



the PIPER

5/10 Issue

Carnegie Mellon

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Campaign Nears Two-Thirds Mark

■ Heidi Opdyke

During Spring Carnival, the university announced that “Inspire Innovation: The Campaign for Carnegie Mellon University” has raised more than \$628 million in commitments and cash toward its \$1 billion goal. David Bohan, associate vice president for University Advancement and the executive director of the campaign, said that number couldn’t have been reached without the support of the campus community.

“Faculty and staff are critical partners in the campaign’s efforts because their gifts, at any and every level, are an endorsement for Carnegie Mellon and its mission,” Bohan said. “The actions of our university community are viewed as a barometer that we are on the right course. There are many alumni who stay in touch with the university community who served as advisers, mentors and friends when students were here.

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Wonders at Work



PHOTO BY TIM KAULEN

DAVID TOURETZKY (FROM LEFT), A RESEARCH PROFESSOR AT THE ROBOTICS INSTITUTE, JOSH MOORE AND DONTÉ MASSIE WATCH RALPH PISTORIUS MANEUVER A CHIARA ROBOT DURING THE ANNUAL TAKE OUR DAUGHTERS AND SONS TO WORK DAY SPONSORED BY STAFF COUNCIL. STAFF COUNCIL MEMBER KENNETH CHU SAID MORE THAN 150 CHILDREN AND 60 VOLUNTEERS PARTICIPATED IN ACTIVITIES ON APRIL 22.

COMMENCEMENT PREVIEW INSIDE

Carnegie Mellon will hold its 113th Commencement at 11 a.m., Sunday, May 16 in Gesling Stadium, where about 3,700 undergraduate and graduate degrees will be conferred. For a look at this year’s keynote speaker Ian Rawson, student speaker Leslie McAhren, the honorary degree recipients and a commencement weekend schedule, see the special commencement pullout section inside on pages 5-8.

SCS RANKS #1

See page 10.

Science Magazine Honors Online Chemistry Labs

■ Jocelyn Duffy

David Yaron and his team have developed a new formula for teaching and learning chemistry by taking laboratory activities out of the lab and into the Internet.

While many students find chemistry concepts to be a “disconnected bag of tricks” that are difficult to relate to real-world experiences, Yaron and his team’s creation helps students connect basic chemistry formulas and notations to the core ideas of science.

In 2000, Yaron, an associate professor of chemistry, and his team of software engineers, undergraduate programmers and educational consultants from Carnegie Mellon and the University of Pitts-

burgh, set about to change how students learn chemistry. They developed The ChemCollective (www.chemcollective.org), a website that provides chemistry instructors with free access to activities that go beyond traditional textbook problems, allowing students to engage

with chemistry in a way that reflects what practicing chemists do in the lab.

“Traditional textbook problems were developed by educators when paper and pencil problem solving was the only viable option to practice chemical

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Q&A With David Dzombak: Thoughts on Why Water Matters

■ Chriss Swaney

David Dzombak, the Walter J. Blenko Sr. Professor of Civil and Environmental Engineering and faculty director of the Steinbrenner Institute for Environmental Education and Research, is helping to plan the World Environment Day Water Matters! Conference on June 3 at the David L. Lawrence Convention Center. Dzombak recently was named chair of a new National Research Council (NRC) Committee to provide advice to the U.S. Army Corps of Engineers on water resource issues. He also serves on the Environmental Protection Agency Science Advisory Board and on a second NRC committee focused on water quality in the Mississippi River. He sat down to talk with the Piper about why water matters.

What can you tell us about World Environment Day?

The United Nations World Environment Day is a worldwide day of awareness of global environmental issues, challenges and progress. Pittsburgh was chosen as the North American site, and there are six sites around the world.

In Pittsburgh, the celebration will consist of six weeks of events leading up to the actual day, which is Saturday, June 5. We'll be culminating the activities with the Water Matters! Conference on Thursday, June 3, which will focus on water and water issues in North America.

How is Carnegie Mellon playing a part in World Environment Day?

Carnegie Mellon is playing a key role in organizing the Water Matters! Confer-

ence and inviting professionals from government, industry and academia to Pittsburgh. Speakers at the event include James E. Rogers, chairman, president and chief executive officer for Duke Energy; David Ainsworth of the U.N. Convention on Biological Diversity; Greg Koch, managing director of the Global Water Stewardship Program for The Coca-Cola Co.; Carl Safina, founding president of the Blue Ocean Institute; and other thought leaders.

We will have three panels in the conference. The first focuses on water and your health, the second on water and energy — water and energy are inextricably related to one another — and the third, on water as an economic driver. There will also be three keynote talks.

How has the environmental movement grown at the university and the region since you've become involved in civil and environmental engineering?

Environmental awareness has increased tremendously over the past several decades. This has been reflected by growth in environmental education and research at Carnegie Mellon, and by changes in western Pennsylvania. The shrinkage of heavy industry in our region has spawned a variety of new directions. Among them was a recognition of the value of our natural resources here and of opportunities to use our natural resources in different ways for economic development and not just for exploiting resources like coal, oil and gas, all of which started here in western Pennsylvania. There's been a real transformation in how our natural resources are viewed in western Pennsylvania.

What are some of the greatest challenges for our environment as we move forward?

The greatest challenges for our environment as we move forward are ever-increasing strains on the environment, starting with increasing population.

While we work to reduce our environmental footprint, the number of people in the world keeps increasing. In the United States, we're at 306 million people and by mid-century, we'll be at more than 400 million.

In sub-Saharan Africa, with dramatic population growth, there are big crunches coming because of severely limited fresh water resources. The energy usage rate increasing in India and

China have implications for environmental resources.

While we are working to reduce our individual and collective environmental footprints, the number of feet continue to increase. The challenge for us as individuals and as societies is to develop new ways of doing things that consume energy and resources.

What are some of the environmental challenges endemic to the Pittsburgh region, and how are we trying to solve some of those issues?

One of the challenges for the Pittsburgh region is fine particles generated in the combustion of coal. Fine particles penetrate deeply into the lungs and pose human health risk. At Carnegie Mellon, we're a leading research center on fine particles in the atmosphere. The United States — through the Environmental Protection Agency — has been studying fine particles, their sources and their health impacts. Carnegie Mellon researchers have been developing the science base for regulations of fine particles.

Other challenges for western Pennsylvania relate to coal production. We have a long history of coal mining and coal use. The coal mining has had tre-



DAVID DZOMBAK

So, at Carnegie Mellon we work to get all students to think about their personal ability to influence the environment. While they are here, they have the opportunity to take classes, and there are many more non-class opportunities to learn about environmental issues through clubs such as Sustainable Earth, the Green Practices effort on campus, extracurricular seminars, Earth Day events and others.



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AT [HTTP://BIT.LY/PIPER](http://bit.ly/piper)

mendous environmental impact for us. We have scarred land from strip mining, subsidence from deep mining, and acid mine drainage from voids in the ground left from deep mining and surface mining. These are very long-term problems.

We also have problems with old wastewater infrastructure in our region. This results in frequent raw sewage discharges to our rivers.

The good news is we're aware of the problems, we're not complacent about them, we're working on them and we will see steady progress in the coming decades.

What advice can you give students who want to be involved in trying to tackle environmental issues?

There is widespread interest among students at Carnegie Mellon and other universities in the environmental challenges of our time. Some of these students will choose to pursue careers that engage them directly in meeting the challenges. Others won't pursue careers directly in environmental protection, but all of us, through our daily lives will have an environmental impact. Every activity humans undertake has an environmental impact. It is widespread awareness and commitment to different ways of doing things in our personal spheres, which results in environmental protection and advancements.

Can you talk about your own research and how it impacts the environment and public policy?

My research is focused on protection and restoration of water and land resources. Currently, my research group is engaged in several projects related to water and energy. We are working on carbon capture and geological sequestration (CCS), and in particular on the potential for leakage of carbon dioxide gas stored in deep geologic formations. This is the technology under development for capture of carbon dioxide emitted from power plants and other fossil fuel sources of energy. We are also working to study the use of waters of degraded quality for thermoelectric power plant cooling. About 40 percent of all water withdrawal in the U.S. is for power plant cooling, and in many parts of the country the amount of available freshwater for such purposes is very limited.

There are several projects at Carnegie Mellon related to the water-energy nexus. We need water to produce energy, we need energy to produce water. We treat water for drinking purposes and industrial uses, and that requires energy. We pump it around in distribution systems for domestic and agricultural water supply, which requires energy.

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5/10 Issue

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Inquiries concerning application of these statements should be directed to the Provost, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-6684 or the Vice President for Campus Affairs, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2057.

Carnegie Mellon University publishes an annual campus security report describing the university's security, alcohol and drug, and sexual assault policies and containing statistics about the number and type of crimes committed on the campus during the preceding three years. You can obtain a copy by contacting the Carnegie Mellon Police Department at 412-268-2323. The security report is available through the World Wide Web at www.cmu.edu/police/.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.

Produced for Media Relations by the Communications Design Group, May 2010, 10-475.

H. Guyford Stever 1916-2010

FORMER UNIVERSITY PRESIDENT LEAVES LEGACY IN EDUCATION AND SCIENCE

H. Guyford Stever, the visionary president who helped to create Carnegie Mellon University and many of its colleges and schools, died on Friday, April 9 surrounded by family and friends. The university's fifth president (1965-1972), Stever was at the forefront of setting scientific policies for the U.S., an adviser to two U.S. presidents and the architect of today's university.

"H. Guyford Stever was a prominent scientist, an important national leader in science policy, and the creator of an enduring legacy here at Carnegie Mellon. The period of tremendous growth and progress that he started continues today. We are all part of his legacy," said President Jared L. Cohon in an email to the university community.

In 1967, Stever announced the formation of Carnegie Mellon University as a result of a merger between the Carnegie Institute of Technology and the Mellon Institute of Research, leading Carnegie Mellon to a period of tremendous growth. During his administration, the College of Humanities and Social

Sciences, the Mellon College of Science, the Carnegie Institute of Technology (engineering) and the School of Urban and Public Affairs (now the Heinz College) took their place beside the College of Fine Arts and the flourishing Graduate School of Industrial Administration (now the Tepper School of Business). Carnegie Mellon also made dramatic advances in computing. These advancements led the way for today's School of Computer Science, the Robotics Institute, the Software Engineering Institute and the nation's first university-wide computing network, known as Andrew.

In November 1971, U.S. President Richard M. Nixon nominated Stever to become director of the National Science Foundation (NSF), and he resigned in February 1972 to accept the NSF post.

His career was marked by many academic honors. He won the National Medal of Science in 1991 and the Vannevar Bush Award in 1997, which are among the nation's highest honors for scientific work in public service. Stever also was a member of the National

Academy of Sciences and the National Academy of Engineering.

In 2008, the nation's first green dormitory at Carnegie Mellon was named after him. Members of Stever's family visited the university during commencement and the dedication.

Stever had a distinguished career that spanned many fields of science and administration. Over the years, he exerted lasting influence on countless scientific endeavors. He was instrumental in the formation of new institutions, from the creation of NASA in the post-Sputnik years, to creation of the internationally known Carnegie Mellon University. As Presidential Science Adviser to Presidents Nixon and Ford, Stever helped to shape the scientific agenda for the nation. He also chaired the oversight committee that redesigned the space shuttle boosters after the Challenger explosion.

During his career, Stever was chairman or member of numerous advisory committees to the U.S. government. The National Advisory Committee for Aeronautics' Special Committee on Space

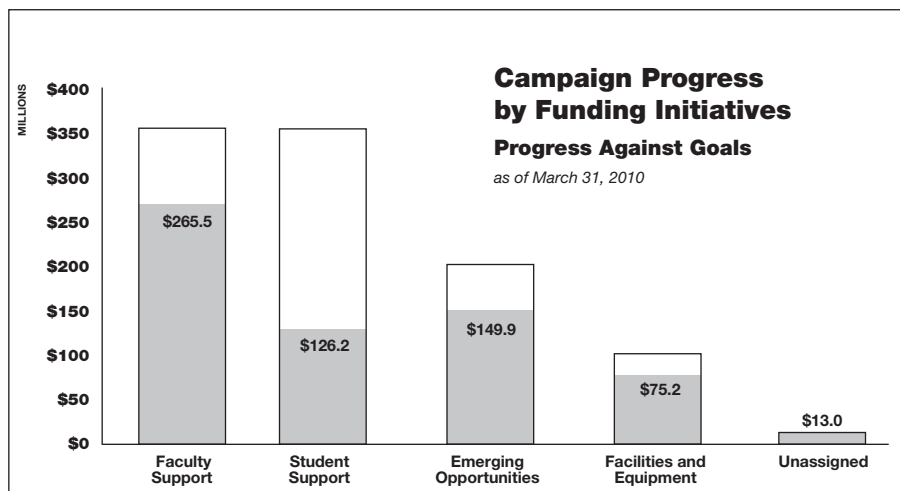


H. GUYFORD STEVER

Technology, also called the "Stever Committee," was among the best known. This special steering committee was formed with a mandate to coordinate the efforts of various branches of the federal government, private companies and U.S. universities in order to develop a space program.

Stever detailed the events of his life in a memoir, "In War and Peace: My Life in Science and Technology."

PHOTO COURTESY OF CARNEGIE MELLON UNIVERSITY ARCHIVES



Campaign Nears Two-Thirds Mark

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"Every dollar gets us closer to discovering or creating something new; to solving the next real-world problem; and to providing knowledge that enables students to succeed and innovate in the world," he said.

One of the other key campaign goals is to enhance and encourage alumni engagement. During March and April the campaign hosted record-attendance at events in Bangalore, Mumbai and New Delhi, Singapore and Washington, D.C.

As part of these events, panel discussions were held that featured faculty and alumni. The panels covered topics that were of relevant interest to alumni and to the university — such as innovation, smart urban growth, sustainability and the environment.

During Spring Carnival, faculty and staff donors with two or more years of consecutive giving were invited to participate in a debut recognition event

for The Order of the May (formerly known as the AI May Society). Those who attended were recognized for their consecutive and loyal financial support of the university. Special recognition was given to people who have given 25 years or more consecutively, as those individuals were formally inducted into the Order. Based on fiscal year 2009, more than 11,000 individuals are consecutive givers, and of those more than 500 donors have given for 25 years or more.

Faculty and staff interested in supporting the university financially or who may have questions regarding their giving are encouraged to contact Carole Panno (cp1g@andrew.cmu.edu) or Michael Haas (mbhaas@andrew.cmu.edu). Additional information is also available at www.cmu.edu/campaign/involved/faculty.html, and payroll deduction forms are available at www.cmu.edu/campaign/ways/fy-09_payrollrom.pdf.

EVENT INSPIRES D.C. ALUMNI



PHOTOS BY ROBB HILL

**inspire
innovation.**
THE CAMPAIGN FOR
CARNEGIE MELLON UNIVERSITY



D.C.-based alumni Phil Bronner (SCS'92) (above, from left), and Eric Giler (TPR'77) participated in a panel discussion for an Inspire Innovation event in Washington, D.C. The theme of the event, innovation and its game-changing impact on business, technology and society, allowed Bronner, a partner at Novak Biddle Venture Partners, and Giler, president and CEO of WiTricity Corp, to share insights with audience members and fellow panelists Priya Narasimham, Pradeep Khosla and Ray Lane, chairman of the university. More than 400 alumni attended including Alisha Bhagat (HSS'05) (inset).

STUDIO for Creative Inquiry Fellow Unveils a Pittsburgh GigaPanorama

■ Eric Sloss

One of the largest digital photographs ever created, a panoramic, 360-degree image of southwestern Pennsylvania taken from the rooftop of the U.S. Steel Tower, was unveiled by STUDIO for Creative Inquiry Fellow David Bear during a ceremony on Earth Day, April 22, in the College of Fine Arts.

Taken with a GigaPan camera, the image was assembled from more than 4,000 individual pictures taken on the morning of Oct. 19, 2009. The digital photograph contains 3.13 gigabytes (10.5 gigapixels) of information created by the CREATE Lab at Carnegie Mellon and the Pittsburgh Supercomputing Center.

The cropped image presented by Bear at the ceremony was 4 feet high by 23 feet long. In its entirety the image would be 50 feet high by 285 feet long — too big for even the Great Hall to accommodate.

“This GigaPanorama lets viewers understand the magnificence of the view

from high atop the U.S. Steel Tower,” said Bear, who is leading the High Point Park Investigation, a project connecting the expertise and insights of many architects, engineers, planners and designers in an effort to transform an urban rooftop into a public green space.

“Though the true experience will be witnessing this panoramic view live, this one-of-a-kind photographic image will forever showcase one of the world’s most spectacular city landscapes,” Bear said.

At the event, the STUDIO acknowledged the participants and products of the recent High Point Park Design Sketch/Case Competition, which involved 350 Carnegie Mellon students and faculty members imagining the creation of a sustainable public park on top of the U.S. Steel Tower, a one-acre expanse that is the largest space atop any building that size on Earth.

“The Roof of the World,” an independent documentary video shot

during the January competition, was also featured during the event, as were 32 architectural design sketches and five business case studies produced during

the competition. To view the Giganpan of Pittsburgh visit www.gigapan.org/gigapans/47373/.



PAUL HECKBERT (FROM LEFT) OF THE CREATE LAB, ART WETZEL OF THE PITTSBURGH SUPERCOMPUTING CENTER, DAVID BEAR OF THE STUDIO FOR CREATIVE INQUIRY AND RUTH KARLIN OF THE HIGHPOINT PARK INVESTIGATION GATHER IN FRONT OF THE CROPPED GIGAPAN IMAGE TAKEN FROM THE TOP OF THE U.S. STEEL TOWER.

Cuban Connection

CFA DEAN VISITS ARTISTS IN HAVANA

■ Eric Sloss

Hilary Robinson, the Stanley and Marcia Gumberg Dean of the College of Fine Arts, recently traveled to Cuba with a group of six representatives from Pittsburgh’s Mattress Factory to attend the opening reception for a new exhibition called “Queloides/Keloides.”

The exhibit, which contributes to current debates about the persistence of racism in contemporary Cuba and elsewhere in the world, runs at Havana’s Centro Wifredo Lam through May 31. Afterward, several Havana artists will travel to Pittsburgh to work in residence at the Mattress Factory. An exhibition will open in Pittsburgh this fall.

During the week in Cuba, Robinson, who serves as a board member for the Mattress Factory, and the rest of the group

met with musicians, artists and Havana’s vice minister for culture. They also visited artists’ studios and took time to experience the sights and sounds of Havana.

The group visited the Institute Superior de Arte, Cuba’s art academy, and attended the opening reception for “Queloides.” The Institute Superior de Arte is located in the Havana neighborhood of Vedado and on the site of a pre-revolution country club.

The Centro Wifredo Lam, where the “Queloides” exhibition is located, was just a few blocks from the group’s hotel on the Plaza de la Cathedral. Juan Roberto Diago, one of the artists in the “Queloides” exhibition, and Jorge Antonio Fernandez Torres, the director of the Centro Wifredo Lam, served as tour guides. The center has three floors of gallery space around an open-air courtyard and sculpture garden.

Q&A With David Dzombak

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What outcomes would you like to see from World Environment Day?

The conference organizing committee, which involves faculty and staff from the University of Pittsburgh and Duquesne University along with Carnegie Mellon, as well as representatives of several foundations, Bayer Corporation and a number of environmental nonprofits — with Sustainable Pittsburgh in the lead — have several primary goals for the conference. Water Matters! will feature thought leaders, relevant to our region and nationally, who are at the cutting edge of sustainable water solutions. We want attendees to come away with increased knowledge of needs, challenges, opportunities and new ideas, which can be brought to bear in their communities, homes and companies. We also want the event to support initiatives throughout our region for advancing water stewardship, water technology innovation and water opportunities for recreation and economic development.

We hope that the conference will inspire more people to work on and improve our water infrastructure and steward our water resources as well as contribute to a more widespread awareness of the importance of our water resources.

Something else that we’re doing in conjunction with the conference is that we’ve just begun a study to examine potential for our region to be a center for water technology innovation. Over the next year this effort will engage universities, companies, non-profits and individuals in our region to identify unique opportunities to build upon existing activities and strengths to pursue collectively new opportunities in the water technology domain. Carnegie Mellon is leading the effort through the Steinbrenner Institute and the Center for Water Quality and Urban Environmental Systems. Professor Jeanne Van Briesen and I are joining with colleagues from the University of Pittsburgh, Duquesne University and some non-profits to take stock of the activities going on in water technology and stewardship innovation. We’re calling this the water innovation consortium, and we’re hoping the conference will help us engage people in thinking about how we can build on the activities and innovations to grow Pittsburgh’s activity and success in the international water market.

Is there anything else you’d like to add?

We’re very excited about the United Nations World Environment Day coming to Pittsburgh and having the opportunity to conduct a major national conference focused on water, an asset so important to the history and economic development of our region, and to our future history and economic development. We are working hard to encourage our Carnegie Mellon community to come out to the conference as well as the broader community in the Pittsburgh region.

piper TRIVIA

Congratulations to Norma Cloherty and Mary Ann Schmidt for knowing that students living on campus are counted as part of Allegheny County’s official census population, regardless of where their parents live.

Go online to the Piper+ at <http://bit.ly/CMUpiper> for this month’s question. Previous winners are ineligible. Winners will receive a prize from the Carnegie Mellon Bookstore.

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Humanitarian Ian Rawson To Give Commencement Address, May 16

HONORARY DEGREE RECIPIENTS ARE BELL, DENNARD, LUDEROWSKI, SIMONS

■ Teresa Thomas

Ian G. Rawson, managing director of Hôpital Albert Schweitzer (HAS) in Deschapelles, Haiti, will be the keynote speaker for Carnegie Mellon's 113th commencement ceremony at 11 a.m., Sunday, May 16 in Gesling Stadium, where more than 3,700 undergraduate and graduate degrees will be conferred.

"We are fortunate to have an outstanding class of honorary degree recipients and a keynote speaker who have had a profound global impact in their chosen fields," said Carnegie Mellon President Jared L. Cohon. "We are especially pleased to welcome as our keynote speaker Ian Rawson, who has led Hôpital Albert Schweitzer in Haiti for many years. He has worked tirelessly and literally non-stop since the devastation of the January earthquake to treat the injured and to care for thousands of refugees. His is a story of leadership and selfless dedication that will inspire and motivate us to respond to the challenges facing the world."

When Rawson was 10, his stepfather and mother, Dr. W. Larimer Mellon Jr. and Gwen Grant Mellon, became



IAN RAWSON

acquainted with Albert Schweitzer, the great musician, theologian and physician who founded a hospital in central Africa. They were so inspired by his example that they established HAS in Haiti's Artibonite Valley in 1956, and devoted the rest of their lives to collaborating with the people of the region to improve their quality of life. Rawson served as HAS board chair before becoming managing director. His wife, Lucy, is president of the Board of Friends of HAS, which raises funds and awareness through the sale of Haitian art.

Rawson earned his master's degree in political science from the American University of Beirut, his Ph.D. in medical anthropology from the University of Pittsburgh, and attended Harvard University's School of Public Health executive program in health planning and administration. He was president of the Hospital Council of Western Pennsylvania, president of AmeriNet Central and a senior manager with Allegheny General Hospital. He served various Pittsburgh cultural and health organizations' boards and advised public health programs in Costa Rica, Nicaragua, Guatemala and the Dominican Republic.

Rawson is a longtime Pittsburgh resident and member of the Carnegie Mellon community. He has served the university as an adjunct professor in the Heinz College; an advisory board member of TechBridgeWorld, a CMU team of faculty, staff and students that creates and implements technology solutions for developing communities around the world; and a collaborator on a variety of projects to advance social equity.

Rawson will share the commencement stage with four honorary degree recipients. They are:

Chester Gordon Bell Doctor of Science and Technology

Bell, the father of the minicomputer and a world-renowned pioneer in high-performance and parallel computing, is a principal researcher at Microsoft's Silicon Valley Laboratory, and for the last decade has been researching digitally storing a person's life. He is revered as part of the startup faculty of Carnegie Mellon's Computer Science Department, where he was a professor of computer science and engineering from 1966 to 1972, and co-authored with Allen Newell the classic book "Computer Structures." He subsequently collaborated on the design of C.mmp and Cm*, pioneering computers of the Computer Science Department. Bell came to Carnegie Mellon from the Digital Equipment Corporation, where he was manager of computer design and the architect of the first minicomputers and time-sharing computers. In 1986, Bell was asked to establish a computing directorate for the National Science Foundation and to lead cross-agency planning

CONTINUED ON PAGE SEVEN

Al-Jaber Delivers Carnegie Mellon Qatar Keynote



HESSA SULTAN AL-JABER

■ Noha Al Afifi

Hessa Sultan Al-Jaber, the secretary general of the Supreme Council of Information and Communication Technology, (ictQATAR) gave the keynote address at Carnegie Mellon Qatar's graduation on May 3.

"I count Dr. Hessa as a very good friend," says Charles E. Thorpe, dean of Carnegie Mellon Qatar. "And she is, of course, a friend to the university: she was on our Joint Advisory Board for years, she is working to build up the ICT industry, and she sponsors many interesting and valuable initiatives. In addition, she is a personal friend, to whom I have always looked for advice

and encouragement."

Carnegie Mellon Qatar's Class of 2010 comprises students receiving degrees in computer science, information technology and business administration.

In her years of leadership at ictQATAR, Al-Jaber has led Qatar's information, communication and technology (ICT) strategy across sectors, spearheading major initiatives in government, education and business. She has overseen the liberalization of Qatar's telecommunications market and directed the modernization of Qatar's ICT infrastructure.

Passionate about ensuring that the benefits of technology reach all sectors, Al-Jaber has led numerous initiatives to make Qatar a more inclusive society through ICT. She has led the modernization of Qatar's government through ICT by streamlining process, making government more transparent and accessible, and launching an online portal to the government. Al-Jaber also has been instrumental in the creation of Mada, an assistive technology center that serves persons with disabilities in Qatar, as well as the development of the Center for Arab Women in Technology.

Entrepreneurial Artist To Deliver Student Commencement Speech

■ Abby Houck

Master of Fine Arts student Leslie McAhren enjoys creative challenges and celebrates the extraordinary in the ordinary.

She'll have a chance to experience an extraordinary creative challenge at Commencement as this year's student speaker. Her speech is titled "You, Me and Lifelong Ascent."

"As an artist, you're constantly looking for an audience," McAhren said. "This was an opportunity to pull some themes from my thesis and put them out in the world."

McAhren's speech, which is based on her thesis, focuses on the theme of the polymath — someone who is an expert in several fields of study. She wants to motivate fellow graduates to imagine multiple career paths and pursue outlets beyond the workplace for their talents. In many ways, it is a personal reflection on Carnegie Mellon's interdisciplinary culture.

"I hope my talk will be an opportunity for people to think about using the total real estate in their brains and the full extent of their skills," McAhren said.

McAhren has spent the past three years pursuing interests in art and entrepreneurship. She's started five small business ventures during this time and took advantage of six Tepper School of Business courses taught by Peter Boatwright, Chris Cykar, Frank Demmler, Mark Fichman and Jeffrey R. Williams.

"All of these business professors have pushed my ideas and my entrepreneurial spirit to make me more than just a 'lemonade stand' proprietor," McAhren said.

Her first goal following graduation is to grow one of the businesses she developed at Carnegie Mellon. But don't ask McAhren to reveal any details yet. She's mastered the School of Art's curriculum and the art of suspense. Right now, all she will say is her business plans are "proprietary information."

McAhren currently is selling \$5 toothbrushes that would make Heinz College faculty member Linda Babcock proud. The toothbrush handles are imprinted with the statement "Ask For What You Want." They were on display at the "Escape PGH" MFA Thesis Exhibition at the Regina Gouger Miller Gallery, and her website www.didyousee.it/ encourages prospective customers to make a purchase with the slogan: "Lifelong ascent begins with daily renewal. Remind yourself every day."

In the summer of 2007, McAhren and her friend, Rachel Walsh, opened a mobile portrait studio in Oaxaca, Mexico. Armed with a cardboard sign, a camera and an orange curtain from their apartment that doubled as a backdrop, they set up shop in the town square next to other street vendors. They charged 30 pesos (about three dollars) for a 5x8 and 4x6 portrait package.

She noted the experience taught her about the challenges of setting up a small business in a foreign country.

"It humbled me in terms of hustle," McAhren said. "Mexico is full of amazing sales people."

She's also in the final stages of completing a full-length feature film, titled "FOOD," with second-year MFA student Courtney Dow. School of Art faculty member Susanne Slavick, one of McAhren's mentors, plays the role of McAhren and Dow's mother in the film. Slavick also served as McAhren's thesis adviser, and McAhren has been



LESLIE MCAHREN IS THIS YEAR'S STUDENT SPEAKER.

PHOTO BY KEN ANDREYO

Hollywood Producer To Speak at Tepper Diploma Ceremony

■ Mark Burd



Paula Wagner (A'69), producer, talent agent and top studio executive, will serve as the keynote speaker during the diploma ceremony for the Tepper School of Business. The event will be at 2 p.m. on Saturday, May 15 in the Soldiers and Sailors Memorial Hall.

A graduate of Carnegie Mellon's School of Drama and a member of the university's Board of Trustees, Wagner is a leading executive in the entertainment industry, earning accolades as a successful producer

and skillful talent agent. She is founder of Chestnut Ridge Productions, a film production company that is currently developing motion picture, television, theater and new media projects.

Wagner began her career at Creative Artists Agency (CAA), where she spent 15 years representing some of Hollywood's top talent including actors, directors and writers. In 1993, she launched Cruise/Wagner Productions (C/W) with her former CAA client Tom Cruise. For the next 13 years, C/W Productions produced a wide range of pictures that earned numerous awards, widespread critical praise and global box office success.

C/W's first film, "Mission: Impossible," was an international hit that brought the company the 1997 Nova Award for Most Promising Producers. Wagner went on to produce such critically acclaimed films as "Without Limits," "Shattered Glass," "Narc," "The Others," "Vanilla Sky," "Elizabethtown," "The Last Samurai" and "Ask The Dust," as well as the international blockbusters "Mission: Impossible II," "Mission: Impossible III" and Steven Spielberg's "War Of The Worlds," for which she was the executive producer.

Wagner was co-owner and CEO of United Artists Entertainment, LLC from 2006 to 2008. She is a member of the American Cinematheque's Board of Directors and sits on the board of the National Film Preservation Foundation through the Library of Congress. She is also on the Executive Committee of the UCLA School of Theater, Film and Television.

Wagner has received numerous awards for her contributions to varying film societies. In 2007, she and her husband Rick Nicita, co-chairman and COO of Morgan Creek Productions, were awarded the ACLU Bill of Rights Award for championing numerous film projects that highlight civil rights and civil liberty issues.

Heinz College Presenters Speak from Experience

■ Brad Stephenson



JON D. WILLIAMS

COURTESY OF JON D. WILLIAMS

Keynote speakers with long histories in their respective fields will address graduates from the Heinz College's Information Systems and Management and Public Policy and Management schools.

Jon D. Williams (HNZ'87) will serve as the keynote speaker for the School of Information Systems and Management's diploma ceremony at 2 p.m., Saturday, May 15 in the Purnell Center for the Arts. For 23 years, Williams has been with Deloitte Consulting LLP, where he is currently a senior principal. He is a member of Deloitte's U.S. Board of

Directors, and he also serves as the chairman of the board for Deloitte Consulting India Private Limited (DCIPL), Deloitte's India-based global delivery center.

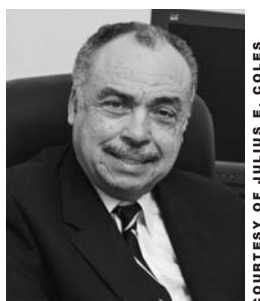
Williams previously served as national managing director of services for Deloitte U.S., and he also led Deloitte's enterprise applications practice.

Williams' consulting career with Deloitte has focused on large technology/application integration engagements for some of Deloitte's largest clients. He focuses on engagement leadership for multi-year large-scale custom application design, development and implementation engagements for clients of Deloitte in any global geography.

Williams received a bachelor's degree in arts management from Ottawa University in 1985 and a master's degree in public policy and management from Heinz College in 1987.

The keynote speaker for the Public Policy and Management diploma ceremony at 2 p.m. on Sunday, May 16 at Rodef Shalom Synagogue will be Julius E. Coles, director of the Office of Global Education and the Andrew Young Center for International Affairs at Georgia's Morehouse College.

Prior to his position with Morehouse, Coles was president of Africare from 2002 to 2009. He served as the director of Morehouse College's Andrew Young Center for



JULIUS E. COLES

COURTESY OF JULIUS E. COLES

CONTINUED ON PAGE EIGHT

Four Honorary Degrees To Be Conferred

CONTINUED FROM PAGE FIVE



GORDON BELL

requested by Congress for a network to connect all federal and university research computers, which became the Internet.

Bell earned his bachelor's and master's degrees in electrical engineering from the Massachusetts Institute of Technology (MIT).

Robert H. Dennard (E'58) Doctor of Science and Technology

Dennard, who earned his Ph.D. in electrical engineering from Carnegie Mellon in 1958, is renowned as the inventor in



ROBERT H. DENNARD

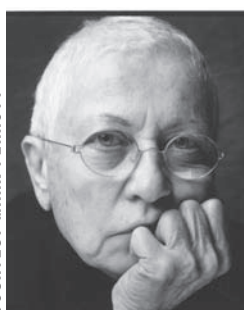
1967 of the one-transistor dynamic random access memory (DRAM) cell for IBM — the global standard for low-cost digital memory

used universally in computers and other data processing and communication systems today. Dennard also is a pioneer in scaling principles of microelectronics, which provide rules for making circuits smaller in every dimension. In 1972, he and co-workers developed the widely

used concept of metal-oxide semiconductor (MOS) transistor scaling, showing how to design devices and build highly integrated circuits of micron size. In the 1980s, he led a group that showed how to design devices of sub-micron dimensions, leading to today's gigabit memory chips and powerful microprocessors. At IBM's Thomas J. Watson Research Center, Dennard continues to investigate the limits of scaling and the future evolution of microelectronics. He has received 52 U.S. patents and published more than 100 technical papers to date. Dennard earned bachelor's and master's degrees in electrical engineering from Southern Methodist University.

Barbara Luderowski Doctor of Fine Arts

Luderowski has been an important force in the transformation of post-industrial Pittsburgh by making immense contributions to the arts community in the region as well as to the redevelopment of the city's North Side neighborhood. Beginning with her purchase of a vacant mattress warehouse in the Mexican War Streets area in 1975, Luderowski has created today's multi-building Mattress Factory, a highly regarded museum of contemporary installation art with a world-renowned artists residency program. Since 1982, she and co-director Michael Olijnyk have brought artists from all over the world and throughout



BARBARA LUDEROWSKI

the United States to create more than 350 new site-specific installations, which have attracted tens of thousands of visitors annually. She has been honored as a Distinguished Daughter of Pennsylvania, has been named among Pittsburgh's Top 50 Cultural Power Brokers and has received the Harry Schwalb Excellence in the Arts Award for visual arts. Luderowski studied at the Art Students League of New York, the Cranbrook Academy of Art in Michigan and Carnegie Mellon. Her sculpture has been shown throughout the United States.

James H. Simons Doctor of Business Practice

Most of Simons' professional accomplishments and many of his philanthropic initiatives revolve around mathematics. He is chairman of the board of Renaissance Technologies, the exclusively quantitative, highly successful investment firm he founded in 1982, and served as CEO until 2009. He is also chairman and founder of the nonprofit Math for America, which he, together with a group of others in the financial industry, established in 2004

to improve math education in the nation's public high schools. Simons' scientific research was in the area of geometry and topology, and included the discovery and application of geometric measurements called the Chern-Simons invariants, which have wide use, particularly in theoretical physics. He earned his bachelor's degree from MIT and doctoral degree from the University of California at Berkeley, both in mathematics. In 1975, the American Mathematical Society honored Simons with the Veblen Prize in Geometry. With his



JAMES H. SIMONS

wife, Marilyn, he manages the Simons Foundation, which is primarily devoted to the support of scientific research. The Simons have also founded a countrywide health care training program in Nepal.

McAhren Speaks

CONTINUED FROM PAGE SIX

Slavick's graduate assistant.

"We call Leslie 'the golden girl,'" Slavick said. "Maybe it's her irrepressible curly blond hair, her sunny disposition or her Midas touch. She is unapologetic in considering our relations as transactions that can and should be mutually beneficial. She creates opportunities for herself and for others, striving for excellence and currency, both literally and figuratively."

McAhren also will remember School of Art faculty member Jim Duesing for his teaching style and sense of humor.

"He insists upon meeting every week, like clockwork," McAhren said. "You meet with him in awful weeks and in wonderful weeks. He consistently pushes you to think harder and do more."

Interaction with faculty like Slavick and Duesing is just one reason McAhren chose to move from Albuquerque, N.M., to attend the School of Art.

McAhren said the small size of the MFA program, which currently has 18 students, meant faculty outnumber students nearly two-to-one. One of her favorite memories is the School of Art's fall Gateway Clipper cruise, which provides students and faculty an opportunity to get to know one another.

"You're outside of the classroom, and you're having a casual meal. You're sailing into the sunset. There's nothing better," McAhren said.

Although McAhren will leave the School of Art this month, she plans to be actively involved as an alumna.

"It has the No. 1 multimedia program in art in the United States," she said. "It's the finest there is."

Schedule of Events

Commencement weekend at Carnegie Mellon involves much more than the ceremony itself. Below is a list of events that will keep campus humming May 15-16.

Saturday, May 15

8 a.m. - 3 p.m., 6 - 8:30 p.m.
Commencement Welcome Area open
Wean Commons, UC

First Aid Area open
Athletic Equipment Desk, UC

8 - 9 a.m.
Phi Beta Kappa Honor Society Initiation Ceremony
McConomy Auditorium, UC
Sponsor will send information directly to inductees.
Caps and gowns are required. A light breakfast will be available prior to the ceremony.

9:30 a.m.
Naval Science (Navy) ROTC Commissioning Ceremony
Soldiers and Sailors Memorial Hall (off campus)
4141 Fifth Ave., Pittsburgh, PA 15213

10 - 11 a.m.
Honors Ceremonies
Various locations across campus.

Noon - 8:30 p.m.
Diploma Ceremonies and Department Events
Specific times and locations are listed on page 8.

5 - 7 p.m.
Pre-Commencement Jazz Reception
All graduating seniors and their families are invited.
Regina Gouger Miller Gallery, Purnell Center for the Arts

To attend, RSVP by May 11 to events-alumni@andrew.cmu.edu or 1-866-401-9529.

5 - 8 p.m.
Carnegie Mellon Advising Resource Center (CMARC) Reception
Singleton Room, Roberts Engineering Hall

8 p.m.
Doctor's Hooding Ceremony
Wiegand Gym, UC
Doctor's candidates will be recognized and hooded individually on stage. Caps and gowns are required. A reception for candidates, ceremony participants and their families and friends will immediately follow the ceremony in Rangos Hall and Schatz Dining Room, UC.
No tickets are necessary.
NOTE: Doctor's candidates and program participants should gather for robing and procession line-up at 7 p.m. in Rangos Hall, UC.

Sunday, May 16

7:30 - 10 a.m.
Diploma Ceremonies and Department Events
Specific times and locations are listed on page 8.

7:45 - 8:30 a.m.
Baccalaureate Celebration
Wright-Rogal Chapel, UC
The Carnegie Mellon Interfaith Council will lead an interfaith baccalaureate ceremony. Attendance is optional. No tickets are necessary. Caps and gowns are not required.

8 a.m. - 2 p.m.
Commencement Welcome Area open
Wean Commons, UC

First Aid Area open
Athletic Equipment Desk, UC

8:30 - 10 a.m.
School of Computer Science Breakfast
Gates & Hillman centers
This is a breakfast for School of Computer Science graduates and their families. Reservations are required. Please contact Catherine Copetas at scs-rsvp@cs.cmu.edu or 412-268-8525.

10 a.m.
Robing for Faculty, Degree Candidates and Members of the Platform Group
Various locations

10:15 - 11 a.m.
Procession of Graduates
Various locations across campus.

11 a.m.
COMMENCEMENT
Gesling Stadium

12:30 - 5 p.m.
Diploma Ceremonies and Department Events
Specific times and locations are listed on page 8.

UC = University Center

Diploma Ceremonies

Graduating students receive their diplomas at department or college ceremonies held throughout commencement weekend. Complimentary shuttle service will be provided on Sunday afternoon to diploma ceremonies taking place off campus. Written directions to off-campus sites also will be available in the Commencement Welcome Area. Unless otherwise indicated, the reception will follow the ceremony.

Bachelor of Humanities & Arts/ Bachelor of Science & Arts/ Bachelor of Computer Science & Arts

Ceremony: 8:30 a.m., Sunday, May 16
Kresge Theater, College of Fine Arts
Reception: 9:30 a.m.
Alumni Concert Hall, College of Fine Arts

Carnegie Institute of Technology

Biomedical Engineering
Ceremony: Noon
McConomy Auditorium, UC
Reception: 1 p.m., Saturday, May 15
Connan Room, UC

Chemical Engineering
Ceremony: 1 p.m., Sunday, May 16
Carnegie Lecture Hall, Carnegie Museum
(off campus)
Reception: following ceremony
Hall of Architecture, Carnegie Museum
4400 Forbes Ave.

Civil & Environmental Engineering
Reception: 12:30 p.m., Sunday, May 16
Ceremony: 2 p.m.
Rooms 120 & 121, David Lawrence Hall
University of Pittsburgh (off campus)
3942 Forbes Ave.

Electrical & Computer Engineering
Ceremony: 12:30 p.m., Sunday, May 16
Reception: following ceremony
Wiegand Gymnasium, UC

**Engineering & Public Policy/
Engineering & Technology
Innovation Management**
Ceremony and Reception: 8 a.m.,
Sunday, May 16
Rangos 2 and 3, UC

Information Networking Institute
Ceremony: 5 p.m., Saturday, May 15
Reception: 6 p.m.
St. Nicholas Cathedral (off campus)
419 S. Dithridge St.

Materials Science & Engineering
Ceremony: 1 p.m., Sunday, May 16
Reception: following ceremony
Winchester Thurston School Auditorium
(off campus)
555 Morewood Ave.

Mechanical Engineering
Ceremony and Reception: 2 p.m.,
Saturday, May 15
Wiegand Gymnasium, UC

College of Fine Arts

School of Architecture
Ceremony: 2:30 p.m., Saturday, May 15
Kresge Theater, College of Fine Arts
Reception: 4 p.m.
Great Hall, College of Fine Arts

School of Art
Reception: 12:30 p.m., Sunday, May 16
Regina Gouger Miller Gallery, Purnell Center
Ceremony: 2:30 p.m.
Philip Chosky Theater, Purnell Center

School of Design
Ceremony & Reception: 3 p.m.,
Saturday, May 15
Rangos Hall, UC

School of Drama
Ceremony: 12:30 p.m., Sunday, May 16
Philip Chosky Theater, Purnell Center
Reception: following ceremony
Lobby, Purnell Center

School of Music
Ceremony: 12:30 p.m., Sunday, May 16
Kresge Theater, College of Fine Arts
Reception: following ceremony
Alumni Concert Hall, College of Fine Arts

College of Humanities & Social Sciences

**Economics/Business Administration
(Bachelor's)**
Reception: 12:30 p.m., Sunday, May 16
Ceremony: 2 p.m.
Soldiers and Sailors Memorial Hall
(off campus)
4141 Fifth Ave.

English
Ceremony: 2:30 p.m., Saturday, May 15
McConomy Auditorium, UC
Reception: following ceremony
Schatz Dining Room, UC

History
Reception: 8 a.m., Sunday, May 16
Lower Level Coffee Lounge, Baker Hall
Ceremony: 9 a.m.
Giant Eagle Auditorium, Baker Hall

Information Systems
Ceremony: 6 p.m., Saturday, May 15
Philip Chosky Theater, Purnell Center
Reception: 7:30 p.m.
Lobby, Purnell Center

Modern Languages
Ceremony: 8:30 a.m., Sunday, May 16
Rangos 1, UC
Reception: following ceremony
Skibo Coffeehouse, UC

Philosophy
Reception: 8:30 a.m., Sunday, May 16
Ceremony: 9 a.m.
Adamson Wing (136A), Baker Hall

Psychology
Ceremony and Reception: 12:30 p.m.,
Sunday, May 16
Rangos Hall, UC

Social & Decision Sciences
Reception: 7:30 a.m., Sunday, May 16
Schatz Dining Room, UC
Ceremony: 8:30 a.m.
McConomy Auditorium, UC

Statistics
Ceremony: 12:30 p.m., Sunday, May 16
Giant Eagle Auditorium, Baker Hall
Reception: following ceremony
Lower Level Coffee Lounge, Baker Hall

Student-Defined Majors
Ceremony and Reception: 12:30 p.m.,
Sunday, May 16
Adamson Wing (136A), Upper Level,
Baker Hall

H. John Heinz III College

**School of Information Systems
& Management**
Ceremony: 2 p.m., Saturday, May 15
Philip Chosky Theater, Purnell Center
Reception: following ceremony
Lobby, Purnell Center

**School of Public Policy &
Management**
Ceremony: 2 p.m., Sunday, May 16
Reception: following ceremony
Rodef Shalom Synagogue (off campus)
4905 Fifth Ave.

Interdisciplinary Programs

Entertainment Technology Center
Reception: 12:30 p.m., Sunday, May 16
Ceremony: following reception
East End Lounge, Heinz Field (off campus)
100 Art Rooney Ave.
NOTE: Shuttle service not provided.

Mellon College of Science

Biological Sciences
Ceremony: 2 p.m., Saturday, May 15
Auditorium, Mellon Institute (off campus)
Reception: following ceremony
Social & Conference Rooms, Mellon Institute
4400 Fifth Ave.

Chemistry
Ceremony: 2 p.m., Sunday, May 16
Auditorium, Mellon Institute (off campus)
Reception: following ceremony
Social & Conference Rooms, Mellon Institute
4400 Fifth Ave.

Mathematical Sciences
Ceremony: 12:30 p.m., Sunday, May 16
Room 2315, Doherty Hall
Reception: following ceremony
Perlis Atrium, Newell-Simon Hall

Physics
Ceremony: 12:30 p.m., Sunday, May 16
Reception: following ceremony
Room 7500, Wean Hall

School of Computer Science

Ceremony: 1 p.m., Sunday, May 16
Reception: following ceremony
Carnegie Music Hall, Carnegie Museum
(off campus)
4400 Forbes Ave.

Tepper School of Business

**Business Administration
(Master's & Doctor's)**
Ceremony: 2 p.m., Saturday, May 15
Reception: following ceremony
Soldiers & Sailors Memorial Hall
(off campus)
4141 Fifth Ave.

**Business Administration
(Bachelor's)/Economics**
Reception: 12:30 p.m., Sunday, May 16
Ceremony: 2 p.m.
Soldiers & Sailors Memorial Hall
(off campus)
4141 Fifth Ave.

UC = University Center

Magazine Honors Online Labs

CONTINUED FROM PAGE ONE

manipulations, beyond limited time in a physical laboratory," Yaron said. "Ready access to computers gives us the opportunity to fundamentally redesign the activities that students are asked to do in high school and college chemistry courses."

The site, which has evolved and grown over the past decade, has been named a recipient of the prestigious Science Prize for Online Resources in Education (SPORE). The award, sponsored by Science magazine, recognizes outstanding freely available online materials that enrich science education. The developers, which include Carnegie Mellon's Yaron, Michael Karabinos and alumnus Donovan Lange, and the University of Pittsburgh's James G. Greeno and Gaea Leinhardt, were recognized in the April 30 issue of Science.

"Students can learn how to do the

ONLINE: WATCH DAVID YARON

DISCUSS THE CHEMCOLLECTIVE

PROGRAM AT

[HTTP://BIT.LY/CMUPIPER.](http://bit.ly/CMUPIPER)

standard written exercises that appear in textbooks without really developing an understanding of chemistry," Yaron said. "Our goal is to give students the opportunity to approach chemistry more like actual scientists, by designing and carrying out their own virtual experiments and by applying chemistry concepts in real-world contexts."

The site has two main types of activities: virtual labs and scenario-based learning activities. The virtual labs use a web-based laboratory simulation in which students can select from hundreds of chemical reagents and manipulate them much like they would in an actual laboratory. The scenario-based activities give students the opportunity to apply chemical concepts to interesting scenarios such as a murder mystery, a case of arsenic poisoning in Bangladesh or a project designing fuel for a mission to Mars.

The site also serves as a platform for instructors to develop their own materials, which they can share among the community of users. Of the 117 labs currently available on the site, 56 have been contributed by 11 different groups from the user community.

Last year, more than 100,000 virtual lab experiments were performed on the website, and the software was downloaded more than 25,000 times for use on local computers.

The ChemCollective is funded by the National Science Foundation's National SMET Digital Library and Course, Curriculum and Laboratory Improvement programs, the William and Flora Hewlett Foundation and the Howard Hughes Medical Institute.

Heinz Presenters Speak from Experience

CONTINUED FROM PAGE SIX

International Affairs from 1997 to 2002 and as the director of Howard University's Ralph J. Bunche International Affairs Center from 1994 to 1997.

Most of Coles' career in the foreign service has been spent as a senior official with the United States

Agency for International Development (USAID). Coles retired from the U.S. Government's Foreign Service in 1994 with the rank of Career Minister. He received numerous awards including the Distinguished Career Service Award and the Presidential Meritorious

Service Award.

Coles received a bachelor's degree from Morehouse College in 1964 and a master's in public affairs from Princeton University's Woodrow Wilson School of Public and International Affairs in 1966.

Public Opinions

STUDY SUGGESTS TWEETS MAY REPLACE POLLS AS PUBLIC BAROMETERS

■ Byron Spice

Polling may be the current gold standard for assessing public opinion, but a new Carnegie Mellon study suggests that analyzing millions of Twitter messages might eventually be a faster, cheaper way to get a sense of what's on people's minds.

Taking full advantage of those freely offered opinions will require computers that can understand and analyze natural language, including the idiosyncratic language that typifies tweets, said Noah Smith, assistant professor of language technologies and machine learning. But even with the relatively crude tools available today, Smith and his colleagues found that microblog analysis can yield measures of consumer confidence and of presidential job approval similar to those of well-established public opinion polls.

"With seven million or more messages being tweeted each day, this data

stream potentially allows us to take the temperature of the population very quickly," Smith said. Telephone-based polls can take days and cost thousands of dollars, he noted, while analyzing Twitter sentiments can be fast and inexpensive.

In the study, to be presented May 25 at the Association for the Advancement of Artificial Intelligence's International Conference on Weblogs and Social Media in Washington, D.C., Smith and his colleagues collected a billion microblog messages – averaging about 11 words each – posted to Twitter during 2008 and 2009. They used simple text analysis techniques to identify messages that pertained to the economy or to politics and then found words within the text that indicated if the writer expressed positive or negative sentiments.

When compared to polling data from the Gallup Organization and the

Reuters/University of Michigan Surveys of Consumers, the Twitter-derived sentiment measurements were much more volatile day-to-day. But when the researchers "smoothed" the results by averaging them over a period of days, the results often correlated closely with the polling data, said Brendan O'Connor, a graduate student in the Language Technologies Institute and the first author of the study.

Consumer confidence measured by the tweet analysis, for instance, followed the same general slide through 2008 and the same rebound in February/March of 2009 as was seen in Gallup's Economic Confidence Index and the Reuters/University of Michigan Index of Consumer Sentiment (ICS). The ICS and Gallup data had a correlation of 86 percent over the period; the Twitter-derived sentiments had between 72 percent and 79 percent correlation with the Gallup data, depending on the number of days averaged to smooth the data.

Likewise, both the Twitter-derived sentiments and traditional polls from Gallup and Pollster.com reflected declining approval of President Obama's job performance during 2009, with a 72 percent correlation between them.

But the researchers found that their

sentiment analysis did not correlate as well with election polling during 2008. For instance, increased mentions of "Obama" tended to correlate with rises in Barack Obama's polling numbers, but increased mentions of "McCain" also correlated with rises in Obama's popularity. Improved computational methods for understanding natural language, particularly the unusual lexicon of microblogs, will be necessary before Twitter feeds can be reliably mined to predict elections, the researchers concluded.

"The Web is so mainstream now that there's no question that the Web is representative somehow of the population," O'Connor said. But pinning down Web demographics is still difficult, he acknowledged, noting that Twitter traffic alone increased by a factor of 50 during the two-year span of the study.

Using computer programs to judge the sentiments of microblogs is fraught with potential error, but even with the crude tools used in this exploratory research, the accuracy is better than can be achieved by chance, O'Connor said.

"The massive amount of data was crucial in making this work," he explained. "We don't need to get the sentiment of every individual right to understand sentiments in aggregate."

Special Delivery

SCANNER WILL BE USED TO ANALYZE THOUGHTS

■ Shilo Raube

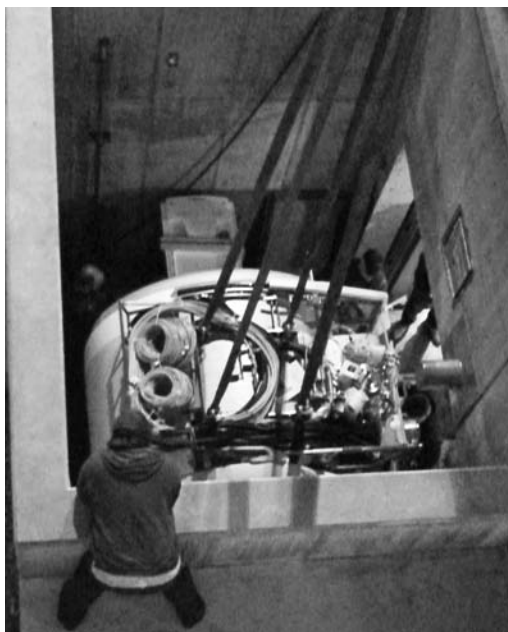


PHOTO COURTESY OF THE SCIENTIFIC IMAGING AND BRAIN RESEARCH CENTER

AN 18,000-LB. SIEMENS VERIO 3T SCANNER IS LOWERED INTO WEAN HALL'S BASEMENT. THE MRI SCANNER WILL BE USED TO ANALYZE THOUGHTS.

In early April, the new Scientific Imaging and Brain Research (SIBR) Center received a special delivery.

An 18,000-lb. Siemens Verio 3T Scanner, purchased with a \$2 million grant from the National Institutes of Health, was lowered via crane into the SIBR's new location in Wean Hall 3604. To move the scanner into the facility, an access area was created in the lower level of the south side of Wean. The scanner — the only MRI scanner located within a computer science department — will now allow Carnegie Mellon scientists to analyze thoughts in participants' brains.

The SIBR will be operational this month and will be used by several departments interested in

brain science, including Psychology, Computer Science, Social and Decision Sciences and Modern Languages.

WATCH A VIDEO OF THE SCANNER INSTALLATION, NARRATED BY JUST, AT [HTTP://BIT.LY/CMUPIPER](http://bit.ly/CMUPIPER).

"It's a first at Carnegie Mellon to have this kind of scanner that is advanced, high field and much more comfortable for participants," said Marcel Just, the D. O. Hebb Professor of Psychology and director of SIBR. "We will be using it to understand how the mind works to get to the underpinnings of human thought."

The goal is to make the SIBR a leading national center in cognitive, developmental and social neuroscience imaging by supporting innovation and discovery. "Scientists at Carnegie Mellon are going to work together to help reveal the biological thinking machine that makes us who we are," Just said.

Club Pays Tribute to Officers



PHOTO BY LARRY RIPPEL

PITTSBURGH POLICE CHIEF NATHAN E. HARPER ACCEPTS A PLAQUE FROM SAGAR SHAH OF THE CARNEGIE MELLON CRICKET CLUB IN EARLY APRIL. THE CRICKET CLUB HOSTED A BENEFIT CRICKET GAME IN MEMORY OF FALLEN PITTSBURGH POLICE OFFICERS ERIC G. KELLY, STEPHEN J. MAYHLE AND PAUL J. SCIULLO, WHO WERE KILLED RESPONDING TO A DOMESTIC CALL IN THE CITY'S STANTON HEIGHTS NEIGHBORHOOD IN APRIL 2009. "EVEN THOUGH IT'S VERY HARD TO EXPRESS THE SORROW, THE SADNESS IS STILL FELT," HARPER SAID DURING THE EVENT. "AT THE SAME TIME, WE HAVE TO CONTINUE TO HONOR AND RECOGNIZE THAT THESE WERE THREE EXTRAORDINARY OFFICERS THAT GAVE THE ULTIMATE SACRIFICE AND IT'S HUMBLING FOR THE COMMUNITY TO STILL BE WITH US." PICTURED BEHIND HARPER ARE CMU POLICE OFFICER PAUL HELFFRICH AND OTHER MEMBERS OF THE CRICKET CLUB.

SCS Tops U.S. News Graduate School Rankings

The School of Computer Science (SCS) is ranked first in the nation among graduate computer science programs in the 2011 edition of U.S. News & World Report magazine's "America's Best Graduate Schools." SCS, last ranked fourth in 2009, is tied for the top spot this year with MIT, Stanford and the University of California, Berkeley. In specialty categories, SCS ranks first in programming language, second in artificial intelligence, third in systems and fifth in theory.

The 2011 edition of "America's Best Graduate Schools" and the "America's Best Graduate Schools" guidebook were released in April.

"Carnegie Mellon strives to push the frontiers of research and education in computer science," said SCS Dean Randal E. Bryant. "We pursue a very broad agenda, spanning both the theory and design of computers, as well as how information technology can transform

society and the lives of individuals. We are pleased to be counted among the top computer science graduate programs in the United States."

In other graduate rankings, the College of Engineering (CIT) kept its sixth overall ranking from a year ago. In specialty areas, CIT is seventh in electrical engineering, seventh in environmental engineering, 10th in civil engineering, 11th in mechanical engineering, 13th in materials science and engineering, 16th in chemical engineering and 29th in biomedical engineering.

The Tepper School of Business ranks 16th overall, second in information systems and production/operations, third in supply chain/logistics and 16th in finance. It ranks ninth for its part-time MBA program.

In U.S. News & World Report's first-ever ranking of Ph.D. programs in statistics, Carnegie Mellon's Statistics

Department in the College of Humanities & Social Sciences ranks ninth for statistics and biostatistics departments.

In mathematical specialties, the Mellon College of Science's Mathematical Sciences Department

is third in logic, 10th in discrete mathematics and combinations, 11th in applied mathematics and 36th overall. The Physics Department ranks 30th, the Department of Biological Sciences 46th and the Department of Chemistry 49th.

PREVIOUS RANKINGS

U.S. News & World Report also re-published some graduate program rankings from previous years. These include the following (year and ranking are in parentheses):

- Master of Fine Arts (2008, seventh): Specialties: Multimedia/Visual Communications (first), Industrial Design (third), Graphic Design (fifth);
- Public Affairs/Heinz College (2008, 10th): Specialties: Information and Technology Management (first), Public Policy Analysis (fourth), Environmental Policy and Management (10th), and Health Policy and Management (10th); and
- Humanities & Social Sciences programs (2009): Economics (Tepper School, 19th), Psychology (17th): Specialties: Cognitive Psychology (second).

Scottish Ties

FROM LEFT, ROBERTA SEFCIK (BSA'12), MICHAEL RUSSELL AND JAKE MOHIN (MCS'10) CELEBRATE CARNEGIE MELLON'S SCOTTISH HERITAGE WITH SCOTTY, THE UNIVERSITY'S MASCOT. RUSSELL, SCOTLAND'S CABINET SECRETARY FOR EDUCATION AND LIFELONG LEARNING, VISITED THE UNIVERSITY IN EARLY APRIL. HIS TALK, "SCOTLAND: A NEW FUTURE BUILDING ON A GREAT PAST," ARGUED SCOTLAND'S CASE FOR INDEPENDENCE FROM THE UNITED KINGDOM, CITING THAT SCOTLAND DOES NOT HAVE REPRESENTATION IN THE EUROPEAN UNION. "THE SCOTTISH GOVERNMENT ALSO BELIEVES THAT THE PEOPLE OF SCOTLAND SHOULD HAVE THE OPPORTUNITY TO HAVE A SAY ON THEIR OWN FUTURE IN A REFERENDUM," HE SAID. RUSSELL WAS ONE OF THREE SCOTTISH GOVERNMENT MINISTERS WHO TRAVELED TO THE UNITED STATES AND CANADA TO DISCUSS GREAT SCOTS AND INNOVATION DURING SCOTLAND WEEK.



PHOTO BY KEN ANDREYO

NEWS BRIEFS

Three Inducted into American Academy of Arts & Sciences



The School of Computer Science's Randal E. Bryant and Jeannette M. Wing and the College of Humanities & Social Sciences' Joseph B. Kadane are among 229 leaders in the sciences, social sciences, the humanities, the arts, business and public affairs to be elected this year to the American Academy of Arts & Sciences. The three



inductees in one year is an all-time high for Carnegie Mellon.

Bryant, University Professor of Computer Science and SCS dean; Wing, the President's Professor of Computer Science and assistant director of the National Science Foundation; and Kadane, the Leonard J. Savage University



Professor of Statistics and Social Sciences, will be inducted Oct. 9 at the academy's headquarters in Cambridge, Mass. For the full list of 2010 fellows, visit www.amacad.org/news/a2z10.pdf.

The academy was established in 1780 by John Adams, John Hancock and other founders of the nation as a center for independent policy research. The current membership includes more than 250 Nobel laureates and more than 60 Pulitzer Prize winners.

Carnegie Mellon has had 15 inductees overall. To view the complete list, visit www.cmu.edu/news/rankings-awards/awards/professional-societies.shtml.

PCHE Wins Outstanding Service Award

The Pittsburgh Council on Higher Education (PCHE) has received the Benjamin Franklin Award for Outstanding Service on behalf of Higher Education from the Association of Independent Colleges and Universities of Pennsylvania. The award honors PCHE's efforts in helping to defeat the city's proposed tuition tax on students this past year. PCHE members

include Carlow University, Carnegie Mellon University, the Community College of Allegheny County, Chatham University, Duquesne University, LaRoche College, the Pittsburgh Theological Seminary, Point Park University, Robert Morris University and the University of Pittsburgh.

Datta To Study Health Information Technology

Anupam Datta, an assistant research professor with Carnegie Mellon CyLab, is part of a multi-institutional research team that received a



\$15 million grant from the U.S. Department of Health and Human Services to reduce security and privacy barriers to the meaningful use of health information technology. Datta is one of 20 senior investigators from 12 universities involved in the Strategic Healthcare IT Advanced Research Projects on Security (SHARPS) project. Carnegie Mellon's portion of the award is \$700,000.

"It is important to ensure that electronic health records do not fall into the wrong hands and are not used for purposes that do not further the goal of providing more effective health

care," Datta said. "One of the aims of this project is to show how to make the computerization of health care systems live up to the promise of more innovative health care while at the same time providing confidence that privacy expectations of patients are respected."

The award, part of the American Recovery and Reinvestment Act of 2009, will help the SHARPS team develop security and risk mitigation policies and the technologies necessary to build and preserve the public trust as health IT systems gain widespread use.

Researchers Develop New Probes for Proteins

Scientists in the Department of Chemistry and Molecular Biosensor and Imaging Center are advancing state-of-the-art live cell fluorescent imaging by developing a new class of fluorescent probes that span the spectrum from violet to the near-infrared. The new technology, called fluoromolecules, can be used to monitor biological activities of individual proteins in living cells in real time. Chemistry Professor Bruce Armitage discussed recent advances in their fluoromolecule technology that have produced diverse and photostable probes at the recent American Chemical Society meeting.

Commuters Spin to Work on Two Wheels

■ Heidi Opdyke

When Philip Miller of the Software Engineering Institute fills up his tank to head to work during spring and fall, it usually means breakfast. Miller cycles up to 36 miles a day to commute into Oakland from the Butler County community of Mars.

Miller is just one of many university employees who switch from four to two wheels as nice weather approaches.

Friday, May 21, is National Bike To Work Day. In celebration of that, the university is partnering with BikePGH to have a Bike to Work Breakfast from 7:30-10 a.m. at the Merson Courtyard-University Center.

“Carnegie Mellon Green Practices supports this Bike to Work event, which brings awareness to the possibilities of using the bicycle for everyday transportation,” said Barb Kviz, environmental coordinator for Facilities Management Services (FMS).

Marcia Gerwig, director of the University Center, said she has attended the breakfast the last few years. She has bicycled to work for the past decade.

“It’s a great event, you can talk to other bikers, commiserate and get advice. It’s well attended, and you see lots of great people.”

Even on two wheels, transportation options abound. People make their way to work on bikes that fold or recline. Some even park their bike along the way.

“It’s made it an adventure to coming into work,” said Kyle Tomer, FMS service response manager. “When the gas prices went up, and CMU offered the bus passes it seemed silly not to take advantage of it.”

Tomer, of Mt. Lebanon, takes the T

to downtown and then bikes along the river trail to Oakland, which is about four miles each way. When the weather is bad, she uses a crosstown bus.

“It’s the same people who ride the trail everyday,” Tomer said. “It gets to be a community. It’s a friendly group, and it’s a nice way to travel.”

Miller leaves home at 4:30 a.m. or earlier to avoid traffic and likes to arrive in Oakland around 6 a.m. His Bike Friday machine folds up so that he can carry it onto Port Authority Buses that don’t have bike racks for the especially

BIKE TO WORK BREAKFAST 7:30-10 A.M., FRIDAY, MAY 21 MERSON COURTYARD-UNIVERSITY CENTER

bike-unfriendly parts of his commute.

“For the most part, the bus drivers are accommodating and kind. But I carry a copy of the regulation that stipulates I can bring a folded bike onto buses with me all the time,” Miller said. “It only happened once that someone told me I couldn’t bring a bike on board.”

Miller said he rides to work for exercise, but there’s an added goal: He’s training to bike one of the 100-plus mile mountain stages of the Tour de France next summer.

“I really enjoy my bike,” Miller said. “It’s given me a lot more pleasure than I anticipated.”

Gregg Podnar’s bike is another unusual ride. The program manager for the Robotics Institute can be seen on his recumbent bicycle making the three-mile trek from Edgewood. The bike, which allows the rider to recline, is good exercise and saves energy but is more difficult for

drivers to see. Because of that he takes some precautions before his commute such as using side streets instead of main roads.

“Automobiles do not see you. It’s not that they’re particularly mean. But I try to ride on side streets instead of main roads,” Podnar said. “Recumbents sit low, so I have an American flag on my bike that people see.”

Pam Snyder, a project director in psychology, has been biking to work for several years and has traveled on a number of long-haul bicycle trips in Pennsylvania and the northeast. She said that in the past five years drivers have become more conscious of bicyclists and are courteous.

“It’s not as scary as people think it is. The culture is changing here in Pittsburgh and becoming more acceptable,” Snyder said.

Miller recommends that people should know the basics about keeping a bicycle in good shape and ride in a way that honors the rules of the road and is predictable for drivers.

Bike racks are available throughout campus. Parking & Transportation Services rents individual steel bicycle lockers, which enclose each bike. Lockers are available to anyone who has their bicycle registered with the university. Registration is free and available from Campus Police. For more information, contact 268-2052.

Another alternative form of transportation is by bus. Carnegie Mellon faculty, staff and students who show a valid university ID can ride Port Authority Transit buses free of charge. Paper copies of schedules are available in the University Center and on the buses.

Child’s Play



PHOTO BY HEIDI OPDYKE

EMMA BIGLER AND RYAN HANDRON PLAY WITH A PARACHUTE DURING A PICNIC FOR THE CHILDREN’S SCHOOL AND THE CYERT CENTER IN CELEBRATION OF WEEK OF THE YOUNG CHILD. ESTABLISHED IN 1971 BY THE NATIONAL ASSOCIATION FOR THE EDUCATION OF YOUNG CHILDREN, THE WORLD’S LARGEST EARLY CHILDHOOD EDUCATION ASSOCIATION, THE WEEK OF THE YOUNG CHILD BRINGS TO ATTENTION THE NEEDS OF YOUNG CHILDREN AND THEIR FAMILIES, WHILE HIGHLIGHTING THE EARLY CHILDHOOD EDUCATION PROGRAMS AND SERVICES AVAILABLE TO MEET THOSE NEEDS.

Zhang Wins \$510,000 Young Investigator Award



Yongjie (Jessica) Zhang, an assistant professor in the Department of Mechanical Engineering, has received a three-year, \$510,000 Young Investigator Award for research excellence

from the Office of Naval Research. Zhang will use her grant to develop novel algorithms and a software package designed to help improve and streamline ship design and analysis for the Navy.

Carnegie Mellon Qatar Hosts Book Launch

Carnegie Mellon Qatar hosted a book launch for “Hazawi” in April. The book, the fourth in the Qatar Narrative series, was a collaboration between Assistant Professor Silvia Pessoa of Carnegie Mellon Qatar, Mohana Rajakumar of Bloomsbury Qatar Foundation Publishing and Halim Choueriry formerly of Virginia Commonwealth Qatar.

“Hazawi” consists of three sections that aim to portray the social dynamics in Qatar,

particularly in the educational context: Stories from the Center, Stories from the Margins and Stories from In Between. The book includes essays by Carnegie Mellon Qatar students.

History Dissertation Wins Three Awards

Jessie B. Ramey, who received her doctor’s degree in history from Carnegie Mellon in 2009, has won three national dissertation awards for her dissertation “A Childcare Crisis: Poor Black and White Families and Orphanages in Pittsburgh, 1878-1929,” the Organization of American History’s (OAH) Lerner-Scott Dissertation Prize in Women’s History and the Herbert G. Gutman Dissertation Prize from the Labor and Working-Class History Association (LAWCHA). Ramey previously received the



National Academy of Social Insurance’s (NASI) 2010 John Heinz Dissertation Award. Ramey’s three dissertation awards are unprecedented for the History Department.

Her winning dissertation re-conceptualized orphanages as a form of child care and explored the development of institutional child

care. Her research examined working parents and their struggle to combine employment and child rearing and revealed how they used child welfare institutions for their own purposes — as a family survival strategy.

Carnegie Mellon History Professor Steven Schlossman co-directed the dissertation with Tera W. Hunter, formerly of Carnegie Mellon and now professor of history at Princeton University. Lisa Tetrault, assistant professor of history at Carnegie Mellon, served as the third reader.

Dan Martin Named Interim Dean of CFA

Dan J. Martin will become interim dean of the College of Fine Arts, beginning July 1.

“Dan brings a wealth of knowledge and leadership experience to this interim position. I know CFA will be in good hands during our search for a permanent dean,” said Executive Vice President and Provost Mark Kamlet in a recent email to the CFA community.

In February, Dean Hilary Robinson announced she would be stepping down at the end of this school year to pursue several other scholarly endeavors and to spend more time with her family in England.

Martin is director and founder of the Institute for the Management of Creative Enterpris-

es (IMCE), an academic unit offering professional graduate-level management education for the culture and entertainment industries



through its Master of Arts Management (MAM) and Master of Entertainment Industry Management (MEIM) programs. Students in these programs conduct applied research and provide techni-

cal support to artists and cultural institutions through the Center for Arts Management and Technology (CAMT).

Martin joined Carnegie Mellon in 1992 and for the past year has served as associate dean of CFA, assisting with many leadership activities within the college and serving on many interdisciplinary committees at the university level.

In addition to his teaching and administrative work, Martin actively consults with cultural organizations in strategic planning and trustee relations, and has presented workshops and master classes on arts management topics at universities and for arts service organizations in the United States, Canada, Germany, Spain, Austria, Greece and Italy.

STICKY Stories

Post-it Note Fiction

Over the years, Adjunct English Professor Sherrie Flick found that student writers have difficulty ending stories. To help them, Flick had her students in the class Survey of Fiction-Forms write entire stories on Post-it Notes.

"The paper gives them a boundary," Flick said. "Space is limited, so it's a great way to practice one specific writing element."

For Flick, Post-it Note writing allows her to experiment and hone her craft. "It's challenging to write a concise story in a short space — and it really contrasts novel writing," she said. —Shilo Raube



PHOTOGRAPHER: KEN ANDREYO

SHERRIE FLICK TEACHES HER STUDENTS TO EXPRESS THEMSELVES ON POST-IT NOTES.

Arlene

In her old apartment, there was nowhere to sit - or you could sit on the floor but there was nowhere to set things - except on the floor where the cat would lick at them and no one said a word.

The old man lived downstairs. He lived on and on and on as the house tumbled apart in chinks and chunks - first this light, then that one, the door handle, the latch.

They shared a garden, nothing in neat rows. — Sherrie Flick
(originally published in Everyday Genius)

Trees

The trees are a stark horizon, they are skinny men in ill-fitting suits selling bibles, they're impossible brooms stood on end so the cats won't eat the tulshes.

They're deep sea creatures, scaggily-haired women who've had one too many perms. They are anorexic cheerleaders, waving their ghost arms chanting: go! Go!

— Sherrie Flick

(originally published in Keyhole Magazine)

Preoccupation

The tiniest tree arrived in the tiniest package - all folded up but ready to assemble. It had glitter and a star and tinsel and little electric lights that blinked, ornaments and a train set with an engine that raced around hooting. There were live microscopic mice wearing striped stocking caps. They sang (in harmony!) but caused all kinds of havoc once they got bored.

— Sherrie Flick

(originally published in Keyhole Magazine)

Read more in an article Flick wrote about her students' projects in the Pittsburgh Post-Gazette: www.post-gazette.com/pg/10108/1050982-109.stm