poverty Action Lab (J-PAL), which works all over

# Interview with the dean: Deborah Fitzgerald, SHASS

*Over the course of the spring semester, Tech Talk has brought readers a series of interviews with each of MIT's five school deans. The third in this series features Dean Deb Fitzgerald, dean of the School of Humanities, Arts, and Social Sciences. In the following interview with Sarah H. Wright of the MIT News Office, Fitzgerald discusses SHASS's impact on the international-education aspect of MIT and the school's future. A longer version of this interview can be found online at <http://web.mit.edu/newsoffice>.*

the world doing transformative research on poverty alleviation, health and health care. Recently The New York Times surveyed leading economists to identify who is doing the most-important economic work to help solve human problems. The "runaway winner," as the Times put it, is our J-PAL team, which is identifying ways to ensure that development aid goes to policies and programs that most improve people's lives. This is a powerful example of the global reach of SHASS-based programs. MIT students want to make a positive difference in the world, and our international programs help them discover how to do that. We also have wonderful, specialized programs that deepen students' capacities to operate effectively all over the world. There are several month-long IAP programs, to mention just a few—in Italy run by the History department, and in Spain and France run by Foreign Languages and Literatures—that immerse MIT undergraduates in the language, history and culture of important cities. Political Science offers a new minor in Applied International Studies that integrates education and experience abroad in a great way.

**Q:** *You are also interested in educational innovation. What kinds of initiatives are you envisioning?*

**A:** We want to sustain and strengthen our distinguished graduate programs, and we are focusing on providing incredible quality in our undergraduate courses. To keep our PhD and special master's programs competitive with other elite schools, we must provide more generous fellowship support. On the undergraduate side, SHASS is the common denominator for all MIT undergrads—eight of the 17 GIR requirements are in our school. My plan is to support our world-class faculty as they think ambitiously about new classes and methods. I have put out a call to SHASS faculty for proposals to develop new kinds of classes—timely, blockbuster classes as well as interdisciplinary classes. We already have several such classes. "How to Stage a Revolution" in History, and "The Supernatural in Music, Literature, and Culture," taught by faculty from Music & Theater Arts and Anthropology are two examples. Bioethics is taught collaboratively between Philosophy and the Program in Science, Technology and Society, and there isn't enough room for all the students who want to take it. In all these classes, we want to find the juncture between faculty expertise and students' passions, and create learning experiences that are as engaging as they are rigorous. We have considerable capacity in this area already, and I am encouraging even more collaborative and interdisciplinary classes, projects, and research. Extraordinary things can happen when we catalyze these relationships.

**Q:** *Are there other ways you are furthering collaborations between schools and across the SHASS disciplines?*



SHASS Dean Deborah Fitzgerald

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**A:** On the academic side, the SHASS faculty has been teaching with colleagues in Science, Engineering, Sloan, and Architecture for decades. Now, we want to take that effort to the next level, expanding the number of classes, research collaborations, and colloquia. And often it's the informal, friendly connections that lead to great things. You know one of the things that surprised me a bit when I became Dean was how much the different parts of the School are really little neighborhoods. And we don't get out of our own neighborhoods often enough! So I've taken a cue from Jay Kaiser, and last year, began to hold a series of random faculty dinners, just the faculty from SHASS. The dinners are very interesting and great fun, and we'll go on hosting them as one way to spark more cross-discipline endeavors.

**Q:** *Is there an MIT way to teach humanities and arts?*

**A:** First, of course, the MIT way is unsurpassed excellence. We have to be the best of the best, and we have to be the best in a uniquely MIT way. We have world-class faculty at SHASS, extraordinary leaders in their fields. Just last week our scholars received both the Pulitzer

Prize (Junot Díaz in fiction) and the Rome Prize (Keeril Makan in music)—two of the most prestigious awards in our fields. We think deeply, as a community, about the role of teaching humanities, arts and social sciences within a large technical university where the gravitational pull is toward science and technology. We think creatively about the special value our disciplines have in this university, educating people who have an uncommon ability to solve problems and make a positive difference in the world. Our students are sophisticated and brilliant, so we have to give them the hardest problems we've got, right away. This seems to be the nature of MIT students—the bigger the challenge, the more they like it.

We also have a creative opportunity to teach in ways that resonate with the MIT ethos of innovation. Like our colleagues in the sciences, the SHASS humanists, artists, and social scientists are inventive scholars who work in a global landscape and engage profound issues to serve society. Comparative Media Studies, a pioneering academic program committed to thinking across media forms, theory, and culture, is based at SHASS. As is HyperStudio, a superb research and development laboratory for digital humanities. Many of our faculty are leaders in inventing ways to incorporate digital technology into teaching and research, and creating innovative educational tools such as "Cultura" for teaching language and culture, the "Visualizing Cultures" project, and the Shakespeare Electronic Archive. Our faculty is unusually alert to growth areas where the humanities, sciences, art and technology intersect to generate new potentials. The arts at MIT are famously good at encouraging and teaching creative problem-solving and risk-taking.

**Q:** *You have great enthusiasm for MIT students. Can you say more about your hopes for them in the world?*

**A:** We want to educate our students to be global citizens. MIT is the very best for training students to be scientifically and technically superior, hands down. We also want to help our students understand that they are poised to be leaders in many fields. At SHASS, we play a strong role in giving MIT students a range of experience for leadership. I'd like to do even more in this area. Our challenge is to help students enter the global world in the best possible way—with humility, creativity, and grace. We want them to be able to write and think critically, be effective and wise problem-solvers, with cultural and aesthetic literacy, with respect for other cultures. We want them to feel confident expressing ideas, understand cultural references in India or France; envision how an end-user will experience an engineered product. These are all areas where the qualitative, contextual knowledge cultures of SHASS are invaluable to MIT students.

**Q:** *I realize you are working 20-hour days. What do you do when you're not leading the school into the future?*

**A:** Is this the hobby question?

**Q:** *[Laughs.] Yes.*

**A:** Well, I don't have any hobbies now. I mean, I used to. I could talk about the ones I used to have! But I like to get outside, walking or biking, and I really love spending a whole day in the kitchen cooking for a dinner party, bringing people together. You have to eat!