

ILLINOIS INSTITUTE OF TECHNOLOGY

iit magazine

FALL 2006



bringing it home

COVER STORY:

Finding America's niche in global manufacturing

BRING BACK THE BOG Student-leaders spearhead the effort to resurrect IIT's legendary campus hang-out

COOL CAT Alumnus Dan Love engineers good vibes at his Southern California jazz club

LETTER FROM THE

president

“Scientists may come and scientists may go, but Ampere is always current.”

This was one of the submissions to the annual freshmen joke contest.



Our 485 new students represent the largest freshmen class in recent IIT history. In one of my favorite orientation weekend traditions, the freshmen compete to win a bookstore gift certificate by coming up with the corniest joke. (We like to take it easy on freshmen during their first days at IIT—after all, things get a lot tougher in the coming four years.) The winner: “What happened to the frog that parked illegally? It was toad!” This was submitted by Ben Jakobcic, an aerospace engineering major from Royal Oaks, Mich.

What I enjoy even more than announcing the winning freshmen class joke is the opportunity to meet our new students as they embark on one of the most exciting journeys of their lives. And of course, I am honored that these talented young adults have chosen to study at IIT. It is always very rewarding to hear their goals and ambitions, and to remind them of the many ways that IIT will enrich them intellectually and personally, and provide them with the tools for a lifetime of learning and achievement.

As the stories in this issue of *IIT Magazine* demonstrate, IIT’s people give our new students much to be excited about. For example, our faculty members across the disciplines are providing leadership to help the United States manufacturing sector advance its global positioning, both by advancing design at our Institute of Design and through the Manufacturing Productivity Center, spearheaded by Professor Keith McKee. Our Mathematics and Science Education department, under the leadership of Professor Norman Lederman, is developing targeted programs and partnerships to improve the quality of secondary math and science teaching and learning. And our faculty are creating sustainable energy alternatives, working with government and private industry to teach them how these alternatives can help counter rising gas prices as well as a deteriorating global environment; a story about the recent sustainability efforts of Professor Said Al-Hallaj appears in this issue.

Our returning students are also a source of great pride, exemplified by a group of committed student-leaders responsible for a campaign to “bring back The Bog,” a venue that holds nostalgic value for many of you. We are moving this project forward with great anticipation, in the confidence that this “new” facility will once again serve as a gathering space for alumni, students, faculty, and staff when it reopens early next year.

As we enter a new academic year, I look forward to introducing you to the countless students, faculty, and alumni who, through their important academic, research, and civic work, are shining examples for the entire IIT community.

A handwritten signature in black ink that reads "Lew Collens". The signature is written in a cursive, flowing style.

Lew Collens
President

iitmagazine

CHIEF COMMUNICATIONS OFFICER
Rose Milkowski

MANAGING EDITOR
Chelsea Kalberloh Jackson

CONTRIBUTING EDITORS
Marlis Manley Broadhead
Catherine Bruck
Beth Duncan
Richard Harth
Abigail Nall
Beth Wittbrodt

ART DIRECTOR
Nancy Niequist Schoon

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IIT Magazine
Office of Communications and Marketing
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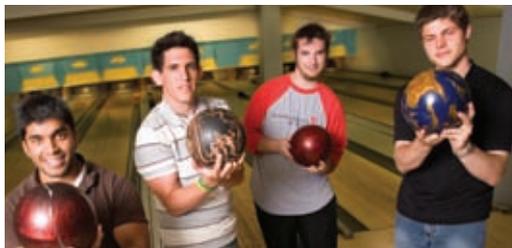
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Founded in 1890, Illinois Institute of Technology is a private Ph.D.-granting university that awards degrees in engineering, the sciences, mathematics, architecture, law, design, psychology, and business. IIT takes an interprofessional approach to research and teaching. By reaching across geographic boundaries, academic disciplines, and the professions, IIT prepares students for leadership roles in an increasingly complex global workplace while conducting a substantial program of applied and basic research with the goal of transforming lives and inventing the future.

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Center for Professional Development
Chicago-Kent College of Law
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College of Science and Letters
Institute of Design
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Stuart School of Business

inthisissue



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The beloved student and faculty hangout, The Bog, looks to make a comeback, thanks to a student-led campaign.



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Alumnus Daniel Love and his popular jazz club have taken Southern California by the horn.



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Email: iitmagazine@iit.edu

Black Knight Alumnus Remembers John Rettaliata

Thank you for the fine profile of Dr. Rettaliata [spring 2006]. He is one of those rare individuals who is able to combine the development and execution of a broad vision with the ability to engage on an individual basis with the people whom his work impacts.

Your article on Dr. Rettaliata included a sidebar on Black Knights. I was president of Black Knights in fall 1959 and winter 1960. Inasmuch as the group apparently disbanded shortly after Dr. Rettaliata left IIT, I am not divulging any privileged information in sharing my memories. My understanding is that Black Knights was established around 1946 in the aftermath of World War II in response to friction on the campus between the returning GIs and the younger students. Dr. Rettaliata's predecessor



Photo: J. B. Spector

wanted to open lines of communication with the students and receive feedback (this at a time when the word meant only something in the operation of a vacuum tube) from the campus. Dr. Rettaliata inherited and expanded this group; he met regularly with the dozen or so

members of Black Knights, asking questions and listening to concerns on campus.

The members self-selected their successors, usually by consensus. It was understood that political rivalries were left at the door; it was always interesting to see the expression of a new member when he saw a political adversary welcome him to Black Knights. Each member received a key upon graduation. A small notice was placed in the school newspaper at the end of the year, stating, "Black Knights is pleased to announce the graduation of the following members:" Perhaps some older alumnus knows the origin of the name.

—Marshall B. Taylor, M.D. (PHYS '60)

Thanks, I'll Take More

I recently received a copy of the spring 2006 IIT Magazine. I was delighted to get it and to read it cover to cover. But I was disappointed to read that there have been earlier issues that I have never received.

I entered IIT in September 1942 on a William J. Cook Scholarship. World War II interrupted my studies, but I returned to IIT in 1946 and graduated in 1949 with a B.S. in EE.

I fondly remember taking drafting classes on the top floor of Main Building next to the railroad tracks, other classes in Chapin Hall, and other classes in Machinery Hall.

I joined Alpha Xi chapter of Alpha Sigma Phi, and also remember many good times in the Men's Glee Club with Gordon Ericson, the director. I was also in Alpha Phi Omega and Alpha Omega Pi.

I haven't been back to IIT since 1949, moved to Transylvania in 1973, and I'm sure I wouldn't recognize the campus today, with all the changes.

Yours is an excellent magazine, and I'm looking forward to receiving many more issues.

—Robert M. Scharding (EE '49)

Editor's note: IIT recently updated its alumni database, and we are happy to have new contact information for members of the IIT community. Alumni who wish to read previous issues of IIT Magazine can find back-issues online at www.iit.edu/magazine. We also welcome alumni to visit IIT's campus. A new tour of the Mies van der Rohe-designed campus is now available. For more information, visit <http://mies.iit.edu/tours>.





Rowe Elected to Lead University Board of Trustees

This spring, John W. Rowe was elected chairman of IIT's Board of Trustees. He will assume his new position in November, replacing outgoing Chairman Robert A. Pritzker, who served in the role for 16 years.

Rowe is president, chair, and chief executive officer of Exelon Corporation, a leading electricity and natural gas company. He is on the boards of Sunoco, Northern Trust Corporation, The Art Institute of Chicago, The Chicago Club, The Field Museum, Chicago History Museum, and the Wisconsin Alumni Research Foundation.

Rowe joined IIT's Board of Trustees in 2004. He also serves on the university's International Board of Overseers, and was the immediate past chair of the Mies van der Rohe Society.

IIT Appoints Harvey Kahalas as New Stuart Dean

On July 1, Harvey Kahalas began his appointment as the new dean of Stuart School of Business.

Kahalas received his Ph.D. from the University of Massachusetts and has consulted for such companies as General Electric, Coca-Cola, and General Motors. Just prior to joining Stuart, he was a professor and dean of Wayne State University's School of Business Administration, where he was also executive director of the Institute for Organizational and Industrial Competitiveness.

"There is great momentum for enhancing Stuart's position as a leading business school in the region," says Kahalas. "I look forward to working closely with the talented faculty and staff at IIT to further this goal in the coming years."

Kahalas will also assume responsibility for the Institute of Business and Interprofessional Studies, which includes the undergraduate business program as well as the activities of the Jules F. Knapp Entrepreneurship Center, the Interprofessional Projects Program, the IIT Leadership Academy, and the Ed Kaplan Entrepreneurial Studies Program.



A former senior fellow at the State University of New York's Nelson A. Rockefeller Institute of Government, Kahalas is listed in *Who's Who in Finance*, *Who's Who in America*, and *Who's Who in the World*, and has been a senior Fulbright scholar and a United States Information Agency American Participant, lecturing throughout the world on industrial competitiveness and economic development.

IIT LENDS A HAND



In June, IIT Hurricane Katrina relief efforts long in the making were realized when Assistant Professor of Architecture Frank Flury and 14 of his students assembled a 1,000-square-foot activity center for members of the Gulfport, Miss., organization, Lynn Meadows Discovery Center. Flury and the students designed and constructed the structure, largely on IIT's campus, and transported it to Gulfport for on-site assembly. David Baker, vice president for External Affairs, joined Flury and the

students in Gulfport on June 30–July 1 to help with finishing the building and to attend the ribbon cutting. "I was amazed at the outpouring of goodwill and appreciation from both the staff of the Lynn Meadows Discovery Center and the families of the children who will use the new multi-purpose center," Baker says. "Frank Flury and our architecture students helped create a recovery miracle amidst the devastation of Hurricane Katrina."

IT'S ALL ABOUT BOB

A TRIBUTE TO BOB PRITZKER

MAY 16, 2006



Alumni, friends, and family gathered in May to honor IIT's Chairman of the Board of Trustees Robert A. Pritzker, who is retiring after 16 years of service in the position. Attendees included students in the Camras Scholarship program, created in 1996 through Pritzker's support and leadership. At the event, Camras scholars surprised guests by removing their suit jackets on stage to reveal T-shirts emblazoned with "PrITZker."



UTP Watch

The spring issue of *IIT Magazine* featured University Technology Park At IIT (UTP), the new research park on the south end of Main Campus. Development of this multi-year project continues, with important recent progress including:

- Technology Business Center opened on August 25, providing 126,000 sq. ft. of rentable space to bioscience, engineering, and high-tech companies.
- Phase II construction of the Incubator began, supported by a \$4 million state grant.
- New tenant: Sigenics, Inc., a biochip design company owned by IIT Professor Philip Troyk, moved into the Incubator in June.

David Baker, UTP executive director, says, "The progress on the new Technology Business Center is amazing. Everyone coming to campus should be sure to visit it."

www.universitytechnologypark.com

Construction at Technology Business Center

A Formula for Better Math and Science Teachers

In his January 2006 State of the Union address, President George W. Bush proposed an American Competitiveness Initiative that involves recruiting 30,000 math and science professionals to teach in classrooms as part of an effort to increase the number and quality of math and science teachers in secondary schools. According to Norman Lederman, professor and chair of the Department of Mathematics and Science Education at IIT, this plan may be starting out on the wrong foot.

Lederman says that while the president's basic assumption is correct—excellence in math and science education may very well strengthen our economy, help ensure a strong national defense, and provide other benefits—the approach must be changed. “I believe the president is serious about the need for better math and science education,” says Lederman. “It is an idea that we, as a nation, ‘remember’ periodically—that is, every time the economy needs a boost or a strong defense becomes critical.”

The problem, Lederman says, is that research shows that dropping into the classroom math and science professionals who are not educated in math and science teaching simply doesn't work. “In general, those who just know subject matter are not good teachers,” says Lederman. “You have to know how to teach.” Lederman points to results from states that in the past have tried to put retired engineers, military, and science professionals in the classroom. “New Jersey started doing it about 10 years ago,” says Lederman. “Other states are still trying it. The results have been disappointing.”

Lederman believes that strong pedagogy is especially vital at the high school level. “Most people who have gone to college can remember a professor who may have researched brilliantly or published extensively, but could not connect with students in the classroom,” says Lederman. “College students can often overcome this or drop the class; high school students cannot.”

Another challenge faced by math and science professionals, says Lederman, is that “high school students do not come to the classroom as blank slates. Everything that a teacher attempts to teach is filtered through his or her different background. It's incorrect to assume that all



Professor Norman Lederman in his office, surrounded by teaching tools and toys he has been given through the years. The Project SLICE program, which Lederman leads at IIT, was recently awarded a multi-year contract from Chicago Public Schools, funded in part by the Gates Foundation.

students will experience the same lesson in the same way.”

However, Lederman notes that pedagogical knowledge alone does not make up for a lack of subject-matter knowledge. This understanding is the basis for IIT's Mathematics and Science Education program, which Lederman helped to form in 2000. The program includes research on the teaching and learning of math and science and offers a comprehensive, disciplinary-based teacher education program in secondary-level mathematics and science.

“We do not claim to know everything about how to teach math and science, although research is helping to piece together the puzzle of what we should do,” says Lederman.

Lederman and his colleagues will soon have the resources to impact the way science is taught in Chicago. This summer, IIT was awarded a multi-million-dollar contract grant from Chicago Public Schools, funded in part by the Bill and Melinda Gates Foundation, to implement Project SLICE: Science Learning Through Inquiry, Content, and Engagement. In this cohort program with Chicago Public Schools, IIT will partner with The Field Museum, Glencoe/McGraw-Hill, and others to provide new biology, chemistry, and physics curricula to Chicago high

schools, as well as professional development for teachers. The program will place a strong emphasis on scientific inquiry in order to provide students with a more meaningful context for learning.

“If we are serious about improving math and science education in this country, we need to make sure teachers are subject-matter experts *and* can communicate the subject matter knowingly to adolescents,” says Lederman. “As we say at IIT, ‘Those who can, do; those who understand, teach.’”

www.iit.edu/departments/msed

QUOTABLE

“Research isn't a matter of conscription.”

—Chicago-Kent College of Law Professor Lori Andrews in *The New York Times*, commenting on the importance of patient ownership of tissues that are donated to research

mission POSSIBLE on

It was a gray, rainy day at Aurora Municipal Airport, and pilots and passengers hurried between the small terminal and their planes, oblivious to the large object sitting off to the side of the slick runway—that is, until Jerome Chiecchio (AE '01) came along. “I saw this jet engine just sitting there on the ramp under the rain. You could see birds making nests inside,” says Chiecchio. “When I saw it like that, I couldn’t resist the idea of trying to save it.”

Chiecchio and a few other members of IIT’s American Institute of Aeronautics and Astronautics (AIAA) group were at the airport for one of their regular “fly outs,” which involved sharing the cost to rent a Cessna plane and fly around Chicago. They began asking questions about the engine at the airport museum and discovered that the engine, along with all of the items in the museum, was on indefinite loan from the Navy. One of the museum’s newer acquisitions at the time was a Navy F4 aircraft,

which was also sitting on the runway. Because the F4 was too heavy for the airport’s thin pavement, the museum had removed one engine and placed it on wooden blocks on the ramp. The museum staff told the AIAA group that it had no immediate plans to move the engine.

To Chiecchio, a self-professed “lover of all things related to flying,” such a valuable object deserved a better fate. “We decided to see how feasible it would be to acquire the engine for display at IIT,” says Chiecchio. Within a few months, Chiecchio and his AIAA classmates had convinced Navy officials to retake the engines and loan one of them to IIT, but then found themselves up against a weightier problem: how to move the two-ton engine from the airport to IIT. “Renting a crane, a truck, and all the necessary equipment was expensive,” says Chiecchio. “At that time, we were a small group of students with a budget of \$100.”

Chiecchio spoke with an employee from

Diamond Rigging, a company that was doing work for an IIT faculty member at the time, and was put in touch with the company’s owner, fellow IIT alumnus Max Mayer (EE '72). “He did everything virtually for free,” says Chiecchio. “Everything” included transporting the massive engine to IIT’s Main Campus and constructing a beautiful stand with cast wheels.

The engine is now on display in the lobby of the Engineering 1 building—a fitting home, in Chiecchio’s eyes. “A jet engine is the perfect combination of the three facets of the Mechanical, Materials, and Aerospace Engineering department,” says Chiecchio. “The performance of the machine is dependent on the materials used and the aerodynamic design of its components. It’s a great educational tool.”

Mechanical, Materials, and Aerospace Engineering Professor David Williams agrees. Williams uses the engine as a learning tool for his aerospace propulsion classes to help students better understand how temperature and pressure vary at different points within the engine.

“Although it’s an old-fashioned engine, it still has all the fundamentals,” says Williams. “There’s no question that students benefit from seeing and working with that first-hand.”



Photo: Renée I.A. Mercuri

Alumnus Jerome Chiecchio stands with the F4 engine that he helped put on display at IIT.

“The warehouses are packed.”
 —Institute of Design Director Patrick Whitney in his *BusinessWeek.com* article, on China’s surplus of consumer goods as a result of Chinese buyers’ disinterest in purchasing items that are currently not designed to meet their lifestyles

QUOTABLE



Tax Software Usability Project Calculates Uncertain Returns

According to the ads, tax preparation software makes preparing and filing taxes faster, easier, and more accurate.

According to the students in Humanities Professor Susan Feinberg's spring 2006 Usability Testing class, the accuracy of those claims depends—on both the software and the users.

With the latest version of tax software touting such promising names as TaxCut, TurboTax, TaxBrain, and TaxACT, the consumer might well hope that such products will eliminate the brain strain and frustration of calculating annual income and outgo. So students formed teams to test the product claims through usability studies on these four online tax-preparation software packages.

The participants were given identical data on a fictitious U.S. worker and were asked to complete a 2005 federal tax return for that individual. They were tested either in the Usability Center or in their home environment and were asked to talk aloud as they worked so the students could extract information relevant to the software's design, ease of use, and organization, and thus gain an overall impression.

While each software package was discovered to have useful features—and was predictably more effective when used by more experienced tax preparers—it became clear that none of the products was truly easy to use because of shortcomings regarding such elements as clarity and navigation. Add to the equation users with different experience levels with both this type of software and tax preparation, and, as one might expect, the resulting outcomes varied widely.

The most divergent results came with the users of TaxBrain. The students reported: "With the current interface, users are unable to find the correct forms to enter data. The direct result... is that all six users tested are given different amounts they would owe or get

refunded after filing their taxes. The range is from owing \$13,229 to getting \$1,485 refunded. The median amount owed is \$2,779."

All four of the programs, the testers concluded, would benefit from various improvements in functionality, from enhanced navigation—including resituating a back button—to clarification of jargon. A prime indicator of the success with all four software products was the usefulness of the help function—regardless of the user's familiarity with tax preparation. In addition to a user-friendly help function, other important considerations when selecting a program are a save button, a progress indicator, hierarchical navigation throughout sections, and clear section names.

In their class journals, students reported that they experienced frustrations and triumphs right along with their "users" while watching them work through the tax preparation tasks without being able to answer questions or intervene in the process. One wrote that, in addition to needing good observation and communication skills, "anyone conducting this kind of test needs to have a lot of patience."

"When these students produce their own products, in other classes or in the workplace," says Feinberg, "they will remember the user's frustration with the use of products and be more cognizant of the importance of writing, designing, and developing for the end user."

Susan Feinberg is director of the Usability Testing and Evaluation Center, www.utec.iit.edu.

Armour Expands Its Graduate Course Offerings

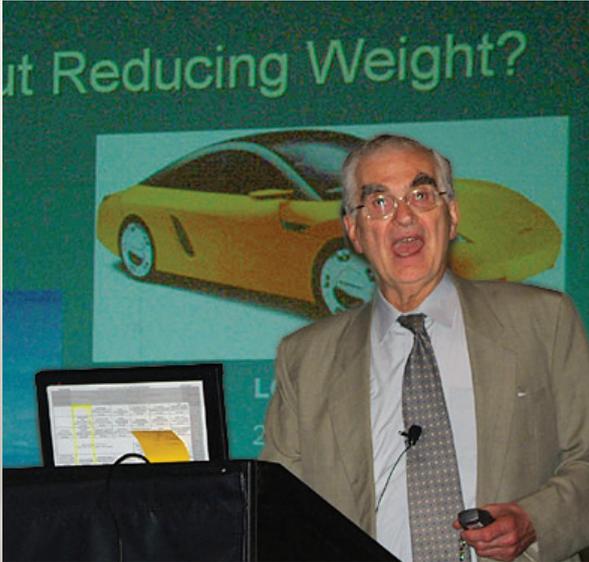
To expand its selection of cutting-edge courses to industry professionals, Armour College of Engineering is adding eight new graduate programs and one graduate certificate beginning this fall:

- Master of Biological Engineering (CHE)
- Graduate Certificate/Specialization in Pharmaceutical Engineering (CHE)
- Master of Engineering in Manufacturing (MMAE)
- Graduate Certificate in Reliability Assurance (MMAE)
- Graduate Certificate in Computer-Integrated Design and Manufacturing (MMAE)
- Master of VLSI and Microelectronics (ECE)
- Master of Power Engineering (ECE)
- Master of Biomedical Imaging and Signals (ECE)

These programs feature valuable cross-disciplinary learning opportunities and a variety of course electives. Each of the manufacturing masters and certificate courses, except the biological engineering master, will be taught entirely over the Internet. Each course also comes with special advantages for alumni: part-time and full-time students can receive cost reductions.

For more information about alumni benefits, email inquiry.grad@iit.edu or phone 1.866.GRAD. IIT. For more information about program details, visit www.iit.edu/~armour.





On Energy and Transport

At IPRO Day this May, Lord Ronald Oxburgh, chair of Shell Transport and Trading Company, presented the keynote Thought Leaders speech, outlining the necessary transition from an oil- to alternate fuel-based economy in his lecture, "Shaping the Energy Transition." He cited the leading causes of climate change to be the cutting of rain forests and the increasing amount of carbon dioxide emissions as a result of oil drilling and coal mining. Oxburgh cautioned "oil and gas reserves are being used effectively as a political weapon" and highlighted several ways for remedying fossil fuel consumption. Among them were improving the efficiency of motor engines and ethanol production, tapping into new energy sources such as urban waste and algae, and bettering the ways that such energy sources can be stored. "If IIT is to make its mark in the world, batteries are the way to do it," he said.

"I liken her to that character Mary Tyler Moore used to play on that sitcom."

—Chicago-Kent College of Law Professor Richard Gonzalez, on cbs2chicago.com, regarding the upstanding personal character of U.S. District Judge Rebecca Pallmeyer, who presided over the trial of former Governor George Ryan

IPRODay May 2006

What I Did This Summer: From Girl Scout Cookie Boxes to Cornell R&D

Where can you find a Girl Scout cookie box-model, aspiring chemical engineer, essay contest winner, future marathon participant, and budding actress? It may be no surprise that all can be found at IIT. What may be a bit more of a surprise is that sophomore Katherine Hammes (CHE) is all of them at once.

This summer Hammes added to her roster Cornell University research intern. She spent three months learning about X-ray crystallography, a departure from organic synthesis, which is relative to her academic coursework at IIT.

"I wanted to try something new," says Hammes of her summer job. "You only live once."

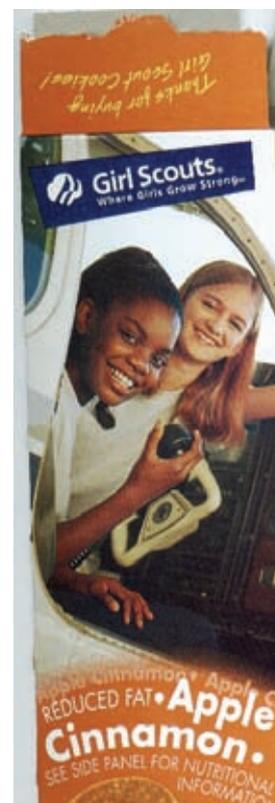
For Hammes, who has even dabbled in nuclear reactor training, trying something new is what life is all about. (A former Girl Scout, she appeared on the Girl Scout's Fat-Free Apple Cinnamon cookie box when she was 13. "My photo is now on the Double Chocolate Chunk box in certain regions," she points out.) During her first year as a chemical engineering major, she served on the executive committees of the Student Government Association and the Strike Force Bowling Society, and was an actress with 33rd Street Productions. She also held two on-campus jobs and began marathon training. So when it came time to select a summer job, she wasn't afraid to venture outside her comfort zone, because "Even if," as she puts it, "I had tried and failed, at least I would have tried."

Hammes accepted a position as an undergraduate research assistant for the Cornell Center for Materials Research—Research Experience for Undergraduates (REU). Her research team investigated how plastics affect freezing properties of various solvents such as glycol. The ultimate goal was to develop procedures that would allow a solvent to freeze into an amorphous glass phase rather than a crystalline solid phase, aiding in its ability to be effectively imaged using X-ray crystallography. This work could eventually be used to help understand the structure or function of proteins

in the human body. The internship culminated with Hammes presenting her work to fellow REU students, as well as writing a research paper that was submitted to the National Science Foundation.

Although Hammes knew very little about materials science before beginning the program, she was intrigued by its diversity in discipline and application and viewed the field as a convergence of multiple concentrations, including physics, chemistry, biology, and engineering. "After this experience, I will definitely be considering steering my career in the materials science direction some day because it leaves so many doors open while still allowing me to choose a main focus for research," she says.

When asked if she found time to have fun while in New York, Hammes responds, "Between the all-night games of pinochle and euchre, kitchen experiments, and going to lab, I was hardly ever in my room. From gorge jumping to playing in waterfalls to buying matching John Deere cowboy hats with newfound friends, I had a blast."



Student Katherine Hammes appears on Girl Scout cookie boxes throughout the United States.



Hammes conducted research at Cornell University, where she spent the summer as a research assistant.

Architecture Professor Engages Students in Historic Renovation Effort

In 1880, George Pullman, founder of the Pullman Palace Car Company, purchased land near Lake Calumet and built the first planned model industrial town in history—a response to the squalid living conditions of most Chicago laborers. For the time, the housing was very up-to-date, featuring indoor plumbing, gas, and a separated sewage system. According to College of Architecture Professor John Durbrow, “Pullman believed that a better quality living environment created a better society and a better worker. His town was an almost unique and fully developed expression of the premise ‘design matters.’”

Pullman was presented with an award for the “World’s Most Perfect Town,” but an economic downturn led to the 1894 Pullman Strike, after which the government demanded the non-industrial property be sold. Many of the historic buildings have been demolished, and the most important landmark of the town—the factory itself—suffered at the hands of an arsonist in 1998. In 1990, the State of Illinois purchased the Pullman State Historic Site. Since then, the state’s



Students who presented designs at the April 19 Pullman event included [left to right] Abigail Beth Santone, Kazuya Katagiri, Devan Beth Passini, Barbara DiGregorio, Arturo Lopez, Katharina Holzapfel, and Yung Kim.

plans for restoring the landmark site have been slow, despite the buy-in of such people as former Governor James Thompson. Confrontations abound—between the state and its contractors, between the state and Pullman residents,



IIT Professor John Durbrow’s architecture students presented designs for a new Pullman Palace Car Museum in the remains of the former car factory.

and even between the residents themselves. Recognizing an opportunity for the university to provide a broad and, hopefully, unifying vision, Durbrow and his students developed plans for a Pullman Palace Car Museum situated on the site of the devastated factory building. Durbrow’s design studios involved 56 participants, each with their own vision of how to use the extant space to create a modern rail museum.

The task was to design a fully functional museum incorporating the last remaining bays and façade elements of the old Pullman factory and featuring exhibition and conservation areas, a theater, cafeteria, gift shop, entryway, and offices, as well as landscaping and parking. One of the challenges was accommodating the massive cars while maintaining a space that was fluid and stayed within the bounds of the current factory site. Many of the students tackled not only physical and spatial challenges but also developed architectural plans informed by the history of Pullman and the larger benefits resulting from a museum’s creation—the reemergence of what has become an inner-city community.

At an event hosted by the Illinois Historic Preservation Agency on April 19, a select group of seven students presented their designs to an audience that included city and state officials and Pullman residents. The reception was fittingly held in the remains of the building itself, which, despite its age and the effects of the fire, still inspires a sense of awe. Among the highlights was a design by Abigail Beth Santone, who used the structure as a model for the historic

geographic divisions of the town, noting the way the railway corridor cut through the severe north/south and east/west circulation of the city’s grid. Arturo Lopez allowed his new buildings to remain in the background, deferential to the existing historic structures. The spaciousness of his design accommodated the showcasing of a large number of rail cars, with the intention of foregrounding the best existing trains and allowing visitors to move freely within the space. Rather than housing his exhibits within the old factory building, Kazuya Katagiri created a serpentine glass and steel structure extending from the south and wrapping around the existing facility, creating a striking juxtaposition between old and new and featuring thematic and sculpture gardens.

Since completing the course, two students (one of whom took Durbrow’s Pullman planning class) have purchased homes in the Pullman area, and Durbrow continues to remain involved with Pullman neighborhood groups in their efforts to restore the damaged sites. Durbrow is also leading another class of architecture students this fall, this time focusing on the design of an Illinois maritime museum at Waukegan Harbor.

www.pullman-museum.org

Professor Said Al-Hallaj demonstrates his unique battery-powered scooter for Congresswoman Judy Biggert at her June field hearing.



Driving for Alternative Energy

For the past 11 years, Chemical and Environmental Engineering Professor Said Al-Hallaj (Ph.D. CHE '00) has been investigating the possibilities of providing clean, safe, sustainable energy through a number of sources—including various fuel cell systems that include polymer, hydrogen-oxygen, reformate, and solid oxide. And it's paying off. "We have successfully demonstrated a passive thermal management system using phase change material for lithium-ion batteries for electric car and scooter applications," says Al-Hallaj.

IIT is now working with the Chicago Department of Fleet Management (CDFM) to convert a hybrid SUV (Ford Escape) into a plug-

"This partnership is a major step in advancing Mayor Daley's commitment to make Chicago the most environmentally friendly city in the nation. It's a great opportunity to grow sustainable companies, set up manufacturing facilities within the city, and create 'green jobs' in the Chicago area." —Howard Henneman, CDFM Commissioner

in hybrid vehicle. According to graduate student Peter Sveum, who is working on this research through funding by All Cell Technologies, LLC, an IIT-based technology transfer company founded by Al-Hallaj and Professor J. Robert Selman, "using lithium-ion batteries with the Ford Escape can result in significant fuel savings

and emission reduction to the CDFM." Other promising research involves the development of high-power lithium-ion battery packs for a variety of portable power and military applications. And people are paying attention, with Al-Hallaj reporting, "I regularly receive email from venture capitalists and potential investors, enthusiasts, colleagues in the same field, and even ordinary people who are encouraged by our efforts and want us to keep charging forward." And this summer, Heartland Angels invested \$1.25 million in his company All Cell to help with his pursuits.

In April, IIT, along with the International Committee of the NanoBusiness Alliance, hosted the kickoff of the Illinois International Fuel Cell Alliance Initiative. Congressman Rahm Emanuel addressed the desirability of establishing significant multilateral ties among

Illinois organizations and companies active in fuel-cell technology, along with potential international partners, to achieve development and commercialization in Illinois.

In May, IIT's prototype electric, fuel-cell, and hybrid vehicles were on parade at Soldier Field at the Mayors Summit on Energy

and the Environment and again in June at Congresswoman Judy Biggert's Field Hearing on Alternative Energy held in Naperville, Ill. As a result of this effort, IIT is hoping to receive nearly \$1.8 million in federal funding next year to support various energy and sustainability projects.

"By shaping successful energy policy and committing the necessary resources," says Al-Hallaj, "it is absolutely possible to successfully develop technologies that will allow industry to provide clean, safe, sustainable energy for the foreseeable future."

For more information, contact Said Al-Hallaj at 312.567.5118 or alhalla@iit.edu.

faculty honors & awards

Hassan Nagib
Mechanical, Materials, and Aerospace Engineering
Nagib (MAE '68) was elected as a 2006 fellow of the American Institute of Aeronautics and Astronautics. Fellows are distinguished for being among the most respected individuals in the aerospace industry. Nagib, who is John T. Rettaliata Distinguished Professor of Mechanical and Aerospace Engineering, was honored for his "contributions to understanding and control of

turbulent and separated flows, with applications ranging from wind tunnel flow quality to the first successful demonstration of active flow control in flight."

Richard Conviser
Chicago-Kent College of Law
The editorial staff of *Chicago Lawyer* magazine named Conviser among the Top 10 Best Law Professors in Illinois. The magazine noted his work founding BAR/BRI, the "course that has prepared more than 1 million would-be lawyers to

take the bar exam," and how his "combination of in-class scrutiny plus out-of-class nurturing is the key to getting students enthused and educated about the law."

Donna V. Robertson
College of Architecture
Dean Donna V. Robertson was elected to The College of Fellows of The American Institute of Architects (AIA). The honor, one of the highest awards that the AIA bestows upon its members, recognizes members for their contributions to the profession.

The AIA College of Fellows was founded in 1952; members are elected by a jury of their peers.

IIT Sigma Xi Awards
Each year, IIT's Sigma Xi Award recognizes faculty and graduate students for their innovative, creative, and scholarly work. Faculty recipients in 2006 include:
Senior Faculty Award: David Williams, MMAE, director of the Fluid Dynamics Research Center
Junior Faculty Award: Mark Anastasio, BME, core faculty member of IIT's Medical Imaging Research Center.

Building From the Web Up

Located in Chicago's South Side Bridgeport neighborhood, the new home/office of architect and IIT professor Martin Felsen and his wife, fellow architect Sarah Dunn, is an amalgamation of old and new. Juxtaposed alongside a front office loft clad in Cor-Ten steel and, above it, a residential loft clad in aluminum, is a grassy mound composed of the demolition debris from a grocery store that previously occupied the site. The decision to turn the debris into landscaping seems fitting, given Felsen's characterization of Chicago architecture. "There's a practicality to architecture in Chicago that I really like," says Felsen. "Architects here are tackling problems, and there are a lot of opportunities to get involved."

A Maryland native, Felsen was drawn to Chicago's architecture in 1995 after graduate school, and since then he and Dunn have been two of the rising young architects "tackling problems" in Chicago. In addition to designing and renovating residential houses and commercial buildings through UrbanLab, the firm they started eight years ago, Felsen and Dunn have created a website, www.chil.us, that analyzes the Chicago area's resources, density, and infrastructure. "It's easy to make a lot of assumptions about a region," says Felsen. "The information on the Web includes a lot of data that we need to consider in order to really understand the area in which we're building." Felsen says the Web project has both a sociological and ecological component, and that it is an outgrowth of his architectural work. "Even on our small-scale projects we're interested in how our work fits into the city," he says.

The website is partially funded by a National Science Foundation grant aimed at better understanding how digital technologies can be used to better urban growth. The grant also includes specific funding for NetLogo, an agent-based simulation software program that Felsen and his IIT classes are using to study growing virtual cities. The software allows autonomous units to be programmed like living things, simulating actual biological complexity, like



Photo: Michael Goss

Professor Martin Felsen at home in Bridgeport, where the home/office units he and wife Sarah Dunn designed juxtapose new with old

birds flocking, or fish schooling. Felsen says that the growth of cities follows similar rules. "Most people assume that cities grow because there are a lot of rules in place and a lot of people at the top. That's not usually the case. City growth is primarily based on a lot of individuals making decisions based on self-interest."

Felsen's current research efforts center on urban "sprawl," the growth of cities based on single-use development—residential or commercial—and low-density environments (think of the now-ubiquitous signs for new-construction townhouses and single-family homes posted along remote stretches of highway). According to Felsen, that low density often leads to social isolation and higher costs for homeowners, who often need multiple cars to travel to and from work.

Felsen's students will have an opportunity to explore urban sprawl in a new class this fall, and Felsen is currently reformulating his website to be used in conjunction with the course. "I hope students will come to understand the logic and facts behind sprawl, and that they can come up with ideas to ameliorate it—such as building more high-density, mixed-use structures," says Felsen, who is quick to clarify that his curiosity about sprawl comes from his design experience and not an interest in policymaking. As both a teacher of young architectural minds and a practitioner, however, that singular concern may end up finding "mixed-use," as well.

www.chil.us



Mark Anastasio (EE '92)

Associate Professor of Biomedical Engineering,
Faculty Member of IIT's Medical Imaging Research
Center (MIRC)

This spring, Mark Anastasio was awarded a National Science Foundation CAREER Award, one of the most prestigious honors given to promising young faculty members. This award will help fund his research endeavors for the next five years and recognizes Anastasio's work in the field of X-ray phase-contrast tomography. His research has also received support from the National Institutes of Health and other national funding agencies.

How would you describe the fundamental aspects of your research?

My research interests broadly address the engineering and scientific principles of biomedical imaging. Much of my work involves the development and investigation of tomographic reconstruction theories for novel biomedical imaging systems that address important needs in biomedical

facultyFAQ

ALGORITHM NATION

science. Tomographic imaging systems, such as X-ray computed tomography (CT), utilize "reconstruction algorithms" to mathematically process a collection of two-dimensional measurement data to form a three-dimensional image. A reconstruction algorithm incorporates knowledge of the physical and statistical properties of the imaging system. Our research addresses a broad range of biomedical imaging modalities that utilize X-rays, ultrasound, and light to form images. Along with the work of my colleagues in the MIRC, much of our efforts are devoted toward developing a new form of X-ray imaging called X-ray phase-contrast imaging.

What are the shortcomings of traditional X-ray imaging?

Conventional X-ray imaging methods leave much to be desired. X-ray radiographs and CT images represent maps that depict the X-ray absorption properties of tissue. Unfortunately, many soft-tissue structures absorb X-ray energy in similar ways and cannot therefore be visualized in the images. For example, a subtle cancerous tumor may not be easily identified in a conventional X-ray image if it absorbs energy in a similar way as the background material in which it is embedded. The use of X-ray radiation is also hazardous; the X-ray energy absorbed by tissue during an imaging procedure is potentially carcinogenic.

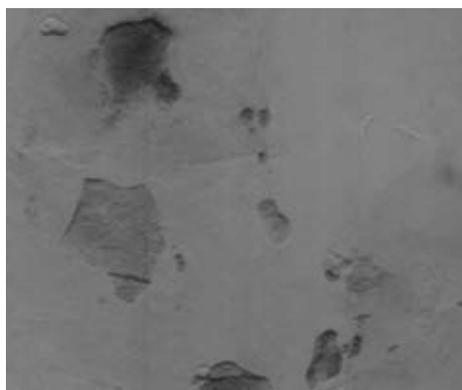
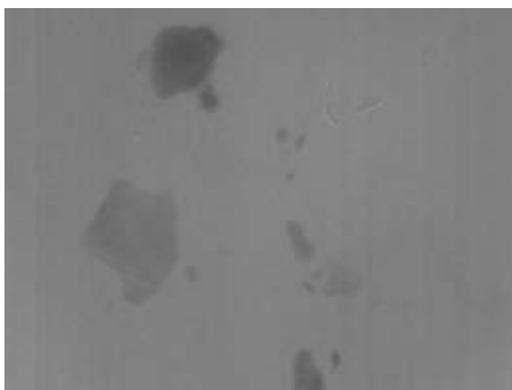
What are the advantages of X-ray phase-contrast imaging?

The way that X-ray phase-contrast methods form images is fundamentally different from conventional X-ray imaging methods. Rather than exploiting differences in X-ray absorption properties, phase-contrast imaging methods form images based on differences in X-ray refractive index values, which reflect a different physical property of the object. Accordingly, X-ray phase-contrast imaging methods can permit visualization of soft-tissue structures that have similar or identical X-ray absorption properties and are not detectable by use of conventional X-ray radiographic methods. Another benefit is that they typically deliver a smaller radiation dose to the subject, and are therefore less hazardous. These features of X-ray phase-contrast imaging suggest that it holds great potential for a wide range of human, small animal, and bioimaging applications.

How did you become interested in imaging?

My interests in applied mathematics and physics ultimately led me to a career in imaging science. These interests stem from my undergraduate studies in electrical engineering at IIT. After my B.S. degree, I earned master's degrees in electrical engineering and physics elsewhere and finally a Ph.D. in medical physics from the University of Chicago. The MIRC and Department of Biomedical Engineering at IIT have provided me with a fertile environment to continue my research efforts.

www.mirc.iit.edu



Human carotid plaques as displayed by traditional radiograph [left] and phase-contrast imaging



Photo: Michael Goss

Students [left to right] Vishal Kadakia, Jason Tenenbaum, Tim Schug, and Brandon Lloyd set their sights on bringing life back to The Bog.

First it was built on Ogden Bog, then it was “The Bog,” then it became storage space for emergency water (which, when the water spilled out of its boxes and flooded the floor of Hermann Hall—the HUB—made it a bit of a bog again). Not surprisingly, it’s The Bog—the former student and faculty hangout in the basement of HUB, closed for the past three years—that a group of current IIT students has successfully campaigned to reinstall, this time for good. The Bog, which featured a bowling alley, bar, and recreation center, was open for four decades. Thousands of alumni and faculty enjoyed the facility and have passed down their many fond memories and stories through the years. These stories helped to fuel the students’ desire to bring back The Bog.



Photo: Courtesy of IIT Archives

Students Rally for the



Already interested in expanding entertainment options on campus, a handful of student-leaders attended a conference seminar last year on how to ignite a passionate student body, and "It all came together," says Jason Tenenbaum (AE, 4th year), Student Government Association (SGA) president.

Adds Tim Schug (CE, 5th year), "Our takeaway from the speaker was 'make an impact, an impact, an impact.'"

Upon their return, the students began doing their homework. They surveyed fellow classmates about life on campus and how frequently they would use The Bog. At least 600 students participated in Strike Force Bowling Society events last year, and students were itching for both more consistent event programming and more options to gather outside the classroom. "We realized The Bog was something nearly everyone missed, even if we hadn't experienced it as students," Tenenbaum says.

After conducting a feasibility assessment and learning that many faculty and administrators were also behind their efforts, SGA committed student activities fund money to assist with the operation of The Bog.

But they still had to bring it back to life.

Over the summer, Tenenbaum, Schug, Strike Force President Brandon Lloyd (AE, 4th year), and Union Board President Vishal Kadakia (BME, 4th year) continued their campaign to

bring back The Bog. A few years of neglect had left the space in need of significant renovation. Just some of the work to be done

"We realized The Bog was something nearly everyone missed, even if we hadn't experienced it as students," —Jason Tenenbaum

included installing a new sprinkler system and new electronic scoring, replacing old floor tiles, rehabilitating lanes, pinsetters, and kitchen equipment, and buying new bowling balls and shoes. "It was a big budget we were asking for. At one point we thought we'd have to count on alumni and others for \$800,000 to make it happen. Even if we did raise the money, we weren't sure we'd get to enjoy The Bog before we graduated," says Schug.

Eventually their vision, determination, and energy paid off. In July, President Lew Collens approved the proposal, but asked the students to help raise \$400,000 in philanthropy to offset the renovation costs.

Among many impressed by the students in action was Steve Lindee of Institutional Advancement. "This is about a spirit, not a place," he says. "These students want a piece of university heritage they can hang on to. Something's come alive here, and alumni, faculty, and staff are getting caught up in it. It's a fever we hope everyone catches."

As work begins this fall, everyone in the IIT community has an opportunity to help

the effort. "We got the ball rolling," says Tenenbaum, "but now we hope everyone gets involved. People can offset some of the

renovation costs, they can visit The Bog, and they can share their stories. Students could give \$10 and still make a big impact."

This year during Homecoming and Alumnifest (October 6–8), the students are hoping to show off the renovation progress being made as new life is breathed back into the campus hangout, which is anticipated to open this winter.

"Homecoming will be great; we'll see some progress by then," says Schug. "But we can't wait for January." ■

To learn more about how you can help support the work the students have started and to share your favorite Bog and campus life memories, visit <http://sga.iit.edu> or email ia@iit.edu.



The outsourcing of
millions of manufacturing
jobs across borders and
overseas is a largely
American recipe. A look
at the causes, effects,
and how IIT is helping to
counter this trend.

America is a land of things. Multiplying by the hour, a blizzard of manufactured goods has become an inescapable component of modernity, making us forget that everything from the vitamin we swallow to the commuter jet we travel in is the result of a complex and labor-intensive process of creation. Yet if widespread reports on the state of manufacturing in the United States are credible, fewer and fewer of the goods we enjoy are being made on our shores, and a decline in America's manufacturing base may be approaching a day of reckoning.

As once-vital manufacturing communities succumb to plant closings and layoffs, many experts in political, business, economic, and even national security circles fear an eventual systemic calamity. In just the past five years, America has lost roughly 3 million manufacturing jobs representing 17 percent of the manufacturing workforce. The Progressive Policy Institute places productivity's role in job loss at 40 percent. Nearly every domestic manufacturing industry, from shipbuilding to textiles to aerospace, has suffered a dispiriting reversal of fortune, at least in terms of employment.

"The wipeout is across the board. Not a single manufacturing payroll classification created a single new job," insists former Assistant Treasury Secretary Paul Craig Roberts, in a commentary for the *Baltimore Chronicle & Sentinel* about America's performance from January 2001–January 2006. Roberts ticks off some alarming figures: "Communications equipment lost 43 percent of its workforce. Semiconductors and electronic components lost 37 percent of its workforce.... Apparel manufacturers lost almost half of the work force. Employment in textile mills declined 43 percent...."

And the list goes on.

The tectonic shifts underway in manufacturing have provoked a fierce debate among economists, politicians, social scientists, industry leaders, and public policy gurus. For some, the changes at hand amount to inevitable reshufflings, growing pains along a course to greater prosperity, facilitated by a wired world of instant communication. For critics, however, the present trajectory is almost thoroughly negative, with multinational companies poised to reap spectacular rewards

Bringi

Story: Richard Harth



ng It Home

from emerging global markets—advantages achieved, it is claimed, at the expense of workers' rights, national economies, and the environment.

The polarization of opinion regarding manufacturing's current state and future prospects, however, hinges not only on analyses of winners and losers in the great economic game. The debate is also informed by differing views as to what is meant by manufacturing, for this, too, is in flux.

The reasons for America's steady leakage of manufacturing jobs are not difficult to come by. Primarily, they center on two economic watchwords of the new millennium: technology and globalization. Advanced technology, though associated with increased manufacturing productivity, often displaces human workers. Computers and industrial

across cultures, reframes the problem of manufacturing's decline. Rather than decreased productivity or an offshoring mania generating a flood of cheap imports, America's limitations as an exporter and deficiencies as a domestic innovator need to be addressed. "I am concerned that we do not produce enough things that other people want to buy," he says.

A study by economists Martin Baily of McKinsey & Company and Robert Lawrence of Harvard University seems to bear out Whitney's conclusions: "Increased domestic demand is the solution to continued job weakness," they report, concluding that 90 percent of job losses in 2000–03 were due to domestic forces rather than trade. Productivity gains were a factor, but more important was a low demand for U.S. goods, coupled with an export weakness (exacerbated

consider wildly self-destructive.

As noted business strategist and author Peter Fingar points out in his new book *Extreme Competition*: "Original-design manufacturers, such as Quanta in Taiwan and Flextronics in Singapore, design and assemble products for international clients, supplying some 20–70 percent of the world's PCs, cell phones, PDAs, MP3 players, and digital cameras." Such "ghost manufacturers" from abroad are the authors behind many brand-name items. Meanwhile, China's recent R&D spending has increased 500 percent as the country looks to capture America's historical strong suit: talent for innovation and fresh, unprecedented design.

Whitney calls for an aggressively creative and culture-specific approach to innovation, insisting, "Design that focuses on making incremental changes to existing products will, in general, be able to be outsourced. Design that is creating newer, more innovative changes needs to be close to the people who will be using the design. If the users are in the U.S., it is likely the design will have to be done here. If the users are in China, it is likely the design will be done there."

In addition to teaching innovative design, IIT has been involved in wide-ranging efforts to address this country's manufacturing issues. Keith McKee, director of IIT's Industrial Technology and Management Programs, believes that America must accept that manufacturing has changed. U.S. manufacturing output is increasing, he says, having gone up 5 percent last year. Such increases have been achieved by greater productivity, leading to inevitable declines in manufacturing employment. "It is really pointless to hope that in some way, manufacturing will become less efficient so that manufacturing employment will increase. Manufacturing is doing well and is not dying, but it will never again return to the 'good old days' where it will provide employment for unskilled workers. The manufacturing workforce for the future requires more education and a greater set of skills."

Part of IIT's efforts, according to McKee, who is also director of IIT's Manufacturing Productivity Center, involve expanding the definition of manufacturing to include the full range of industrial operations—all those activities that provide "stuff" to companies, the government, and the population. Industry considered in this way includes manufacturing, but it also includes building and maintaining equipment and facilities, as well as all of the activities related to moving, storing, and distributing the "stuff." "Based on this worldview, industry, representing

"I am concerned that the United States does not produce enough things that other people want to buy."

—Institute of Design Director Patrick Whitney

robots slice through sheet metal, oversee factory efficiency, and perform an endless variety of assembly tasks tirelessly and with superhuman precision, allowing for a reduced workforce. Globalization allows manufacturers to draw their labor pool from across the planet, relying on an inexhaustible supply of cheap workers to manufacture goods at a fraction of the cost of domestic production.

While technology and globalization have contributed to the decline in manufacturing jobs in the U.S., their relative importance in manufacturing's woes remains a matter of controversy. Within industry, many insist that job losses are an inevitable price for competitiveness in the global marketplace. The National Association of Manufacturers (NAM) praises strides in domestic productivity, claiming such advances "enable Americans to do more with less, increase our ability to compete, and facilitate higher wages for all employees." While mourning job flight, NAM has generally been a strong proponent of free trade and the unimpeded flow of capital. Love or lament it, they say, America's manufacturing paradigm has shifted, forcing businesses to adapt or succumb in a transformed marketplace.

Patrick Whitney, director of IIT's Institute of Design and an authority on design innovation

by Chinese economic policies that keep the dollar overvalued by 20 percent).

One effect of manufacturing loss on the overall health of the American economy is undeniable: it has been the largest single contributor to a staggering trade deficit, currently inching toward the trillion-dollar mark. (In 2005, it reached more than \$800 billion, with an accumulated value since 1990 of \$4.5 trillion.) America's reliance on goods manufactured outside its borders presently amounts to twice its dependence on foreign oil. In the past, America primarily imported items that were manufactured abroad with unskilled labor, but the trend has undergone a sea change, with some of our most sophisticated high-tech consumer goods now being manufactured and, in some cases, designed outside the United States.

Indeed, Advanced Technology Products (ATPs) seem to be fleeing our borders as quickly as steel production and clothing manufacture had earlier migrated to greener pastures. Two-thirds of the 650 distinct ATPs identified by the Department of Commerce are now entering the United States as imports from China. The Chinese trade surplus with the U.S. is the largest in the world, and, ironically, more than half this surplus is due to offshore production by U.S. firms for U.S. markets, a policy that critics such as Roberts

about 30 percent of GDP and employment, is the foundation upon which the entire economy exists," McKee points out.

"IIT started to focus our educational programs on industry several years ago with specialization available in Manufacturing Technology, Industrial

"Manufacturing is not dead and is not dying, but it will never again return to the 'good old days.'"

—Professor Keith McKee

Facilities, and Industrial Logistics," he says. IIT's Industrial Technology and Management Programs offer a Bachelor of Industrial Technology and Management, as well as a Master of Industrial Technology and Operations.

Under the leadership of the Department of Mechanical, Materials, and Aerospace Engineering, IIT has also partnered with eight other universities to take part in the National Coalition for Manufacturing Innovation (NCMI). Through research and teaching, NCMI aims to assist U.S. manufacturers to lead the world, capturing the manufacturing market and generating jobs, to distribute scientific and manufacturing news to companies, and to promote entrepreneurship.

The challenge of empowering a new workforce is a daunting one. Only 6 percent of students in America pursue engineering degrees, compared with 12 percent in Europe and 40 percent in China. While the anticipation of poor job prospects may discourage some students from pursuing careers in manufacturing, others find that good schools are increasingly priced beyond their means. Additionally, more than half of U.S. engineering Ph.D.s and 34 percent of all U.S. doctoral degrees in the natural sciences are earned by foreign-born students who often return to their home nations after their visas expire.

The borderless terrain of globalism provides an environment in which companies are currently competing with countries in indirect conflict, as Whitney observes: "Companies are adapting quite readily; look at IBM's announcement about growing its workforce in India. Countries have a much more difficult problem because they are defined by a fixed geography and society. The main way for countries and their citizens to survive is through high-level education."

Spelling out the mixed blessing of profit and loss posed by borderless trade, the *Report to Congress of the U.S.–China Economic and Security*

Review Commission notes, "Increasingly, U.S. multinationals are using China as an export platform in order to compete more aggressively in the global economy." The study gives an example: Wal-Mart, whose imports of Chinese goods reached \$18 billion in 2004, is today

the largest importer of Chinese-made products in the world.

Meanwhile, if U.S. companies hope to stay competitive without outsourcing, manufacturing payroll clearly cannot be

the sole or even chief defining factor, as labor costs in places like China amount to single-digit percentages of U.S. labor costs, and will remain so for the foreseeable future. Instead, a focus on diversification and indispensable customer service will be required. Manutec, a metals and machining manufacturer in Milwaukee, faced steep competition from parts made in China and Mexico, reporting to the *Milwaukee Journal Sentinel* of its 20 percent drop in sales figures in 2003. Diversifying its business plan to include highway and power plant construction and scaling back activities identified as non-productive helped Manutec regain its equilibrium.

goods, though many experts warn that without adjustments in our thinking, a steep decline in America's standard of living may be inevitable. Due primarily to the budget deficit, 2005 was the first year in U.S. history in which total spending exceeded income, yielding an unprecedented sub-zero savings rate. "Once the pain level becomes acute," says Fingar, "the DNA of our forefathers will awaken 'homo consumptus' and transform him into 'homo sapiens' once again. When that happens, watch out, world. Hopefully, that won't take an economic 9/11, though it very likely could."

In the case of America's more immediate future, an allied effort by government, industry, and higher education is required to bolster research and development leading to new industries, and to prepare and inspire a new generation of students with the necessary skills to compete. While some companies and manufacturers will not survive aggressive competition from abroad, some will grow stronger through these economic upheavals. As Patrick Whitney notes, "Companies learning how to design and produce things for emerging markets learn how to be more innovative and efficient. This knowledge is directly applicable to helping them compete in their more developed domestic markets." As for the staggering potential of emerging markets, one only need consider

Manufacturing Productivity Center

Since 1976, IIT's Manufacturing Productivity Center (MPC) has led efforts to improve manufacturing innovation in the United States. Assisting companies both large and small, MPC boasts a client list ranging from Kraft Foods to Eltek Manufacturing to the United States Department of Defense. To read more about the MPC, including its areas of expertise and successful case studies, visit www.mtm.iit.edu/mpc.html.

Other manufacturers benefit from geographic proximity to their domestic supplier and customer base, making outsourcing a less appealing strategy. Nevertheless, for a vast and growing manufacturing sector, the enticements of labor and design outsourcing may be too tempting to resist. Fingar speaks of the extreme competition faced by U.S. businesses in the transfigured landscape brought about by globalization: "We are in the midst of one of the greatest economic shifts of all time. In round one of twenty-first-century globalization, the capitalists have labor on the ropes."

For American consumers, globalization has spurred a shopping bonanza in low-priced

China's 1.3 billion citizens embedded in an economy that is growing by 10 percent per year.

In light of the challenges faced, the imperative for radical, risk-taking creativity in both the design and manufacture of goods has never been more critical. Educational efforts such as those underway at IIT are helping to prepare the next generation for the full range of opportunities and challenges inherent in industry, of which manufacturing is but a part. ■

www.id.iit.edu

www.mtm.iit.edu

www.mmae.iit.edu



Alumnus
Dan Love
is Spreading
the Rhythm
of Engineering
and Jazz

Story: Richard Harth

JAZZ



DAN



'Round midnight, the band begins to find its pace, warming to the room's acoustics. A trumpeter steps toward the edge of the stage and delivers an impassioned solo, the notes now intimately entangled, now isolated in staccato flashes. Drinking it all in with apparent delight, Dan Love (EE '51) is in his element, playing host to a captivated audience at Steammers, Southern California's premier jazz club.

Cool cat and jazz impresario may seem improbable roles for the nearly 80-year-old IIT alumnus, whose career in electrical engineering has earned him almost every honor the field affords, as well as taken him around the world. Such eclecticism seems to serve him well, however; he hasn't missed a beat since earning his degree at IIT in 1951.

Love was born in Fall River, Mass., in 1928. The son of a career Navy man, he enjoyed a carefree childhood, describing himself as a somewhat indifferent high school student. There wasn't much to do in the declining textile mill center, though every now and then someone exciting would blow into town, as when legendary performer Cab Calloway showed up to dazzle the locals.

Things changed around the time Love turned 15, when momentous events set his life on a more serious track. Love vividly recalls the occasion: "I was traveling to my aunt and uncle's in Rhode Island when I heard the news on the car radio that the Japanese had bombed Pearl Harbor," he says. Love was apprehensive, as his father had already been called back into the Navy.

Three years later, with America's war seething in the Pacific, he followed in his father's footsteps and enlisted in the Navy. He left aboard an attack cargo craft, the USS Hydrus, passing in stages through Pearl Harbor and the Solomon Islands to Guadalcanal, where the ship anchored.

During landing operations on Okinawa, Love witnessed the notorious kamikaze pilots. Fortunately, he survived the ordeal, taking part a few months later in Operation Magic Carpet, the massive effort to return American troops to the United States at war's end.

Returning to the States was tough at first. Dan found himself with few inspiring job prospects and decided it was time to get serious about his studies. At IIT, he found a mentor in one of his early professors, Eric T. B. Gross—a pioneering engineer and engineering educator—who saw great promise in the young man.

As Love's adviser, Gross taught him the value of hard work and motivated his young disciple toward excellence. In return, Gross found a worthy and appreciative protégé in Love. "It was inspirational that someone was interested in me. He always encouraged me to do something enriching," Love remembers.

It was during these formative school days, between lectures and cramming for math and physics exams, that Love was seriously drawn to jazz, a flirtation that soon





turned into an abiding passion. “In the dorm, I was exposed to many cultures: Americans from many parts of the country and people from South America, Turkey, Africa, Europe, and Asia. I didn’t own a radio, but I heard others play music from jazz to classics to pop tunes. I often attended concerts in Grant Park.”

The improvisational daring and creativity of jazz offered a respite from the rigors of his engineering coursework and an occasional break from the engineering crowd, “a pretty straight-laced bunch,” Love recalls with a laugh. Whatever the case, he soon became immersed in the music of such luminaries as Duke Ellington, Stan Getz, and the Brazilian master Antonio Carlos Jobim, the prolific composer of “Girl From Ipanema” and other classics.

Love passed his affinity for jazz to his son Terence, who took up the tenor sax and would later open Steamers Jazz Club and Café in 1994. This regional oasis for musicians and aficionados alike—the *L.A. Times* praised, “Steamers hosts the who’s who of Los Angeles jazz”—eventually proved an irresistible attraction for Dan. He joined in the enterprise to help with logistics and, of course, to soak up all the free jazz.

Dan also hosts the popular Monday night event featuring big band music. Helping jazz lovers find the best seats to take in the evening’s sets and overseeing the business of running a successful club may seem a long way from Love’s early days as a study-worn engineering geek. Looking back, he recalls that after graduation, he found a job in a Chicago steel mill, where his intuitive talents in the field made an early impression.

Working in a roundhouse that serviced diesel locomotives, Love encountered one of his first real-life engineering conundrums. A compressor had been malfunctioning, and, as test engineer, he was asked to identify the problem. Easier said than done, as a number of senior members, including the shop foreman who’d been on the job 25 years, had applied their talents, to little avail. Love found a neglected schematic taped to the wall and recognized that the diagram didn’t match the compressor’s configuration: a resistor was missing, yielding improper starting current when he measured the circuit with an ammeter. Once the missing piece was inserted, the long-vexing problem was solved. Love prepared a paper on this engineering riddle for *Power Magazine*.

It was a nice break for a fresh grad. Love’s problem-solving talents grew as he migrated to the specialization of forensic engineering—an investigation of material failures or malfunctions, often involving criminal liability. Immersion in this then-unfamiliar discipline made Love an authority on engineering safety. Eventually, he applied his expertise to the oversight of fossil and nuclear power plants, work that would take him around the world, including an extended stint in Spain as an employee for Bechtel.

With his company, Love Consulting, Dan has conducted countless investigations. In addition to probing engineering complexities, the work often involves delicate legal maneuverings to assess responsibility. “It’s really a mind game to determine what happened,” he says.

Despite his semi-retirement, Love’s science affiliations haven’t been entirely replaced by the bohemian allure of the California jazz community. This summer, Love will act as a jury member for nominees to the Institute of Electrical and Electronics Engineers Fellows program, the most coveted honor in the field. Love was made a fellow in 1987 and looks forward to the challenge of helping to select this year’s inductees. He is clearly proud of his standing among the field’s elite: “To become a fellow is to have made significant accomplishments and to be one of less than 0.1 percent selected annually for membership elevation.”

When queried on the career prospects for students contemplating the world of electrical engineering, Love’s enthusiasm was palpable. “There’s just so much activity in the field today, in communications, sensing, computers, entertainment, power...I wish I were young and just entering engineering now!” Should you need more inspiration than that, drop by the club when you’re in the neighborhood. Your host will give you an earful about the distinctive rewards of music and science and the gratification that comes from living a vibrant life (that is, if he finds a spare minute!). ■



Victor Tsao



In 1988, Victor Tsao (M.S. CS '80) and his wife, Janie, started Linksys, a home wireless networking business, in the garage of their Irvine, Calif., home. Less than two decades later—and having sold the company to Cisco for \$500 million—they are stepping down

from their joint role as senior vice president and general manager of Linksys and preparing for their next adventure: expanding Cisco's growing China market as senior vice presidents of Cisco Systems, Inc.

What are the upsides and downsides of leaving your hands-on leadership roles?

We have been working on Linksys operations for the past 18 years, and we felt the infrastructure was built to the point that a transition would be a good move. At the same time, we get to change our pace a little bit, focus on an emerging market, and have a chance to impact a bigger picture of Cisco's as the mother company. This will be fun for us. Therefore, we believe both Cisco and Linksys have the upside.

What has been the key to Linksys' success?

We've been pretty focused from day one. We've most concentrated ourselves on 12-month, short-term goals, with three to five years of long-term direction. And once we set the direction, we've been very focused on the operations, the details. There's no perfect organization, but if you have focused execution, you can continue to refine the plan as you go and look for more opportunities.

What was your initial vision for Linksys?

From the early days—late '80s, early '90s—our goal has been to connect systems together to improve productivity and enhance operation efficiencies. This goal is reflected in our company name, Linksys. We started by linking printers, then expanded linking to PC-to-PC, application-to-application, and Internet-to-Internet. Our vision is to offer all types of connectivity through our evolving, robust product line.

Was there a defining moment when you knew you'd "arrived"?

Yes, it came in the summer of 2000. We had started working on a consumer-grade router in late 1999, and, after six months, we knew we had something great. We started to ship the "home router" with the price range, enhanced features, ease of use, and well-covered channel, and we literally created the home networking market and industry. That was a very exciting and defining moment for Linksys.

After working together all these years, what's the secret to the success of your marriage?

It's a partnership. In such a complex business environment, there's a lot to do, so it's great to work with someone you trust completely. And it's a give and take. When our boys were younger, some days Janie would have to leave the office at 5:30 to pick them up, make dinner, and help them with their homework. I'd go home a couple of hours later, spend some time with them, and then come back to the office to work some more. I think ultimately we respect and value each other.



REGIONAL CHAPTERS

The IIT Alumni Association is everywhere! New regional chapters have been formed, and they can provide you more ways to stay connected—and closer—to the IIT community. New chapters are in Naperville, Ill., Los Angeles, San Diego, Boston, and Detroit. For more information, contact Marian Quirk, associate director of Alumni Relations, at quirk@iit.edu.

Fluid Movements

Amy Lee Segami

Growing up in Hong Kong,

Amy Lee Segami (ME '79, M.S. '82) had dreams of being a dancer. "I wanted to perform with an opera company," she says. Her childhood love of movement was not always encouraged by her father, an international businessman who had to work to keep his daughter's feet on the ground—literally. "I was constantly moving, so he would actually make me sit down so he could work with me on my English and math." When Segami asked her father why he kept steering her toward math and science, he told her, "The world is going to become technical, and this will assure you a place in it."

To her father's delight, Segami enrolled at IIT to study mechanical engineering. While here, however, she had an experience that would eventually spark an unconventional turn in her career. Inspired by an article written by late IIT professor and aerodynamics expert Andrew Fejer that encouraged artists to consider mechanical flow patterns as sources for their works, she became interested in fluid dynamics. After receiving bachelor's and master's degrees in mechanical engineering and working for several years in a corporate setting, she began studying Suminagashi—the ancient Japanese art of painting on water—using her knowledge of fluid dynamics to create the intricate pictures. At the time, very few people had heard about the art form—"or if they had," says Segami, "they said it couldn't be done."

A quarter-century later, Segami is regarded as a pioneer and the foremost practitioner of the still-rare art form. This April, she received a Chicago Immigrant Achievement Award from the American Immigration Law Foundation in recognition of her contributions as an innovative artist. "People in the field who have seen my work say, 'This is so different,'" says Segami. "The depth, intricacy, richness, texture, and composition—I think much of that comes from my having a scientific background."

Despite his conviction that it was important for his daughter to gain technical skills, Segami's father was one of her biggest supporters, she says. "He never said I was wasting my time," says Segami, who said that letters she found after



Photo: Bogumita Robinson

her father's death earlier this year are especially meaningful to her. "He told his friends that he admired my courage in pursuing my art." Segami describes her father as a renaissance man with a great passion for classical music, art, and painting. "I'm a continuation of him," says Segami. "And I think that I'm on his path of putting art and science together."

Having found a way to express the beauty of science through her art, Segami works to share that lesson with others, including IIT students, to whom she has given lectures. "Some of the students come up to me afterwards, and more than a few express relief in hearing my personal story," says Segami. "One of them said he wanted to study music, but that he kept fighting with his father, who wanted him to study electrical engineering. I told him that he could find a way to do both." Segami pauses a moment, then adds, "You don't paint a whole picture at the same time. First lay down the ink, then take the next steps."

An exhibition of artwork by Amy Lee Segami (Amy Basic)—"Suminagashi, Painting On Water: The Probability of Certainty"—will be on display on Main Campus from September 21–November 4 as part of the art @ IIT series.

<http://art.iit.edu>

A small collection of Segami's art is on display in the high-tech classroom at Galvin Library.



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Illinois Institute of Technology would like to recognize the members of our Gunsaulus Society who made generous estate gifts to the university in fiscal year 2006.

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Samuel R. Todd (EE '13)
Ralph (LAW '50) and Erna Tracy
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James E. Wack (EE '29)
Peter (ME '37) and Adeline Winel
Earl A. Zackavitch
George H. Zendt

To speak with a representative about how you can make a lasting contribution to IIT, please contact Denny Moller, director of Planned Giving, at 1.800.448.2586 or moller@iit.edu.

Gunsaulus | SOCIETY

Boosting Your Connection to IIT

The ambitious two-year b@iit project to transform IIT's technological infrastructure into a modern Unified Digital Campus kicked off June 1. When fully implemented by 2008, members of the university community will access everything from email and calendars to class schedules, employee benefits, group documents, forms, and more via a customizable intranet portal of channeled content. Learn more about the scope of the project, and check the progress of 13 major milestones at www.iit.edu/banner.

Membership Has Its Privileges

Did you know that IIT provides its alumni community with a variety of great benefits? To take advantage, all you have to do is be an alum!

Exclusive services include:

- **Career services** Gain special access to IIT's Career Development Center.
- **Free email** Sign up for your own free IIT account.
- **Galvin Library access** Visit the library and check out periodicals, any time.
- **Bookstore discount** Receive 10 percent off when you shop at IIT's campus bookstore.
- **Discount recreation** Benefit from deep alumni discounts at IIT's Keating Sports Center.
- **Tuition discounts** Sign up for graduate and undergraduate courses at great rates.
- **Alumni address referral** Send us a note, and we'll forward it to a fellow classmate.
- **Application fee waiver** Know a prospective student? Send him or her a certificate for an application fee waiver, free to you.



AN IIT LEGACY

For more than a half-century, the Bonthron family has shared a rich history as an IIT family, with several of its members earning degrees from the university. The Bonthrons joined together for photos at a recent family gathering. Pictured are [left to right] Scott Bonthron (ME '88, M.B.A. '94), former dean and Professor Emeritus Robert Bonthron (ME '44, M.S. '52, Ph.D. '62), Douglas Bonthron (ME '79), John Bonthron (IE '51), and Brett Bonthron (EE '88).



classnotes

1950s

Robert J. Robertson

IE '50, Naperville, Ill., recently produced the "Symphony & Swing" concert at J. S. Morton High School.

Kermit K. McRae

CE '58, Caledonia, Minn., was honored as the "Scot of the Year" for 2006–07 at the Scottish Heritage Dinner held in the Caledonia area.

1960s

Martin C. Jischke

PHYS '63, West Lafayette, Ind., has been named by President George W. Bush to a seat on the President's Council of Advisors on Science and Technology.

Frank B. Fletcher

EE '64, Oceanside, Calif., has continued to work in U.S. Gypsum's manufacturing plants as a part-time consultant since his retirement from the company in 1995.

Richard Citta

EE '68, Oak Park, Ill., received the 2006 IEEE Masaru Ibuka Consumer Electronics Award for his contribution to the development of HDTV.

1970s

Douglas R. Walega

ARCH '78, Berwyn, Ill., has been awarded the 2006 Robert W. Teeter Award, given by the Pav YMCA in Berwyn for outstanding community service.

Dennis E. Rupert

ARCH '79, Chicago, has been elevated by The American Institute of Architects to its College of Fellows.

1980s

Rod Fralicx

M.S. PSYC '80, Chesterfield, Mo., has joined the consulting firm Hay Group as general manager.

Mark P. Sexton

ARCH '80, Chicago, has been elevated by The American Institute of Architects to its College of Fellows.

Zafer Gürdal

M.S. MAE '81, Blacksburg, Va., has been granted the title of professor emeritus at Virginia Tech, where he taught from 1985 until his retirement.

Sarah Johnson-Millon

MGT '81, Burr Ridge, Ill., has been hired as the new business manager for the District 168 School Board in Sauk Village, Ill.

Steve Mihelich

ARCH '82, Downers Grove, Ill., a principal with Williams Architects, located in Carol Stream, Ill., has been installed as president of the Northeast Illinois Chapter of The American Institute of Architects.

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

Steven Vitas

CRP '84, La Grange, Ill., has recently received several appointments, including chairman of the Illinois State Chamber of Commerce's Infrastructure Council and member of the Chamber's Board of Directors. He has also been appointed to the International Visitors Center of Chicago Board of Directors.

Ken J. Cochrane

MET '88, Maumee, Ohio, married Dr. Wendy Luellen in December 2005. He works for Worthington Industries in technical services and handles all of the G.M. accounts. He received his M.B.A. from the University of Toledo in 2002.

Amit Okhandiar

EE '88, Irvine, Calif., is president of mLogica, a California-based software start-up that has recently set up an office in Pune, India, and developed partnerships with Wake Music Group and R-Dog.

1990s

Melody Patricia Paul

TECH '90, Aurora, Ill., is a project manager at Motorola. She received her M.B.A. in general management in 2003.

James K. Egerton

M.B.A. '92, Glen Ellyn, Ill., has started his own company, Chess-Now, which presents programs for corporate strategy-sharpening skills and promotes team-building through chess.

Michael Harshfield

M.B.A. FIN '94, Naperville, Ill., has joined Reactrix Systems as the company's vice president of deployment, customer care, and supply chain management.

Roger Zimmerman

LAW '96, Stow, Mass., has joined Mirick, O'Connell, DeMallie & Lougee LLP as counsel with the firm's intellectual property group.

David J. Diersen

M.S. FMT '97, Wheaton, Ill., has been Illinois editor for GOPUSA.com since 2000.

Stephen Rodosky

M.S. FMT '97, Newport Beach, Calif., is a portfolio manager with a focus on the management of treasuries, agencies, and futures.

Rebecca Pala Poulson and Lt. Craig A. Poulson

both LAW '98, Silver Spring, Md., were recently married.

Li Kan Wang

LAW '98, Norcross, Ga., was elected to the Board of Directors of Shu-Te University in Taiwan.

2000s

Vamsi Krishna Tokala

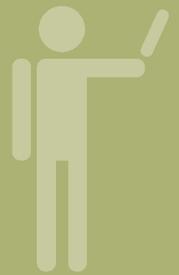
M.S. CS '02, O'Fallon, Mo., is working in St. Louis as an electronic data interface analyst at Express Scripts, Inc. She lives in O'Fallon with her husband, Pallavi.

Michael D. Prince

ME '04, South Lyon, Mich., is currently working as a project engineer at the U.S. Environmental Protection Agency and pursuing a master's in mechanical engineering at the University of Michigan.

Theresa L. Allen

ARCE '05, Chicago, received IIT's 2006 Julia Beveridge Alumna Award for outstanding commitment to the university.



CLASS SCRIBES WANTED!

A great way to get involved with IIT is to be a class scribe. Class scribes help IIT and their graduating class to stay connected by sharing news about fellow classmates with one another and with the rest of the university. To sign up to be a class scribe, or to learn more, contact Marian Quirk at quirk@iit.edu.

Share Your News!

We want to know what's new with you. Send us your class note update—news about births, marriages, career changes, and other events in your life. We'll publish your news on the alumni website and in a future issue of *IIT Magazine*.

Sharing is easy. To send in your class note, write to alumni@iit.edu, or visit www.iit.edu/alumni and click on "Class Notes." [under "Alumni Community"]



On May 5, members of the university community gathered to honor outstanding alumni who have achieved excellence in their personal and professional lives, and whose service and commitment to IIT continue to enrich the university.

2006 alumni awards



[Left to right] Alumni Nicholas (Ph.D. IE '66) and Elaine Thomopoulos (Ph.D. PSYC '74) with Professional Achievement Award winner Shailesh Godambe (M.S. IE '70, Ph.D. '75).



Alumni Robert Naftzger (Ph.D. MECH '69) [left] and Charles Jones (ME '64, M.S. IE '73, Ph.D. IE '76) with Professional Achievement Award winner Lewis Thigpen (M.S. MECH '67, Ph.D. '70) [right].



President Lew Collens [right] and alumnus and Alumni Awards selection committee chairman Manu Vora (M.S. CHE '70, Ph.D. '75) present a Professional Achievement Award to William Bodinus (ARSC '35).



The 2006 Alumni Award winners, those who accepted awards bestowed posthumously, Dean of the College of Architecture Donna Robertson [front row, third from right], and alumnus Walter Sobel (ARCH '35) [front center].



Alumnus Roy Coleman (PHYS '64) gives his acceptance speech for the Alumni Medal, the most prestigious of the IIT Alumni Awards.



Alumnus and Alumni Awards selection committee chairman Manu Vora [left] with Outstanding Young Alumnus/a winner Amie Harvey (CHE '99) and her husband Scott.



Professional Achievement Award winner Jim Stice (M.S. CHE '52, Ph.D. '63) [center] and wife Betty Gowdy-Stice (BIOL '52, M.S. BCHM '60) chat with Associate Vice President of Development Greg Barrett.



President Lew Collens and Alumni Awards selection committee chairman Manu Vora [left] with alumnus John Calamos (BE '63, M.A.S. BA '70) [center], accepting a Professional Achievement Award.



President Lew Collens presents an Alumni Service Award to professor and alumnus Hassan Nagib (MAE '68, M.S. '69, Ph.D. '72) [right].



Professional Achievement Award winner Jimmy Akintonde (ARCH '95) [second from left] with alumna and wife Shanita (M.B.A. '97) [second from right] and guests.

Alumnus Leaves Record Gift to IIT Fraternity

Carroll K. Simons (ME '33) passed away in 2004 at the age of 96, and his legacy continues to touch the lives of IIT students. Simons' \$3.9 million estate bequest was presented to President Lew Collens at an April 2006 Phi Kappa Sigma event. The gift established the Carroll K. Simons Scholarship, which will be the nation's largest scholarship for a single fraternity chapter, and will fund maintenance and improvements to the FKS house and fraternity quadrangle.

Simons became a member of Phi Kappa Sigma in 1929 and had a lifelong affiliation with the fraternity. He twice served as Alpha of Alpha Epsilon Chapter and was chapter adviser for 13 years following his graduation. He also provided leadership to the House Corporation for more than 60 years. Simons was honored as the third recipient of the National Interfraternity Conference Silver Medal Award for a lifetime of distinguished service to youth through the college fraternity system. He was also given the IIT Alumni Award of Merit.

Simons worked for 35 years in the comptroller's office at Illinois Bell Telephone Company and served in the U.S. Army Signal and Army Air Corps during World War II.

obituaries

Andrew Fejer

Former Professor and MMAE Chair



Born in Hungary, former Department of Mechanical, Materials, and Aerospace Engineering Chair Andrew Fejer served as an apprentice to aviation pioneer Theodore von Kármán of Budapest. He graduated from the Technical University of Prague, Czechoslovakia, in 1937, completed his master's degree in aeronautical engineering in 1939 at Caltech, and earned a doctorate

in aeronautical engineering and physics in 1945 while working for NASA's Jet Propulsion Laboratory.

Fejer joined IIT in 1958 as director of the Department of Mechanical and Aerospace Engineering and served in that capacity until 1972; he continued as a full-time faculty member until 1978. He received the IIT Excellence in Research Award for his pioneering achievements in the areas of wind tunnel design, jet engines, turbines for power plants, and wind engineering. Fejer helped to establish IIT as a world leader in fluid mechanics.

In addition to his internationally recognized research activities, Fejer initiated numerous international student exchange programs at IIT and modernized many physical facilities, laboratories, and processes. The Engineering 1 Building, which has housed the MMAE department since 1968, was planned primarily by Fejer and designed by Skidmore, Owings & Merrill.

A renaissance man at heart, Fejer introduced many of his students to photography and music, co-authoring an article with them that was published in the art journal *Leonardo*. He began a trend to relate artistic value to scientific images that has become the annual Gallery of Fluid Motions event at the American Physical Society Fluid Dynamics Division technical meeting.

Irving M. Footlik (ME '39)

The IIT community is saddened by the loss of long-time benefactor and extraordinary friend Irving M. Footlik (ME '39).

“Irving’s most significant gift to Illinois Institute of Technology made possible a transformational relandscaping of the area just north of our National Historic Landmark S. R. Crown Hall,” says John Collins, IIT vice president of Business and Administration. “Irv’s contributions and positive spirit will be truly missed.” Footlik had also directly supported students’ work through the Interprofessional Projects Program, aiding the development of a user-friendly spirometer that outperforms traditional equipment for diagnosing people with lung disease.

“Irv Footlik is one of those special people who have helped make the university a better place,” says President Lew Collens. “He gave his time and energy as well as financial resources to help students. During recent years, he served as a member of the board of State Street Village Corporation and helped launch State Street Village residence hall, an important addition to the campus. He and his wife Sylvia have been wonderful members of the IIT community.”



Sylvia and Irving Footlik

inmemoriam

John Alioto
LAW '74, River Forest, Ill.

Dorman Anderson
M.S. ARCH '67, Seattle

Roy Askins
M.S. SOC '69, St. Joseph, Mo.

Robert Boerke
CHE '48, Ocala, Fla.

John Brierley
CHE '41, Downers Grove, Ill.

Donald Brissman
FPSE '37, Naperville, Ill.

John A. Brooks
CHE '46, Sarasota, Fla.

John Condor
IE '52, Henderson, Nev.

Lawrence Cullen
EE '35, Tinley Park, Ill.

Robert Ducay
BE '51, Brookfield, Ill.

Robert J. Evans
ME '47, Sterling, Va.

Mel Evenson
M.S. DSGN '68,
Rancho Palos Verdes, Calif.

Phoebe Goldman
M.S. DSGN '66, Highland Park, Ill.

Victor Graziano
EE '44, Oak Park, Ill.

Ronald Hedlund
ARCH '58, Chicago

Warren Hutchings
ME '41, Arlington Heights, Ill.

Stephen Koscielny
CHE '77, Chattanooga, Tenn.

William Logue
ME '43, Peoria, Ill.

David Mountcastle
LAW '61, Fort Myers, Fla.

James Mulqueeny
M.P.A. PA '94, Downers Grove, Ill.

Howard Pendlebury
EE '42, Lenexa, Kan.

Carroll Peterson
CHE '39, Clairton, Pa.

William Roche
ME '38, Wheaton, Ill.

Albert Rosendahl
LAW '72, Tinley Park, Ill.

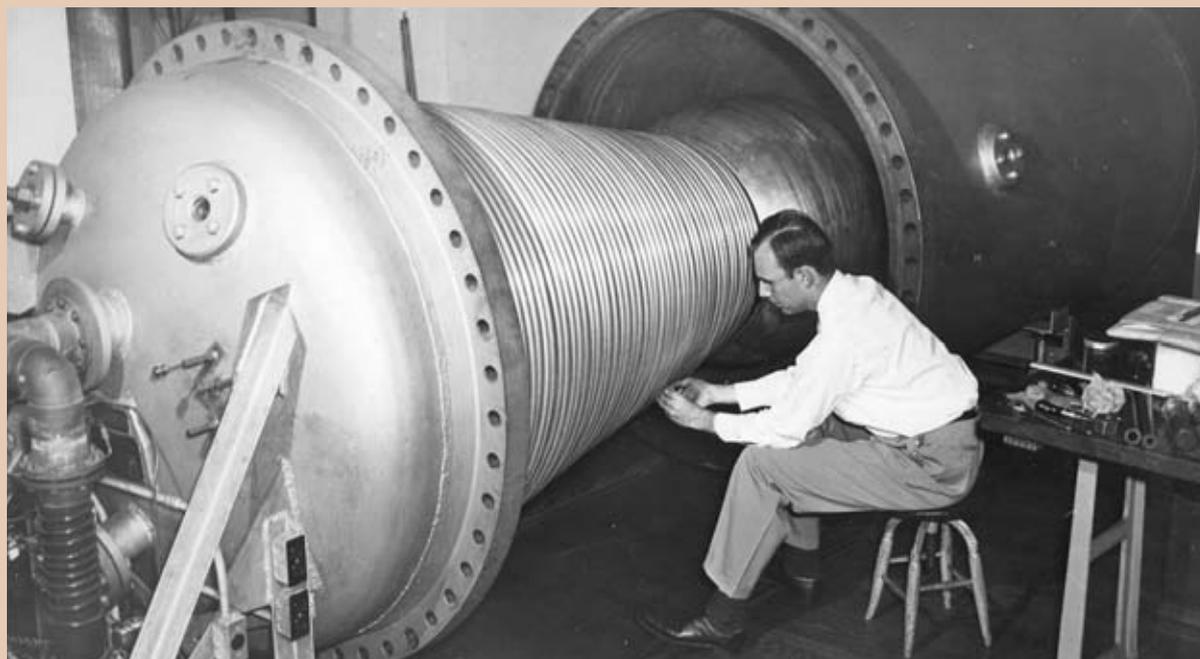
John Sarallo
EE '60, Frisco, Texas

Theodore Sherwin
LAW '37, Chicago

Paul Walach
ME '56

James Zietlow
M.S. PHYS '49, Ph.D. '55,
Kalamazoo, Mich.

rewind



Professor W. Rudolph Kanne seated in front of his atom smasher, ca. 1941

One of the perks of being at IIT is the possibility of seeing famous people around campus. Some are visitors or alumni or benefactors, and some are notables who work here. Drawing a paycheck from IIT is about the only thing that Nobel Laureate Leon Lederman and I have in common, so when I happened to spot Lederman on Footlik Lane one afternoon, I smiled and nodded and passed by without pausing to chat. After all, my academic background is in the humanities and about the only physics I “speak” is *top quark*, for which I can’t even offer a dictionary definition. So where would I even begin a conversation with the person who, as director of Fermilab, managed the construction of the Tevatron, the world’s most powerful atom smasher, in 1983? (It’s still there.)

Back inside the IIT Archives (my laboratory), where I feel mildly competent to conduct historical research, I often encounter other

noteworthy alumni, faculty, and staff who have brought distinction to our university. Just as often, I “encounter” people in the historical records I am cataloging. Such is the case with W. Rudolph Kanne, professor of physics here in the 1940s. Besides being a physicist and on the payroll of IIT, Kanne had (he is apparently deceased) a couple of other things in common with his eventual successor, Lederman: each spent most of his career as an *atomic* physicist, and each of them built atom smashers!

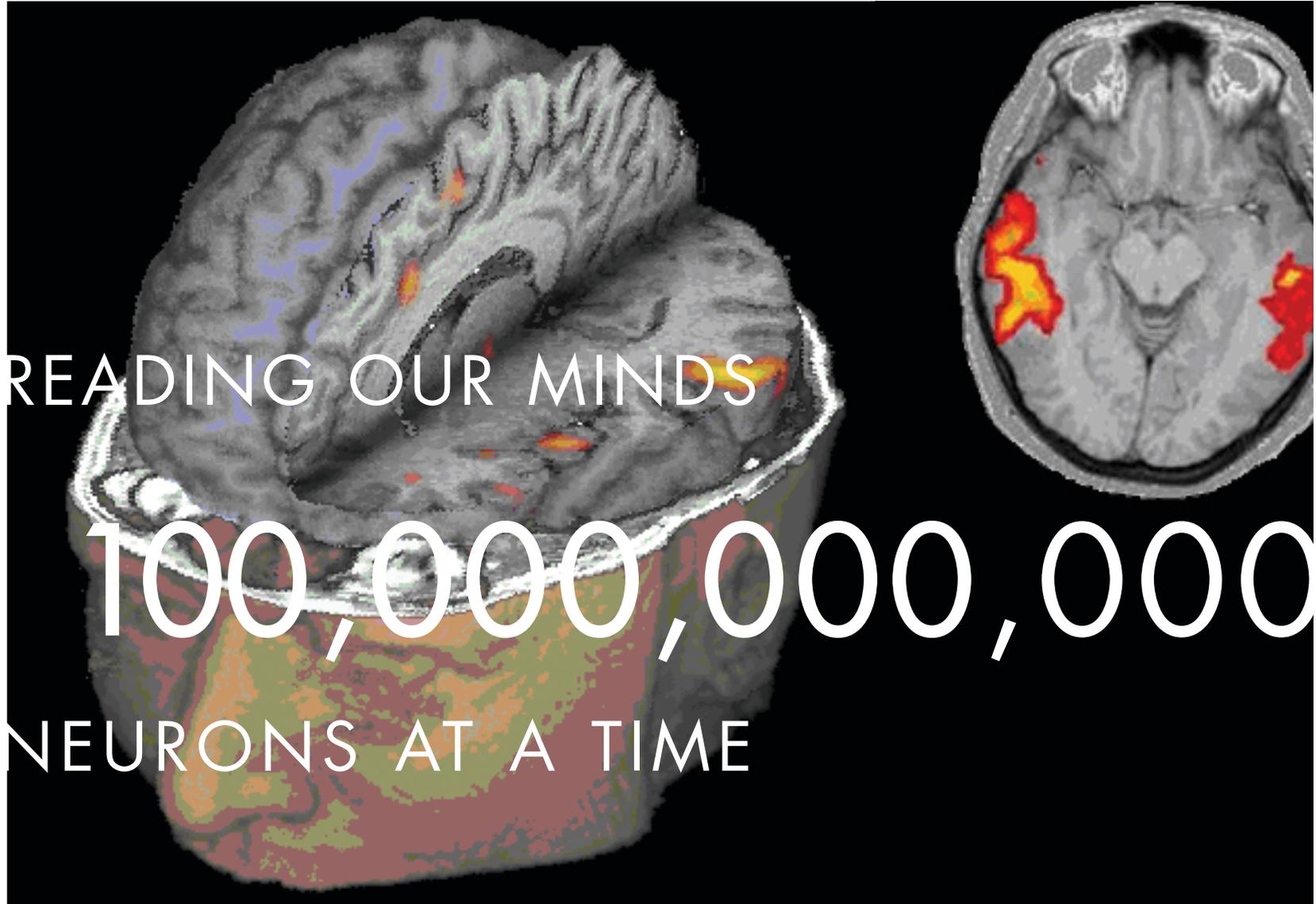
In 1941, Kanne built an electrostatic generator, a.k.a. an atom smasher, described in *Technology News* as a machine “housed in a tank 11 feet long and 4.5 feet in diameter.” The atom smasher maintained a pressure of 150 pounds per square inch and, according to a press release issued by IIT the same year, “...is expected to develop a stream of concentrated energy from 1.5 to 2 million volts.... The high voltage and relatively small

size...are among its chief unusual general characteristics.” Kanne used the device, which was housed in the physics building (the old Chapin Hall), to conduct pure research, an activity that perhaps needed defending even back then. From the same press release, we read: “The field of nuclear physics has brought [about] the solution[s] of many problems in remote fields. The gaps in the periodic table have been filled [all of them, Dr. Lederman?], and surprising chemical properties of the new elements have been discovered.”

A couple of differences between the good doctors’ atom smashers: Kanne’s electrostatic generator cost \$5,000 and, weighing in at just four tons, it was possibly the world’s smallest atom smasher in 1941. Lederman’s Tevatron cost \$120 million and is large enough to need its own campus (in Batavia, Ill.) and the backing of the U.S. Department of Energy to support it.

Sharing History

Do you have interesting materials from IIT’s past—books or manuscripts from Armour Institute, Lewis Institute, or IIT and its schools—that you would like to donate to the university’s archives? To find out if your IIT treasure could help chart history at the university, contact IIT Archivist Catherine Bruck at archives@iit.edu or 312.567.6840.



READING OUR MINDS

100,000,000,000

NEURONS AT A TIME

THE HUMAN BRAIN CONTAINS APPROXIMATELY 100 BILLION NEURONS. TODAY, IIT SCIENTISTS ARE HELPING DOCTORS TAKE A CLOSER LOOK AT THEM.



Surgeons may soon be able to use a new kind of MRI imaging during surgical planning to help avoid damage to important nerves. IIT professor Konstantinos Arfanakis has advanced imaging technology so that getting clearer brain images faster is now possible. And thanks to IIT professors Miles Wernick and Yongyi Yang, pharmaceutical researchers can better evaluate the effectiveness of new medications, using advanced methods to extract patterns of brain activity from imaging scans.

Unlocking the secrets of the human brain. Just another way IIT is *Transforming Lives and Inventing the Future.*

To learn more about the exciting things happening at IIT, visit www.iit.edu.

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Alumnifest 2006

OCTOBER 6-8



You're invited to come back to IIT October 6-8 to attend ALUMNIFEST, the annual reunion for all IIT alumni—this year **for the first time being held in conjunction with the students'**

Homecoming celebration so together you can **share the vibrant life on the campus** while **connecting with old friends**. See how **beautiful** the campus looks. Get a **fresh taste of the academic excellence** and dedicated faculty for which IIT has always been known. Look beyond the exciting additions to the campus and inside you will still see the same curiosity and enthusiasm for learning

that has launched thousands of successful careers. Whether you're a recent graduate or celebrating your 50th reunion, today's IIT remains a **special place for transforming lives and inventing the future.**

For the latest program information and easy online event registration go to www.iit.edu/alumni or phone 800.IIT.ALUM (800.448.2586)

ONE STEP
back



TWO STEPS



forward



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