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LETTER FROM THE president

What does it take to be a leader in higher education?

IIT has embarked on a strategic planning process, *Many Voices, One Vision,* with the goal of developing the university's unique path to future excellence. Our quest to be recognized as one of the country's top universities is embraced with great pride and a determination to succeed. We can contend for a place among the very best universities by focusing on our strengths in technical and professional education and research, and by leveraging our international diversity and Chicago location.

American universities have long held the premier position in higher education across the world. This leadership is eroding, however, because the rest of the world has recognized that education is the foundation of economic and social well-being. Other countries are investing heavily in higher education. The playing field for recruiting students *and* faculty is increasingly international and more competitive. To stress the latter point, governments of other countries are now providing attractive financial incentives for America's top faculty to be associated with their universities. This trend, coupled with a tightening of U.S. funding for higher education, especially research, has produced challenges for U.S. universities that have not been faced in the past century.

Returning to the original question, educational leadership is defined by *both* the quality *and* the innovativeness of a university's programs. While many universities have individual towers of excellence, those who are identified as leaders have defined one or more themes across their institution, and have committed themselves to continuous innovation consistent with their mission and vision. In all cases, innovation and commitment are the keys to improvement.

Additionally, academic leaders recognize the importance of their students' experiences and continually develop curricula and out-of-classroom programs to better prepare students for their future careers and self-fulfillment. They realize that the graduates are our most important "product." Finally, academic leaders understand that vigorous programs of research and scholarship advance the educational mission while also providing a vehicle for continuous improvement of the faculty.

Now is the time for IIT to develop a plan that leverages our strengths, and creates and sustains a university-wide culture that embraces bold and transformational ideas. This may seem to be a daunting task, but past planning efforts, such as the National Commission for IIT and the 2010 Plan, have prepared us well to address our current aspirations. As other universities have demonstrated, by strategically focusing on core strengths and building new initiatives with university-wide priority, it is possible to advance from a mid-level, regional university to an academic leader on a regional, national, and global scale.

Coordinated by the new Office of Institutional Strategy, the *Many Voices, One Vision* strategic planning effort will require the contributions of the entire IIT community to determine how to take IIT to the next level. I want to thank the faculty, students, staff, and trustees who have already been called upon to serve on various planning committees, and I welcome the input of all of you. While decisions must be made as we develop our strategies, the key factor in making the right decisions is input from all our constituencies.

Through smart choices and collective participation, I know we will shape a successful plan. We must then have the courage to adhere to our plan once it is in place. I ask you to join me in this quest for excellence, and I thank you for your confidence, determination, and continued trust.
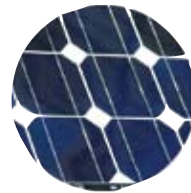
John L. Anderson

John L. Anderson
President

Founded in 1890, Illinois Institute of Technology is a private Ph.D.-granting university that awards degrees in engineering, the sciences, mathematics, architecture, law, design, humanities, psychology, and business.

IIT MISSION STATEMENT
To advance knowledge through research and scholarship, to cultivate invention improving the human condition, and to educate students from throughout the world for a life of professional achievement, service to society, and individual fulfillment.

IIT Armour College of Engineering
IIT Center for Professional Development
IIT Chicago-Kent College of Law
IIT College of Architecture
IIT College of Science and Letters
IIT Institute of Design
IIT Institute of Psychology
IIT Stuart School of Business

ADA STATEMENT
Illinois Institute of Technology provides individuals with disabilities reasonable accommodations to participate in university activities, programs, and services. Individuals with disabilities requiring an accommodation should call the activity, program, or service director. For further information about IIT's resources, contact the IIT Center for Disability Resources at disabilities@iit.edu.

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Letters

Alumnus Recalls African-American Fellow Student

Thank you for sending me a copy of the winter 2008 issue containing Steve Hendershot's article "Making a Dream." I did know Frank Crossley very well, as we both were active in the Community Service Committee that first worked with Ada S. McKinley at the South Side Settlement House. In that connection we also had a number of conversations with President Henry T. Heald, who was also mentioned in this magazine issue.

However, I was a bit disappointed that you forgot to mention another outstanding black student of that time, Robert A. Eubanks, who completed his Ph.D. work with Professor Eli Sternberg just before I completed my own, and on a related topic in elasticity theory.

—*Felix Rosenthal (EE '47, M.S. MATH '48, Ph.D. ME '52)*

No Need to Airbrush Commitment

I read with great interest the article in the most recent edition of *IIT Magazine* on diversity. While I was pleased that it would seem the university has developed a stronger commitment to diversity, I believe it is completely disingenuous to state or imply the university has always had such a commitment. There were always a very limited number of minorities that were considered and accepted by IIT—and I would add that while their acceptance was not warm by staff or students, they were never turned away as long as they performed well. Also, I still remember the extraordinary measures the university used in the past to insulate itself from the surrounding community. In fact, the only time the two would acknowledge each other was on Election Day.

Again, I'm pleased that IIT seems to have improved in this area, but I don't think you have to airbrush to demonstrate the commitment.

—*Arlington Carter (EE '61)*

FollowUp

Updates on the people and places previously covered in *IIT Magazine*

"Student Heads Effort a World Away" *Winter 2007*

IIT continues to be active in efforts to improve the quality of life in Haiti, as first profiled last winter. The IIT student chapter of Haiti Outreach has developed a water-distribution system for the town of Pignon. To help raise funds for the endeavor, this February the group held the event Learn to Make a Difference in Haiti, which featured Haitian music and food, and a keynote address from Illinois State Senator Kwame Raoul. The fundraiser was co-organized by IIT student chapters of the American Society of Civil Engineers, Engineers Without Borders, and the Water Environment Federation.

"A Matter of Scale" *Spring 2006*

IIT's Center on Nanotechnology and Society, profiled in 2006, joined with a new Washington, D.C.-based think tank, the Center for Policy on Emerging Technologies, and the University of Ulster to hold a global discussion about technologies of the future. Nigel M. de S. Cameron, IIT research professor and director of the Center on Nanotechnology and Society, moderated the roundtable, held this January in London.

Photos: Mindy Sherman

Renovations of IIT's Oldest Structure Underway

With its bold sandstone and red pressed-brick façade, and commanding Romanesque design, Main Building is as much a visual representation of IIT as the university's sleek steel-and-glass structures built more than a half-century later—together symbolizing the successful marriage of old and new on Main Campus.

In February, IIT embarked on a multi-phase Main Building renovation project, sponsored in part through a $1 million gift from alumnus Bob Schmidt (ME '36), that aims to make the oldest structure on Main Campus a bit newer again.

Constructed in 1891–93, Main Building originally held classrooms, a library, and a gymnasium. One of its most striking features is a series of three stained-glass windows composed of more than 1 million pieces of Tiffany glass.

The attic tower of the Chicago landmark was damaged by fire in 1947–48 and removed. Main Building was last renovated in 1982, which included interior work, masonry tuckpointing, and new windows. This new series of renovations will make Main Building more energy efficient and compliant with the Americans with Disabilities Act (ADA), and correct its outdated plumbing systems.

Terry Frigo, director of the IIT Department of Design and Construction, describes how renovating a historically significant building to be ADA compliant requires some creative solutions. "The main entrance of Main Building is not conducive to adding a ramp without dramatically impacting the historic architecture. Given this constraint, we will be converting the entrance on the north side of the building to be the accessible entrance," he explains, adding that his crew must also reconfigure the entranceway's interior ramp to meet the slope required for wheelchairs.

In addition to the modifications to the north entrance and a new ramp to the elevator level, phase-one renovations include the replacement of the building's aging elevator. Fortunately, the existing elevator shaft had room to accommodate a larger elevator that meets ADA minimum size requirements.

The second phase of the project will result in new restrooms on each floor of the building and is scheduled to begin as soon as city permits are obtained. "The existing toilet rooms are too small to meet the current ADA requirements," Frigo says. "We will be taking the space on the south side of the main stairs and building new, fully accessible toilet rooms, with the required amount of fixtures."

Third-phase renovations, scheduled to begin this summer, will repair the west façade—exterior work requiring the most critical attention—and are being funded by Schmidt. Additional façade work will be conducted in a future phase.
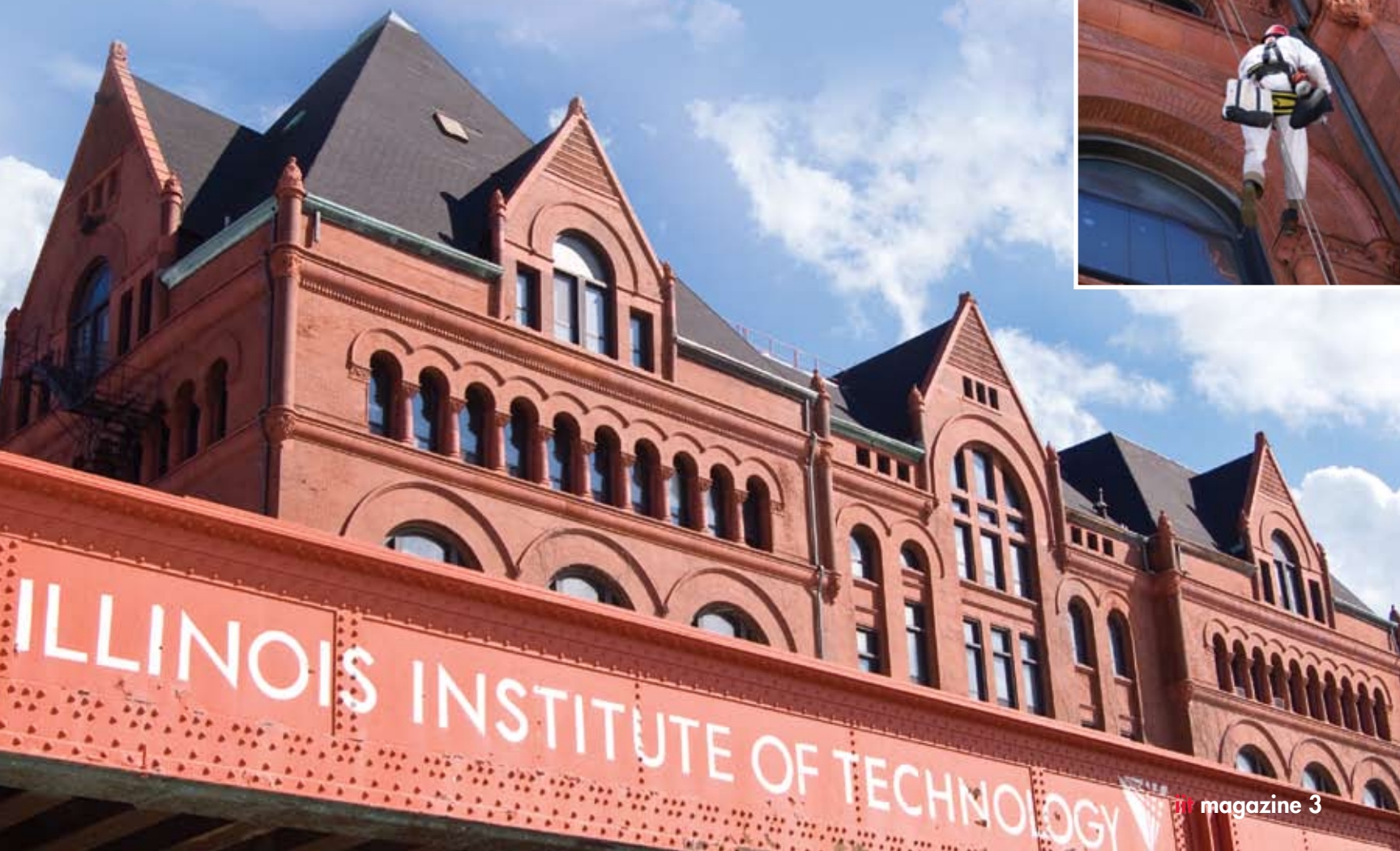
Campus Safety Top of Mind Following Recent Shootings

This April marked the one-year anniversary of the tragedies at Virginia Tech University, which were followed by a similar shooting at Northern Illinois University this February. In light of these incidents, universities around the country have evaluated their emergency-response programs and implemented security plans that aim to quickly communicate emergency messages to their communities.

"For many universities, these tragedies were a wake-up call that we need to have effective threat-assessment teams in place to address the safety of students and employees," according to John Collins, IIT vice president for business and administration. "For us, the incidents were another opportunity to reach out and work with the local police, and to discuss contingency operations."

More than a year ago, IIT implemented a four-pronged communications strategy to ensure the safety of its campuses, including IITalert, mass email, a remote website, and emergency phone bank and voicemail alerts.

"One component is the portal, IITalert, which is an instant-messaging system that allows us to reach anyone who signs up through text messages to phones or PDAs. This instant communication will be used only in the event of an emergency," says Collins. A signup drive and raffle were held in February to encourage new registrants.

The plan also includes sending mass emails to the IIT community and posting messages on the IIT website. Collins points out that the university has established an out-of-state backup connection for its website so that important news can be posted remotely should a natural disaster disable the Chicago area. IIT has an emergency voicemail message that can provide callers with updated information in the event of a crisis, as well as a phone bank that can be set up quickly to answer calls live.

Naturally, speed is a critical factor. Organization is also key. To address this, IIT's Crisis Response Plan has identified IIT President John L. Anderson as the Crisis Response Leader and Collins as the university's Crisis Incident Commander, who coordinates the efforts of the Crisis Response Team—faculty and staff leaders who manage the university's crisis response actions in the event of an emergency.

IIT's Crisis Response Plan includes three threat levels. Level 1–extreme, requires immediate mobilization to protect part or all of IIT in the event of an emergency such as a hazardous materials spill, terrorist or bioweapons attack, or major fire. Level 2–serious, involves incidents with the potential to spill out of control, including lesser fires or explosions, natural disasters, utilities loss, or hate crimes. Level 3–not extreme, responds to lesser threats such as property crime and power outages.

Being an urban university, Collins says, IIT needs to be proactive with issues of campus safety. "I always tell people that, in my assessment, the IIT [Main Campus] is a safe campus, but we're not crime proof," he says, adding that redevelopment in the area surrounding Main Campus has had a positive impact on campus, as have educational initiatives at IIT designed to increase awareness about the "common-sense approach" to safety.

With 53 emergency telephones around campus and a staff of patrolling and undercover officers, IIT, in partnership with local law enforcement, is working to ensure a safe campus environment. "Chicago police and IIT's Department of Public Safety are vigilant in their patrol and visibility [in the neighborhood]. And we continue to educate students that the rules of safety apply whether they're walking across campus or downtown on Michigan Avenue," Collins says.
http://publicsafety.iit.edu

Nine New Members Join IIT Trustees

At its November 2007 and March 2008 meetings, the IIT Board of Trustees elected a total of nine new trustees:

Sherita Ceasar (ME '81, M.S. '84), vice president of product engineering, planning, and strategy for Comcast Cable Communications, Inc.; member, IIT Department of Mechanical, Materials, and Aerospace Engineering Advisory Board

Giuseppe "Joe" Calabrese, executive vice president of Harris Private Bank, Harris Financial Corporation

Marc Hannah (EE '77), vice president of technology development (retired) for Silicon Graphics, Inc.; member, IIT Institute of Design Board of Overseers

David C. Hovey (ARCH '67, M.S. '71), founder and president of Optima, Inc., and associate professor in IIT College of Architecture; board member, Mies van der Rohe Society

Jamshyd Godrej (MAE '72), chairman and managing director of Godrej & Boyce Manufacturing Company, Ltd.; member, IIT International Board of Overseers

Christopher "Chris" Lee, president of Johnson & Lee, Ltd.; member, IIT College of Architecture Board of Overseers

Paul F. McKenzie, vice president of Centocor R & D

Tim Stojka, chief executive officer of Fast Heat, Inc.

Alan "Bud" Wendorf (ME '71), chairman and chief executive officer of Sargent & Lundy; board member, IIT Alumni Association

Environmental Management Program Receives High Marks

George Nassos, EM program director

At a time when the challenges of environmental sustainability are unfurling at a steady clip, the IIT Stuart School of Business Environmental Management (EM) Program has been at the forefront of the issue for an impressive 13 years. Developed as an interdisciplinary area of study, the EM program integrates law, science, and business to address the demand for uniquely trained management professionals who understand pressing environmental issues such as energy efficiency and carbon management.

One of a handful of such programs in the United States and the only one in the Chicago area, the Stuart EM program continues to be a leader in its field.

Every two years, Beyond Grey Pinstripes, an independent ranking of the Aspen Institute Business and Society Program, conducts a survey of more than 600 accredited graduate business schools worldwide. In the 2007–08 study, IIT's program was ranked 48th (top 10 percent) overall in the world and 33rd in the nation. In the most important of the four criteria, coursework, IIT was ranked 11th in the world and eighth in the United States.

According to George Nassos, EM program director, the number of degree applicants to Stuart's EM program rose 300 percent from fall 2006 to fall 2007. Additionally, enrollment for two key courses, Industrial Ecology and Environmental Law and Regulation, is also up, nearly doubling since last fall.

Along with Nassos, key EM faculty include Nasrin Khalili and JohnPaul Kusz, who with other faculty bring a range of professional experience, including work for the Environmental Protection Agency, the Department of Energy, and leading corporations and organizations from around the world. Students gain hands-on experience through internships and study projects, including developing a new business model with a local environmental service firm, managing corporate and community assets using geographical information systems technology, and conducting a life-cycle analysis for new products.

The program has established partnerships with CITA-WIND, a French company developing new wind turbine technology, and the Green Exchange in Chicago's 1st Ward. These alliances support the program's mission to prepare students for management-level positions in sectors that foster a more sustainable environment.

The program's success has also demonstrated a kind of "second generation" achievement. Of the estimated 225 EM program alumni, Nassos says, approximately 80 percent work in the Chicago area. "When a job becomes available in their company, I am usually the first person they contact when looking for a new EM student," he says. However, that doesn't mean the program is exempt from the challenges of basic supply and demand: "I have more full-time job opportunities and internships that come to me than I have students to fill. This past summer, R. R. Donnelly needed an intern to work on a carbon footprint project, but I had no student looking for an internship. They all had something," says Nassos.

Word of the program's work continues to spread. During the past few months, Nassos explains, he's received calls almost every week from companies that are interested in becoming sustainable. "Last year, Ernst & Young started a sustainability practice to consult for its clients. A friend of mine started the group, which consisted of about six people nationwide. Five of these people are in Chicago. He came to hire IIT Stuart students, and right now they are looking for more positions."

Nassos is currently hosting a blog to foster dialogue on environmental and sustainability issues in business. To learn more or to visit the blog, go to www.sustainabil**iit**y.com.

www.stuart.iit.edu/graduateprograms/ms/environmentalmanagement/index.shtml

—Pat Cronin

sustainability

Point and Shoot

Photo: Bonnie Robinson

Chris Chock (CE, 2nd year)

Though Chris Chock received his first camera just two years ago as a Christmas gift, his relationship with photography immediately "clicked." Fifty thousand times, to be exact—the number of photos Chock took before the new point-and-shoot "burned out" in less than seven months.

In 2006, when the sophomore chemical engineering student graduated from University Laboratory School in Honolulu, he also "graduated" to a digital single lens reflex camera, the type of equipment favored by many professional shooters for its ability to capture on film exactly what the photographer sees through the lens. One month later he was at IIT and soon after began submitting photos to *TechNews.*

Chock's self-deprecating humor is evident as he recalls his inauspicious rise to photo editor. As he began to more regularly submit his work to the newspaper in spring 2007, he learned there would soon be an opening for the photo editor position. "So I applied and, seeing as I was the only—so therefore best—applicant, I got the job." Beneath the glib explanation, however, is a genuine affinity for photography, its art and technology. "The thing about photography that I enjoy the most is using the camera to see things that the eyes can't."

One way Chock chooses to explore this idea is through his use of long exposures. Applying this technique is difficult in terms of the technology, as taking a long exposure requires much more planning. "You have to think about every shot beforehand, compose and envision it." He often photographs water and likes to watch how its individual lines become more unified, like a painter's brushstroke. "The outcome is that the photograph makes the chaotic, windy water take on a gloss, and you can see the reflections build up over time." Having grown up in the valley region of Honolulu, Chock developed his interest in water as a subject in part through his observations of streams near his home.

For the photographs he takes for *TechNews,* Chock is always looking for a new angle—in perspective as well as content. "I try to find a way to take the photo in a way people haven't seen before." His most memorable assignment for the paper was the press reception for the Sympathy for the Devil exhibit at the Museum of Contemporary Art. "I was able to meet some of the artists and take pictures of the art and the museum. It was a really fun experience I never thought I'd get, especially being a chemical engineering student."

His main goals for his photography are currently directed toward gaining more experience. In a philosophy often associated with athletes rather than artists, he says he's constantly pushing himself harder, being motivated by "the desire to do better." "Right now, I'm just working on acting on my ideas as they come to me. But isn't that what a photographer's supposed to do?"

—Pat Cronin

New Undergraduate Program Increases Access to Research Experience

Last November, IIT launched the Office of Undergraduate Research with the purpose of centralizing research opportunities and more proactively identifying new research endeavors for students. Using its website as a clearinghouse for posting on- and off-campus undergraduate research opportunities, the office has also begun a new IIT Undergraduate Research Fellowships program, which supports funded, semester-long research projects that pair students with IIT faculty working in their area of interest. Both students and faculty can submit research projects for consideration.

"There are many opportunities for undergraduates on campus, but often the hardest part is letting students know about them," says Eric Brey, associate dean, assistant professor of biomedical engineering, and director of undergraduate research. Another challenge is ensuring that students participate in projects that are approachable—a hurdle that undergraduates can experience when placed in more advanced settings.

The IIT Undergraduate Fellowships address this issue through projects that focus on attainable undergraduate learning. The office received an impressive 60 student applications and 30 faculty applications for its first round of fellowship funding. A total of 15 projects were funded for the spring semester—ranging in topics from unmanned ground vehicles to nanoethics to low-cost water supply systems.

"Research experience like this helps students determine whether they want to attend graduate or medical school. It also helps them to decide if they want to pursue a career in research; while experience with industry sponsors can lead to jobs," says Brey. "For other students, research that illustrates 'why they're doing what they're doing' is a bridge toward applying what they're learning in the classroom."

Brey points out that financial constraints can prevent students from taking on research assignments, or may require them to balance a job with their coursework as well as outside research. The generous stipends provided for in the IIT Undergraduate Research Fellowships allow students to focus solely on research. In an added learning component of the program, students are asked to submit articles describing their research accomplishments to an online journal being developed by the Office of Undergraduate Research. In the future, the office hopes to provide funding for students to present papers at conferences.

www.undergradresearch.iit.edu

Alyssa Appel (BME, 4th year)

Photo: Bonnie Robinson

UTP Watch

The core and shell construction of Incubator–South in University Technology Park At IIT (UTP) is now complete. Funding from the State of Illinois and IIT has enabled the university to develop 28,000 square feet at the south end of the old Engineering Research Building, designed by Ludwig Mies Van der Rohe in 1944. The space, when completely built out, will accommodate up to 30 more startup companies in 19 wet labs and 15 dry labs. Currently, IIT is seeking funding from a number of sources to complete the build out.

On the company front, the data storage company, Cleversafe, graduated from UTP in January 2008 and moved downtown, as it continues to grow. Cleversafe joined UTP in May 2005 with three employees and left with 35, including many IIT alumni. Comarch, a Polish software-development firm, nearly doubled the size of its space in IIT Tower, as it grows to meet the demands of the North American market. New startup companies within UTP include AlterVia Fuels, Inc. and Red Rabbit Software.

www.universitytechnologypark.com

IIT Launches Chicago WiMAX Initiative

Catastrophic forces of nature such as the tsunami that struck Southeast Asia in 2004 and Hurricane Katrina destroy not only lives and homes but also the telecommunications infrastructure necessary to bring aid to stricken regions. In both those cases, however, a wireless digital technology that utilizes a microwave link instead of a wire to secure a connection allowed relief workers to coordinate their efforts.

This form of technology—worldwide interoperability for microwave access—better known as WiMAX™, has arrived in Chicago, the first large-market area in the United States to be outfitted for a WiMAX network. IIT helped to introduce WiMAX to the business community as it showcased the university's role in the Sprint initiative by organizing WiMAX Day at IIT, held March 28 on Main Campus. Presentations were made by representatives from IIT; Sprint; Cognizant; WMX Systems, LLC; the University of Wisconsin–Madison; and the City of Chicago on the new technology, what it means to the city, and how IIT is involved in the WiMAX project.

According to the WiMAX Forum®, the industry-led, nonprofit group that coined the term WiMAX in 2001, the technology "will provide broadband connectivity anywhere, anytime, for any device, and on any network." Offering broadband wireless access up to 30 miles for stationary units and 3–10 miles for mobile units, WiMAX is ideally suited for use in metropolitan or rural areas. (The range for WiFi, in most cases, is 100–300 feet.) Also unlike WiFi, WiMAX does not require a direct line of sight between the source and the endpoint, overcoming the limitations imposed by various terrains and structures. Another advantage is that WiMAX allows for a more efficient and greater bandwidth use, providing an increased number of residences and businesses with TS-1 and DSL speeds.

"The major advantages [of WiMAX] are its adaptable Quality of Service, high-data bandwidth access for multimedia applications, and access to an all-IP (Internet protocol) network," explains Suresh Borkar (M.S. EE '67, Ph.D. '72), senior lecturer in the Department of Electrical and Computer Engineering (ECE). "There is continuing activity to provide robust end-to-end security and real-time applications like Voice-over IP (VoIP) and streaming video. Distance education can be a key benefit. Law enforcement and fire departments can benefit from its wireless connectivity from different locations. Huge amounts of data can be sent and made available at different locations using WiMAX as the access network."

IIT WiMAX currently utilizes the 2.5GHz frequency band of the spectrum, a range that is especially suited to the delivery of point-to-multipoint signals. IIT has licenses for eight channels on this band, using some of them for transmitting live courses to public and corporate sites. The university has leased six of the channels to Sprint for the Chicago WiMAX build-out.

According to Louise Hewitt (M.S. CST '88), director of IIT Online Technical Services within the Office of Technology Services, WiMAX testing has also been conducted between Main Campus and Rice Campus and between Main Campus and Downtown Campus via a connection on the 88th floor of the Sears Tower, in anticipation of a wide area network (WAN) that will connect all of IIT's campuses. "The mobility advantage of this technology may also be utilized in providing access to live classes streamed over the Internet for viewing and supporting student participation on-the-go," she says. Borkar notes that IIT's firsthand knowledge of WiMAX and telecommunications faculty position the university to be a local education leader for the new technology, offering its experience to the City of Chicago as it explores potential use of WiMAX throughout Chicago.

The university plans to take its role as WiMAX educator to the next level by offering a series of courses on the subject. Mohammad Shahidehpour, chair of IIT's ECE department, says that IIT will initially offer a set of three two-day Internet-based courses primarily for members of industry, government, and organizations interested in the application and deployment of WiMAX. Topics will include a WiMAX overview, information on radios and antennas, and operations and management. "Subsequently, we expect to offer seminars and tutorials on in-depth topics such as channel characteristics, signaling systems, end-to-end routing and security, and areas for expanded research and evolution," Shahidehpour adds.
www.ece.iit.edu/wimax/index.php

Louise Hewitt (M.S. CST '88),
IIT Online Technical Services director

Photos: Bonnie Robinson

Alumnus Helps Bring Tools to Nepali Students

Mark Grandau (EE '86) and son, Ben

"Benjamin Joseph Laxmin Grandau—big name for a little boy," says his father, Mark Grandau (EE '86), who, with his wife, Charyn, traveled to Kathmandu, Nepal, in November 2003 to take then 5-month-old Ben to his new home in Verona, Wis. The couple had been interested in adopting a foreign-born infant and after studying the adoption process offered by a variety of countries, decided upon a new program in Nepal that seemed to be a good fit.

Once there, what they saw changed the direction of their lives. "Nepal is a poor country limited by resources, which is ironic considering it was the center of the Asian trade routes at one time," Grandau says, thinking back to his visit to Kathmandu Valley, a region struggling with issues of pollution and a lack of potable water. That memory of Nepal and the love Grandau has for his son became the inspiration for a big-hearted idea: to help establish a computer-assisted design (CAD) laboratory at Kathmandu University (KU).

Shortly after bringing Ben home, the Grandaus became active in Madison's Nepali neighborhood, assisting other new adoptive parents and undertaking administrative responsibilities at the Nepali American Friendship Association. Upon hearing a National Public Radio show about serving one's community by giving of one's talents, Grandau, a senior software designer for the CAD software company SolidWorks, felt he wanted to do more for his son's homeland. Grandau researched universities throughout Nepal before deciding to send an email to Baula Thapa, associate professor and head of KU's Department of Mechanical Engineering, asking how he could be of service. The academician, whose research focuses on erosion-resistant coatings for use in the hydroelectric generators that power much of Nepal's electricity, responded that he was assembling a CAD laboratory. For Grandau, this was a golden opportunity that he accepted as being his personal crusade. "As an engineer who creates software for engineers, I'm very aware of the benefits to society that the combination of good tools coupled with innovative minds can create," he explains.

With the assistance of colleagues at SolidWorks, who helped lead him to an anonymous donor within the CAD industry, Grandau obtained a $135,000 grant, which has made possible the purchase of the laboratory's first four computers, software such as Boxford CNS and ANSYS, and training for students. Grandau is trying to raise an additional $25,000 for the purchase of 12 more computers, which would open the laboratory to a greater number of individuals than the senior-level students who, at present, are its primary users. With the funds Grandau has helped raised thus far, Thapa and his students have been able to make strides toward realizing their dreams.

"The support of SolidWorks is a milestone for the development of a modern laboratory at Kathmandu University," says Thapa, noting that the university was created out of industry, government, and donor support, and has not been able to invest an appreciable amount of money in laboratory development. "We now have a computer-aided design and drafting laboratory, which we would not have thought possible otherwise. We would like to be a leader in this field in the future." Already, a Japanese company that was recently established in Kathmandu brought in 12 of Thapa's students to run a special software program they learned through the CAD laboratory. "I believe this is just the beginning," says Thapa. "It will make us comfortable to penetrate into the international market and improve the manufacturing industry in Nepal."

Grandau's short-term goal for helping set up the CAD laboratory is rooted in his dual beliefs that "innovation is fostered by necessity" and that computer technology is an economical choice in a country with such limited resources as Nepal.

"By doing things in the world of virtual design," says Grandau, "they can reduce their costs and try to innovate ideas quickly."

His vision for the project, however, reaches far beyond the Kingdom of Nepal. Grandau believes discoveries made there might one day prevent a global crisis. "Those same resources issues will become worldwide in this coming century," says Grandau, citing diminishing sources of clean water and air, energy reserves, space, and food. "Getting the tools to design solutions that allow [KU] to evaluate and simulate ideas virtually will allow them to develop solutions that someday could benefit the whole world."

Baula Thapa [center] with CAD students at Kathmandu University

Change of Pace
Physicist Finds His Niche in Finance at IIT

Did you hear about the string theorist who got a job in a bank?

What may sound like an intellectual joke instead represents a shift in disciplines that is not so peculiar for Geoffrey Harris, IIT assistant professor of finance. After spending years immersed in one of the most abstract theoretical realms in science, Harris left the world of physics to develop models that quantified risk for Chicago and New York banks. Today, he teaches the intricacies of finance to students at IIT Stuart School of Business.

Harris' odyssey began along a standard job track for physics majors. His early interest was in the esoteric domain of string theory, with its peculiar loops of matter twitching in 10- or 11-dimensional worlds. Though he received his Ph.D. in particle physics from the University of Chicago, his research interests later shifted to the field of cosmology.

Following post-doc positions at Syracuse University and the University of Chicago, however, Harris began to contemplate a profound career shift. "Although I really enjoyed the physics I did, I felt I could spend the rest of my life writing papers and never really see any of it used," he explains.

So, armed with a physicist's facility for upper-level mathematics, he began to look into finance. After auditing a course and reading an introductory book, Harris became intrigued. "There were some really beautiful theoretical ideas, but they had very concrete applications to real life," he says. This enthusiasm eventually led him to become a "quant," or quantitative analyst, for several banks, more recently joining academe to teach these subjects.

Much of Harris' work involves financial derivatives, contracts that give companies an option to buy future commodities they may need while locking in the price to hedge against risk. "The basic rule of finance," he says, "is that we don't know what the future is going to be, but we can model the probability of various futures." Citing the example of an airline, Harris points out that hedging against changes in the price of fuel is probably a good idea if a company wants to avoid potentially calamitous results from a sudden spike in oil prices.

A bank might offer the airline such a fuel derivative—for a price, of course. Selling the derivative essentially reduces the airline's risk, transferring it to the bank. Calculating what that derivative is worth and how the bank can manage the risk it has assumed is where people like Harris come in. The calculations involved are serpentine and often involve a sophisticated form of computer modeling known as a Monte Carlo simulation. Such financial modeling strategies are now taught to Harris' students at IIT.

Harris says he couldn't have envisioned where his early mathematical interests would eventually lead, but he has thrived in his new environs. "There was a certain appeal to going into finance, and also I found from an intellectual standpoint that it was very interesting."

While he still follows developments in his former field when he can, Harris also savors time with his family and enjoys practicing piano. "I'm happy doing a lot of different things in my life."
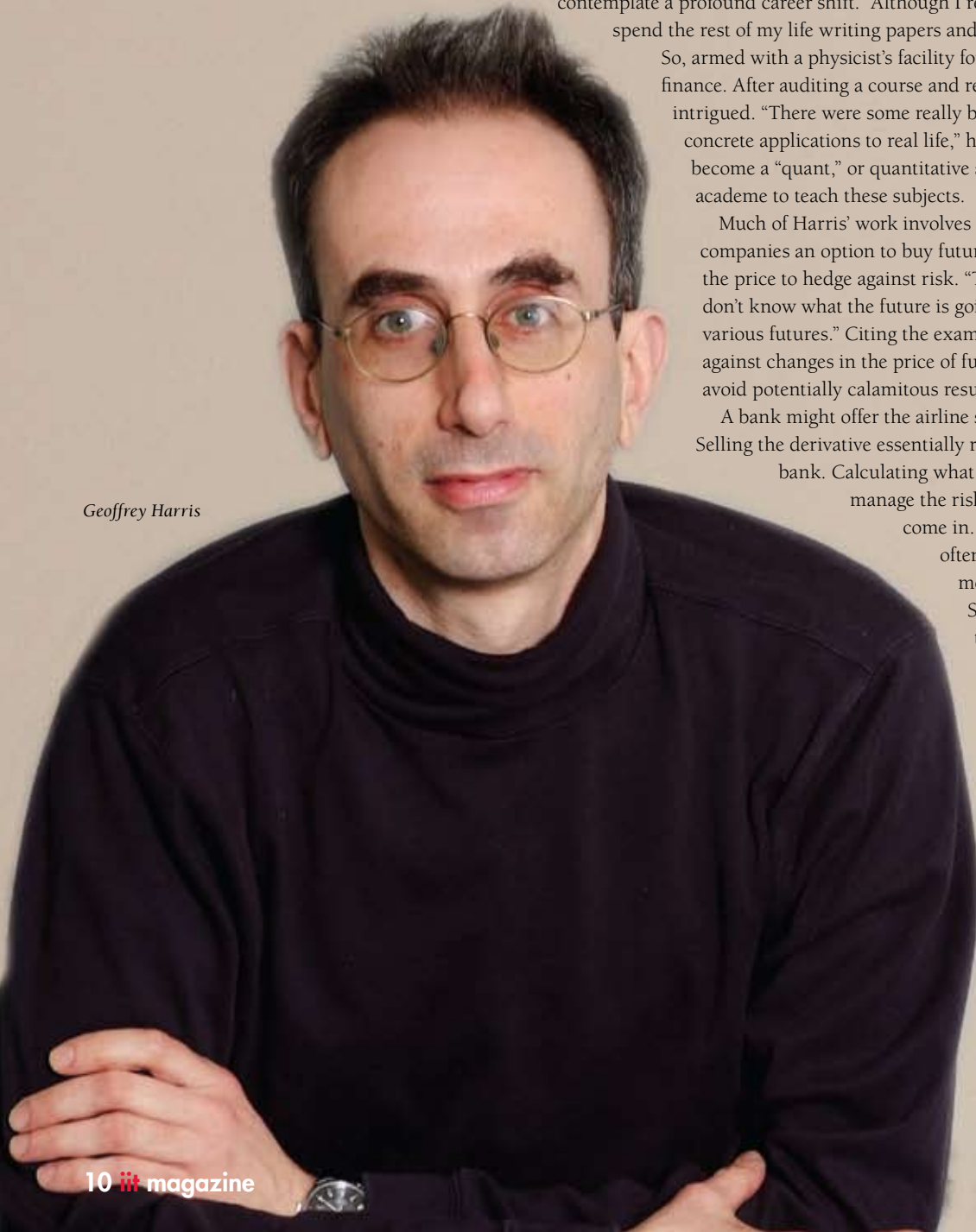
—*Richard Harth*

Geoffrey Harris

Photo: Bonnie Robinson

Shangping Ren

Shangping Ren, assistant professor in the IIT Department of Computer Science, has earned a Faculty Early CAREER Development Award from the National Science Foundation. One of the top honors that the United States government bestows on scientists and engineers beginning their careers, the award recognizes those who show exceptional potential for leadership in advancing knowledge in their fields. About 15 percent of a few thousand applicants are chosen to receive the annual award. Ren's five-year, $400,000 award will advance research and education in the field of open distributed embedded systems, cyber-physical systems, and programming languages and models for these systems at IIT.

Benjamin Riley

Benjamin Riley, assistant professor, visual training professor, and director of the second-year undergraduate program in the IIT College of Architecture, has been recognized with a 2007 American Institute of Architecture Students Excellence in Architectural Education Award from AIA Illinois (American Institute of Architects).

John Ronan

The *Chicago Tribune* named John Ronan, assistant professor in the IIT College of Architecture, as a Chicagoan of the Year for 2007. John Ronan Architects was recognized with four awards in the 2007 Chicago Design Excellence Awards, sponsored by the Chicago chapter of the American Institute of Architects. Ronan is currently designing the new home of the Chicago-based Poetry Foundation.

Comer Youth Center in Chicago's Grand Crossing neighborhood, designed by John Ronan

Ronald W. Staudt

Professor Ronald W. Staudt accepted the 2008 Louis M. Brown Award for Legal Access on behalf of IIT's Center for Access to Justice and Technology (CAJT), part of IIT Chicago-Kent College of Law. The center received the American Bar Association honor as a program that serves to match unmet legal needs of the middle class with lawyers who provide affordable legal services. Staudt is CAJT director.

Teaching Grants for Innovative Faculty
Blake Davis

Blake Davis, instructor in the IIT College of Architecture, received a Teaching Grants for Innovative Faculty (TGIF) award in fall 2007 for integrating the construction of a geodesic dome into his Basic Dwellings course for second-year students. The TGIF program, sponsored by the new Office of Undergraduate Affairs, awards up to $2,000 to faculty and faculty advisors to professional society chapters who are working on creative ways to improve the learning experience for IIT undergraduates. Davis' architecture students sought ways to prevent seam seepage problems in the dome, which was formed from a recycled paper cast. Some of Davis' students volunteered to continue working on the project after the semester ended and grades were posted. The deadline for 2008 awards was mid-May; winners will be announced in *IIT Today,* the university's online newsletter, in June.

Little Lab:

Building a Diagnostic Powerhouse

The laboratory that screens patients for viruses, proteins, bacteria, and other markers of disease just got smaller.

Much smaller.

IIT's ChemArray chip—no larger than a postage stamp—has broad applications. The device under development is a multipurpose biosensor, a diminutive canary in a coalmine for revealing disease pathogens. It can also screen food and water for contaminants like *Salmonella, E.coli,* and *Listeria;* sniff out bioterror poisons, stalk tuberculosis or avian flu… the list goes on.

Think of a biosensor as a futuristic sleuth, able to track, detect, and transmit information about chemical or biological agents in the environment. Unlike other types of sensing

William Buttner [left] and Victor Perez-Luna

gadgets, a biosensor makes use of biological material such as enzymes, antibodies, or whole bacteria for the detection process. Having homed in on its prey, the biosensor transmits an electrical signal announcing its findings.

The ChemArray is being developed within IIT's International Center for Sensor Science and Engineering. Sensor science is a hybrid field, incorporating surface chemistry, nanotechnology; physical-, biological-, and electrochemistry; and software engineering.

Work began on the ChemArray in the laboratory of former IIT Professor Joseph Stetter. Research Professor of Chemistry William Buttner, also the center's director, and Victor Perez-Luna, associate professor of chemical engineering, are now modifying the device—originally designed to analyze fingerprints—to complete a host of diagnostic chores.

In the chip's original application, tiny sensors on the surface, each about 50 microns across, make contact with the textural components of a fingerprint, generating an electrical output in the process. More than 93,000 such sensors produce a detailed map of the fingerprint structures, transmitting the information as a grayscale image.

Later tests were done using biological material applied to the chip surface, including wormlike microorganisms known as nematodes. Just as the ChemArray's sensors had discerned the ridges and canyons of a fingerprint, they detected these wriggling creatures to a scale of 2–3 microns—approaching the dimensions of a typical bacterium.

This exciting finding opened the door to the development of a sophisticated and versatile biosensor. Encouraged, the two researchers then decided to incorporate antibodies into the design.

The human immune system relies on antibodies precisely because they are such superb sensing probes, with an accurate and extremely specific affinity for the antigens they bind with. Using a process known as self-assembled monolayer (SAM) technology, Buttner and Perez-Luna began engineering a chip capable of detecting micron- and nano-scale biomaterials by immobilizing antibodies and fusing them to the detector surface.

Reporting on ChemArray advances, Perez-Luna notes the success he and Buttner have had in identifying bacteria (including *E.coli* and *Neisseria gonorrhoeae*) by means of different chip-surface antibodies. The technique will lead to the detection of a small universe of allergens, viruses, other bacteria, chemical toxins, proteins, and diverse antigenic markers of disease.

Buttner and Perez-Luna hope to engineer individual chips, each containing a variety of antibodies. To do this, the surface is modified with organosilane molecules, which act like a sort of molecular glue. "This prevents the antibodies from detaching or being washed away or displaced," Perez-Luna notes, adding that the robust surface chemistry achieved allows the sensor to function in a variety of environments.

One of the principle advantages of the device is its simplicity of use. Because the platform is fully automated and electronic, the examiner need have no special training to operate it. Nor must he or she go through the vigilant, time-consuming efforts typical of biomedical assays, where reagents, rinsing cycles, microscopy, or other techniques are required.

Buttner says the final version of this work-in-progress will be a mobile, cost-efficient instrument. "We envision it running from a laptop or even a Palm Pilot," he says.

—Richard Harth

Photos: Bonnie Robinson

SEARCHING
for *Meaning*

Shlomo Argamon

"Computers are very good at seeing every single word and punctuation mark, but they're not good at getting the big picture," says Shlomo Argamon, professor of computer science and director of IIT's Linguistic Cognition Laboratory. "People are just the opposite."

While computers have transformed every scientific discipline from astrophysics to marine biology, the humanities have remained somewhat independent of this wave, existing as a parallel world. Many scholars of literature, for example, continue to rely on that most ancient of random-access devices: the book. But scientists like Argamon are convinced that our detail-obsessed computers have a great deal to offer the humanities.

Much of Argamon's recent work is in an area known as computational stylistics. This growing community of humanities scholars, computer scientists, and statisticians is collaborating and finding innovative ways of teasing meaning out of texts, music, and art. Argamon is collaborating with humanities scholars at the University of Chicago and computer scientists at Bar-Ilan University in Ramat Gan, Israel.

Computational stylistics can be contrasted with computational content or topic analysis—for example, the work of that indispensable tool, Google. Search engines crawl their vast repositories of pages to extract basic facts. Despite the power of such engines, they are blunt instruments, insufficient to pry out meanings in a given text. Meaning, Argamon points out, is created in a specific context, by a particular individual or group, for a particular purpose. Format is also critical to the interpretation of meaning. (Just compare a novel with an instant message.)

Unlocking these hidden textual elements is what computational stylistics is all about. Argamon highlights the distinction between mere word recognition and the requirements for stylistic analyses: "If we consider content, when we see the word 'car,' we know the text says something about a car. On the other hand, the occurrence of any particular word hardly says anything about the text's style." A computational approach to style must be statistical in nature, making use of aggregate tendencies and preferences that have a cumulative effect.

One area where results have been strikingly apparent is author gender. "So far, in different experiments with different kinds of texts, we have found clear, statistical differences between typical males and typical females," Argamon says. In the studies undertaken, the accuracy in determining author gender by computational means was about 70–80 percent.

One such study involved late twentieth century fiction and nonfiction. Argamon and his colleagues were intrigued to find that despite the editorial constraints imposed, it was actually easier to determine gender in nonfiction than in fictional texts.

"Computers are very good at seeing every single word and punctuation mark, but they're not good at getting the big picture. People are just the opposite."

Other texts opened to computer-assisted stylistics include the Shakespeare plays. Argamon has been examining the means used by the playwright to construct maleness and femaleness in his characters. Of particular interest are scenes in a few of the plays in which female characters assume male disguises. Argamon hopes to subject these to the computer's close reading for clues about Shakespeare's approach to real versus impersonated gender.

Other applications of computational stylistics include forensic and anti-terror investigations in the analysis of anonymous documents, as Argamon explains: "The idea of trying to extract hidden meanings from a text is just as applicable in a hard security context as it is in the humanities, where we're trying to extract meaning from Shakespeare or James Joyce."
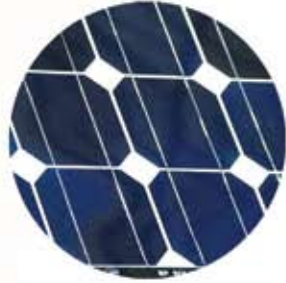*http://lingcog.iit.edu*
—Richard Harth

A **WISER** Path to Sustainability

By Marcia Faye

"I believe the world is going to have to massively revise its energy supply and consumption patterns over the next several decades," reflects **Ralph L. Wanger,** Illinois Institute of Technology trustee. "We are running into shortages of petroleum, which are going to fire a whole lot of new fuels. There are all sorts of environmental issues involved with the use of energy, including global warming and other problems of handling pollution. There is no way we are going to be able to continue to have growth in the United States or the rest of the world unless we can solve some of these energy problems."

Ability to Do More

Officially launched on March 3, 2008, WISER will expand upon the work of the Energy and Sustainability Institute (ESI), created in 2004 through IIT Armour College of Engineering. "Ralph Wanger's gift gives us great potential to go well beyond our initial aspirations for ESI," says Anderson of ESI's aim to develop state-of-the-art, interdisciplinary education and research programs, and to promote commercialization of some of the new ideas in areas related to energy and sustainability.

Hamid Arastoopour (M.S. GE '75, Ph.D. '78), Armour dean, newly appointed Linden Professor of Chemical and Biological Engineering, and recognized authority in particle technology and energy conversion systems, and Henry R. Linden (Ph.D. CHE '52), Max McGraw Professor of Energy and Power Engineering and Management, were cofounders of ESI. Arastoopour acknowledges that Wanger's gift will enable the university, through WISER, to build upon its existing strengths in energy and sustainability as well as to expand into new project areas. "Mr. Wanger's gift is going to provide us with needed infrastructure, seed money for faculty research, and scholarships to attract top students," says Arastoopour.

He says two elements set IIT apart from most other universities that have sustainability initiatives: a long track record of conducting energy research and a large and experienced faculty working together in an interdisciplinary environment. Arastoopour cites the example of architecture faculty collaborating with engineering faculty on wind and solar energy projects. In his analysis of initiatives at other universities with comparably sized sustainability programs to WISER, Arastoopour notes that each had received substantial funding from industry and government grants, which made a difference in what they could accomplish. Wanger's gift will give IIT the competitive edge it was lacking.

Linden, director of IIT's Energy + Power Center and architect of energy activities at IIT, says the gift will give the university the chance to do much more to address what he sees as "the critical issue of our times." An IIT faculty member since 1954, Linden is a recognized authority in national and international energy economics and policy, and has spent his career researching, developing, and implementing sustainable global energy technology. "It has given us a real boost in going forward and a basis for raising other similar gifts to establish the institute," says Linden of Wanger's contribution. He is optimistic that the funding will make it easier to obtain the large corporate, state, and federal grants to help the institute attain its goal of establishing IIT as a national leader in energy and environmental and sustainability issues, complementing Chicago's emergence as a forward-thinking city.

Respected Manager, Benefactor, and Visionary

How to go about solving some of the world's energy problems is something that Ralph Wanger has considered seriously. With his observation that "nothing happens in science and engineering that doesn't involve energy," perhaps it should come as no surprise that Wanger has entrusted the task of discovering an energy solution to a university with strengths in both science and engineering. He has done so with a $5 million pledge to establish the IIT Wanger Institute for Sustainable Energy Research (WISER).

A graduate of Massachusetts Institute of Technology (MIT), Wanger chose IIT as the recipient of his benevolence because "a gift to IIT has more effect on the school than a gift to MIT would," explains Wanger. "MIT is a larger, richer place at the top level of engineering schools. IIT is in the position for a lot more change and a lot more interesting projects. It will be a more effective gift."

Wanger knows about anticipated yields on investments. For 33 years, he was manager of the Acorn Fund, one of the nation's top-performing growth funds. He and his wife, Leah Zell, are principals of their management firm LZW Group, LLC. Wanger became an analyst in 1960 for Harris Associates, LP, eventually becoming a portfolio manager. In 1970, he established the enormously successful Acorn Fund, increasing its assets from $8 million to more than $13 billion during the years he managed the fund. During this time, Wanger left Harris to start Wanger Asset Management, LP before becoming an LZW principal in 2005. He has been featured in major newspaper and financial publications, and wrote the book *A Zebra in Lion Country: Ralph Wanger's Guide to Investment Survival,* published in 1997.

The WISER gift is not the first that Wanger has made to bring a sense of excitement and renewal to IIT. In 2004, he and Leah donated $1 million to the Mies Society for renovation of the south porch of S. R. Crown Hall, home of the IIT College of Architecture.

"He's an incredibly creative individual who has a sincere interest not only in helping IIT advance, but also in contributing to society by promoting initiatives that contribute to sustainability, especially in the energy area," says IIT President John L. Anderson. "Ralph told me that he hopes WISER will give IIT opportunities to partner with other universities in both research and education. Our goal is to have WISER internationally recognized for both its research and educational programs."

Ralph L. Wanger

Building Upon IIT's Strengths

IIT took its first steps on the road to becoming an energy leader some 60 years ago, when it became affiliated with the Institute of Gas Technology (IGT) and began a graduate program in gas engineering and joint research endeavors. While IGT ended the graduate program in 1985, the Gas Research Institute, under Linden's direction, provided IIT funding to hire faculty in the energy arena. Arastoopour was brought on to lead the new Energy Technology Program, resulting in the development of an energy specialization education program, expanded energy research, industry involvement, and the endowed chair that Linden occupies. In 2004, the ESI was established, providing opportunities for all of IIT's colleges, schools, and centers to engage in energy and sustainability activities.

Under WISER, the university will build upon its strengths in four focus areas: energy production (clean coal technology); renewable energy (solar energy/hydrogen storage and fuel cells); energy efficiency, conservation, and sustainability (hybrid systems and sustainable buildings); and power and power distribution (security and the Galvin Electricity Initiative). Centered about these four areas of research, faculty from various disciplines within Armour College will continue to develop enterprising approaches toward a sustainable future.

Energy production

Linden defines sustainability as meaning "an inexhaustible, emission-free supply of energy." A significant problem in coal burning—the major source of our nation's electricity—is the generation of fossil fuel emissions, such as carbon dioxide, sulfur, nitrogen oxides, and mercury, which are responsible for adding to the planet's greenhouse gas effect and polluting the environment. Arastoopour and Department of Chemical and Biological Engineering (ChBE) Distinguished Professor Dimitri Gidaspow (Ph.D. GT '62) have developed mathematical models for a coal gasification process, the conversion of coal into

gas. Their work, supported by the National Science Foundation (NSF), the Department of Energy (DOE), and industry, earned accolades from the American Institute of Chemical Engineering. ChBE GTI Associate Professor Javad Abbasian (M.S. GE '78, Ph.D. '86) is finding ways to remove carbon dioxide and sulfur from coal flue gas using high temperatures, and has successfully developed a novel sorbent, or sulfur-removing compound. Herek Clack, an associate professor in the Department of Mechanical, Materials, and Aerospace Engineering (MMAE), is investigating ways to remove mercury from the flue gas that results from the burning of coal.

Renewable energy

"Renewable energy, such as solar or wind, is not available continuously; therefore, we need to store produced electricity using high-capacity batteries or convert produced electrons to molecular form, such as hydrogen, then store it," explains Arastoopour.

ChBE Research Associate Professor Said Al-Hallaj (Ph.D. CHE '00) is coordinating renewable energy initiatives for WISER through the Energy + Power Center. Several demonstration projects funded by the State of Illinois, the City of Chicago, and other entities are in progress, including a solar-hydrogen hybrid fuel cell that powers an LED sign. One of Al-Hallaj's newest projects is the development of a hybrid scooter that is powered by a battery, a fuel cell, and hydrogen gas. ChBE Distinguished Research Professor J. Robert Selman, in collaboration with Al-Hallaj, was awarded a patent in March 2007 for an

electrostatic spray used in fuel cell technology. Research on the development of inexpensive and high-performance electrochemical fuel-cell systems is under the direction of ChBE Professor Jai Prakash, who is focusing his efforts on the integration of batteries, fuel cells, and capacitors in renewable power/energy systems.

Energy efficiency, conservation, and sustainability

Through his startup company, All Cell Technologies, LLC, Al-Hallaj is collaborating with Ali Emadi, a professor in the Department of Electrical and Computer Engineering and director of IIT's Electric Power and Power Electronics Center, on the conversion of a City of Chicago hybrid SUV into a plug-in hybrid. With a battery that can be recharged by connecting a plug into an electric power source, a plug-in hybrid vehicle does not require any fossil fuel during its all-electric range if its battery is charged by a renewable energy source.

Emadi has led IIT research initiatives on the development of electric-hybrid vehicles and motor drive technology. Emadi's two-pronged approach to hybrid systems consists of using already-built components in the conversion of traditional vehicles into hybrid vehicles and creating unique components for hybrid electric conversion kits. The kits are being developed in conjunction with Emadi's startup company, Hybrid Electric Vehicle Technologies, Inc., and are expected to be ready for the market in 2009.

Imagine living in a house in the heart of the city that largely relies upon its own capabilities to supply heat and electricity while doing so in

Professors Said Al-Hallaj and Ali Emadi are converting a hybrid Ford Escape SUV into a plug-in hybrid for the Chicago Department of Fleet Management.

ways that contribute to a sustainable future. In 2005, ESI began plans for the creation of such a residence in the House of the Future initiative. Project leaders Arastoopour and Al-Hallaj are planning to incorporate such energy-efficient features as a solar roof, reversible metering, and a small wind turbine to help generate the building's energy needs. This demonstration facility, to be erected on Main Campus, will serve as a sustainable showcase and science teaching laboratory for students in the local community as well as IIT students, several of whom drew up plans for the proposed design. In another project, IIT College of Architecture Professor Peter Land, an authority on tall buildings, and MMAE Associate Professor Dietmar Rempfer are collaborating on developing high-rises that effectively utilize wind turbines to produce the energy needs of buildings that have multiple housing units.

Power and power distribution

"Perfect Power" is a term that may sound impossible to accomplish, especially in regards to the electrical demands of a city. But in 2005, Motorola, Inc. founding family member, Bob Galvin, along with sons Chris and Mike, formed the Galvin Electricity Initiative in an attempt to achieve just that. Two of the power experts they approached to help create a prototype of the perfect power system were ECE Chair and Carl Bodine Professor Mohammad Shahidehpour and Associate Professor Alex Flueck, who, under WISER, will continue working on their design of a series of "intelligent" micro-grids powered by IIT and ComEd that would conform to the ways electricity is being used and adjust its flow rate accordingly. Such a system would result in less energy waste, ultimately reducing the need for fossil fuels.

Commitment to Sustainability

Impending shortages of natural resources, an ever-increasing world population, and the long-term effects of emissions produced in the manufacture of energy have made sustainability the catchword of the 2000s. With a history in energy research, an interdisciplinary team of thinkers and doers, and a vision to preserve the Earth's resources and environment for future generations, IIT is committed to taking on an increased leadership role in sustainability issues.

"IIT Stuart School of Business introduced the sustainability concept into its graduate Environmental Management Program in 1999," says George P. Nassos, industry associate professor, adding that the following year, the Center for Sustainable Enterprise was established at Stuart. Nassos says that the center is a founding member of the Chicago Sustainable Business Alliance, an organization of nearly 160 members all striving for the advancement of sustainability.

Additional projects, such as the development of alternate sources of natural gas and the production of efficient and cost-effective biofuels, are underway at Armour and will continue to grow and perhaps even expand in new directions under WISER. "I envision the faculty from WISER will be consulted on energy policy and national research strategies," says Anderson. "Our goal is to promote WISER beyond Chicago, especially in Washington, D.C., and internationally." He adds that WISER should increase research and education opportunities for all students. "WISER represents a major theme of the university, embracing participation by all of our colleges," he says.

Ralph Wanger sees the promise of a sustainable future in IIT's students. "Sustainability is going to be one of the key long-term problems over the life of someone entering IIT as a student today. I believe the ability to have a program of this nature will attract highly qualified students and be good for the reputation of the school," he explains. "I think everybody is enthusiastic and eager to make something that will be good for IIT, good for students, and good for America." ■
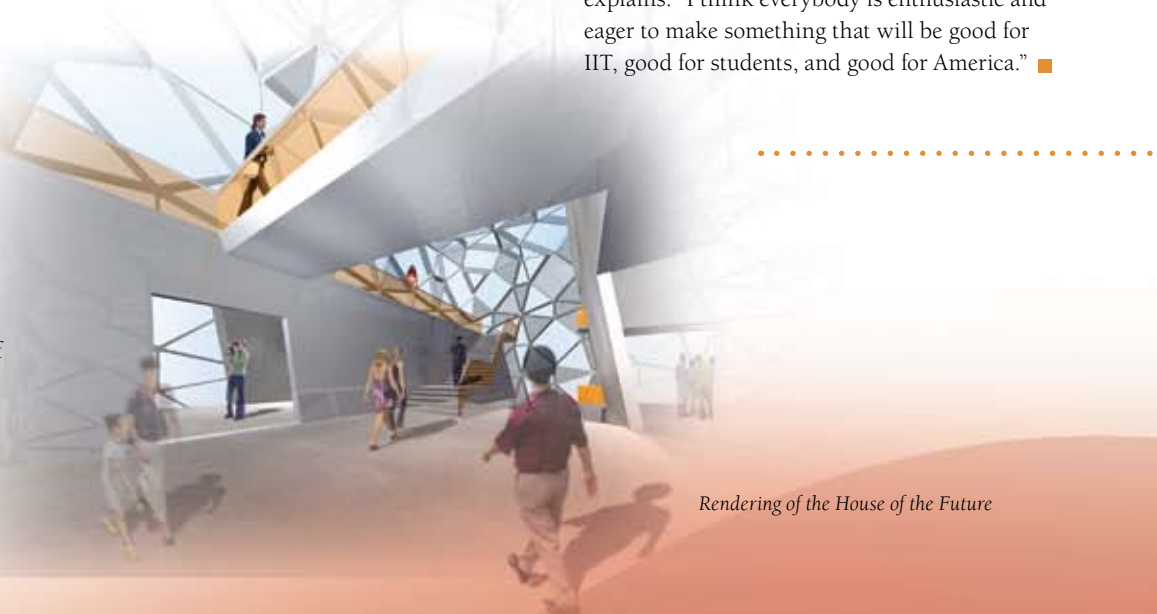
Rendering of the House of the Future

A WISER CELEBRATION—MARCH 3, 2008

A radio-controlled electric car race that pitted WISER benefactor and trustee Ralph L. Wanger against IIT President John L. Anderson capped an informative, thought-provoking, and at times, just plain fun WISER launch celebration, held on March 3 on IIT's Main Campus.

The academic colloquium portion of the event featured talks by IIT faculty as well as Charles Maxwell, energy analyst for Weeden & Co. Hans Maru (M.S. CHE '70, Ph.D. '75), retired chief technology officer and executive vice president of FuelCell Energy, Inc., delivered the plenary address, "Where Are the Fuel Cells?" Before introducing Maru, John W. Rowe, chair of the IIT Board of Trustees and utilities-industry leader for more than 24 years, briefly shared his view on new directions in energy. Rowe maintains that a successful transition from society's carbon-incumbent lifestyle will involve a combination of energy-efficiency practices, the increased use of natural gas as a bridge fuel, and an increased acceptance of nuclear power in energy generation. "I continue to believe that the nation must come to terms with nuclear power," said Rowe. "I can't see how we have an energy future with electricity below 20 cents per kilowatt hour unless we have a significant goal for nuclear."

Wanger's sentiment, made at the event's conclusion, served as a poignant summary of why sustainability should matter. "I'm very worried about my granddaughter, Katherine, who is here," he said. "I'd like to make sure that she grows up in a healthy, safe, and prosperous world. This is my gift to Katherine to help make her a happy and productive adult."

Photo: Tina Leto

IIT President John L. Anderson and Ralph Wanger engage in an electric racer competition.

The computer is the workhorse of the Information Age, executing tasks of astonishing variety and difficulty. But without cleverly designed commands, even supercomputers balk at the problems set before them—a challenge of growing complexity, ironically, due in part to the increasingly powerful technology that drives these machines. Enter a new suite of intelligent algorithms to guide the computers of tomorrow to their targets.

By Richard Harth

In a lively series of ads for the popular search engine Ask.com, "lame algorithms" are dismissed as the very essence of uncool (never mind a longer path from points A to B). The savvy marketing team behind the campaign hopes to infuse a term once consigned to the unfashionable world of geek speak with newfound hipness. The time may be right.

As it happens, all sequential processes—from sorting laundry to finding a route up Mt. Everest—are actually algorithms in disguise. Algorithmic recipes lead migrating herds to their watering holes and direct the formation of snowflakes and hurricanes.

It is in the realm of computer science, however, where the algorithm reigns supreme. All machine programming is based on these lists of instructions, which begin at an initial input state and proceed to some point of termination—a path that revved-up technology is making more challenging to navigate.

For researchers in the IIT Department of Computer Science (CS), smarter algorithms are a fundamental tool of the trade, designed, analyzed, and applied to diverse specialties, including information retrieval, wireless networking, market forecasting, computer simulation, and cryptography.

Beginnings

The CS department came into being by fits and starts. IIT Professor Peter Lykos—recruited to the IIT Department of Chemistry in 1955—had a keen interest in early computing, honing his skills on Argonne National Laboratory's IBM 650 computer. In 1959, Lykos introduced his chemistry majors to computing, instructing students to program a least-squares calculation of vapor pressure in a language known as Octal. Still, a fully fledged department devoted to computer science would have to wait.

In the 1960s, Charles Bauer, then assistant principal of Lane Technical High School, began teaching programming courses to Chicago students, using IIT's facilities. The enthusiasm for computer science was infectious, with area teachers eventually enrolling in Bauer's courses as well.

In 1971, with interest in computers mounting, the IIT CS department was founded. It quickly became the fifth largest department of the 25-department university, offering a range of CS classes, some of which persist today.

Stone Age to Digital Age

Algorithms in one form or another have been around since humanity's earliest activities. The hunting algorithms used in modern search engines are, in some respects, remnants of the algorithmic strategies for finding game in prehistory. Computer scientists refer to "greedy algorithms," "sorting algorithms," "genetic algorithms," and even "ant algorithms" (which mimic the statistical behavior of foraging insects).

ALGORITHMS
in the
Information Age

The term algorithm dates to the Persian astronomer, mathematician, and geographer Muhammad ibn Mūsā al-Khwārizmī, whose ninth century treatise was translated into Latin three centuries later as *Algoritmi de numero Indorum*. Long before al-Khwārizmī, simple algorithms had found their way into an array of early computing devices, including the abacus (invented in Babylonia in the fourth century B.C.) and in the first century B.C. the Antikythera mechanism (a prediction tool for stellar and planetary motion).

By 1642, the philosopher-mathematician Blaise Pascal introduced a mechanical calculator. In the early 1820s, British mathematician Charles Babbage developed a large, steam-powered "Difference Engine" for calculating astronomical tables. Eventually, electricity, transistors, and microchip technology, along with a host of other innovations, revolutionized computers.

Today, these fleet-footed machines leaf through billions of Internet documents per second, model conditions of ocean and atmosphere a century into the future, and even act as digital matchmakers, drawing our soulmates from ever-deepening tide pools of personal data. Algorithms form the dynamic core of these applications.

Building a Better Algorithm

While algorithmic maneuvers in our daily lives can seem effortless, cajoling a machine into executing similar calculations can be daunting. As IIT Professor Ed Reingold, a theoretician of algorithms, explains, "The computer sees a problem one little piece of data at a time and that complicates things enormously."

Imagine, for example, trying to find your way from New York's Upper West Side to the Lower East Side. A few glances at a good city map would probably be enough to guide you to your destination. But the computer essentially has

IIT computer science professors [left to right] Xiang-Yang Li, Ed Reingold, Xian-He Sun, and Sanjiv Kapoor

to examine the city's maze of intersections one at a time, forgetting about those it has looked at already.

As Reingold explains, "If you boil the problem down to its essentials, you have an algorithm that manipulates a graph—an idealized structure that has points and connections between the

> ## A good algorithm has to accomplish its task quickly— it has to be efficient.

points." Today, sophisticated graph algorithms are at the heart of programs like Mapquest and Google Maps.

IIT Professor Sanjiv Kapoor explains that algorithms need to do more than just provide accurate solutions. Simply put, a good algorithm has to accomplish its task quickly—it has to be efficient. This is the point where the art of algorithm design emerges.

Certain tasks like sorting playing cards by value and suit or arranging a group of seashells by color and shape can be handled rapidly by a variety of intelligent sorting algorithms. Adding more elements to be sifted and sorted increases the time required for the algorithm to finish the job, but the time increases almost linearly (actually, n log n). In mathematical jargon, such problems are solved in polynomial time.

Other problems are far thornier, requiring exponential time to solve. That can cost dearly,

because increasing the elements to be examined can quickly swamp computing resources. Such challenges are known to computer scientists as NP-hard problems.

A classic case of NP-hard is the "traveling salesman problem," or TSP. Here, a salesman is sent to visit a number of different cities on his rounds, returning to his starting place after stopping once at each destination. He wants to do this at the lowest cost (i.e., in the most efficient manner). The problem is easy to pose but much tougher to solve than one might think.

As the number of cities to be visited by the salesman increases, the time required for a simple algorithm to crack the problem goes up exponentially. Thus, an algorithm that can deliver a solution for a 10-city trip in less than a second requires about 20,000 years of high-speed computing time when the problem expands to 20 cities!

NP-hard problems are often subdued using approximation algorithms—those that give a good, but not necessarily optimum, solution. The traveling salesman problem is critical for computer scientists because it recurs in endless variations and disguises, often requiring shrewd algorithmic solutions.

Kapoor studies one such NP-hard problem—finding the equilibrium point in stock and commodity markets. As he explains, "The question was raised by the French economist Leon Walras in 1874. How do these markets actually get to an equilibrium point? Or do they ever reach this point?" Today, Kapoor and others are pursuing the question through methods including algorithmic game theory, a field at the intersection of economics and traditional computer science.

Kapoor and his colleagues believe they have found a type of algorithm—known as an auction process—that can find the equilibrium price for a given set of traded commodities, given certain preconditions. This process occurs naturally in the real world. "We showed that this mechanism can be made to work in polynomial time," Kapoor notes.

Networking

Evolving algorithms also play a key role in network transactions, which today make up more than half of all Internet traffic, as Associate Professor Xiang-Yang Li points out. Li is the director of IIT's Wireless Networking Lab and applies his algorithmic design expertise to the unique challenges associated with network environments.
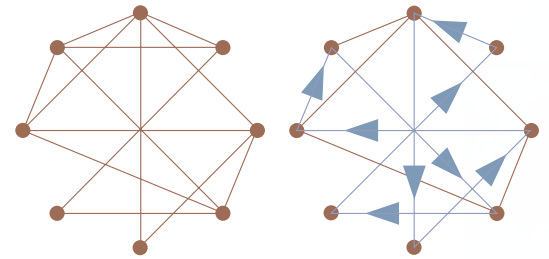
Weisstein, Eric W. "Traveling Salesman Problem." From MathWorld—*A Wolfram Web Resource.*

File-sharing programs such as Napster are among many so-called peer-to-peer (P2P) programs in which distributed users in the network act as both servers and receivers of information. One problem with these architectures is that individual users tend to act as selfish agents, maximizing their own benefits while in the process hindering the overall performance of the network. In his efforts to optimize the cost-benefit ratios intrinsic to network environments containing selfish users, Li also makes use of algorithmic game theory, among other strategies.

Such approaches to problem solving find application well beyond the field of computer science, occasionally entering the geopolitical sphere. President John F. Kennedy's advisors, for example, deliberated over numerous algorithmic scenarios during the Cuban missile crisis, a classic case Li teaches to his students.

Li and departmental colleagues Ophir Frieder, Nazli Goharian, David Grossman, Peng-Jun Wan, and Wai Gen Yee are members of IIT's Information Retrieval Laboratory, established to attack the problem of accessing useful data from the gargantuan and ever-growing sea of digitized information, both online and off.

Frieder, director of the lab, insists that our search and retrieval headaches are far from over (notwithstanding the spectacular success of Google and its carefully guarded page-ranking algorithm). "People think that 'search' has been solved," Frieder observes, taking issue with this common misconception. In addition to the needle-in-a-haystack quandary of finding relevant documents via standard search engines, there are all those other documents out there. Unlike the computer-readable pages Google hunts through, these "real-world" documents, as they are known, form a hodgepodge of scribbled notes, drawings, documents with watermarks or annotations, texts on corrupted paper, and so forth.

One of many projects Frieder and his colleagues in information retrieval have worked on is the Complex Document Information Processing prototype that opened the world of real-life documents to powerful search capabilities. As a test bed for this software, the group used the Legacy Tobacco Documents Library, a storehouse

Ophir Frieder

of 42 million document images (roughly 1.5 terabytes) relating to the famous United States tobacco litigation. Many of the documents include handwriting, tables, signatures, and graphics along with standard text. The National Institute of Standards and Technology is already using some of the outcomes of this research in its efforts.

Other research in progress through the Information Retrieval Lab includes search technology that integrates multiple data types via IIT's patented Intranet Mediator, search technology for Arabic language materials, detection of computer misuse, sophisticated refinements in data mining, and P2P advances.

Into the Spotlight

Algorithms are presently undergoing a sea change, largely related to two technological trends. The first has to do with Moore's Law, an observation of computer hardware development over time. Though the pace of advance has been remarkable—with processing speed doubling roughly every 18 months—this windfall cannot continue indefinitely. Physical limitations will curb the design of faster microchips. Once this wall is reached, only better algorithms can improve performance, at least in traditional computing.

The second trend—known as parallel processing—arose in part to circumvent these physical limitations. With parallel computing,

"It's impossible to know today what will bear fruit in a decade or five decades."
–Ed Reingold

many processors simultaneously chew away at a problem, rather than a single CPU working through its paces sequentially. The power of this technique has been enormous. Of course, there is a hitch: parallel computing also requires sophisticated new algorithms.

Parallel computing is a specialty of IIT Professor Xian-He Sun, who works on the formidable challenges of designing parallel processing algorithms. He points out that parallel algorithms are becoming a necessity, not only in the rarified world of supercomputing but also for personal computing as well. New PCs with multiple CPUs built into so-called multi-core chips have already begun to shrink parallel computing down to size.

Among Sun's early breakthroughs were algorithms designed for tridiagonal systems. These algorithms have been included in IBM's Parallel Engineering and Scientific Software Library and adopted as a community standard.

More recently, Sun has attacked the problem of maintaining communications among multiple users operating on mobile devices such as PALM or other PDAs. When participants interact in real time—for example, in an online game— the communications to and from a user can be lost if the member moves out of the range of the particular wireless service station.

The situation becomes much more complicated when multiple users are moving dynamically. Sun's new protocol—an algorithm for coordination—maintains communication states under process migration, so that interactions among multiple users can operate seamlessly. He and his student received a national award for this contribution.

Forward March

Reingold is adamant that theoretical research is crucial to the future of computer science. He points to earlier discoveries in pure mathematics that have since moved to the technological forefront. "It's impossible to know today what will bear fruit in a decade or five decades," he stresses. "That's one reason blue-sky research can turn out to be very important. Cryptography is a terrific example of that."

Composed of mathematics, not silicon, algorithms are endlessly flexible structures. In addition to their pride of place in computer science, algorithmic processes are embedded in nature, choreographing the movements of flocks of birds in flight and shoals of fishes under the sea. They are without limit, and will continue to shape the world. ■
www.iit.edu/csl/cs
www.ir.iit.edu

1959
Peter Lykos introduces IIT chemistry majors to computing. It is the first known case in the United States of computer programming appearing as a requirement for a major course, according to the Charles Babbage Institute.

1964
Charles Bauer, assistant principal at Lane Technical High School, begins teaching Saturday morning programming courses for area high school students.

1967
Lykos establishes an M.S. program in computer science at IIT, from which there are graduates who pre-date the founding of a formal IIT Department of Computer Science (CS).

1971
The IIT CS department is founded, offering 35 undergraduate and graduate courses, making it the fifth-largest department in a 25 department university and the first CS department in the Chicago area. Robert Tobey is hired from Argonne National Laboratory as the first departmental chair.

1976
Carma McClure is awarded the first CS doctorate at IIT. McClure has written a number of books concerning the representation of algorithms using diagrams and words to more clearly specify programs and improve usability and maintenance.

1985
Bauer retires from the Chicago public school system and becomes an associate professor of computer science at IIT. He remains at IIT as the longest-serving CS faculty member.

Today
With more than 600 students, the CS department is the largest unit within the IIT College of Science and Letters and one of the top 10 producers of computer science master's degrees in the United States. Graduates of the department have attained positions at Amazon, Google, Microsoft, Motorola, Wolfram Research, and other leading companies.

www.iit.edu/csl/cs

U rban bird watchers, take heart. The wonder and wildness of the natural world are right in Chicago, in those special areas where the sidewalks meet the soil, where the buildings yield to the trees. IIT Professor Geoffrey A. Williamson has visited many such special areas. One of his favorite avian-inspired nature memories is of a winter evening cross-country skiing with a friend at the Marovitz Golf Course in Lincoln Park.

"It was very picturesque that night. What had been a light drizzle had changed to snow as the temperature had just dropped below freezing. A fresh coating of pure white snow was everywhere and there was a coating of ice over all the trees," says Williamson. "My friend and I had spotted what we thought might be a snowy owl on top of a spruce tree. We stopped skiing and looked at it in the faint light, trying to decide if it was an owl or maybe just a plastic bag. Finally, we decided it was a plastic bag. We then swished forward on our skis, making what really was a snowy owl take flight from the top of the tree, which then shook a little. The owl was totally silent, making no noise at all as it flapped off, the only sound being a cascade of tinkling as little ice crystals tumbled down through the spruce tree."

Williamson is more than a casual bird watcher—he is a birder, someone who takes a more dedicated approach in their observations, engaging in the hobby at many different levels. He has seen nearly 650 different types of birds across the United States and has traveled to Peru and Costa Rica to observe the bird life in those countries. If you have gone on a Chicago Ornithological Society (COS) bird walk in Lincoln Park's North Pond area, Williamson may have been your guide, as he has conducted more than 275 walks in the Chicago area and elsewhere.

Besides leading walks for the COS, Williamson has served as the group's president and has been a member of its board as well as the board of the Illinois Ornithological Society; he is currently its membership secretary. He is the compiler, or organizer, of the Lisle-Arboretum Christmas Bird Count and is also co-editor for the Illinois and Indiana region of *North American Birds*, the journal of ornithological record published by the American Birding Association.

Birding has been a family affair for Williamson, who met his birder wife, Christine, when he moved from New York to Illinois and joined the COS. He became interested in birds at age 8 thanks to his parents, who gave him a field guide that he and his brother, Joel, consulted as they took their own bird walks around the pond next to their home. Williamson's interest accompanied him to graduate school at Cornell University, where he began his birding activities in earnest—joining a bird club, meeting other birders, participating in bird counts and surveys, and traveling just to look at birds. When he is able, Williamson tries to piggyback birding side trips onto out-of-state work-related events he attends. At a spring research conference in Las Vegas, Williamson hopes to find the time to look for Le Conte's thrasher, a bird of the desert Southwest that he has not yet seen.

Closer to home, Williamson has observed a type of predatory bird that has made IIT's Main Campus its winter abode for the past several years: not Talon, the IIT Scarlet Hawk, but a Cooper's hawk, and likely, more than one. Williamson saw it for the first time in the tree by George Segal's *Man on a Bench* sculpture. "It is pretty unusual to have a bird like this roost in a spot that does get a fair bit of foot traffic going by," he says, noting that the population of Cooper's hawks is on the increase in Illinois. They can be seen across the state throughout the year, particularly during the spring and fall migrations.

"The bird seems to pay no heed to the various university folks who walk under its tree. Probably most of those people have no idea the bird is there," he says. According to Williamson, the hawk seems to spend the day hunting for its typical diet of small birds, which it probably finds in the neighborhoods around Main Campus or along the Metra tracks, flying back to its tree roost for the night.

For the Beauty of Birds

BY MARCIA FAYE

David Baker, vice president of IIT's Department of External Affairs, has seen the campus hawk and is a birder who has learned much from his colleague. "He demonstrates a boundless enthusiasm, which rubs off on all of us in strange ways," Baker says, as he recalls a December morning in 1998 when he and Humanities Professor Jack Snapper joined Williamson on an early morning "owling" expedition in the forest preserves near Argonne National Laboratory.

Cooper's hawk

Although the temperature was only 4 degrees Fahrenheit, Williamson attempted to attract great horned and other varieties of owls the group was hoping to see using playback of tape-recorded owl calls. The extreme cold caused the recorder to fail, but the attempt was far from being unsuccessful, thanks to Williamson's Plan B. "Undaunted, he then imitated the calls himself, yielding amazing return calls from the owls in the area around us," explains Baker. "We covered the whole metropolitan area that morning and saw five different species of owls for our troubles."

"In trying to see many different kinds of birds, you are led to visit a wide range of places that you might not go to otherwise."

Williamson's birding avocation and his science vocation seem to share common traits. "Every trip we have gone on together results in an email from him listing the exact number of species that we may have seen that day," says Baker. "Geoff applies the same energy and precision to birding as he does to his academic and research work in electrical engineering." Williamson, who investigates system and signal analysis in various applications through the Department of Electrical and Computer Engineering, is currently collaborating with two other institutions on a project studying the causes of kidney damage from high blood pressure and is focusing his efforts on the dynamic response of the microvasculature to blood pressure changes.

While Williamson brings an energy and precision to his birding, birding brings to Williamson a rewarding way to experience the natural world. He explains that a reason why birding is so rewarding is that both seeing and identifying a particular bird can be quite challenging. But it is a challenge Williamson relishes. "In trying to see many different kinds of birds, you are led to visit a wide range of places that you might not go to otherwise." For Williamson, this may mean a trip to as yet unvisited corners of the country in search of his 651st bird, while for others it may be as simple as standing at the base of the *Man on a Bench* tree and looking up. ■

G E O F F R E Y   W I L L I A M S O N

Photos: Bonnie Robinson

Psychology *in the* Workplace

By Christopher Darnielle

The quest to understand and measure the complexities of human personality has long fascinated both scientists and philosophers alike. By the late eighteenth century these efforts had coalesced into a branch of medicine called phrenology, in which practitioners sought to quantify personality traits and mental acuity by measuring bumps on the human skull. The futility of this practice—also called "bumpology"—was summed up perfectly by a famous Mark Twain anecdote in which he submitted himself, anonymously, to an examination by famous phrenologist Lorenzo Fowler. As the story goes, Fowler found a cavity where a bump "should" have been and declared that this "represented the total absence of the sense of humor" in Twain. Oops.

In the decades since, the study of personality has evolved into an empirical science, one that's at the heart of the discipline of industrial and organizational (I/O) psychology. I/O psychology is a booming industry; the United States Department of Labor projects a 21 percent increase in the number of I/O jobs available over the next decade, the majority of those positions likely filled by candidates with graduate degrees.

Although I/O psychology is a broad field that deals with a wide array of workplace- and human resources-related subjects, pre-employment screening—"selection"—is one of the most common that modern I/O psychologists tackle. Personality testing is a widely used measure of workplace compatibility.

Joseph Wilkinson says that his own experience being tested for a job more than two decades ago—a process he describes as "time consuming, but interesting"—inspired him to seek out I/O psychology specialists when he and his partner opened their consulting business, Skalinder-Wilkinson and Associates, Inc. "We decided to use the process to screen all 13 or 14 of the prospective employees for the firm," Wilkinson says, "because we wanted to make sure our future employees were compatible with our company's culture." The results were nothing short of spectacular.

"In the 12 years we were in business, we only lost one employee," he says, adding that this lone defection was the result of a marriage, and not any sort of conflict. He says that the experience taught him a valuable lesson about testing and the selection process: "Yes, occasionally the process will make mistakes, as these tests aren't infallible; but in cases where the tests indicate that a candidate is deficient for whatever reason, that's something I wouldn't recommend ignoring."

"I think more companies are testing today," says Bruce Fisher (Ph.D. '84), director of the IIT Institute of Psychology's Center for Research and Service. The numbers bear this out: the testing industry has ballooned into a $400+ million industry with an estimated 8–10 percent rate of annual growth, and an array of (unsupervised) off-the-shelf tests are readily available to consumers. Of course, these off-the-shelf instruments have opened the door

to inappropriately conducted testing, which in part is why testing has gotten somewhat of a bad reputation, at least in the press.

"There are a lot of tests out there that are not well developed, but have a tremendous amount of great marketing glitz to them," Fisher says. "But they are not good tools, and they are neither valid nor legally defensible. Companies can get into trouble [using them]."

"Personality tests, like any test—indeed, any measurement—yield scores that have errors, but you have to consider the alternative," explains Alan Mead, assistant professor at the institute and an expert in psychometrics, the science of psychological measurement. "The idea that tests are worthless because they are not perfectly reliable and valid is exactly analogous to arguing that we should scrap the judicial system in this country because sometimes a guilty person is found innocent, or vice-versa."

In fact, he adds, "We have good reason and empirical support to assume that run-of-the-mill interviews have substantially lower validity and reliability than personality testing."

Personality testing is but one tool that I/O psychologists have at their disposal when seeking to improve a company's selection methods. Fisher points out that companies with strong selection processes "are going to have other methods to get at the same type of data in a different way," what he calls a

"multi-method approach." One example he offers is combining a personality test with a background check or an interview. "You're looking, of course, for confirmatory data from the different methods," he says.

As for interviewing, Fisher recommends a different methodology to help weed out potentially bad hires, a system called SAR, or "Situation, Action, Result." He summarizes SAR with the hypothetical interview of a customer service agent: "The question might be something like this: 'describe a time when you dealt with an exceptionally difficult, or unruly, customer.'" Fisher explains that established guidelines help interpret a candidate's response; for example, a behavior profile is crafted by comparing how a candidate responds to an identical situation faced in the past by top-performing employees. This is called the "critical incident method."

Intelligence testing is another common tool of the selection process, but it's one that has been fraught with controversy—namely allegations of bias against minority candidates. However, as a pure predictor of job performance, it's regarded as a very effective tool, particularly for executive positions. "All other things being equal, there isn't a job in the world where it pays to be dumber," Mead notes dryly.

Roya Ayman [center] with IIT faculty colleagues Alan Mead [left] and Bruce Fisher

COMMON I/O PSYCHOLOGY TESTS

"One of the more widely accepted theories—although by no means universally accepted or a perfect theory—is the idea that you can break down what we call personality into five different bins, sort of the global characteristics," says I/O Assistant Professor Alan Mead. "The 'Big Five' is a common way of putting it."

Although no two personality tests are created equal, Mead says that most use slightly different variations on the widely accepted Big Five model.

Some common tests:

- **16PF (16 Personality Factor Questionnaire)** The 16PF is so widely used that it has been adapted into 35 different languages. It is a normal-range personality test designed to give an in-depth assessment of the subject via its own Big Five (extraversion, anxiety, tough-mindedness, independence, self-control), as well as the 16 normal-range traits indicated by the test's name. Mead is currently seeking to launch a research initiative to make it easier for practitioners to analyze a job to determine which 16PF factors are job-related.

- **MBTI (Myers-Briggs Type Indicators)** The MBTI is a well-established tool in occupational psychology that seeks to classify how we view, react to, and structure the world around us. Subjects are broken down into one of 16 types, as determined by these factors: extraversion/introversion, sensing/intuition, thinking/feeling, judging/perceiving. MBTI is used by an estimated 89 of Fortune 100 companies.

- **Wonderlic Personnel Test** The Wonderlic is a 12-minute, 50-question exam used primarily to assess adaptive problem-solving skills and aptitude for on-the-job learning; the test's results can then be extrapolated to plot a candidate's intelligence quotient. This test has been made famous in recent years by teams in the National Football League, which routinely administer it to prospective rookie players during the league's annual draft combine.

- **MMPI (Minnesota Multiphasic Personality Inventory)** A commonly used test in the mental health fields, the MMPI is administered to roughly 15 million people annually. It was developed at the University of Minnesota in 1942 to identify psychopathology in patients. Mead notes that although the MMPI is sometimes erroneously referred to as a personality test, its development and intended uses are clearly very different from instruments like the MBTI or the 16PF. Because of its medical nature, he says that its use as a screening tool in selection likely violates the Americans with Disabilities Act.

"Research shows that mental ability is the most critical and broadly generalizable facet in predicting executive success," says Fisher. He cites a recent statistic that roughly 25 percent of executive-level success can be accounted for solely by intellectual horsepower. Of the other 75 percent, Fisher says that there are many personality factors that are important, primarily traits like conscientiousness, integrity, persuasiveness, social confidence, and flexibility.

Predicting executive success is a timely topic at IIT, who as of press date had three executive-level job openings: two deanships and a provostship. The university has hired recruitment firms to handle these nationwide candidate searches.

The first step in executing such a search would be to pare down the pool of candidates, Fisher says hypothetically—likely through a multiple interview process—until only a group of finalists remain. From there, he says, "We would typically recommend an assessment that is comprised of a battery of validated tests, both personality and cognitive ability, and then complement that with an in-depth interview"—all supervised by a qualified psychologist.

Although Fisher isn't involved in IIT's current executive searches, he deals with these issues on a daily basis in his work directing the Center for Research and Service. "If there's one thing that we feature as a core competency, it's that we're really good at helping companies measure human resources-related strategies," he says, "in terms of how well they're working and where they can be investing." This includes measuring occupations through a psychometric (statistical) method known as "job analysis," validating pre-employment testing, structuring employment interviews, designing performance appraisal methods, and evaluating the effectiveness of job training programs.

Operated as a nonprofit entity, the center serves as a consulting firm for the institute, providing a revenue stream for research initiatives while allowing students to translate their classroom study into applied consulting experience. "In fact," notes Fisher, "I've come to see this as the most important aspect of the center." For example, the center's staff is currently engaged in research designed to enhance the utility of the 16PF, a common personality test. One such project uses item response theory to help ensure even better psychometric characteristics in future versions of the 16PF.

While this real-world experience is crucial in preparing students for careers in I/O psychology, it also helps reinforce what students learn in the department's academic program. The curriculum is "based on the scientist-practitioner model, with a mission to train students with broad knowledge of processes of human relationships in the workplace (organizational psychology) and policies and practices (personnel)," explains Roya Ayman, director of the institute's I/O Psychology Training Program. "It has a strong emphasis on methodology and quantitative aspects." The program is the oldest of its kind in Chicago, and was ranked sixth best in North America by *TIP*, a publication of the Society of Industrial/Organizational Psychology, in 2004.

The institute offers students two tracks: the Personnel Human Resources Development track, in which students earn a non-thesis master's degree; and an I/O doctoral track, in which students compose a master's thesis and a dissertation, and receive a Ph.D. with a specialization in psychology.

It's a highly selective program; Ayman estimates that only five to 10 students are admitted to the Ph.D. track annually. The program boasts a 100 percent placement rate for graduates—exactly what you'd expect for such a select group of students who specialize in the science of occupational psychology. ∎

www.iit.edu/colleges/psych

alumninews
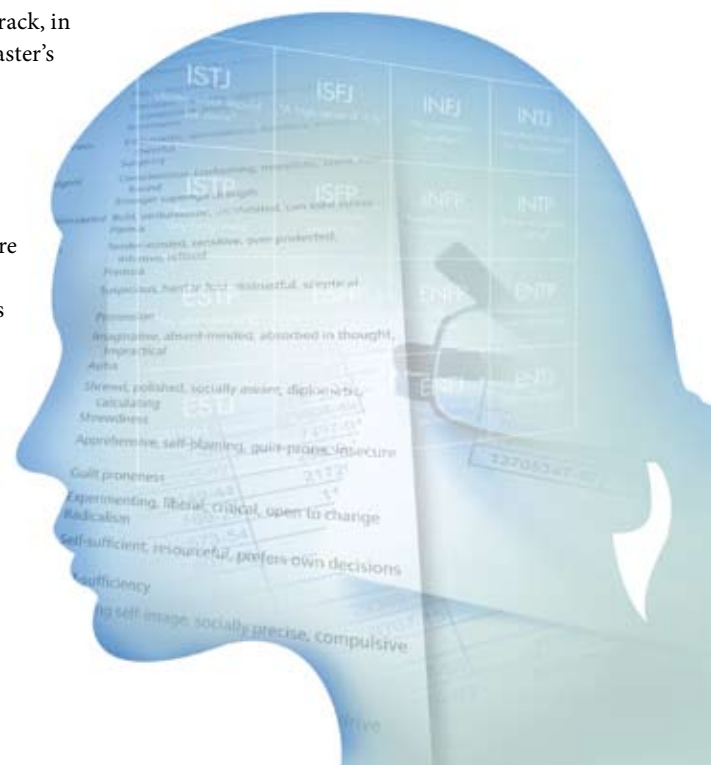
Alumni Publications

Two alumni recently published novels set on college campuses in Chicago. **Robert Joyce** (IE '57, M.S. BEA '60) has written *The House on Michigan Avenue* (Pygmalion Press). The story is set on IIT Main Campus in the early 1950s, a time during which many students had returned from World War II to a university in transition.

Bernadette Steele (M.S. TCID '03) has authored her first novel, *The Poetry of Murder.* A murder mystery, the book is the first in a series chronicling the adventures of Geneva Anderson, a resident of International House at the University of Chicago. Steele is presently working on her doctorate at IIT.
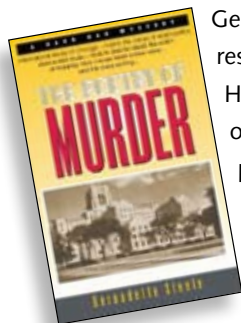
2008 IIT *Alumni Award Winners*

At ceremonies held in conjunction with the Spring IPRO Day on May 2, 2008, 20 distinguished and accomplished alumni were recognized for their contributions to IIT, their professions, and their communities. The recipients of the 2008 IIT Alumni Awards are:

IIT ALUMNI MEDAL
M. Zia Hassan (M.S. IE '58, Ph.D. '65)
Gloria Ray Karlmark (MATH '65, CHEM '65)

IIT ALUMNI SERVICE AWARD
Hamid Arastoopour (M.S. GE '75, Ph.D. '78)
Morton Nemiroff (CHE '50)
Edwin F. Stueben (MATH '58, M.S. '60, Ph.D. '63)

IIT COLLENS MERIT AWARD
Robert W. Schmidt (ME '36)

IIT GLOBAL SERVICE AWARD
Atul Thakkar (M.S. EE '71)
Federico Vidargas (M.A.S. ARCH '76)

IIT OUTSTANDING YOUNG ALUMNUS/A
Kevin C. Furman (CHE '97)
Mariam Kittaneh (CHE '03)
Douglas Opicka (PS '97, M.P.A. '97)

IIT LIFETIME ACHIEVEMENT AWARD
(awarded posthumously)
Robert M. Janowiak (M.S. EE '61)
Samuel Karlin (MATH '44, M.S. '45)
John V. Martinkus (ARCH '61, M.S. '64)
James Y. Oldshue (CHE '47, M.S. '49, Ph.D. '51)

IIT PROFESSIONAL ACHIEVEMENT AWARD
Jeffrey Anderzhon (ARCH '73)
Praveen Gupta (M.S. EE '89)
Hans C. Maru (M.S. CHE '70, Ph.D. '75)
Nabeel A. Riza (EE '84)
Melvin E. Stern (M.S. PHYS '51)

Nominations for 2009 awards are presently being accepted. Instructions are available at www.iit.edu/alumni/updates/awards. For more information about the IIT Alumni Awards, please contact Cameron Watkins at 800.448.2586 or alumni@iit.edu.

Gunsaulus Society — PUZZLED ABOUT ESTATE PLANNING?

Across:
1. Those who include IIT in their estate plans are members of this group.

Down:
1. This estate-planning tool manages the distribution of a person's property by transferring its benefits and obligations to different people.
2. Type of charitable gift providing specified sum of money each year to a beneficiary for life
3. A gift made by will
4. Policy holder makes payments during life in exchange for lump sum to beneficiary at death
5. The generic name for all these types of accounts: IRA, Roth IRA, 401K, SEP
6. Annual payments of this life-income gift are based on the fair market value of its assets determined once each year.

For more answers, contact Elaine Clay at clay@iit.edu or 312.567.5028.

classnotes

1930s

Grote Reber
EE '33, Bothwell, Tasmania, was posthumously inducted into the 2007 Illinois Engineering Hall of Fame. The award, presented annually by the Illinois Engineering Council, recognizes individuals for lifelong accomplishments.

1940s

Marvin Camras
EE '40, M.S. '42, LAW '68, Glencoe, Ill., was posthumously inducted into the 2007 Illinois Engineering Hall of Fame. The award, presented annually by the Illinois Engineering Council, recognizes individuals for lifelong accomplishments.

Eugene Sevin
ME '49, Ph.D. '58, Lyndhurst, Ohio, is a past recipient of the Melvin L. Baron Award from the Department of Defense Shock and Vibration Information Analysis Center. The award recognizes technical contributions and leadership in computational structural dynamics and related specialties in the field of shock and vibration.

1950s

Ted A. Erikson
CHE '52, M.S. '59, Chicago, and his team competed in various swimming events during the 2007 Summer Senior Olympics in Louisville, Ky., held June 22–July 7. The team traveled to Turkey in July to swim the Bosphorus Strait.

Ralph C. Koeller
ME '57, M.S. '59, Ph.D. MECH '63, Platteville, Wis., published the paper "Toward an Equation of State for Solid Materials with Memory by Use of the Half-order Derivative," which appeared in *Acta Mechanica,* Vol. 191 No. 3–4, pp. 125–133, 2007.

John A. De Runtz Jr.
ME '59, M.S. MECH '62, Ph.D. ME '65, Portland, Ore., received the 2007 Melvin L. Baron Prize from the Department of Defense Shock and Vibration Information Analysis Center. The award recognizes technical contributions and leadership in computational structural dynamics and related specialties in the field of shock and vibration.

Arthur C. Schlicht
CHE '59, Sugar Grove, Ill., retired from Walker Process Equipment in Aurora, a manufacturer of water and wastewater treatment equipment, after 51 years of service.

> **MAJOR KEY**
> For a complete list of abbreviations for IIT's academic majors, visit www.iit.edu/magazine.

1960s

Ata A. Abdel-Latif
Ph.D. BCHM '63, Martinez, Ga., and his wife, Iris, celebrated their 50th wedding anniversary on September 15, 2007.

Ted B. Belytschko
ES '65, Ph.D. MECH '69, Winnetka, Ill., is a past recipient of the Melvin L. Baron Award from the Department of Defense Shock and Vibration Information Analysis Center. The award recognizes technical contributions and leadership in computational structural dynamics and related specialties in the field of shock and vibration.

1970s

Jerome M. Gardberg
LAW '70, Henderson, Nev., retired from the practice of law in November 2007.

Jeffrey W. Anderzhon
ARCH '73, Washington, D.C., is a senior living studio

George L. Hunt
PSYC '66, Varna, Ill., is building a small, self-reliant, intentional community (religious movement) in Lyons Gate Manor guided by principles put forth in the novel *Walden Two* by B. F. Skinner.

Lewis Thigpen
M.S. MECH '67, Ph.D. '70, Alexandria, Va., received the 2007 XCaliber (shorthand for exceptional, high-caliber work) Award from Virginia Polytechnic Institute and State University. The annual award celebrates and illustrates innovative approaches to teaching using technology. Thigpen is a professor of mechanical engineering at Howard University.

Lee A. Hollaar
EE '69, Salt Lake City, Utah, obtained a doctorate in computer science from the University of Illinois at Urbana–Champaign in 1975 and joined the faculty. Since 1980, Hollaar has been a professor of computer science at the University of Utah. He has also authored the book *Legal Protection of Digital Information.* He produced the first legally recognized, digitally signed will, helped to draft the Digital Millennium Copyright Act as a Senate Judiciary Committee fellow, and through amicus briefs to the Supreme Court, played a major role in adding "inducement" to copyright law and "foreseeability" to patent law.

leader and senior associate at the Washington, D.C., office of JSA Architects. Anderzhon also coauthored the book *Design for Aging Post-Occupancy Evaluations* (John Wiley & Sons, Inc.) and was made a fellow of the American Institute of Architects.

Kaiser Saifudin
M.S. IE '76, Waldorf, Md., is acquisition program manager with the Defense Threat Reduction Agency (DTRA), part of the Department of Defense, in Ft. Belvoir, Va. The DTRA's mission is to work cooperatively for the elimination, non-proliferation, and threat reduction of all biological, nuclear, and chemical weapons in the former Soviet Union countries.

Jeffrey I. Doman
M.A.S. CRP '77, Evanston, Ill., is a cost estimator with Friedler Construction Co. Doman's responsibilities include estimating, project management, and contract administration in the public sector of the construction industry, primarily focusing on school renovation and housing rehabilitation projects in the Chicago area.

Jeffery P. Perl
CHE '77, M.S. '79, Ph.D. '84, Lincolnwood, Ill., chaired the American Institute of Chemical Engineers Chicago Symposium 2007, with opening remarks made by IIT President John L. Anderson.

Mark Donovan
M.P.A. '78, Chicago, has been the executive director of facilities management at the University of Illinois at Chicago for the past 20 years.

Timothy W. Shytle
FPSE '78, Charlotte, N.C., is senior fire protection engineer for the Harrington Group, Inc.

Robert E. Strunck
LAW '79, Chicago, is referred to in the new e-book *Defending the Damned: Inside Chicago's Cook County Public Defender's Office* by Kevin Davis and published by Atria Simon & Schuster. The book is a frank discussion of the work of the Murder Task Force of the Office of the Public Defender of Cook County.

1980s

Barry A. Mattes
LAW '80, Chicago, has been promoted to vice president of J-M Successors, Inc., an insurance-premium finance company.

Arthur J. Roman
ARCH '80, Western Springs, Ill., has joined the Chicago office of BSA LifeStructures, a national leader in designing health care, education, research, and technology facilities.

Richard D. Hayes
ARCH '81, Winnetka, Ill., has been elected vice president in the Chicago office of pb2 Architecture and Engineering, where he is also director of architecture. Hayes, with the firm since 2006, has worked on such projects as the plaza redevelopment of the Amoco Building in the Loop and the design of the Visitor Center of the Morton Arboretum in Lisle.

Michael J. Burke
Ph.D. PSYC '82, New Orleans, La., received the 2006 Decade of Behavior Research Award and made a presentation of his research at a congressional briefing. The Decade of

Behavior (2000–2010) is a multidisciplinary initiative that focuses the talent, energy, and creativity of the behavioral and social sciences on meeting many of society's most significant challenges.

Kevin P. O'Donoghue
BA '83, Mill Creek, Wa., is general manager of f.e.m.m.e.Safety, Inc., who provides practical safety training for women. O'Donoghue and his wife have been living in the Pacific Northwest for the past 11 years.

David J. Pyrce
M.B.A. '84, Murrieta, Ga., is founder and managing general partner of the Jaguar Land Fund, which invests in distressed land assets. The fund intends to capitalize on the current turmoil in the housing market by building a portfolio of land investments.

Bernard J. Schulze
MET '84, Park Ridge, Ill., has joined CTLGroup as manager of the Structural and Transportation Laboratory. Schulze oversees the testing of full-size and reduced-scale structural components.

Peter M. Koliopoulos
ARCH '86, Scottsdale, Ariz., principal of Circle West Architects, has been selected president of the Arizona State University College of Design Council for Design Excellence.

John G. Fijolek
M.S. CS '87, Alameda, Calif., has been granted 27 United States engineering-related patents with several more pending. Fijolek also passed the United States Patent and Trademark Office Patent Bar in 2005 and currently is employed as an executive at a $2 billion telecommunications company.

1990s

Kristin C. Kennedy
ARCH '90, Pittsburgh, Pa., has formed Florida Consulting, LLC, an independent roofing and waterproofing consulting company, with her husband, Rich Florida. Kennedy is active in all aspects of the company, where she also serves as information technology director, office manager, treasurer, and vice president.

Kristina M. O'Brien
BA '90, Washington, D.C., recently returned from a one-year deployment in Southwest Asia, where she commanded a 400-person United States Air Force logistics unit supporting air operations throughout the area.

George A. Schutter
ACCT '92, Washington, D.C., was appointed chief financial officer of the Peace Corps in 2005. Schutter previously served in the Marine Corps, including two tours in the Persian Gulf, and was honorably discharged in 2002 with the rank of major.

Junjian Tang
M.A.S. ARCH '93, Lisle, Ill., received a personal commendation letter from United States Navy Rear Admiral Gary R. Jones, Naval Education and Training Command, for the "expertise, dedication, and architectural brilliance" Tang brought to the $850 million recapitalization plan for the Naval Station Great Lakes.

Louis V. Storino
CHE '94, M.S. ENVE '96, Chicago, successfully completed the 30th annual LaSalle Bank Chicago Marathon, held October 7, 2007.

Stelios Symeonides
AE '94, M.S. MAE '97, Nicosia, Cyprus, is the business development manager for the Southeast Europe, Middle East, and Africa region for Kronospan, the largest worldwide manufacturer of wood-based products. Symeonides and his wife have two sons.

Ahmed Z. Zaheer
ME '96, M.B.A. '97, Karachi, Pakistan, is working for Shell, traveling the world, and married his wife, Nazia, on July 27, 2002.

Michael C. Driscoll
M.A.S. CHE '97, Ph.D. '07, Ottawa, Ill., and his daughter, Mary Ann, both received their doctorate degrees on the same weekend in May 2007. Driscoll graduated from IIT while his daughter graduated from the University of Illinois at Chicago College of Pharmacy.

Christopher L. Brown
HIST, PS '98, Medford, Mass., is an attorney who has been practicing civil litigation in downtown Boston at McDonough, Hacking & Lavoie, LLC, for the past two years. Brown graduated in 2005 from Northeastern University School of Law. He and his wife, Ann, were married in October 2007.

Kevin M. Laberge
M.A.S. ENVE '98, Chicago, is the former project coordinator for the City of Chicago City Hall Greenroof Project.

DeeAnn Ladwig
EE '98, Kalamazoo, Mich., an electrical engineer in the Lexington, Ky., office of CMTA, Inc., earned her Kentucky Professional Engineer license in December 2007. Ladwig also became a Leadership in Energy and Environmental Design accredited professional in 2007.

Christopher J. Walsh
Ph.D. CHEM '99, South San Francisco, Calif., recently purchased a home in the area because he wants to become more involved in biotech/chemistry startup communities.

2000s

Nicholas L. Steele
M.A.S. STE '00, Chicago, has been promoted to associate in the Chicago office of Thornton Tomasetti, Inc., where he has been employed since 1998. Steele has been involved in such Chicago projects as the reuse of Soldier Field, the anticipated Chicago Spire residential tower, and media tower component of the redevelopment of Block 37 in the Loop. Thornton Tomasetti, Inc. provides building engineering services to clients worldwide.

Heather Sterner
PPPS '00, Alburtis, Pa., is assistant director of student activities at Arcadia University in Glenside. Sterner has also been serving as a board member and secretary of the Planned Parenthood Advocates of Northeast Pennsylvania.

Sookhyun Kong
M.B.A. '01, Irvine, Calif., was a member of the Walt Disney Internet Group from 2006–07 and was with LG Electronics Mobilecomm from 2002–06.

Leyla M. Tandag
M.B.A. '02, Jersey City, N.J., received a Merit of Excellence Award and the Jake Wittmer Research Award in 2005 from the International Association of Business Communicators.

Amanda Modjeski and Dan Monahan
MBB '03 and CHE '03, respectively, Madison, Wis., were married on July 2, 2006, in Madison. Modjeski received her M.D. in May 2007 from the University of Wisconsin School of Medicine and Public Health. The couple is living in the Boston area, where Modjeski will complete a residency in anesthesiology at Beth Israel Deaconess Medical Center, Harvard Medical School. Monahan is employed as sourcing manager for Aspen Aerogels, a thin film insulation company.

Mark L. Zachar
CHE, ENVE '03, Chicago, successfully completed the 30th annual LaSalle Bank Chicago Marathon, held October 7, 2007. Zachar has also made a career/life change. After three years with the Metropolitan Water Reclamation District, he made a decision to become a Roman Catholic priest with the Maryknoll missionaries, and is currently attending the Catholic Theological Union.

Michael D. Heatwole
CE '06, Hoffman Estates, Ill., and his wife, Linnea, were married on June 2, 2007, in Nassau, Bahamas.

The Timeless Design Appeal of the Chair Man
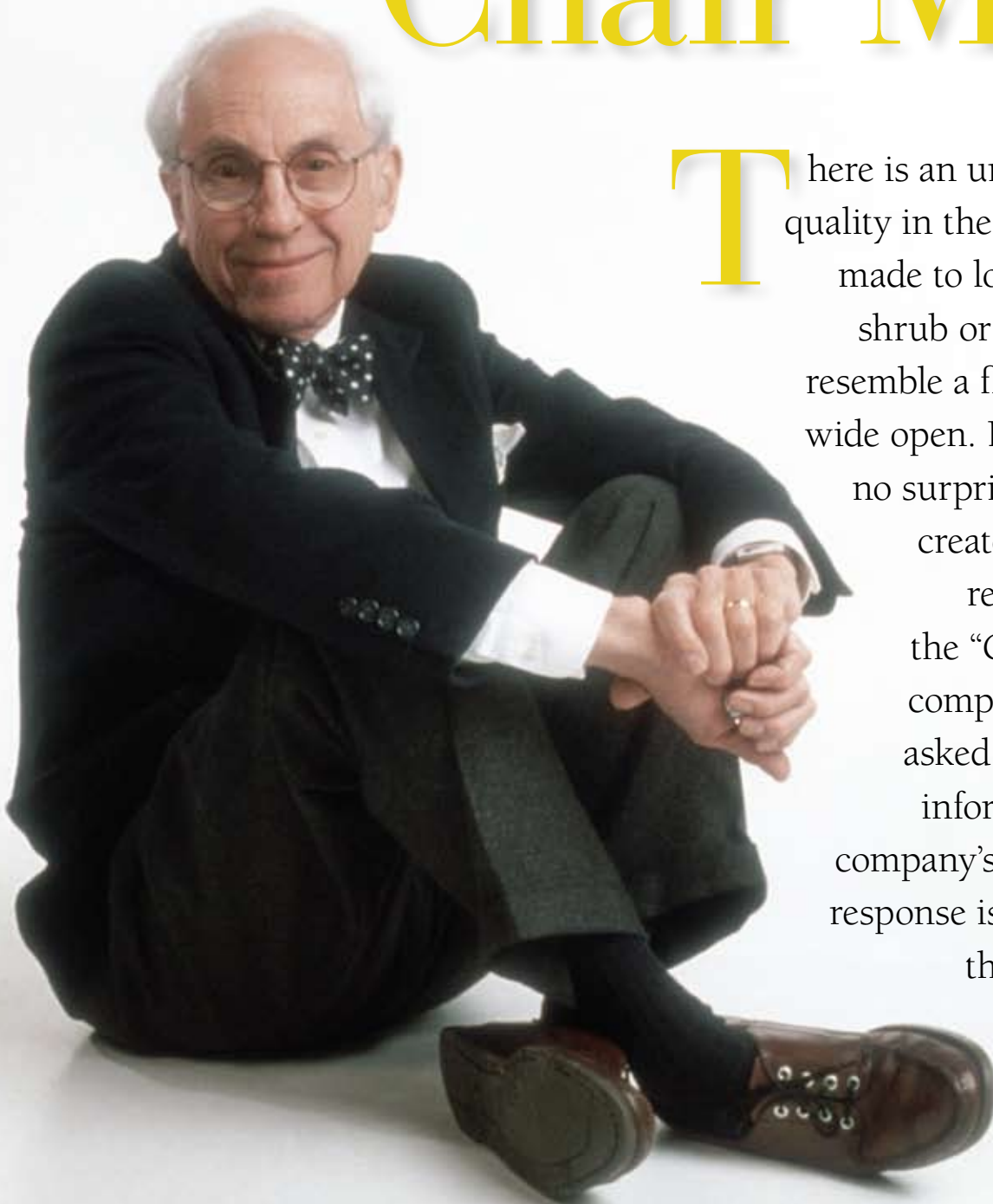
There is an undeniably playful quality in the design of a chair made to look like a pruned shrub or a table crafted to resemble a flower with petals wide open. It should come as no surprise, then, that the creator of these pieces refers to himself as the "Chair Man" of his company or that when asked if he could share information about his company's new projects his response is, "I'd love to, but they are all secret!"

According to Richard Schultz (DSGN '51), the administrative Chair Man of Richard Schultz Design, Inc. (his son, Peter, serves as president), the proportions and use of materials in his 1966 Collection—an elegant line of poolside chaise lounges, chairs, and tables he was commissioned to design for Knoll, Inc.—continue to please customers, who view his work as a standard for mid-century modern design. "People see this furniture as fresh and new even though it was designed over 40 years ago," he says of the pieces, which are still being produced today and sold to residential and commercial clients around the world.

Schultz joined Knoll in 1951, the same year he graduated from IIT Institute of Design (ID), to assist designer and sculptor Harry Bertoia as well as to design his own furniture lines. Schultz's 1966 Collection arose out of a request made by Knoll founder, Florence Knoll, who wanted attractive outdoor furniture able to weather the elements. After 20 years with the company, Schultz left to work as a freelancer before starting Richard Schultz Design, Inc. in 1992.

"Richard Schultz is a giant in the furniture design arena," says Dale Fahnstrom, professor and former ID director. "Having been part of the Knoll design empire starting in the '60s, he has continued to distinguish himself from others through his systemic vision, consummate eye, and focus on detail." Fahnstrom co-designed the Bulldog Chair

office seating line for Knoll in the late '80s and cites Schultz as being an early influence in his work.

A visit to the company website (www.richardschultz.com) reveals the garden of Schultz's nineteenth century Pennsylvanian stone farmhouse, where the designer's Topiary/Confetti chairs, designed to look like pruned shrubs, sit against backdrops of snowdrifts and summer foliage alike, with their pattern of repeating cut-outs that allow light to shine through, producing a dappled effect. The Topiary Stacking Chair is one of Schultz's favorite pieces. "It's not really much better than anything else," he explains, "but it is the most interesting. A stacking chair is a difficult problem, and I think it turned out well."

Schultz acknowledges the strong influence of three professionals at ID in helping lay fertile ground for learning both the creative process and the design process: Buckminster Fuller, Davis Pratt, and John Walley. "Buckminster Fuller was an iconic figure," says Schultz, noting that "everything he said was new and exciting." Schultz credits Pratt for teaching him the basics of product design and Walley for introducing him to what Schultz considered as being "the heart of the program," a Bauhaus-centered class known as the Foundation Course.

"Both Pratt and Walley were disciples of [László] Moholy-Nagy, whose personality shaped the school," says Schultz. Moholy-Nagy founded ID in 1937 as the New Bauhaus, in recognition of the German Bauhaus design school whose cornerstone was Modernism. In 1944, its name was changed to the Institute of Design and in 1949 it became part of IIT.

Though Schultz's concentration while at ID was in industrial design, he discovered his passion anew in furniture design. "I admire his achievement and longevity in a tough but interesting field," says Fahnstrom. "Richard continues to innovate through exploration and

application of new materials, challenging processes, interesting forms, and his innate sense of design elegance. Few designers have been able to establish a body of work of this magnitude, which captures their philosophy and provides a springboard for a continuum of design achievement. This is a rare feat, indeed."

Snapshots: Recent IIT Alumni Events

Alumni Basketball Game

Tarik Galijasevic (CE '01, M.B.A. '03) and Steve Mori (CHE '00) compete in the alumni basketball game.

Former IIT basketball players at the annual Alumni Basketball Reunion

2008 Camras Bowl and Dinner

Alumni Mike McCourt (AMAT '07), Tom Holt (CAEE, 5th year), Alek Babel (CE '07), Richard Duncan (AE '05, M.S. FIN '07), and Ed Aramayo (MMAE, 5th year) receive the Camras Bowl trophy from President John L. Anderson.
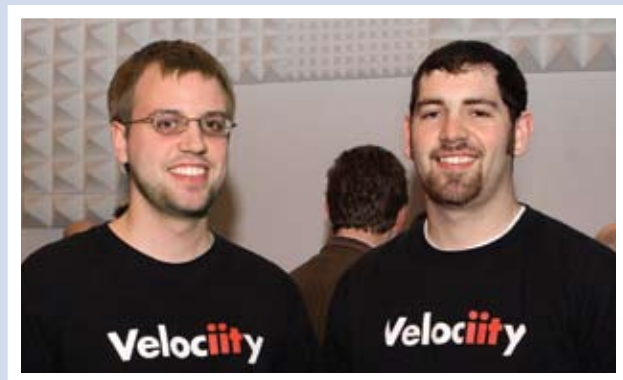

President John L. Anderson and members of the alumni trustee team competed against a winning student Camras Bowl team.

Five current Camras Scholars, competing together as a team, listen as questions are read at the 2008 Camras Bowl.

WISER Launch

Two students model their "Velociity" T-shirts at the celebration of the launch of the IIT Wanger Institute for Sustainable Energy Research.

Hubbard Street Dance at Crown

Members of Hubbard Street Dance Company perform in S. R. Crown Hall.

Engineers Week at Rice Campus

A member of the Illinois Society of Professional Engineers demonstrates the effects of wind to children attending the DuPage Area Engineers Week program at IIT Rice Campus.

President's Tour

President John L. Anderson visits with Brett Bonthron (EE '88) and Robert Cunningham (ARCH '48) at an alumni reception in Palo Alto, Calif.

Bob Roberts (EE '48, M.A.S. '52), Gail Cohn, and Marvin Cohn (EE '50, M.S. '53) attend the Fort Lauderdale alumni reception.

SAVE THE DATE!

HOMECOMING
SEPTEMBER 26–28, 2008

At IIT this fall, the traditional Alumni*fest* has been expanded to create a true university-wide Homecoming weekend, including the following special events:

• Celebrations for alumni who received their undergraduate degrees in 1963, 1968, 1973, 1978, 1983, 1988, 1993, 1998, and 2003
• Fraternity and sorority alumni gatherings
• Black alumni reception
• Socials for alumni who lived in the residence halls, including previous resident advisors
• Athletic matches for former varsity athletes
• Academic showcases highlighting research and teaching at IIT
• Chicago White Sox baseball game

More event-specific information will be coming to mailboxes this summer. For more information or to volunteer to help plan an event, contact the Office of Alumni Relations at 800.448.2586, www.iit.edu/alumni, or alumni@iit.edu.

S. R. Crown Hall Summer Exhibition 2008

Crombie Taylor, Aaron Siskind, and the Adler and Sullivan Project
Curated by John Vinci (ARCH '60) and Jeffrey Plank
June 12–August 3, 2008
S. R. Crown Hall, IIT Main Campus

The exhibit documents and illustrates the important contributions in the early 1950s of architect Crombie Taylor, photographer Aaron Siskind, and IIT Institute of Design (ID) to our understanding of Louis Sullivan, an architect of central importance to the history of American architecture and to the history of Chicago. These contributions affirm the power of ID's innovative curriculum.

The exhibit will include a re-creation of the original Siskind/Sullivan project exhibit, vintage photos of the Sullivan stencil recovery process, Taylor's recreation of Sullivan's 12 polychromatic stencils from the Auditorium Building and Garrick Theater at original scale (2x4 to 4x6 panels), plus examples of Taylor's modern architecture and Siskind's abstract photography, both from the 1950s.

The exhibit will run June 12–August 3. For more information about the exhibit, contact the Mies Society at 312.567.5042 or rains@iit.edu. Additional information about the exhibit may also be found at http://mies.iit.edu.

Upcoming Alumni Events

IIT in Naperville with President John L. Anderson
June 12, 2008
6–8 p.m.
Tellabs Corporate Headquarters

Detroit Alumni Gathering with President John L. Anderson at Detroit Tigers game
June 25, 2008
5 p.m.
Comerica Park
Detroit, Michigan

Inaugural Darsh T. Wasan Lectureship and IIT Symposium
September 19–20, 2008
Perlstein Hall Auditorium
IIT Main Campus
Lecture by David Edwards (Ph.D. CHE '87) on September 19; symposium on September 20

Career Fair
September 18, 2008
Hermann Hall
IIT Main Campus

For more information about upcoming alumni events, visit www.iit.edu/alumni/currentevents.

The IIT Alumni Association is now on Facebook! Through the official Alumni Association page you can find upcoming events, view photos and videos, read daily IIT-related news articles, connect with fellow alumni on the discussion board, join a regional chapter group, and display your bond with IIT. You don't even have to be a Facebook user to view the page. To link to the IIT Alumni Association Facebook page, visit www.iit.edu/alumni.

obituaries

François d'Heurle

Ph.D. MET '59, Yorktown, N.Y.

François d'Heurle's career with IBM in Yorktown Heights, N.Y., began before he graduated with a doctorate in metallurgical engineering from IIT in 1959. D'Heurle, an emeritus scientist, started working for the company in 1958, then moved to IBM's Thomas J. Watson Research Center in 1961, where he stayed until his retirement 35 years later. The honors d'Heurle received for his distinguished work on aluminum-copper alloy conductors and metal silicides include the IEEE Cledo Brunetti Award, the Gaede-Langmuir Award of the American Vacuum Society, and the American Institute of Physics Prize for Industrial Applications of Physics. He was an IEEE fellow and the author or coauthor of more than 200 technical papers.

D'Heurle's personal passion was peace activism. He served as secretary of the Committee of Responsibility—a group of medical personnel, scientists, clergymen, and concerned citizens who acted to help civilians injured in the crossfire of the Vietnam War—and arranged medical care for injured children. D'Heurle was also an active member of the Fellowship of Reconciliation, the War Resisters League, and the WESPAC Foundation.

D'Heurle is survived by his wife of 57 years, Adma, three sons, and five grandchildren.

Samuel Karlin

MATH '44, M.S. '45, Palo Alto, Calif.

Samuel Karlin was known for his wide-ranging curiosity and mentorship of graduate students as much as he was for his brilliant and pioneering work in mathematics. Over the course of his 60-year academic career, Karlin made significant contributions to mathematical analysis; total positivity; approximation theory; probability, statistics, and stochastic processes; operations research and management sciences; population genetics and evolution; genetic epidemiology; and biomolecular sequence analysis.

After graduating from IIT, Karlin went on to obtain a doctorate in mathematics from Princeton University and worked for nine years at California Institute of Technology before joining the faculty at Stanford University, where he taught for many years. A prolific writer, Karlin wrote or contributed to 10 books and published 450 scientific papers, the latest at the age of 65. More than 70 doctoral students benefited from his guidance. Among the many honors Karlin received was an award in applied mathematics from the National Academy of Sciences in 1973 and in 1989, the National Medal of Science. He was also posthumously given a 2008 IIT Lifetime Achievement Award.

Karlin is survived by his wife, Dorit Carmelli, two sons, a daughter, a stepson, and nine grandchildren.

Robert J. O'Brien

ARCH '41, Fort Myers, Fla.

While a student at the IIT College of Architecture, Robert J. O'Brien studied under Ludwig Mies van der Rohe. O'Brien served in the United States Navy during World War II, achieving the rank of lieutenant commander. His longtime career with Alcoa began after the war. In his first position as manager of product development at the company's Wheeling, Ill., branch, O'Brien received a patent for an aluminum-formed TV dinner tray. He then was transferred to Alcoa's Pittsburgh headquarters, where under his supervision, the aluminum lightweight beverage container was developed. He was also responsible for formed containers, flexible packaging, cereal box foil liners, can coatings, and food technology development.

O'Brien is survived by his wife, Helena, a son, three daughters, a stepson, five grandchildren, and two great-grandchildren. His first wife, Mary, preceded him in death.

in memoriam

Ian R. Bartky
CHEM '55, Bethesda, Md.

Howard W. Broecker
LAW '66, Bridgman, Mich.

Karen E. Cavazos
LAW '01, Chicago

Arnold M. Colantonio
ME '41, Janesville, Wis.

Joseph R. Cummens
ME '43, Chesterfield, Mo.

Bertram E. Eakin
M.S. CHE, Ph.D. GT '57, Houston, Texas

John D. Harigan
BE '70, Florala, Ala.

Eugene A. Heike
CHE '37, Dallas, Texas

Richard W. Keefe
ME '49, Murrieta, Calif.

Ben B. Knazan
ARSC '43, Hopkins, Minn.

Ernest L. Koehler
CHE '38, M.S. '45, Niles, Ill.

Robert G. Liebmann
EE '37, Fullerton, Calif.

Thomas E. McClellan
LAW '79, Arlington Heights, Ill.

Jerrold L. Morris
LAW '52, Wichita Falls, Texas

Ramunas J. Motekaitis
Ph.D. CHEM '67, College Station, Texas

Larry F. Odar
DSGN '63, Richland, Mich.

Diane D. Otto
LAW '83, Wilmette, Ill.

John J. Penn
ES '37, South Burlington, Vt.

Harold E. Podall
CHEM '46, M.S. '47, Alexandria, Va.

Wilbur H. Rudolf
CE '32, Venice, Calif.

Walter J. Samek
M.S. ME '52, West Hartford, Conn.

Robert M. Savlin
M.S. DSGN '66, Wilmette, Ill.

Maurice Spielman
CHE '45, Ph.D. '51, Hanover, Pa.

Gustav W. Staats
EE '42, Ph.D. '56, Marshfield, Wis.

Nicholas B. Stanley
DSGN '53, Fort Lauderdale, Fla.

Arvid A. Temple
ARSC '42, Flossmoor, Ill.

William Hogenson [second from left] crossing finish line in an unidentified collegiate race ca. 1904 as published in *Lewis Annual* (Lewis Institute yearbook), 1904, page 171

By Catherine Bruck, University Archivist

rewind

With the possibility of the Olympics coming to Chicago in 2016, IIT is gearing up to both help our city win the bid and to greet athletes, judges, trainers, volunteers, and visitors who will be venturing to spots away from the Olympic Village when they need a break from the action there.

IIT's Olympic Heritage

This is a wonderful opportunity for us to showcase IIT's scholastic competitiveness and our own world-renowned campus to people from around the globe. While academics and architecture may be our *raison d'être,* we also lay claim to at least two Olympic medal holders and one "image maker" within our ranks of engineers, entrepreneurs, and designers.

Our earliest Olympian came from the halls of Lewis Institute. William P. Hogenson's 1902 application to attend Lewis indicates that he wanted "to prepare for business" and cites athletics as his special interest. Much to the chagrin of his dean and his father, William apparently spent more time on the run than he did hitting the books. One of Dean W. A. Greeson's notes to William's father informing him that his son's work in math, chemistry, and drawing was unsatisfactory received the following response: "I can offer no excuse only that he is not of a studious mind and it does not seem to help to talk to him. His interest taken in athletics no doubt is part of the cause." We can only hope that William redeemed himself both with his papa and with his alma mater when he went to St. Louis in 1904 for the III

Olympiad and came home with one silver and two bronze medals in track and field events.

Fifty-six years later, William W. Parks (CE '44) won a bronze medal in sailing at the XVII Olympiad in Rome. Early in his sailing career, Parks represented IIT in an intercollegiate race in 1940. He has remained connected to IIT ever since. Through the years, he has served on various committees and as president of the Alumni Association prior to being appointed to the Board of Trustees in 1977, a position he still holds. He is also currently on the Board of Overseers for Student Life but still finds time to enter Star Class races at age 87.

While Parks could be found yachting off the coast of Italy in 1960, another IIT alumnus was at the same Rome Olympics with a press pass in his hatband. Marvin E. Newman, who was among the first Master of Photography graduates of the IIT Institute of Design in 1952, may have been behind the camera, but he was front and center at many of the events and award ceremonies in his role as *Sports Illustrated's* official photographer of the Rome competitions. Framed in Newman's viewfinder were such notables as Muhammad Ali, Wilma Rudolph, and Herb Elliott, who may have outrun Hogenson, but then again, Elliott didn't have Dean Greeson breathing down his neck.

Are there other Olympians or hopefuls out there? If so, let us know at archives@iit.edu.

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Golden Alumni Society Reunion

September 18–20, 2008

A special celebration for the members of the Class of 1958 and all alumni who graduated in early years, featuring:

• *Golden Alumni Society Luncheon and Induction Ceremony*

• *Campus tours and sightseeing activities*

• *Educational program and speakers*

For more information on the 2008 Golden Alumni Society Reunion, visit *www.iit.edu/alumni* or contact Marian Quirk at 800.448.2586 or *quirk@iit.edu*.

Darsh T. Wasan Lectureship and Dinner

Friday, September 19, 2008
Perlstein Hall Auditorium

Come join other alumni, faculty, and staff in celebrating the many accomplishments of Darsh T. Wasan!

4:15 p.m.
Lecture by David A. Edwards (Ph.D. CHE '87)

David A. Edwards is the Gordon McKay Professor of the Practice of Biomedical Engineering in the School of Engineering and Applied Sciences at Harvard University. He is a member of the National Academy of Engineering, a prolific science author and researcher, and a novelist.

6:30 p.m.
Dinner and program to honor Darsh T. Wasan

For more information, or to RSVP, contact Judee Ackerman at *ackerman@iit.edu* or 312.567.3001.

Homecoming

September 26–28, 2008

The traditional Alumni*fest* has been expanded to create a true university-wide homecoming weekend, including the following special events:

• *Celebrations for alumni who received their undergraduate degrees in 1963, 1968, 1973, 1978, 1983, 1988, 1993, 1998, and 2003*

• *Fraternity and sorority alumni gatherings*

• *Black alumni reception*

• *Socials for previous resident advisors and alumni who lived in the residence halls*

• *Athletic matches for former varsity athletes*

• *Academic showcases highlighting research and teaching at IIT*

For more information, call 800.448.2586 or email *alumni@iit.edu*.

Alumni Awards

Do you know of an outstanding, accomplished alumnus or alumna? If so, nominate them for one of the 2009 IIT Alumni Awards. Nominations are due on October 15, 2008.

Information about how to nominate an individual for one of the awards may be found at *www.iit.edu/alumni/updates/awards*.

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