**Gershenfeld, Selker on ‘Sci American 50’**

Denise Brehm  
News Office

Two MIT faculty members—Neil Gershenfeld and Ted Selker—have been named to the “Scientific American 50,” the magazine’s annual list of leaders in science and technology that will appear in its December issue on newsstands Nov. 23. The magazine also named Gershenfeld the Communications Research Leader of the Year. Gershenfeld, director of MIT’s Center for Bits and Atoms (CBA), was selected as the Communications Research Leader of the Year for “designing a communications protocol for connecting the hardware in a ‘smart’ household.” The award was for an unexpected spinoff from CBA research that resulted in the development of an Internet architecture for things called “Internet 0.” Internet 0 extends the original “internetworking” ideas behind the Internet down to individual devices. “Internet 0 enables interdevice internetworking and end-to-end modulation,” said Gershenfeld. “It is emerging as an alternative to the myriad ways people are currently connecting things to computers—like RFID tags, Bluetooth peripherals, X10 appliances, bar codes, etc.—making them all part of the Internet. It natively uses the Internet protocol, the signals are the same for all devices (a bit like Morse Code), it operates without relying on central servers, and the hardware can cost less than a dollar.”

At a recent meeting at MIT, many of the original Internet architects and their current counterparts discussed the close parallel between the way the Internet originally connected heterogeneous networks and the way Internet 0 now is connecting heterogeneous devices. Internet 0 grew out of earlier testbed installations Gershenfeld did at the Museum of Modern Art in New York City, the White House/Smithsonian Millennium events in Washington, D.C., and the “Media House” in Barcelona. Internet 0 was developed by Gershenfeld, his graduate student Rafi Krikorian and Danny Cohen, now at San Microsystems, who helped create the Internet’s IP protocol.

Selker honored for Voting Technology Project

Selker, a professor in the Media Lab and the MIT director of the Caltech/MIT Voting Technology Project, was honored jointly with his counterpart at Caltech, Professor Michael Alvarez, for “recommending sweeping changes to overhaul U.S. voting systems.” Selker and Alvarez were selected as Policy Leaders in the computing category of the Scientific American 50.

The Caltech/MIT Voting Technology Project was established in late 2000 in the aftermath of the U.S. Presidential election with the goal of preventing the recurrence of the problems that accompanied it. At a recent meeting at MIT, many of the original Internet architects and their current counterparts discussed the close parallel between the way the Internet originally connected heterogeneous networks and the way Internet 0 now is connecting heterogeneous devices. Internet 0 grew out of earlier testbed installations Gershenfeld did at the Museum of Modern Art in New York City, the White House/Smithsonian Millennium events in Washington, D.C., and the “Media House” in Barcelona. Internet 0 was developed by Gershenfeld, his graduate student Rafi Krikorian and Danny Cohen, now at San Microsystems, who helped create the Internet’s IP protocol.

**MIT will play key role in creating national energy lab**

Elizabeth Thomson  
News Office

MIT will play a major role in the creation of the nation’s premier laboratory for nuclear energy research, development, demonstration and education.

Secretary of Energy Spencer Abraham announced today that the Battelle Energy Alliance, LLC has won the contract to establish the Idaho National Laboratory (INL). The Battelle team includes a national consortium of some eight universities led by MIT, BWX Technologies, Inc., Washington Group International, the Electric Power Research Institute, and leading Fortune 500 companies. The INL will combine the research and development components of the Idaho National Engineering and Environmental Laboratory and Argonne National Laboratory West. It will begin operating under its new name and contract on Feb. 1, 2005. The term of the contract is 10 years; it has an estimated value of $4.8 billion.

MIT’s Department of Nuclear Engineering and Nuclear Reactor Laboratory are home to many of the researchers involved in the INL contract.

Professor Ian Hutchinson, head of the Department of Nuclear Engineering, said, “We are delighted at the prospect of helping to lead in the renaissance of nuclear energy in the U.S., focused in the Idaho National Laboratory.”

“Nuclear is the most environmentally benign energy source we have, and its contribution to our energy mix must increase if we are to address the need for energy independence and the threat of climate change. As the nation’s premier technical university, and the acknowledged leading nuclear engineering project, was honored with the Communications Research Leader of the Year.

**Engineering students turn sights to rural Africa**

Sasha Brown  
News Office

Seven engineering students from schools on three continents converged in Ghana last summer to help identify some of the persistent problems plaguing rural areas in the West African country and bring the problems to the attention of engineers who can find solutions.

MIT senior Tim Heidel, an electrical engineering major, came up with the idea while studying at Cambridge University in England on exchange during the 2003-2004 school year. Many of his peers at Cambridge participated in student-organized expeditions aimed at serving broader purposes than sight-seeing. For the many students who went on these learning adventures, the experience changed their lives. Heidel noticed that while expeditions were often academic in nature, few had been done in the field of engineering.

“I decided I wanted to go to Africa,” said Heidel, who knew that engineering work would be particularly vital for rural communities, many of which were suffering from water scarcity and bad roads.

**A DANGEROUS WOMAN**

A physicist and his wife penned the first biography of Martha Wright, an early women’s rights activist.
Online student literary journal launched

Sarah H. Wright


Undergraduate students and faculty advisors with a mutual interest in exploring transcultural identity collaborated on “e.merging” beginning in spring, 2004. The online journal will be published once each semester.

Isabelle de Courtivron, professor of foreign languages and literatures and director of the Center for Bilingual/Bicultural Studies, described the faculty experience that set the literary project in motion.

“In our writing and literature classes, we noticed that students were increasingly producing memorable short texts on issues related to their plural identities. We wanted to create a journal that would capture the wealth and diversity of these students’ voices,” de Courtivron said.

The first issue of “e.merging” includes short stories, poetry and creative non-fiction, artwork will appear in future editions. For students and faculty members on the “e.merging” staff, the launch date of the new journal represents hard work and hope for community recognition.

Sam Hwang, a senior, in management and an “e.merging” student editor, said, “I think it’s equally important for people with diasporic experiences to share their stories as well as people without these experiences to learn by listening to, and reading, these stories.”

Faculty advisors shared the students’ enthusiasm for “e.merging.” Faery, director of First Year Writing, said, “A lot of really excellent writing is done by students at MIT, and it is always a pleasure that we have an outlet and enjoy that writing. ‘e.merging’ fills a particularly important niche.”

Another “e.merging” faculty advisor, Emma Teng Chang, who holds the Class of ’56 Career Development chair and is associate professor in foreign languages and literatures, said, “I am delighted by the creation of a student journal giving voice to the varied perspectives of a new generation on issues of bilingual, bicultural and transcultural identities.”

Kaya Shah, a junior in earth, atmospheric and planetary sciences, is an “e.merging” editor, described the early stages and subsequent pride felt by the student literary project. “We initially had some trouble organizing the group and putting together the entire website,” said Shah. “Now that we are about to launch, I am very proud of the group and I am amazed at all we have accomplished. Now that we have a platform together, it will be much easier to publish in the future,” Shah said.

The advisors and editors of “e.merging” invite current students and recent graduates to contribute. Contributions to the next issue are welcome through Feb. 1, 2005.

“Many of our students define themselves as transnational, translingual and transcultural. The framework together, it will remain an active and dynamic catalyst for reflection and creativity,” de Courtivron said.

Ellen Liang, a junior in mathematics and a member of the “e.merging” editorial board, echoed de Courtivron’s invitation. “This MIT student writing will show that we are writers among us, and I believe it can really inspire the words out of any techie,” Liang said.

Kerry supporters try to rally

Sasha Brown

News Office

Flutist Alison Hearm and guitarist Martin Hunter perform at the "Beyond the Vote" rally organized by the MIT Free Radicals on the Student Center steps, Nov. 5.

Balling themselves was a tall order for the deserted supporters of John Kerry who braved high winds to speak at a gathering in front of the Student Center three days after the election.

“We are hoping for a little rejuvenation,” said Anne Pollock, a graduate student in the Program in Science, Technology and Society and co-founder of the two-week old campus group, the MIT Free Radicals, which organized the Nov. 5 event.

The “Beyond the Vote” rally was scheduled two weeks before the election, but both Pollock and Free Radicals co-founder Sarah Johnstone, a graduate student in biology, suspected that something inspirational would be needed. They called for a gathering at the Student Center.

While the few people who attended the rally were dedicated, the turnout was disappointing. “People are a bit depressed,” said Pollock.

The steps outside the Student Center became a makeshift stage for them to air thoughts, feelings and concerns following the U.S. Presidential election. Speakers came up in between recorded songs by pop stars like Pink and Christina Aguilera, picked for their angry lyrics and energizing beat.

The first thing we have to realize is that we do not represent the majority of Americans,” said freshman Richard Hughes, a computer science and comparative major from Texas. “America is more conservative, socially and economically, than most people are willing to accept.”

Hughes competed with gusts of wind up to 61 mph whipping past the microphone. “The massive division is a major problem. We need to stop debating and start looking for compromise,” he shouted.

Guest speaker Hugh Gusterson, associate professor of anthropology in the Program in Science, Technology and Society, shared a letter he received on Nov. 2 from a young woman in Georgia who had lived with his family to find ways to let people know that she would vote for Bush, but by summer’s end, she was a Kerry supporter, Gusterson said. That transition gave him hope.

“You represent the future of this country,” Gusterson told the small crowd, most of whom were under 30.

Number of genes in human genome unexpectedly low

A team of more than 2,800 scientists, including several from MIT, has published a scientific description of the finshed human genome sequence, reducing its estimate of the number of human protein-coding genes from 35,000 to only 20,000-25,000, a surprisingly low number for our species.

In the Oct. 21 issue of Nature, researchers with the International Human Genome Sequencing Consortium describe the final product of the Human Genome Project, the 13-year effort to read the information encoded in the human chromosome. One of the central goals of the effort was to identify all genes, which are generally defined as stretches of DNA that code for functional proteins.

The Nature paper provides rigorous scientific evidence that the genome sequence produced by the Human Genome Project has both the high coverage and accuracy needed to perform sensitive analyses, such as those focusing on the number of proteins encoded in diseases involving in disease, and the “birth” and “death” of genes over the course of evolution.

The human genome sequence far exceeds our expectations in terms of accuracy, completeness and continuity. It reflects the dedication of hundreds of scientists working together toward a common goal—creating a solid foundation for biomedicine in the 21st century,” said Eric Lander, director of the Broad Institute of MIT and Harvard and a professor in MIT’s Department of Biology.

Francis S. Collins, director of the National Human Genome Research Institute (NHGRI) and lead scientist on the Human Genome Project, said that 10 years ago, most scientists thought humans had about 100,000 genes. When we analyzed the working draft of the human genome sequence three years ago, we estimated there were about 30,000 to 35,000 genes, which surprised many researchers initially. But this new analysis reduces that number even further and provides us with the clearest picture yet of our genome.”

In the United States, the International Human Genome Sequencing Consortium is led by NHGRI and the Department of Energy (DOE).

The Nature paper also provides the scientific community with a peer-reviewed description of the finishing process and an assessment of the quality of the finished human genome sequence. The assessment confirms that the finished sequence now covers more than 99 percent of the euchromatic (or gene-containing) portion of the human genome and was sequenced to an accuracy of 99.99 percent, two times more accurate than the previous generation of the human genome.

“Finished” doesn’t mean that the human genome sequence is perfect. There still remain 441 gaps in the sequence, in contrast to the 150,000 gaps in the working draft announced in June 2000. The technology now available in the hand could close these gaps, if enough people are willing to do so, and we will do more research and new technologies.

The human genome sequence and its annotations can be accessed through several public genome browsers, including GenBank at the National Center for Biotechnology Information.
SCIENTIFIC

A Very Dangerous Woman: Martha Wright and Women’s Rights (University of Massachusetts Press, 2004) describes her heroine’s significant involvement in some of the major issues of her time. The book’s title refers to her conservative neighbors’ opinions of her, not to the fact that she was a very dangerous woman.

How did James Livingston, a senior lecturer in MIT’s Department of Materials Science and Engineering, come to co-author a book on Wright? In the 1980s, he discovered that she was his great-great-grandmother. Further searching revealed that a large collection of her letters had been stored in the archives at Smith College and elsewhere. Wright’s sister was Lucretia Mott, one of the country’s most famous early feminists.

No one, however, had ever written a book about Martha, despite her many illustrious acquaintances, voluminous letters, and heady resume. She was a founding editor of the 1846 Seneca Falls Women’s Rights Convention. She was president of the National Woman Suffrage Association. And at age 26, she attended the founding of the American Anti-Slavery Society. Later she was active in the Underground Railroad.

She had been lost in her sister’s shadow. Enter Livingston and his wife, Sherry Elnora Penney. The two began devoting serious time in 2005 to researching and writing “A Very Dangerous Woman.” Before then, Livingston explained, they simply didn’t have the time. Both had demanding careers; he was teaching solid-state physics at MIT and she was chancellor of the University of Massachusetts.

But as Livingston’s teaching load began to decrease (he currently teaches a freshman seminar on magnets) and Penney stepped down from the chancellor position (she remains a professor at the university), the book about Wright began to become a reality.

The couple made some 12 trips to Smith College, staying for three days at a time to scan through about 1,500 letters written by Wright. “If we found one that looked interesting, we had it copied so we could read it at home,” Livingston said. On each trip they made about 150 copies.

Other sources included Syracuse University (home to 300 more Wright letters), and MIT’s Program in Women’s Studies.

Livingston and Penney have been writing the book since 2005. “We brought in students who found a very nascent field,” said Livingston. “The project has given me a fantastic opportunity to learn with and from a broad community of people. It has been a collaborative, interdisciplinary effort.”

A nascent field that crosses many boundaries, and one where women are often underrepresented, is citizen science. Livingston and Penney helped motivate the Human Health Vote Act and is finding its way into new voting equipment and statements made by the Election Assistance Commission and election officials. With funding from the National Science Foundation, American voting systems can become exemplary machines to run democracies.

“We brought in students who found themselves learning and working in a nascent field that crosses many boundaries,” said Livingston. “The project has given me a fantastic opportunity to learn with and from a broad community of people. It has been a collaborative, interdisciplinary effort.”

Livingston and Penney are working with students to develop a secure voting system for a new voter-verifiable, verifiable election system. The system will allow voters to verify their vote and ensure that their vote is counted.

“A wonderful opportunity to learn with and from a broad community of people,” said Livingston. “The project has given me a fantastic opportunity to learn with and from a broad community of people. It has been a collaborative, interdisciplinary effort.”

The project is funded by the National Science Foundation and is being developed in collaboration with the Massachusetts Institute of Technology (MIT) and the University of Massachusetts (UMass). The system is being tested in a pilot program in the state of Massachusetts, and is expected to be ready for use in the November 2008 election.

The system will allow voters to verify their vote and ensure that their vote is counted. The system will be tested in the 2008 election and is expected to be ready for use in the 2009 election.

The system is being tested in a pilot program in the state of Massachusetts, and is expected to be ready for use in the November 2008 election.
Women in a Ghanaian village make butter from locally grown shea nuts. Shea butter is a popular beauty treatment as well as an ingredient in foods. The women asked the EnGhana group for an easier way to grind the nuts.

GHANA

Continued from Page 1

Heidel put out feelers, and Kwame Nkrumah University of Science and Technology in Ghana responded favorably. Despite being a country well-endowed with natural resources, Ghana remains heavily dependent on international financial and technical assistance.

Two students from Kwame Nkrumah joined the expedition along with three from Cambridge University, and Kathleen Connolly, an MIT senior in electrical engineering and computer science who was attracted to the project by the human element. “One of the negative things about engineering is the little interaction with people,” said Connolly.

Together, the students were able to raise the necessary funds. “We did a lot of grant-writing,” said Connolly. The group raised $12,000, largely from Cambridge University, the MIT Public Service Center and the Royal Geographical Society. As per the rules of any Cambridge University expedition, each student was required to supply 300 university engineering and business students to help solve them.

In addition to solving new problems, the ENGhana team members want to make sure that they do not end up working on problems that have already been solved elsewhere. To help spread the word and gain input, the team presented its findings at the Sustainable Resources 2004 conference in Colorado last month. “A lot of the solutions already exist,” said Heidel. “We just need to find them.”

Ghanaians identify areas of need

Water scarcity: Water is in extremely scarce supply throughout the Adaklu communities. The problem is compounded by an annual four-month period without rainfall. The community needs a method of supplying and conserving safe drinking water.

Road conditions: The single-track dirt road connecting Adaklu to Ho is pure mud: after rains and blindly dusty during drier times. After heavy rains, “they are left with the inability to reach town or the hospital,” said Heidel. Clearly, “we need to maintain the road is needed.”

Another problem is water scarcity in both areas. During November through March, no rain falls; the wells dry up. The current method of rainwater collection, in giant oil barrels, can only save water for about a week, Heidel said. “We need to design a way to store water in a long term way,” he said.

Design that Matters

Further insight into challenges, the team of students participating in the Design that Matters club, the ENGhana (Engineering Ghana) team is working on problems that have already been solved elsewhere. “We weren’t interested in documenting challenges they didn’t see as challenges,” said Connolly.

The problems would also need to have solutions the villagers could adapt to a lot of outside help. To gain further insight into challenges, the team of students participated in most aspects of the communities’ daily activities. As predicted, road conditions were a problem. The dirt road connecting Adaklu to Ho is pure mud: after rains and blindly dusty during drier times. After heavy rains, “they are left with the inability to reach town or the hospital,” said Heidel. Clearly, “we need to design a way to store water in a long term way,” he said.

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All told, the students identified at least 10 engineering problems that they have since brought to the engineering community at large. Working with MIT’s Design that Matters club, the ENGhana (Engineering Ghana) team is trying to get the word out about the project.

Design that Matters (Dm) is a Massachusetts non-profit founded at MIT by students. The Dm is sponsored by the non profit whose aim is to “help people in under-served communities improve their quality of life by creating products and services that meet needs identified by the communities themselves. Dm acts as a bridge to bring problems identified by nongovernmental organizations and the communities into the classrooms of MIT and other universities so that engineering and business students can help solve them.”

Since its launch in 2000, Dm has worked with more than 300 university engineering and business students to develop dozens of prototypes.

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ENERGY LAB

Continued from Page 1

neering school in the country, MIT brings unique knowl-
edge and experience to the partnership. Together with the other universities in the consortium, we will ensure strong linkage of the lab to America’s university research and educational programs,” said Hatchéson.

David Moncoton, director of the MIT Reactor Lab, said, “MIT brings enormous strength to the country’s quest for a renewal of nuclear power, both in terms of the intel-
lectual quality of its faculty, students and research staff, and in terms of physical research facilities, most impor-
tantly the MIT Research Reactor.

“The MIT reactor is the leading facility operated by a university in this country for performing the critical R&D on new materials and fuels necessary to design the next-
generation nuclear power plants. The opportunity to be

MIT brings enormous strength to the country’s quest for a renewal of nuclear power, both in terms of the intellectual quality of its faculty, students and research staff, and in terms of physical research facilities.

David Moncoton

Director of Nuclear Reactor Laboratory

The Idaho National Laboratory will conduct science and technology across a wide range of disciplines with strong programs in areas such as materials, chemical, environment, and computation and simulation. The lab also will play a key role in ensuring the nation’s security by applying its technical expertise to help protect the country’s critical infrastructure and preventing the spread of nuclear material.

One of the laboratory’s first major tasks will be to lead an international research and development effort to cre-
ate an advanced nuclear energy technology called the Next Generation Nuclear Plant (NGP). The NGP will be a Generation IV nuclear system that the Department of Energy hopes will produce both inexpensive electric power and large quantities of cost-effective hydrogen to support the development of a clean and efficient hydro-

Ghanaian honey producers identified a need to develop an improved method of bottling that can work with the other labs in our complex, academically and industry to advance nuclear power technology and create an entirely new type of nuclear energy plant for the longer term future.”

Now accepting applications!

DEADLINE: WEDNESDAY, JANUARY 12, 2005

For more info, visit: http://ment.mitmincetonmit.edu or contact Mike McNulty (617) 258-3490 / mcsnulty@mit.edu

You could win $30,000 plus national recognition for your inventiveness. Inceptive graduate students and seniors may apply.

PHOTO / TIM HODEL
The research agreement between the Ford Motor Company and MIT is larger than the sum of its financial commitment. The multimillion Ford-MIT Alliance that began in 1997 now has linked MIT and Ford researchers on more than 80 research projects as diverse as voice recognition and possible energy sources. Three of these areas illustrate the breadth of Ford’s interests and influence: climate research, a new CAD modeling concept and voice recognition for automobiles.

Sustainable energy

Global challenges like developing sustainable energy require broad approaches such as the more than 80 Ford researchers involved in the Environment and affiliated programs. The globalization of environmental and security-related concerns plus the likelihood of regulation has given the transportation industry a vested interest in both competitive advantage and sustainable strategies like clean energy.

In May, a team led by Professor David Marks, director of the Laboratory for Energy and the Environment, briefed Ford executives on MIT’s climate research and its implications for business, and on a new, large-scale initiative on near-term energy strategies. That conversation continues this fall, focusing on topics such as emissions trading, carbon sequestration, the infrastructure for a hydrogen economy, and energy security issues.

Through MIT’s many research approaches, we are helping Ford see the broader implications of growing energy use, environmental impacts, and technological and regulatory advances. The research product itself allows us to advance the debate about pathways to a sustainable future and the methods that will identify those paths,” said Marks.

Interactive designers

In the Computer Aided Design (CAD) Lab, Professor David Wallace, the lab’s co-director, has been working since 1996 on a new modeling concept and software that allows product designers to share, integrate and experiment with one another’s computational models easily. While the web allows users to download, upload, and create new virtual models much faster and more cheaply, to evolve and show that this type of approach allows you to build the models much faster and more cheaply, to evolve and change them, and to reuse them flexibly. It removes the barriers that prevent integrated modeling from being practical.”

Car talk

Most people have talked to cars—often not very politely. At the Computer Science and Artificial Intelligence Laboratory’s (CSAIL), however, people are building the tools that will allow drivers to speak to their cars and get a useful response.

James R. Glass, head of CSAIL’s Spoken Language Systems group, is working with Ford to explore the use of voice recognition technology in real-time operating environments. The problem is challenging for a number of reasons specific to the automobile. “The car environment presents an acoustic-challenge that can only be overcome if we accept it can be extremely noisy,” said Glass. “Because the driver’s hands and eyes are busy, we try to use the car’s driver’s cognitive load.” In addition, since the driver's location is relatively fixed, it is a good environment to explore audio-visual-processing methods.

MIT students have spent the past two summers at Ford’s local testing center building automation systems called “In Vehicle Conversational Interfaces.” One thing they are working on now is an address-recognition system that will allow users to say a destination aloud, rather than having to enter it via keypads into an onboard navigation system. Future applications may make it possible simply to ask for Russian folk music or the Boston weather rather than taking your eyes off the road to scan the radio display on the dashboard.

MIT’s Lean Aerospace Initiative members and partners huddled with Textron Systems last summer to develop a fresh approach to understanding and improving the production of Sensor Fuzed Weapons, a Textron product sold to the U.S. Air Force and the Lab’s customer. Using the Initiative’s Lean Enterprise Value Business Simulation (otherwise known as the Game), participants huddled with Textron Systems last summer to develop a new collaborative engagement that is based on data and linked to customers’ needs and expectations. I like to think of this process as providing us with a fact-based insight so that we are “lean with a purpose,” said Jeff Picard, Textron’s vice president for Lean operation.

The Lean Aerospace Initiative at MIT is a research program of the Center for Technology, Policy and Industrial Development involving 17 faculty and researchers from the Department of Aeronautics and Astronautics and the Sloan School in seven collaborative research teams. It also involves creative and innovative people in more than 50 corporations and governmental agencies. It was founded in 1993 by the U.S. Air Force, MIT, labor unions and defense aerospace businesses to revolutionize the industry based on the “lean” philosophy of eliminating waste, being responsive to change, focusing on quality and enhancing the effectiveness of the workforce.

The Game trims fat from Air Force supply chain

The power of the simulation lies in its integration,” said co-director Tim Bednar of Rockwell Collins. “It demonstrates how efficiencies in one functional area do not necessarily translate to improvements to the entire enterprise. The need for a big-picture view and coordination among all stakeholders within the enterprise is demonstrated very well during the simulation.”

Key simulation benefits include the ability to unite stakeholders in a mutually beneficial process, make lean strategies an enterprise priority, accelerate the development of meaningful outcomes, and discover ways to eliminate waste across the enterprise, not just in production.

By the workshop’s end, the 30 participants had identified actions to close the gap between current program practices and desired improvements. Goals set in a one-to two-year timeframe resulted in a realistic plan. “These Value Stream workshops provide the foundation for formulation of a lean implementation strategy that is based on data and linked to customers’ needs and expectations. I like to think of this process as providing us with a fact-based insight so that we are “lean with a purpose,” said Jeff Picard, Textron’s vice president for Lean operation.

News you can use

Design semifinals scheduled

More than 20 teams of creative young inventors will come together next Tuesday for the semi-final judging of the MIT Student Design Competition. Students and others will present designs for products of use to soldiers and other first responders, such as police, firefighters and EMTs. This year’s entries include a powered rope ascender and a hands-free casualty carrying system.

Judging will take place Nov. 16 from 6:30 p.m. in Room 26-100. Winning teams will receive seed funding from the Institute for Soldier Nanotechnologies to build a prototype for the final competition in February. All MIT community members are invited. Write to soldierdesigns@mit.edu for more information.

X-Prize founder Peter Diamandis to discuss space exploration

A student-run conference on space exploration, SpaceVision 2004, will be held on campus from Nov. 11 to 14. Organized by Students for the Exploration and Development of Space (SEDS) and the MIT Mars Society, the SpaceVision 2004 conference will feature nationally recognized speakers, including X-Prize founder Peter Diamandis, an MIT alumnus who founded SEDS. NASA administrator Craig Steidle and Mars Society president Robert Zubrin also will speak at the conference. Speakers will examine the balance between public and private space programs and the formation of national space policy.

The four-day conference is organized so that each day will focus on a particular theme. For Nov. 11 organizers have planned forums on human space flight and space advocacy; on Nov. 12, forums on communicating the value of space, commercialization and private enterprise; and on Nov. 14, government space programs. Other events during the conference will include a demonstration of the space elevator climber, a space industry career fair and a poster session.

Pet Parthenon spruces up spartan doghouse

A local canine citizen stopped for a bite to eat and a short rest at the Parthenon in Lobby 7. The Game trims fat from Air Force supply chain

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At the Educational Technology Fair, Professor Eric Klopfer of urban studies and planning gestures in front of his computer screen as he describes how he integrates handheld devices into his courses.

Faculty, students and educational technology professionals attended an Educational Technology Fair at MIT on Nov 2 to see examples of technology currently being utilized in classrooms, libraries and other areas of MIT and to find out how to incorporate them into their own work.

All of the projects that were exhibited in Lobby 13 are currently being used at MIT and are ready for consideration by other faculty for their classrooms.

“One of the main goals of the Ed Tech Fair is to give the MIT community a better perspective on the breadth and depth of educational technology research being done here, and also to display the passionate interest of some of our faculty for finding ways to improve teaching through the thoughtful use of technology,” said Jean Foster, team leader in Academic Computing and one of the fair’s organizers.

“The tournament demonstrated the myriad ways in which computer technology is being used to expand teaching and learning across the campus,” said Jerry Grochow, vice president, Information Services and Technology at MIT. “The fact that faculty came to show off their activities is a testament to the expanding integration of technology in the academic arena.”

Among the 22 projects exhibited were Professor Eric Klopfer’s use of handheld and desktop simulations in the classroom, Mathematics Professor Haynes Miller’s Interactive Mathematics Project, and Physics Professor Dave Pritchard’s program to evaluate the learning potential of interactive environments and the associated scalability and economy of Internet delivery. Library representatives from DSpace, Metadata Services, Data and Global Information Systems (GIS) Services also were on hand to discuss their areas.

DSpace user support manager Margret Branschofsky demonstrated how the DSpace digital archiving system works to capture, distribute, manage and preserve digital research and educational materials. Katherine McNell-Harman, Data Services librarian, explained to faculty the types of assistance her unit can provide in finding, understanding and using statistics or numeric data, as well as archiving and distributing data. Lisa Sweeney, head of the Libraries’ GIS Services, demonstrated GIS mapping software.

“The Ed Tech Fair has evolved into a wonderful opportunity for faculty and others involved in education to share ideas and new techniques which are significantly enhancing our abilities to provide a first-class education for our students,” said Robert Redwine, dean of Undergraduate Education.

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**CLASSIFIED ADS**

Members of the MIT community may submit one classified ad per issue. Ads can be resubmitted, but not two weeks in a row. Ads should be 50 words maximum; they will be edited. Submit by e-mail to classification@mit.edu or mail to Classified, Rm 11-400. Deadline is noon Wednesday the week before publication.

**HOUSING**


Lexington: condo for sale. 3BR, 1,200+ sq ft, new kitchen, new windows. 781-274-0528.


1995 Nissan Sentra. Auto, great cond. 75K, great engine, body drops, well maintained yearly. A/C/all power/air cruise/air bags/moon roof. $3,000. Clare at 253-7708 or clare@mit.edu.

1991 Toyota Corolla DX 4 door sedan, 76K, body ok, MA inspection sticker. Reliable transportation. $1,350. 978-793-0737 or salomone@mit.edu.

**VEHICLES**

1995 Nissan Sentra. Auto, great cond. 75K, great engine, body drops, well maintained yearly. A/C/all power/air cruise/air bags/moon roof. $3,000. Clare at 253-7708 or clare@mit.edu.

**WANTED**

Seeking parking space to rent monthly near Boston medical area! Longwood/Fenway. Sue at shanyardy@bhp.mit.edu or 253-0429 or 781-799-8039 (until 7 pm).

**STUDENT POSITIONS**

Help students with homework and studying for tests in all subject areas. Teach literacy and health information workshops. Training and supervision provided. Tech Tutoring Center at stairs, maclntosh/downtown/whitaker@hotmail.com or 617-825-0100 x1199.

Legal Advocacy & Resource Center, Inc. seeks advocates for free legal hotline. Hotline advocates will provide legal information and referrals to callers or will prepare intake screenings to be directed to an attorney. Send resumes to dbiagiotti@gbls.org or 617-371-1123.

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**John Longwell, expert on combustion, dies at 86**

Professor Emeritus John P. Longwell of MIT, a chemical engineer widely known for his research in synthetic fuels, combustion and petroleum refining, died on Oct. 6 from congestive heart failure. He was 86.

Professor Longwell, a native of Colorado, received the B.S. degree from the University of California at Berkeley and the Sc.D. from MIT in 1943. During World War II, he was a member of the Talos missile research team at Johns Hopkins Applied Physics Laboratory.

He joined the MIT faculty in 1976 after a 30-year career at Exxon Research and Engineering Company, where he concentrated on petrochemicals, fuel processing and combustion, and advanced to the company’s highest technical rank, senior scientific advisor.

At Exxon, he also organized and managed the Central Basic Research Laboratory.

At MIT, he taught courses in chemical engineering and helped to develop up energy-related programs in that department and in the MIT Energy Laboratory. He served as associate director of the Center for Environmental Health Services. In 1981 he was named the first Edwin R. Gilliland Professor of Chemical Engineering at MIT.

His own research included studies of coal, oil shale and biomass conversion, as well as formation and control of emissions from combustion. In 1979 the American Institute of Chemical Engineers recognized Professor Longwell for his scientific contributions in combustion, both in the design of industrial burners and jet combustors, and in reaction kinetics and transport. He held 23 patents.

Professor Longwell authored or co-authored numerous unpublished government studies and dozens of publications on combustion, alternative fuels, synthetic fuels and hydrocarbon fuels for aviation. He is best known for his role in developing the well-stirred reactor, widely used for studying combustion kinetics.

In 1966, he testified on the use of alternative fuels for aviation before the Senate Subcommittee on Aerospace Technology and National Needs. As a member of the National Research Council committee on alternative technologies for the destruction of chemical weapons, Professor Longwell played an important role in displacing incineration with alternative technologies at the eight chemical weapons stockpile locations in the continental U.S.

A member of the National Academy of Engineering, Professor Longwell received widespread recognition from professional organizations and from his peers. He served as president of The Combustion Institute and received its Sir Alfred Egerton Medal in 1974. In 1980, he was appointed to the Energy Engineering Board of the National Research Council’s Assembly of Engineering.

An avid conservationist and lifelong outdoorsman, he enjoyed fishing, bowhunting, hiking and skiing as well as quieter pursuits including woodworking, rock and mineral collecting and listening to classical chamber music, said Marion Longwell, his wife of 59 years.

He is survived by his wife Marion of Kingston, Wash.; his brother Robert Longwell of Houston; two daughters, Martha Blair of Rochester, N.Y., and Ann of Franklin, Wash.; his brother Robert Longwell of Houston; two daughters, Martha Blair of Rochester, N.Y., and Ann Strickland of Kingston, his son John of Evergreen, Colo., and eight grandchildren.

A memorial service was held Oct. 16. Donations in Professor Longwell’s name may be sent to the conservationist Henry’s Fork Foundation, PO. Box 530, Ashton, Idaho 83420, or to the John Longwell Memorial Fund at MIT, Room E19-411.
Origami master Lang will visit MIT

MacArthur Fellowship winner Erik Demaine, assistant professor of electrical engineering and computer science, continues his mission to foster the art of origami at MIT, hoping to create new paper-folders on campus.

Demaine will host Robert J. Lang, one of the world’s leading masters of origami, as an artist in residence at MIT from Nov. 11 to 17. During this period, Lang will give two lectures, two master classes (one for novices, the other for experts), visit classes, tour labs and share meals with faculty, staff and students, including members of MIT’s Origami Club.

A pioneer in the cross-disciplinary marriage of origami with mathematics, Lang has presented several refereed technical papers on origami-math at mathematical and computer science trade meetings. He has consulted on applications of origami-engineering problems ranging from airbag design to expandable space telescopes.

A native of Ohio, Lang has been one of the few Western columnists for Origami Tanteidan Magazine, the journal of the Japan Origami Academic Society. Additionally, he was the first Westerner invited to address the Nippon (Japan) Origami Association’s annual meeting, in 1982, and has been an invited guest at international origami conventions around the world.

Lang is now a full-time origami artist and author or co-author of eight books and numerous articles on the art. He lives in California.

Demaine’s love of origami grew out of his interest in the mathematics of folding. He is currently studying protein folding and hopes that computational origami— the geometry of paper folding—could eventually lead to the design of custom-made proteins to help fight disease.

Demaine teaches a course on origami in the Department of Mathematics.

**Folding schedule**

On Nov. 11, Lang will give an overview of his work, both artistic and mathematical, at 7 p.m. in Room 123 of the Stata Center. On Saturday, Nov. 13, he’ll give a workshop on folding techniques for novices from 2-4 p.m. (Sign up by e-mail to edemaine@mit.edu to learn the workshop location.)

On Monday, Nov. 15, Lang will give a technical lecture on the mathematics and algorithms in origami design from 11 a.m. to 12:30 p.m. in Room 4-211. Attendees to this lecture should be familiar with mathematics and algorithms. And on Tuesday, Nov. 16, Lang will give an advanced origami design workshop for experienced folders who want to design their own models or refine their design skill from 7-9 p.m. Send e-mail to edemaine@mit.edu as soon as possible to reserve a space in that class.


MIT’s gamelan orchestra will perform at MIT, Carnegie Hall and later in Bali

MIT’s Gamelan Galak Tika opens its 12th season this week with a concert on campus tomorrow followed by its debut performance at Carnegie Hall in New York City Saturday.

The concerts will feature two cross-cultural compositions by Professor Ivan Ziporyn for the 25-member gamelan, an Indonesian-style orchestra featuring mostly percussion instruments such as gongs and chimes. Gamelan Galak Tika plays traditional Balinese music as well as experimental pieces composed by Ziporyn, a world-renowned clarinetist and composer who also heads the orchestra. His compositions, including the two to be performed this week, helped propel MIT’s gamelan onto the world music scene. Ziporyn’s pieces often combine Western instruments such as electric guitars, mandolins and even symphony orchestras with traditional gamelan instruments.

“Fire Tree” (1994) is a clash of gamelan and electric guitar, bass and keyboard that brought the audience to its feet at the conclusion of the 1995 “Blang On A Can Marathon” at Lincoln Center in New York. “Amok!” (1997) is a 30-minute piece featuring sample technology, extended instrumental techniques and elements of electronics.

Joining the gamelan for this cross-cultural rendition is Odd Apprente, the electro-acoustic new music duo of cellist Ha-Yang Kim and percussionist Nathan Davis, who performed Ziporyn’s music for the recent production of “Oedipus Rex” at the American Repertory Theater. Also from the “Oedipus” ranks are multiinstrumentalist Jeff Lieberman and bassist Blake Newman, accompanied by guitarist Eddie Whalen, a former member of the Gamelan Galak Tika. Ball’s master musician Dewa Ketut Ati begins a year-long residency with the orchestra by reuniting with the choreographer I Nyoman Catra for a performance of “Semara Wisaya,” featuring dancers Desak Made Margareta Larasati and Nyoman Aji.

The campus concert will be held in Kresge Auditorium on Nov. 11 at 7:30 p.m. Tickets are $10 for adults, $5 for students/seniors, and free with MIT I.D. The New York concert will be in Zankel Hall at Carnegie Hall (881 7th Ave., New York) Nov. 13 at 4 p.m. It is part of the “In Your Ear” summer festival curated by John Adams. Tickets range from $20-$32.

Ball-bound gamelan

Since its founding 11 years ago as the Boston area’s first multicultural gamelan, Gamelan Galak Tika has dedicated itself to studying traditional Balinese music and dance and developing new works by Balinese and American composers. The group has given dozens of performances around

MIT Tech Talk

November 10, 2004 PAGE 7

Harries presents lecture on materials in art

Cambridge-based artist Mag Harries, known locally for her whimsical public art installation called “The Glove Cycle,” a cascade of “lost” bronze gloves along the escalator of the Porter Square subway station, will deliver the 2004 Page Haaglof Lecture on Glass Thursday, Nov. 11, at 7 p.m. in Wong Auditorium.

The lecture’s title, “Mining Materials,” refers to Harries’ resistance to being seduced by materials. “She likes to strip the materials down to their essentials,” said Peter Houk, director of MIT’s Glass Lab.

The lecture itself marks a return to MIT for Harries, who became embroiled in controversy on campus in the early 1990s over her proposed sculpture for the Straton Student Center—a shaman’s hat—woven from hair donated by members of the MIT community.

“Public art is by nature a messy business. It gets dirty, vandalized, battered by the weather,” wrote Christine Tenin in the Boston Globe about Harries’ work and controversy. “And that’s after it’s realized. In the earlier stages, it is often compromised in battles with whatever bureaucracy is commissioning it.”

Harries, who works mainly as a sculptor, was educated at Leicester College of Art and Design and Southern Illinois University. She has held two residencies at the Pilchuck Glass School in Seattle, in 1997 and 2000, and has taught at the School of the Museum of Fine Arts in Boston since 1989.

She has exhibited throughout the U.S. and her work is in many collections including the National Museum of Wales and the Boston Museum of Fine Arts. Harries’ awards include an Artist Fellowship from the Massachusetts Council on the Arts and Humanities. In 1993 she won the Honor Award for Design Collaboration from the Boston Society of Architects.

The Page Haaglof residency, sponsored by the MIT Glass Lab, was established in 1998 to celebrate the life and work of Haaglof, who died unexpectedly in 1997. As director of the Glass Lab for more than 10 years, one of Hazlegrove’s highest priorities was to invite glass artists to the Institute for the benefit and further development of the MIT community.
Gamelan Galak Tika

Chris Kline plays the Banyuwangi gongs with the MIT Gamelan Galak Tika. The Balinese-style orchestra performs Nov. 11 in Kresge Auditorium at 8pm.

Photo: Bill Southworth

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**CALENDAR**

**WEDNESDAY NOVEMBER 10**

**Craft Fair**

5th Annual MIT Medical craft fair. 10:30am-1:30pm. Room E25-119.

**List Visual Arts Center Gallery Talk**

Led by Bill Ainger, curator, Noon. List Center. 253-4860.

**THURSDAY NOVEMBER 11**

**Veteran’s Day Institute Holiday**

SpaceVision 2004 Conference focusing on both public and private opportunities emerging in human spaceflight, with two dozen speakers. 8:10, 440, Nov. 11-14. Various campus locations.

**Friday NOVEMBER 12**

**“The Clipper Ship and the Corporate Ship”**

Exhibit focusing on the design, construction, speed and social experience of the clipper ship era. 9am-5pm. MIT Museum.

**Saturday NOVEMBER 13**

**Varsity Women’s Openweight Rowing**

Foot of the Charles Regatta. 8am. Charles River. 258-5266.

**Origami Workshop with Robert Lang**

Workshop with origami artist Robert Lang, artist-in-residence at MIT Nov. 11-17. 2-4pm. Room 5-134.

**Saturday November 14**

**List Visual Arts Center Gallery Talk**

With Hikko Kluchi, Education/Outreach Coordinator. 2pm. List Center. 253-4860.

“Drowned Out” - Movie and Talk

Screening of documentary and discussion with Sukumar Krishnan, Activist. 2-5pm. Room 4-237, 628-9826.

**Carnatic Vocal Concert**

Sanjay Subramanyam performs. 8:15. MITHAS members, $10 students. MIT students free. 5:30pm. Wood Auditorium.

**International Folk Dancing (participatory)**

Folk dancing. 8pm. Lobdell Dining Hall. 253-FOLK.

**MIT Chamber Singers**

William Cutter, musical director. 8pm. Kresge Auditorium. 253-9800.

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**ANCIENT MUSIC TRADITIONS**


**ORIGAME: ARTISTIC/MATHEMATICAL**

Talk by origamist artist Robert Lang: Artist-in-Residence at MIT Nov. 11-17. 7pm

**MIT GAMELAN GALAK TIKA**

Concert featuring Evan Ziporyn’s “Fire and” and “Amok!” Tickets: $10, $5, free with MIT ID. 452-2032.

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**EDITOR’S CHOICE**

**AMONG MUSIC TRADITIONS**


**ORIGAME: ARTISTIC/MATHEMATICAL**

Talk by origamist artist Robert Lang: Artist-in-Residence at MIT Nov. 11-17. 7pm

**MIKAMELAN GALAK TIKA**

Concert featuring Evan Ziporyn’s “Fire and” and “Amok!” Tickets: $10, $5, free with MIT ID. 452-2032.

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**MIT EVENT HIGHLIGHTS NOVEMBER 15 - 21**

**MONDAY NOVEMBER 15**

**Mathematics and Quantum Information in Origami Design**

Lecture by Robert Lang: Artist-in-Residence. 11am-12:30pm. Room 4-231.

**Unnatural Mammal Talk by Richard H. John, University of Illinois at Chicago on American Teleogry. 4-6pm. Room E17-705. 253-4062.

**Rural-Imperial Relations in Medieval Jordan**

Lecture by Dr. Bethany Walker, Grand Valley State University. 5:30pm. Room 3-133. 253-1400.

**How the Connection Machine Got Its Blinking Red Lights**

Presentation by artist Tamir Tchiel in the first commercial computer designed expressly to work on simulating intelligence and life. 7pm. Room 32-4863.

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**TUESDAY NOVEMBER 16**

**Reality and the Romance of Refugee Research**


**Vital Difference**

Open forum to discuss the role of race in community-building at MIT, hosted by the Center for Reflective Community Practice. 5-6:30pm. Sydney-russian Kadiga. 253-7587.

**A Personal View of the Swiss Legacy Architecture**

Lecture by Jirg Conzett, structural engineer, Switzerland. 6:30pm. Room 10-205. 253-7791.

**Thanksgiving Klezmer Style Contrabass Live music**

By ContraKlez with John Chambers & Friends. $5, $3 donation. Students free. 8-10:30pm. Lobby 13, 354-0864.

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**WEDNESDAY NOVEMBER 17**

**List Visual Arts Center Gallery Talk**


**Object Lesson: No Impuich**

Talk about the HIP Joint Simulator on display at the MIT Advertising Simmons. Deborah Douglas, curator of technology, and Institute Professor Emeritus Robert Marn, Noon-1pm. MIT Museum. 253-4444.

**Copyright Wars Talk by Wendy Gordon, BU Law**

5-7pm. Room E25-111. 253-382-4012.

**poetrynight**

Tom Pickett, author of 10 books of poetry and prose. 7pm. Room 6-120. 253-7884.

**Words and Music with Kenny Werner and MIT Poets**

Faculty and student poets share their work with Artist-in-Residence. Kenny Werner. 3:30-5pm. Killian Hall. 253-2826.

**U.S. premiere of “Invisible Object” Documentary**

On contemporary art and architecture. 6:30pm. Room N20-389. 452-2484.

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**THURSDAY NOVEMBER 18**

**MIT Chapel Concert**


**Copyright Wars Talk by Wendy Gordon, BU Law**

5-7pm. Room E25-111. 253-382-4012.

**poetrynight**

Tom Pickett, author of 10 books of poetry and prose. 7pm. Room 6-120. 253-7884.

**MIT Chamber Orchestra**

Music director. William Cutter, music director. 7pm. 253-9800.

**Special Gallery Tour**


**Weekly Anime Screening**

MIT Anime Club. 7pm. Room 6-120.

**The Musical World of Kenny Werner**

MIT Festival Jazz Ensemble. Frederick Harris Jr., music director. With special guest pianist and composer, Kenny Werner. MIT artist-in-residence. 5pm. Kresge. 253-2826.

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**FRIDAY NOVEMBER 19**

**The Painter, the Critic, her Pictures, his Words**

Talk by Architecture Professor Caroline Jones. MIT community only. Noon. Room 146-304.

**Special Gallery Tour**


**Weekly Anime Screening**

MIT Anime Club. 7pm. Room 6-120.

**The Musical World of Kenny Werner**

MIT Festival Jazz Ensemble. Frederick Harris Jr., music director. With special guest pianist and composer, Kenny Werner. MIT artist-in-residence. 5pm. Kresge. 253-2826.

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**SATURDAY NOVEMBER 20**

**Varsity Men’s Basketball MIT Invitational**

2pm. Rockwell Cage. 258-5265.

**Tamasha! Colors! Africa!**

An all-you-can-see African buffet. $10 MIT students, $12 others, MIT students free. 5-7pm. Walker Memorial. 225-8385.

**MIT Concert**

William Cutter, music director. 7pm. Room 6-120.

**The Musical World of Kenny Werner**

MIT Festival Jazz Ensemble. Frederick Harris Jr., music director. With special guest pianist and composer, Kenny Werner. MIT artist-in-residence. 5pm. Kresge. 253-2826.

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**SUNDAY NOVEMBER 21**

**MIT Museum Free Admission**

Third Sunday of every month. Always free with MIT ID. Noon-5pm. 253-9377.

**MIT Chamber Players Concert**


**International Folk Dancing (Participatory)**

International folk dancing. 8pm. Lobdell Dining Hall. 253-FOLK.

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**“Kabuto Mushi, Opus 427”**

by Robert Lang

Go Online! For complete events listings, see the MIT Events Calendar at: http://events.mit.edu.