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Rensselaer’s Games and Simulation Arts and Sciences degree program is ranked among the top 15 programs in North America. Page 10.

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In January, IBM announced that it had chosen Rensselaer to be the first university to receive a modified version of Watson, its artificial intelligence computer system capable of answering questions posed in natural language. Watson, which gained widespread fame when it competed against and beat Jeopardy’s all-time champions, is able to sift through vast amounts of data and provide evidence-based answers to the questions of its human users.

“Watson really shows that a computer can start interacting in this modern technology and Web age at the level that people expect, where they can interact with it and talk to it eventually,” says James Hendler, professor and head of Rensselaer’s computer science department. “The human and the computer will be able to do things together that neither of them could do alone.”

Rensselaer graduates were there from the beginning as IBM conceptualized and created Watson. Now, more Rensselaer students are bound to follow in their illustrious footsteps as they enjoy close encounters with this “almost human” computer.

“The experience of working on Watson will give our students an advantage as they compete for the best jobs in Big Data, analytics, and cognitive computing,” says President Shirley Ann Jackson.
The New Polytechnic for Rensselaer

Responding to 21st-century challenges requires new collaborations

The urgent global concerns that we face in the 21st century—access to clean water, food security, energy security, environmental stewardship, health security, and disease mitigation, to delineate a few—are the key touchstones of The Rensselaer Plan 2024. Responding to these challenges will require our best efforts as an academic research community, in terms of ingenuity, collaboration, and good judgment.

The challenges that we face are of unprecedented magnitude, too complex to be resolved by the independent actions of people working in isolation. Because finding solutions is critical to our world, and to the ultimate survival of human kind, we must extend ourselves, through our imagination and creativity, our careful deliberation, our resourcefulness, and our strict focus and discipline.

Earlier this year, I proposed a new way of working to harness the power of science and technology, in a speech to the British Royal Academy of Engineering, titled “The New Polytechnic: Collaboration and Leadership Across Disciplines and Sectors to Address Urgent Global Challenges.” I suggested that we must engage a completely “New Polytechnic”—a new institutional model to enable academe to meet the global challenges of the 21st century, particularly in the arenas of “big data,” high performance computing, and Web science.

I define the New Polytechnic as an entirely fresh collaborative endeavor, merging across a multiplicity of disciplines, sectors, and global regions. It is animated by new technologies and tools—high performance computing is an example—applied in new ways, with input from big data, amplified by new platforms such as the Semantic Web, probed by advanced analytics, and guided by societal concerns and ethics. Engaged by a broad spectrum of participants, the New Polytechnic ultimately will facilitate novel and effective approaches to global challenges.

We at Rensselaer have appreciated the concept of the polytechnic since early in our history. We know, for instance, that discoveries in science can flow naturally into novel solutions to engineering problems and take practice to a new level. And history has taught us that working where disciplines overlap leads to fresh ideas and more comprehensive answers to emerging challenges.

In fact, Rensselaer already is at the leading edge of the New Polytechnic, with a number of distinct and powerful mechanisms for working across disciplines. We have our signature research thrusts, which focus our research efforts. We have our constellations, which provide formal structures for bringing students and faculty together in ways that recognize important areas of exploration. And, most visibly, we have organizations, like the Center for Cognition, Communication, and Culture, and platforms like the Curtis R. Priem Experimental Media and Performing Arts Center and the Center for Biotechnology and Interdisciplinary Studies.

Our approach to the New Polytechnic enables the people within the Rensselaer community to spark new endeavors and participate in efforts that will redefine how worldwide challenges are approached.

The New Polytechnic, of course, will not eliminate traditional disciplines, any more than the emergence of biochemistry as a distinct field replaced biology or chemistry. The depth of knowledge and the practices of the fields with which we are all familiar continue to provide great value and form strong foundations on which we can build new knowledge.

But the New Polytechnic enables collaboration at a deeper, more fluent level than ever before. It can help us to re-envision possibilities and clear away barriers on a vast scale. As we have seen, the New Polytechnic is an intellectual construct, a new way of thinking, a new way of doing. It will impact research in powerful new ways. It will impact pedagogy—as we enlist the next generations of students in this construct, and educate them to be leaders in the digital economy.

The New Polytechnic will utilize data more fully—in ever more sophisticated ways, while exploiting our ubiquitous interconnectivity.

In fact, the interconnectivity of people and things is generating massive amounts of data. To make sense of all that data requires us to capitalize on that very interconnectivity to collaborate in new ways. It requires us to break out of disciplinary silos, to develop and use new technological tools, and to employ high performance computing, data aggregation, and analytics.

The New Polytechnic—utilizing advanced technology to amalgamate a multiplicity of perspectives and disciplines—can lead to greater vision and deeper understanding. The New Polytechnic is our best bet for assuring the human hunger to know and to remedy, and the human desire for uplifted lives.
A team of Rensselaer Architecture students took home the “Structural Ingenuity” award at this year’s CANstruction event at the New York State Museum.

CANstruction is an international charity competition where architects and engineers compete to design and build structures made entirely from cans of food. At the close of the competition, all of the food is donated to local food banks.

This year is the third year that the Capital Region has held a CANstruction competition and the second year Rensselaer has had a team participate. Their project, titled “We’re not in CANsas anymore,” had a Wizard of Oz theme complete with a swirling tornado, yellow brick road, and replica of the Emerald City.

The team raised more than $4,000 to donate 3,000 cans, according to team captain Tyler Hopf, a senior in architecture.

“I think this is something I and the rest of the students feel is a huge part of our time here in the area and we will bring the spirit of the event with us wherever we end up,” Hopf says.
ROYAL ACADEMY OF ENGINEERING

Harnessing the Power of Science and Technology

President Shirley Ann Jackson has called for a new way of working and learning to harness the power of science and technology—particularly in the arenas of “big data,” high performance computing, and Web science—for the urgent purpose of developing answers to the intersecting challenges of energy, food, water, health, and national security, climate change, and natural resource allocation, which are fundamental to our daily lives and to the long-term viability of the planet.


Calling for increased collaboration across disciplines and sectors, Jackson said, “The urgent, global concerns that we face in the 21st century, and beyond, are more complex and even more subject to intersecting vulnerabilities. These challenges will take all that we have in terms of ingenuity, collaboration, and good judgment. These are challenges of unprecedented magnitude, too complex to be resolved by the independent actions of those working in isolation. Because they are critical to our world, and to the ultimate survival of humankind, they demand the best of our imagination and creativity, careful deliberation, tremendous resourcefulness, and the strictest focus and discipline.”

Envisioning a “New Polytechnic,” President Jackson noted that “effective use of advanced technological, collaborative platforms strongly suggests the need for a shift beyond traditional leadership, both in process and in personal approach.”

As the world becomes more digitally interconnected and data driven, she said we “will use data in ever more sophisticated ways, while exploiting our ubiquitous interconnectivity.”

President Jackson believes that a more interdisciplinary approach “will impact research in powerful new ways. It will impact the profession of teaching as we enlist the next generations of students in this construct, and educate them to be leaders in the digital economy.”

LIGHTING RESEARCH CENTER

Celebrating 25 Years of Lighting Research and Education

More than 175 guests from around the world came to Troy in March to celebrate the 25th anniversary of the Lighting Research Center (LRC) at Rensselaer. The event included a forum, tours of the LRC, and a dinner. The topic for the keynote and panel discussion was the value of lighting and the notion that society undervalues light, largely because we do not properly measure its benefits. LRC Director Mark Rea spoke about how the benefits of lighting go well beyond lumens per watt and proposed some new metrics to measure the value of light. Rea has served as director since the LRC was established in 1988.

One oft-overlooked benefit of lighting, heavily discussed throughout the event, is its profound effect on human health, such as on sleep, alertness, and productivity. For example, the LRC’s research on tailored light exposures as a non-pharmacological intervention has had especially promising results for individuals with Alzheimer’s disease, improving quality of sleep at night and alertness during the day. Human factors are of paramount importance when designing the built environment, and this has led to innovative LRC designs with benefits that range from increasing workplace productivity to preventing falls.

The challenge of correctly measuring and communicating the value of lighting was discussed by a five-member panel, chaired by Russ Leslie ’80, LRC cofounder and associate director—including keynote speaker Rory Sutherland, Ogilvy; Peter Bennich, Swedish Energy Agency; Steve Briggs, GE Lighting; Randy Burkett, Randy Burkett Lighting Design; and Andrew Vesey, AES.

David Haviland ’64, former vice president for institute advancement and former dean of architecture, and Evan Douglis, dean of architecture, spoke at the dinner reception. Rea announced the launch of the Glenn W. Bailey Industry Mentor program and its first mentor, Fred Heller ’47, chairman emeritus and former CEO of Genlyte, followed by a speech by Heller. Later, Rea presented the 25 Year Award to the New York State Energy Research and Development Authority (NYSERDA), accepted by NYSERDA President and CEO Francis Murray Jr., for 25 years of national leadership in lighting research that has transformed lighting, and for 25 years of support.
A Rensselaer team has created a simulation video game that gives young New Yorkers an unusual, firsthand perspective on how water makes its way from the upstate watershed to downstate homes and businesses.

Flo: The Watershed Project uses Kinect motion-sensing technology to simulate the experience of water as it travels the often treacherous journey from the peaks of the Catskills to the faucets of New York City. The project includes outdoor fieldwork, bridging the gap between the digital and natural worlds. It also emphasizes the connection between middle school students at opposite ends of the West-of-Hudson Watershed. Eighth-graders at the Bronx Academy of Letters and, 100 miles north, at Onteora Middle School were involved in game design and testing—a process that increased their awareness of their shared responsibility as stewards of the environment.

“This project is very much in keeping with the Rensselaer tradition of bridge building,” says Kathleen Ruiz, associate professor of integrated arts. “It bridges the distance between upstate and downstate students while furthering their understanding of complex environmental issues and the need for sustainable practices to protect the WOH Watershed and the New York City water system.”

The WOH Watershed supplies more than 90 percent of the 1.3 billion gallons of water consumed each day by New York City’s more than 8 million residents. That makes the watershed a lifeline for those who live downstate. But the work of safeguarding the watershed often falls to upstate residents.

With help from her colleagues in Games and Simulation Arts and Sciences, Ruiz assembled a team of Rensselaer students to help bring Flo to life. She also involved environmental scientists, education consultants, and science teachers and students from the Bronx and Onteora middle schools.

During the game, players take on the role of water and travel through waterway scenarios designed in accordance with watershed geographical data. Each scenario is another “level” of the game and includes a series of mini-games that players must complete so the water can continue cascading south. Challenges include reducing sediment, implementing storm water control systems, reducing pollutants, and engaging in other eco-friendly practices.

“It’s not just the science that gets people to empathize and protect,” Ruiz says. “Engaging with art will get them involved on another level.”

A team of interdisciplinary researchers has developed a new method for significantly increasing the heat transfer rate across two different materials. Results of the team’s study could enable new advances in cooling computer chips and light-emitting diode (LED) devices, collecting solar power, harvesting waste heat, and other applications.

By sandwiching a layer of ultrathin “nanoglue” between copper and silica, the research team demonstrated a fourfold increase in thermal conductance at the interface between the two materials. Less than a nanometer thick, the nanoglue is a layer of molecules that form strong links with the copper (a metal) and the silica (a ceramic), which otherwise would not stick together well. This kind of nanomolecular locking improves adhesion, and also helps to synchronize the vibrations of atoms that make up the two materials which, in turn, facilitates more efficient transport of heat particles called phonons.

As computer chips grow smaller and more complex, manufacturers are constantly in search of new and better means for removing excess heat from semiconductor devices to boost reliability and performance. With photovoltaic devices, for example, better heat transfer leads to more efficient conversion of sunlight to electrical power. LED makers are also looking for ways to increase efficiency by reducing the percentage of input power lost as heat. Ganpati Ramanath, professor in the Department of Materials Science and Engineering, who led the new study, says the ability to enhance and optimize interfacial thermal conductance should lead to new innovations in these and other applications.

“Interfaces between different materials are often heat-flow bottlenecks due to stifled phonon transport. Inserting a third material usually only makes things worse because of an additional interface created,” Ramanath says. “However, our method gives rise to multifold increases in interfacial thermal conductance, contrary to poor heat conduction seen at inorganic-organic interfaces. This method to tune thermal conductance by controlling adhesion using an organic nanolayer works for multiple materials systems, and offers a new means for atomic- and molecular-level manipulation of multiple properties at different types of materials interfaces.”
LALLY SCHOOL OF MANAGEMENT AND TECHNOLOGY

Business Plan Competition Fosters Entrepreneurship

IT'S NEVER TOO EARLY TO ENCOURAGE COLLEGE STUDENTS TO find a way to turn an idea into a viable business, according to the Lally School of Management and Technology. To support the concept, the Lally School hosted its annual business plan competition for undergraduate and graduate students in February.

“The Lally School is committed to fostering entrepreneurship, innovation, and leadership,” says Thomas Begley, dean of the Lally School. “This competition is an exciting event where student entrepreneurs compete for both cash prizes and in-kind services. Most important, the competition energizes and develops the student entrepreneurial mindset of the competitors to encourage them to believe that starting a business is a real possibility.”

The aspiring entrepreneurs had their sights set on winning part of the $15,000 cash prize and in-kind services being awarded to winning undergraduate and graduate teams.

The first-place graduate team winner was Vital Vio. The company, led by James Peterson ’12, CTO and co-founder, is working to develop a revolutionary lighting technology that can safely provide environmental disinfection in health-care facilities and co-founder, is working to develop a revolutionary lighting technology that can safely provide environmental disinfection in health-care facilities to reduce the rate and financial burden of hospital-acquired infections.

“Students who are involved in the competition received help from a variety of resources in Rensselaer’s Emerging Ventures Ecosystem and surrounding community, including our Entrepreneurs-in-Residence, mentors from the Entrepreneurs’ Organization of Albany, our Rensselaer faculty and staff, local business leaders, and our alumni ae network,” says Gina O’Connor, associate dean and professor at the Lally School and faculty director of the Severino Center.

A team of astrophysicists—led by Douglas Whittet, director of the New York Center for Astrobiology at Rensselaer, will use the observatory’s infrared absorption spectroscopy capabilities to search for a suite of molecules in clouds of dust surrounding five young stars. Their work is part of the first season, or cycle, of research to be performed aboard the Stratospheric Observatory for Infrared Astronomy (SOFIA), the largest airborne observatory in the world.

“The scientists will determine the chemical composition of distant regions through absorption spectrometry, a technique that takes advantage of the fact that different types of matter absorb different segments of the wavelength spectrum generated by a given source of energy—in this case, the newly born star. We’re trying to look at a part of the spectrum that doesn’t get through the atmosphere very well,” he says. “Earth’s atmosphere, which contains a lot of moisture, absorbs most of the infrared radiation we want to detect. But SOFIA cruises at an altitude of about 40,000 feet, which is above almost all of the moisture, and allows us an unimpeded view of the stars. There’s really nothing else out there right now that could collect the data we need for this research.”

A partnership of NASA and the German Aerospace Center, SOFIA consists of an extensively modified Boeing 747SP aircraft carrying a reflecting telescope with an effective diameter of 2.5 meters (100 inches). The airborne observatory, based at NASA’s Dryden Aircraft Operations Facility in California, began a planned 20-year lifetime with its first cycle from November 2012 to December 2013.

“We’re interested in how the matter that you need to make planetary life came to be: Where did it come from and how was it formed? And since it happened here in our solar system, is it likely to happen elsewhere as well?” says Whittet, also a professor of physics. “We can’t go back in time to observe our solar system when it was born, but we can look at other regions that we believe are similar and use them as analogs for the early solar system.”

The scientists will determine the chemical composition of distant regions through absorption spectrometry, a technique that takes advantage of the fact that different types of matter absorb different segments of the wavelength spectrum generated by a given source of energy—in this case, the newly born star. As they are searching for signs of life, they will be looking for molecules that are precursors to life on Earth. They have already found some promising molecules, including the most abundant molecule in our solar system, water.

Rensselaer astrobiology researchers will take part in a series of nighttime flights on an airborne observatory to search newly born stars for the presence of precursors to life.
Graduate student Ming Ma has developed a new method to manufacture light-emitting diodes (LEDs) that are brighter, more energy efficient, and have superior technical properties than those on the market today. His patent-pending invention holds the promise of hastening the global adoption of LEDs and reducing the overall cost and environmental impact of illuminating our homes and businesses.

For this innovation, Ma, a doctoral student in the Department of Materials Science and Engineering, has been named the winner of the prestigious 2013 $30,000 Lemelson-Rensselaer Student Prize.

“For more than 175 years, Rensselaer has produced some of the world’s most successful engineers and scientists, explorers and scholars, innovators and entrepreneurs. Doctoral student Ma, with his groundbreaking invention to manufacture LEDs, honors and continues this tradition of excellence,” says Prabhat Hajela, provost.

Ma is the seventh recipient of the Lemelson-Rensselaer Student Prize. First given in 2007, the prize is awarded annually to a Rensselaer senior or graduate student who has created or improved a product or process, applied a technology in a new way, redesigned a system, or demonstrated remarkable inventiveness in other ways.

“Invention is critical to the U.S. economy. It is imperative we instill a passion for invention in today’s youth, while rewarding those who are inspiring role models,” says Joshua Schuler, executive director of the Lemelson-MIT Program. “This year’s Lemelson-MIT Collegiate Student Prize winners prove that inventions and inventive ideas have the power to impact countless individuals and entire industries for the better.”

Conventional incandescent and fluorescent light sources are increasingly being replaced by more energy-efficient, longer-lived, and environmentally friendlier LEDs, but LEDs still suffer from challenges related to brightness, efficiency, and performance. With his project, “Graded-refractive-index (GRIN) Structures for Brighter and Smarter Light-Emitting Diodes,” Ma faced these problems head-on and tackled a fundamental, well-known technical shortcoming of LED materials.

LEDs are hampered by low light-extraction efficiency—or the percentage of produced light that actually escapes from the LED chip. Ma’s patent-pending technology has demonstrated a light-extraction efficiency of 70 percent, meaning 70 percent of light escaped and only 30 percent was left trapped inside the device—a huge improvement over the 25 percent light-extraction efficiency of most of today’s unprocessed LEDs.

Overall, Ma’s innovation could lead to entirely new methods for manufacturing LEDs with increased light output, greater efficiency, and more controllable properties than both surface-roughened LEDs and the LEDs currently available in the marketplace.
THE RENSSELAER GAMES AND SIMULATION ARTS AND SCIENCES (GSAS) program was named among the top 15 out of 150 undergraduate game design programs in the United States and Canada, according to the “Top Schools to Study Video Game Design for 2013” report from the Princeton Review, in partnership with PC Gamer magazine.

The new report marks the fourth consecutive appearance of Rensselaer on the list since it was launched by Princeton Review in 2010. The 2013 report is based on a survey the Princeton Review conducted in 2012-13 of 150 programs at institutions in the U.S. and Canada offering video game design coursework and/or degrees, according to the Princeton Review. The Rensselaer program is ranked 11th out of the 150 programs surveyed.

“The Games and Simulation Arts and Sciences program at Rensselaer is first-rate, offering in-depth concentrations that provide a wealth of interdisciplinary experience taught by faculty who are leaders in the field,” says Mary Simoni, dean of the School of Humanities, Arts, and Social Sciences. “We are honored to have received this recognition.”

The GSAS program offers a comprehensive understanding of interactive digital media, a balance of disciplinary competencies, and the mastery of a self-defined set of interrelated disciplinary challenges. The program was founded in 2007 and graduated its first full class in 2011.

Within the program, students gain an understanding of games from the broadest range of possible perspectives. They play an active role in research and education in disciplines that include the visual and aural aspects of new media in the electronic arts, cognition and artificial intelligence in cognitive science, digital graphics and software development in computer science, experimental game design in psychology, and human computer interaction and computer graphics in communication and the arts.

Current students and recent graduates receive regular recognition for their work, including recent honors through the Independent Games Festival Student Showcase, the Unity3D DX11 Challenge, and Global Game Jam 2013.

GAMES AND SIMULATION ARTS AND SCIENCES

Games Program Among Best in North America

ENTREPRENEURSHIP

Class of ’51 Competition Highlights Entrepreneurship

STUDENT VISION AND INVENTIVENESS WERE demonstrated in the latest array of entries and winners of the Class of ’51 entrepreneurship competition. Sponsored by the Class of ’51 Entrepreneurship fund, the event encourages undergraduate and graduate students to pursue the development of entrepreneurial ideas.

Judged from the entries of nearly 50 students, three ideas were awarded prizes for their problem solving, uniqueness, and feasibility.

“Each year, the quality and potential of the student entries get better and better,” says Rob Chernow, vice provost for entrepreneurship and chair of the competition. “The judging for this year was very close overall and several great ideas were submitted. The winners stood out in how thoroughly their concepts were developed and how well they were presented.”

This competition is one of three endowed funds established in 2000 by the Class of ’51, in honor of their 50th Reunion year. Winning students also will receive mentoring in helping them to take their innovations to the next steps.

This year’s Class of ’51 $2,500 first-prize award winner is Navid Attary ’13, civil and environmental engineering, who has developed a seismic protection system to boost the resiliency of bridges and buildings in earthquakes. His system uses a new and novel method to dissipate the destructive forces of earthquakes. It has the potential to save countless lives and prevent billions of dollars in damages around the world every year.

The second-prize winner is Atharva Poundark ’13, biomedical engineering, who has developed a sequential materials and fabrication approach that better mimics bone mineral formation seen in nature.

Third prize went to Michael Fede ’13, aerospace engineering, for his application for computers and smartphones enabling a virtual preview of a product in its intended environment.

Testing of an initial prototype has shown that Navid Attary’s patent-pending technology can reduce the force in structures during earthquake conditions by up to 60 percent.
BIOLGY

Road Signs on the Intracellular Highway

The interior of every cell within our bodies is crisscrossed with a network of molecular highways upon which nutrients, replacement parts, and other vital materials travel to their appropriate location. The system is immensely complex, and wrong turns are among the cellular malfunctions observed in connection with diseases like Alzheimer’s, amyotrophic lateral sclerosis (ALS or Lou Gehrig’s Disease), and poly-cystic kidney disease.

That much is known. But the road signs that direct traffic on the highways—collectively known as the cytoskeleton—are a mystery, and now the subject of research for Lee Ligon, associate professor of biology. Ligon has been awarded a five-year $1.5 million grant from the National Institutes of Health to unravel one thread of the mystery, testing whether a particular feature scientists have observed on the molecular highways—called “microtubules”—could be serving as a directional sign for traffic. Misdirected traffic results in long delays in the delivery of vital intracellular cargo, particularly in nerve cells that extend the full length of the body, and has been observed in conjunction with several neurodegenerative diseases.

“This is a really fundamental project to understand the basic mechanisms of how cells work, and it has ramifications for lots of diseases,” Ligon says. “This is basic science, and a lot of the really groundbreaking changes in the way we approach various diseases have started out as these basic science findings.”

Ligon’s research will focus on microtubules, one of three sets of structural proteins that make up the cytoskeleton. As their name suggests, microtubules are hollow tubes, each tube composed of 13 separate strings of “protofilaments” joined side by side to form a tube.

“Microtubules are long filaments, hollow like a straw, and with a certain degree of structural rigidity, like girders in a building,” Ligon says. “We’re looking for things that make the microtubules different from one another, things that could serve as road signs along the way.”

The surface of a microtubule is textured with a series of evenly spaced bumps. Molecular “motors” carrying various cargo use repeated chemical reactions to travel from one bump to the next, moving along the length of the microtubule. Scientists already know that the bumps are not symmetrical, giving the “road” a different surface profile in each direction. The motors must be shaped appropriately for the surface of the road, and motors that can travel in one direction have a different shape from motors that can travel in the reverse direction. This polarity seems to be one of the main navigational markers in the system.

But, Ligon says, the shape of the individual bumps can also be altered on the fly, which may allow the cell to re-route cargo while it is in transit, if necessary.

“We think that these modifications are one of the key ways that the cell coordinates its traffic—sending different cargoes to different parts of the cell,” Ligon says. “To use an analogy, the street signs seem to be changing depending on where the cell needs traffic to go. That may be giving the cell a way to respond to a changing environment.”

THE SCHOOL OF SCIENCE HAS REFURBISHED THE OPTICS on a Boller and Chivens 16-inch Cassegrain telescope, the largest telescope in the Hirsch Observatory, on the roof of the Jonsson-Rowland Science Center. The telescope, which General Electric donated to Rensselaer in 1980, is used by observational astronomy students, by the Rensselaer Astrophysical Society (RAS), and during public viewing sessions offered by the Department of Physics, Applied Physics, and Astronomy and the RAS.

The refurbishment, which included improvements to the surface of the mirrors and minor structural changes, should result in a clearer, brighter picture, says Heidi Newberg, professor of physics, applied physics, and astronomy.

“The mirrors are made of glass with a thin layer of aluminum on top of the glass topped by a protective coating. The mirror is pointing up and, over time, dust falls onto the mirror and accumulates, and the coating deteriorates,” Newberg says.

In addition to general deterioration, the original design of the mirror housing and mounts made it very difficult to adjust and the mirrors themselves have been misaligned since the last time the mirrors were “re-aluminized,” about 20 years ago. Newberg says the misalignment caused some distortion of the image.

The contractor who repaired the telescope, Peter Mack of Astronomical Consultants and Equipment, made minor structural changes to the mirror housing and mounts that corrected the issue and will make it much easier to remove and remount the mirrors and align them properly.

The net effect should be a noticeable improvement.

“We’re hoping that everything will be much sharper,” Newberg says. “We’ll see details and features that are closer together than we could before.”
Gustavo Crembil, Assistant Professor of Architecture, has received a prestigious VIDA Art and Artificial Life International Award for “TZ’IKJ,” an art installation that will use mud-encased giant spherical robots to provide insights into possible parallel narratives between contemporary robotics and Mayan creation myths. Crembil shares the award with collaborator Paula Gaetano-Adi, a former electronic arts instructor at Rensselaer.

VIDA awards recognize pioneering efforts of artists from Spain, Portugal, and Latin America and provide support in two categories: finalized projects and incentives for production. Crembil and Gaetano-Adi, both of Argentina, won a Production Incentive Grant to produce the first of seven robots required for their installation. VIDA funding is provided by Fundacion Telefonica of Spain.

Two Rensselaer architecture students, Cat Callaghan ’12 and Travis Lydon ’13, helped Crembil and Gaetano-Adi develop their proposal, which was submitted last semester. To Crembil, the VIDA is especially gratifying because it indicates that his work still resonates in Latin America.

“As Latin Americans working in the United States, we want to be part of regional discussions in both the North and the South,” Crembil says. “We were surprised and glad to discover that our work was so well-received in the southern region.”

The TZ’IKJ project was inspired by a Mayan myth, which describes one of the gods’ failed attempts to create man out of mud. (TZ’IKJ is Mayan for mud or clay.) According to the creation myth, the early mud beings were blind, clumsy creatures, with multiple perceptual and cognitive deficiencies. These creatures moved without understanding or purpose, and Crembil and Gaetano-Adi’s robots will behave in much the same way.

When completed, the installation will consist of seven geodesic robots, each covered in a dried mud crust made using a pre-colonial construction technique. Each robot will be covered in a dried mud crust, made using a pre-colonial construction technique. The robots will interact unpredictably, moving slowly and occasionally colliding with one another. Each collision will set the robots on a new course and will take its toll on the robots’ mud casing. Over time, pieces will break off and provide a glimpse of the robots’ interior construction—a result in keeping with the Mayan description of the mud beings, which “just crumbled and dissolved away.”

A Fulbright scholar, Crembil has practiced architecture in his native Argentina and the U.S. His projects draw from the fields of design, architecture, engineering, performance art, communication, and political activism. Crembil’s works have been exhibited at the Museum of Modern Art in New York, Cranbrook Art Museum in Michigan, the Emilio Caraffa Museum of Fine Arts in Cordoba, Argentina, and during Dutch Design Week in Eindhoven, Netherlands.
The Lighting Research Center (LRC) recently unveiled its new photometry laboratory with a ribbon cutting at its 25th anniversary celebration in March. The new laboratory is supported with funding from the New York State Energy Research and Development Authority (NYSERDA). Irvin “Jack” White, the past NYSERDA president who issued the 1987 request for proposals that established the LRC, cut the ribbon alongside LRC Director Mark Rea and current NYSERDA President and CEO Francis Murray Jr.

“This new well-equipped laboratory expands the LRC’s capabilities in lighting measurement and lighting product evaluation, in addition to providing tools to further the LRC’s research into new lighting technologies and new metrics,” says LRC Professor and Director of Research Narendran. “Our dedicated staff here at the LRC, especially Andy Bierman, Yiting Zhu, and Martin Overington, worked countless hours setting up the equipment, which is highly complex. Thanks to their hard work, the lab is now fully operational.”

The laboratory includes an imaging type goniophotometer system, mirror type goniophotometer system, illuminance meters, luminance meter and color analyzer, spectrometers, National Institute of Standards and Technology calibrated lamp standards, a large thermally controlled integrating sphere system, and thermal test chambers. The new equipment allows LRC researchers to conduct photometric measurements on a wider range of lighting products and systems, including luminaires.

In addition, the new laboratory expands the LRC’s training and education capabilities at its Photometry Institute, a three-day interactive course designed to build the knowledge and skills to establish and conduct photometric testing and evaluation of lighting products and systems. The hands-on course is geared toward engineers, technicians, managers, testing personnel, and product designers who want to learn more about photometric, colorimetric, and related evaluation of lighting products and prototypes, including the latest requirements for testing light-emitting diode (LED) and traditional lighting products—for example, understanding testing requirements for labeling programs such as ENERGY STAR® and Lighting Facts.

LRC researchers will also be able to assist lighting manufacturers with a wider range of lighting measurements and evaluation services. The LRC is recognized throughout the world for objective, independent, third-party testing of lighting products and systems. The hands-on course is geared toward engineers, technicians, managers, testing personnel, and product designers who want to learn more about photometric, colorimetric, and related evaluation of lighting products and prototypes, including the latest requirements for testing light-emitting diode (LED) and traditional lighting products—for example, understanding testing requirements for labeling programs such as ENERGY STAR® and Lighting Facts.

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Through his gift, Jepson would like to see architecture students experience similar success in their careers by providing opportunities to learn about the important role business plays in architecture.

“I am hopeful that my gift will enhance the experience of architecture students by further teaching them about the business side of the profession, which will, in turn, help both the students and the school achieve greater prominence,” Jepson says.

“The creation of a named professorship in the School of Architecture represents a transformative educational opportunity for our program,” says Evan Douglis, dean of architecture. “It enables us to bring a distinguished leader from anywhere in the world to the school in support of our commitment to develop cutting-edge research with global impact.”
DOUG MERCER ’77 BELIEVES THAT IT TAKES more than lectures on theory, reading textbooks, and taking exams to make a successful electrical engineer. Mercer is convinced that “the art of tinkering” is an essential experience that students may lack in the standard university setting. That is why he was eager to create the Douglas Mercer ’77 Laboratory for Student Exploration and Innovation in the Department of Electrical, Computer, and Systems Engineering (ECSE) at Rensselaer.

As Mercer says, “There are many famous stories about how great technology companies got started by tinkerers in their garages in places such as Palo Alto. One way to think about this new lab is to picture it as one of these garages in the middle of a great research university, to bring together students, faculty, and industry. I can’t think of a better scenario to foster innovation.”

The lab will provide an open shop environment for approximately 500 students each year to work on class design projects, using state-of-the-art hardware.

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Volvo Funds New Center for Sustainable Urban Freight Systems

Rensselaer has announced the launch of its new Center for Sustainable Urban Freight Systems. Dedicated to investigating new ways of infusing sustainability and efficiency into the way businesses send and receive goods, the new $4 million center is funded by the Volvo Research and Educational Foundations (VREF) through its Future Urban Transport research program and recognized as a VREF Center of Excellence.

“Rensselaer is a driving force in transportation engineering research, and we are pleased to partner with the Volvo Research and Educational Foundations on the new Center of Excellence for Sustainable Urban Freight Systems,” says Prabhat Hajela, provost. “This collaboration positions Rensselaer and the School of Engineering to make an even greater impact on transportation systems research, a critically important field that affects all of our lives.”

“Urban freight, ‘the last mile,’ accounts for a large and increasing part of urban transport flows. The challenges this poses require urgent attention,” says VREF Chairman of the Board Anders Brännström. “New solutions to managing freight in urban areas are emerging, and the need for new knowledge and collaboration is greater than ever.”

Transportation engineering expert Jose Holguín-Veras, the William H. Hart Professor at Rensselaer, will lead the center.

“The fundamental quest of the Center for Sustainable Urban Freight Systems is one of behavior modification: to change the idea of urban freight systems from one driven by profit maximization to one that accounts for the externalities produced,” says Holguín-Veras. “Our research team will use technology, public policy, and proactive engagement of the private sector as building blocks to design and implement actionable strategies to transform and push forward the leading edge of urban freight systems.”

Urban freight transportation systems represent a multifaceted challenge. The imperative of companies to maximize their profits often leads business owners, regulators, and others to concede some of the less desirable byproducts of freight transportation: delivery trucks causing traffic congestion and air pollution in city centers, which in turn make the city centers less hospitable and accessible to travelers, tourists, and local residents. This challenge has significant technological, political, social, and environmental implications.

The new center seeks to jump-start the creation of a framework that engages and fosters collaboration between cities, the private sector, and academia to tackle this universal challenge. Center researchers will seek to develop and identify a holistic, integrated suite of technologies, regulations, and incentives to help shape a new paradigm of freight transportation systems that are more cost efficient, more energy efficient, and less disruptive to commuter traffic in urban centers.

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ENGINEERING

NASA Selects Two for Aeronautics Scholarships

ENGINEERING STUDENTS JAMES PRESSLY AND CHRIS VOLK are among just 20 undergraduates nationwide to be awarded 2012 NASA Aeronautics Scholarships. As such, Pressly and Volk will receive two years of education-related financial support, plus a paid summer internship at a NASA research center.

NASA launched the Aeronautics Scholarship Program (ASP) in 2008 to advance aeronautics by investing in “our nation’s research leaders of tomorrow.”

Since the program’s inception, five Rensselaer undergraduates have earned ASP awards—an achievement that places the Institute among the top five for number of ASP recipients.

“These awards recognize some of the nation’s most promising young engineers,” says Prabhat Hajela, provost. “Our track record speaks volumes about the strength of our programs and the caliber of our students.”

Pressly is pursuing a B.S./M.S. in materials engineering and will complete the five-year program in four years. A member of the swimming and diving team, he has earned Liberty League All-Academic honors. He also serves as recording secretary for Delta Phi Fraternity.

An aeronautical engineering major, Volk is treasurer of Engineers without Borders, a member of Engineers for a Sustainable World, and treasurer and webmaster for Lambda Chi Alpha Fraternity. He has interned at Sandia National Laboratories in New Mexico. Volk’s interest is in combustion and propulsion research, with an eye toward improving fuel efficiency. “Over the years, engines have been improved and perfected,” he says, “but fuels have remained relatively standard. One day, I hope to be part of a team that makes aeronautical travel more affordable by creating more efficient fuels.”

Previous Rensselaer ASP recipients include Alex Angilella and Austin Rivera, both in 2011, and Heather Kline in 2009.

GREEK LIFE

Alpha Phi Alpha Fraternity Celebrates 30th Anniversary

IN FEBRUARY THEOMICRON UPSILON CHAPTER OF ALPHA PHI ALPHA CELEBRATED THE 30TH ANNIVERSARY OF THE CHAPTER’S FOUNDING AT RENSSLEAER. MORE THAN 50 FRATERNITY MEMBERS RETURNED TO CAMPUS TO CONNECT WITH EACH OTHER, SERVE THE COMMUNITY, AND PAY TRIBUTE TO THE FRATERNITY’S LONG-STANDING MOTTO: “FIRST OF ALL, SERVANTS OF ALL, WE SHALL TRANSCEND ALL.”

Activities included the Black & Gold Ball, an annual dinner and scholarship pageant that provides students with an opportunity to network with faculty, staff, and alumni; and a community service day at Joseph’s House and Shelter, located in downtown Troy. The partnership with Joseph’s House has lasted for nearly 20 years. The fraternity has organized an annual “Sleepout for the Homeless” event to collect monetary donations for the organization. Each spring, fraternity members leave the comfort and warmth of their residence halls to raise funds and awareness of the homeless in the city of Troy and beyond.

“Joining Alpha Phi Alpha Fraternity was one of the greatest decisions I have made in my life,” says Matthew Dixon ’12, chapter president, who received his bachelor’s in civil engineering and is now pursuing his master’s in financial engineering and risk analytics. “The friendships and experiences have been life-altering, and have made me a better scholar, leader, and person.”

“The Omicron Upsilon Chapter of Alpha Phi Alpha was founded at RPI on Feb. 19, 1983, with the help of Brother Dr. Paul Zuber, RPI’s first black tenured professor; seven men known as our ‘Mini Jewels’ brought Alpha Phi Alpha to the campus community,” says Scot Spencer ’83, who studied architecture. “Since then, the Omicron Upsilon chapter has grown to nearly 80 lifelong brothers. For a group of men firmly rooted in the notion that progress is forward-moving, this celebration offers a reflection of our rich history, dynamic spirit, and the connections needed to be stewards for the advancement of a new generation.”
SHAWN-YU LIN, a nano-photonics expert who is professor of physics and a member of the Future Chips Constellation and Smart Lighting Engineering Research Center, has been selected as a fellow of the American Association for the Advancement of Science (AAAS). Lin is one of 702 newly selected fellows recognized for their scientifically or socially distinguished efforts to advance science or its applications. AAAS cited Lin for “pioneering and developing photonic crystals.” Lin’s work has received funding from the U.S. Air Force Office of Scientific Research, the U.S. Department of Energy’s Office of Basic Energy Sciences, U.S. National Science Foundation, and the Focus Center-New York for Interconnects. He is a fellow of the American Physical Society and the Optical Society of America.

LAURIE LESHIN, dean of the School of Science, has been appointed by President Barack Obama to the advisory board of the Smithsonian Institution’s National Air and Space Museum. The museum is the largest collection of historic aircraft and spacecraft in the world, and a vital center for research into the history, science, and technology of aviation and spaceflight, as well as planetary science and geophysics. Leshin joined Rensselaer in 2011, prior to which she served for six years as a senior executive at NASA, working on both the science and human exploration programs.

X. GEORGE XU, head of the Nuclear Engineering Program, has been appointed to serve on the Radiation Advisory Committee of the U.S. Environmental Protection Agency (EPA) Science Advisory Board. In this three-year role, Xu will advise the EPA on national policies related to radiation protection and safety. Xu also was elected a fellow of the American Nuclear Society (ANS) and was recognized with the Professional Excellence Award from the ANS Radiation Protection and Shielding Division.

DONALD SCHWENDEMAN, professor, has been named head of the Department of Mathematical Sciences. Schwendeman’s expertise lies in the general field of computational science and engineering where he has made contributions in diverse topics such as combustion and reactive flow, optimizing transonic and hypersonic wings, fabrication of integrated circuits, and the stability of imploding shock waves. He is also a longtime champion of the Mathematical Problems in Industry Workshop, an annual event in which faculty and students in applied mathematics tackle real-world problems posed by industry partners.

DEEPAK VASHISHTH, professor and head of biomedical engineering, has been appointed director of the Center for Biotechnology and Interdisciplinary Studies. Vashisht, an expert in tissue engineering, has more than $5 million in funding from the National Institutes of Health for his research into biology and hard tissue mechanics, cellular control of tissue growth and development, mechanobiology of skeletal tissue regeneration, and fatigue fractures of long bones. He is a fellow of the American Institute for Medical and Biological Engineering.

JOYCE MCLAUGHLIN, Ford Foundation Professor in the Department of Mathematical Sciences, has been named an inaugural fellow of the American Mathematical Society. She was recognized for her distinguished contributions to the creation, exposition, advancement, communication, and utilization of mathematics. McLaughlin’s main research area is in nonlinear analysis as applied to parameter identification in inverse problems.

GANPATI RAMANATH, professor of materials science and engineering, has received the Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation in Germany. Given in recognition of Ramanath’s research record and accomplishments in the fields of nanomaterials and interfaces, the award includes an invitation to meet the president of Germany, and to spend up to one year in the country as a visiting scholar at research institutions to collaborate on long-term research projects. The Humboldt Foundation grants only up to 25 Friedrich Wilhelm Bessel Research Awards annually. Known throughout the global materials science and engineering community as a leader and innovator, Ramanath focuses his research on nanostructured materials and interfaces for applications in electronics and energy.

KAREN HANSEN, associate athletics director and senior woman administrator, has been named this year’s emerging athletic administrator by the National Association of Division III Athletic Administrators. The award, which is given annually to one national honoree, is presented to an athletics administrator with seven or fewer years’ experience at the Division III level. Recipients are recognized for their involvement and leadership roles at their respective institutions or as part of a conference office.

JOHN BULLOUGH ’91, senior research scientist at the Lighting Research Center, has received the Ronald K. Mengel award from the Fire Protection Research Foundation, National Fire Protection Association, for his presentation at the Research Foundation’s March 2012 symposium, titled “Characteristics of Light-Emitting Diode Sources: Relevance for Visual Signal Detection.”

CARL WESTERDAHL, former dean of students, director of alumni and community relations, and a long-time supporter of Rensselaer, died on April 3. As dean of students, Westerdahl initiated programs for growing numbers of women, minority, and international students. During his tenure as director of alumni and community relations, he helped build an outstanding board of trustees for the Rensselaer Alumni Association and invigorated the alumni awards program. He was co-author of the history book Rensselaer: Where Imagination Achieves the Impossible, and was active in the creation of the Rensselaer Alumni Hall of Fame, serving as consultant and researcher for many years. In 1993, he provided funding to establish the Pillars of Rensselaer Award to honor long-term staff members who show professionalism and caring and serve as outstanding representatives of Rensselaer.
AT HER INAUGURAL ADDRESS on September 24, 1999, with the world on the cusp of a new millennium, President Shirley Ann Jackson proposed a bold initiative: a “new Rensselaer Plan” that would revitalize the revolutionary pedagogy founded by Amos Eaton in 1824—what he called The Rensselaerean Plan—and catapult Rensselaer into the 21st century and into a new status as a top-tier world-class technological research university with global reach and global impact.  

BY ROBIN EILEEN BERNSTEIN
“Two stakes were put in the ground back then,” says President Jackson today. One was to create a compelling student experience, and the other was to ramp up research, particularly in new fields such as biotechnology and information technology. Thus began the transformation of Rensselaer into a fully realized university guided by rigorous educational imperatives and innovative new research centers, anchored by leading-edge interdisciplinary platforms and degrees, and energized by a growing holistic and global student experience.

Now, with the bicentennial of Rensselaer less than 12 years away, the Institute has unveiled a refreshed and updated blueprint for the future called The Rensselaer Plan 2024, which builds on this upward trajectory to ensure that Rensselaer continues and enhances its 21st-century prominence. It renews the university’s commitment to the six-part strategic focus of the original plan, and underscores the distinguishing strengths of the Institute in interdisciplinary inquiry and research, interactive learning, and entrepreneurship.

**FROM “TRANSFORMING” TO “TRANSFORMATIVE”**

The original plan transformed Rensselaer. Annual research funding tripled to $100 million, as five new signature research thrusts were established. The professoriate now includes 34 new named chairs, including 24 Constellation professors and 275 new faculty hires. The original plan laid the foundation for the successful $1.4 billion Renaissance at Rensselaer fundraising campaign. It is no wonder there has been a threefold surge in undergraduate admission applications, and that graduate applications are at their highest levels ever. Consequently, admission to Rensselaer is more selective than ever. Perhaps most visible has been the physical transformation of the Troy campus, with new and enhanced platforms, facilities, and infrastructure to the tune of $725 million, all of which serve to vastly invigorate education, research, and student life. “We have accomplished a lot,” says President Jackson. “There is a lot of new energy.”

The difference now is that the refreshed Rensselaer Plan shifts gears. It is no longer about transforming Rensselaer as much as it is about establishing Rensselaer as a truly transformative force. President Jackson is quick to explain that this does not mean that the Institute will not continue to change. “It will, and we intend for it to,” she says. But it is time for Rensselaer to build upon what already has been accomplished and, increasingly, to reach beyond its borders with significant and lasting worldwide influence. This means becoming a university that is transformative in the lives of its students, in its pedagogy, and in the global impact of its research. As President Jackson says, “We want to be a transformative force in those areas that make a difference for the world, make a difference for our students, and make for a great university.”

**A FOCUS ON STUDENT LIFE**

**Being a transformative university** begins with its students. The focus at Rensselaer today remains on discovery, invention, and innovation, while
supporting all aspects of student growth and development.

Fortunately, the original Rensselaer Plan was a game-changing driving force in expanding the award-winning First-Year Experience into student education-centered CLASS (Clustered Learning, Advocacy, and Support for Students). CLASS is not just an initiative, but a new way of life at Rensselaer. CLASS intentionally blurs the line between academic and student life, fostering a stronger sense of community across the student experience. Learning now takes place throughout the Institute, and networks for support, intellectual growth, and personal development exist throughout a student’s time at Rensselaer.

The Rensselaer that some alumni and alumnae may recall has been transformed, says Tim Sams, vice president for student life. CLASS develops an already highly capable student body, while building affinity among students, and between students and the Institute. The Rensselaer Plan 2024 will strengthen the student experience with co-curricular programs that marry rigorous intellectual challenges with a holistic, supportive student environment.

By focusing on all students, regardless of their residential location, CLASS offers students a road map to encourage personal and intellectual growth, and inspires them to act with intent and focus, Sams says. Rensselaer’s 200-plus student clubs and organizations support CLASS in its six target areas—personal, professional, leadership, and cultural development, as well as good citizenship within both the campus community and neighboring communities, including a new competition this semester, sponsored by the Office of Student Life and spearheaded by Cary Hall’s Design and Arts Housing floor, challenging students to create a CLASS brand identity and logo.

CLASS is not just for undergraduates. The graduate population is growing and is an increasingly important part of university life. With the new Rensselaer Graduate Housing at City Station, graduate students are reaping the benefits of clustered living. CLASS programs offer graduate students assistance with their unique needs, such as balancing the demands of school and family, or support with dissertations and research—including, for example, the importance of academic integrity, or turning innovative research into commercial enterprises.

CLASS, by definition, is proactive, according to Sams, and seeks to tap into Rensselaer students’ desire to succeed. Pathways is a new program in which staff from the Office of Student Life reach out to students in such well-traveled places as the Rensselaer Union, Jazzman’s Café, and the library. Student Life staff field questions from students in any area of need, and introduce resources and opportunities. These serendipitous encounters make the campus feel more intimate and connected.

CREATING AN INNOVATIVE PEDAGOGY

Rensselaer has always been known for pioneering groundbreaking approaches to teaching, such as the studio classroom and team-based learning in the 1990s. It was, after all, the recipient in 1996 of the “triple crown” of higher education awards: the Hesburgh, Boeing, and Pew Charitable Trust awards for innovations in undergraduate education. The Rensselaer Plan 2024 commits the Institute to amplifying its acclaimed innovative pedagogy by creating the next revolution in teaching and learning.

“Rensselaer was always a leader in the hands-on studio or flipped classroom, versus relying solely on didactic or lecture-style learning. Now we are moving toward an even more interactive approach,” says Provost Prabhat Hajela.

One such new development is the mixed reality classroom, which builds upon the already nationally recognized strength of Rensselaer in Games and Simulation Arts and Sciences (GSAS). It may seem like the stuff of the Star Trek generation, but an eight-week pilot program, fondly known as the Mandarin Project—which uses gamification as a teaching/learning tool—has launched Rensselaer to—as that show’s tagline states—“boldly go where no man has
gone before.” Indeed, it was former Star Trek writer Lee Sheldon, now co-director of Rensselaer’s GSAS program and author of The Multiplayer Classroom: Designing Coursework as a Game, who helped create the pilot, called “Mandarin Language and Culture: The Lost Manuscript.” The goal for students was to learn Mandarin Chinese through the interactivity and immersion of a game, but it is the underlying pedagogy that holds vast potential and, in true Rensselaer fashion, is breaking a new path.

Now that approach will be extended into a more complete augmented reality experience by creating a virtual reality where students and sentient synthetic AI (artificially intelligent) characters interact. “Ultimately it helps you think on your feet and solve problems,” Hajela says. “Our students learned a full semester’s worth of Mandarin in just eight weeks.”

The intent is that the promise heralded by the success of the Mandarin Project will be nurtured to full fruition at the new Rensselaer Emergent Reality Lab, an advanced virtual reality space currently under construction in the Rensselaer Technology Park. Together with the flexible immersive multimedia platform of the Curtis R. Priem Experimental Media and Performing Arts Center, the Emergent Reality Lab will enable classes designed as games, where students are engaged in an interactive, digitally enhanced, immersive learning environment more ambitious than any to date. Linking plugged-in students in new ways. Gen Y and Gen Z students—that is, those currently at Rensselaer and those who will be admitted over the next decade—gravitate toward these tools. “They expect mobile and social networks, and global connectivity,” says Hajela.

Within the coming decade students will reap the rewards of increased campus and global connectivity, and better access to big data—resulting in more collaborative partnerships across disciplines and across Rensselaer’s five schools to tackle global problems, much like a think tank.

Professors will create new paradigms for learning—fueled by the improved Semantic Web search capabilities developed by the Tetherless World Constellation, by combining growing access to a treasure trove of online data with the critical inquiry and debate of the Socratic method.

Ultimately, the updated plan is about expecting students to question more, search more, and prove more. “Can you search on the Web for data that validates what I just told you?” is a question Hajela sees professors posing more frequently to students and, if there’s a lack of agreement, asking students to pinpoint the problem. This, of course, is a world apart from how alumni and alumnae were taught in a pre-Internet era without resources to efficiently dig for data. “New digital tools open their minds to question more,” says Hajela.

An innovative pedagogy applies as well to Rensselaer graduate students and helps them to apply their knowledge toward solving global challenges, while more constructively focusing on professional development. “It’s about asking what skills they need to become leaders,” says Hajela. The goal for all of our students is to create well-rounded, engaged, mature thinkers and innovators who are intellectually agile, and possess the multicultural sophistication to become transformative forces across the globe.

The Rensselaer Plan 2024 is about giving students more opportunities for research and entrepreneurship, intellectual diversity and creativity. “If we are to be a transformative global force, we must prepare students to be innovative problem-solvers and make them lifelong learners who are productive upon graduation,” says Hajela. “We teach them the joys of discovery.”
RESEARCH TO SOLVE GLOBAL CHALLENGES

**Perhaps the most significant transformation** at Rensselaer in the past decade has been the creation of a research portfolio of the size, quality, and prominence to position the university to impact key global challenges. In the next decade, *The Rensselaer Plan 2024* will link the Institute’s strengths in five signature research thrusts to challenges facing the world at large, and empower Rensselaer to be a transformative force in solving them.

Thus, the newly refreshed Rensselaer Plan identifies a broad matrix of interconnected global challenges. These include mitigating disease, developing new sources of renewable energy, providing clean water and food, applying new technologies to manage an explosion of data, creating advanced materials that impact energy and health, and establishing a sustainable and resilient infrastructure.

Thanks to investments in research platforms developed under the original Rensselaer Plan, such as EMPAC, the Computational Center for Nanotechnology Innovations, and the Center for Biotechnology and Interdisciplinary Studies, the Institute is uniquely equipped to address global challenges by virtue of its five signature research thrusts:

- **Nanotechnology and Advanced Materials**
- **Energy, Environment, and Smart Systems**
- **Computational Science and Engineering/IT**
- **Biotechnology and the Life Sciences**
- **Media, Arts, Science, and Technology**

“We are in a position of strength,” says Jonathan Dordick, vice president for research. “Our research has applications in a great number of arenas including, for example, human health, business analytics, advanced materials, artificial intelligence, cybersecurity, supply chain management, and climate change.” Under *The Rensselaer Plan 2024*, the Institute will zero in on scientifically rich topics such as these and others, all of which impact global challenges.

Roughly speaking, research in the coming decade will fall under two broad interdisciplinary umbrellas. “Beyond the Internet: Digital Meets Reality” will explore data and information in the context of engineering natural and man-made networks, cyberinfrastructure and cybersecurity, the social sciences and art, data analytics, innovation, and the basic sciences. “Infrastructural Resilience, Sustainability, and Stewardship” will look at building a sustainable future by developing affordable health-care technologies, transformative materials, new energy solutions, smart logistics, and resilient infrastructure.

Consider disease mitigation. “How do we take unstructured big data and generate useful information that we can apply to solve problems?” asks
Dordick. “How do we take treatment and outcomes data spanning two decades to determine optimum treatments and outcomes at the lowest cost to the patient?”

One answer, which Rensselaer is uniquely equipped to handle, is to utilize health-care analytics to help the pharmaceutical industry bring new drugs in the pipeline to market more efficiently. Drug repurposing is one technique that researchers are using to decrease drug development costs and boost approval rates. “The vast majority of molecules fail,” says Dordick. “But we have an opportunity to perhaps bring some back to life.” By probing massive databases Rensselaer can determine, for example, if patients given drug X for disease Y were cured of side effect Z. In this way, a potential new drug formerly assigned to the clinical trial scrap heap might find viable new uses.

This is not driven by advances in biology but by how we deal with these massive amounts of data, according to Dordick. “In a sense it means weeding through material to find the buried treasure. Five or 10 years ago we called it data-mining,” he says. “But back then we were limited by preconceived notions of what to look for. Now we are much more efficient at finding data and making connections.”

Rensselaer is already in the lead. “Medical schools and health-care organizations come to us to turn their data into something meaningful,” says Dordick. “They need our expertise in supercomputing, data and web science, and our ability to link that to the life sciences. We don’t have a medical school, but we are driving how they function.”

Another area in which Rensselaer is blazing a new trail is in finding new sources of energy. For example, energy transmission is limited by the capacity of the power grid; higher currents mean greater efficiency, but existing materials often fall apart when exposed to them. Similarly, solar energy acquisition and storage are limited by their efficiency. “This is about developing new materials for new uses,” says Dordick. “Our Center for Future Energy Systems supports this, as do our supercomputer and the Smart Lighting Energy Research Center.” Rensselaer also is a leader in using new interdisciplinary approaches to improve the efficiency, resiliency, and livability of buildings.

Dordick predicts that by 2024, Rensselaer will grow its research enterprise from $100 million to $250 million, and will be working on research endeavors perhaps not yet even imagined. He envisions new partnerships and the cultivation and spin-off of bigger entrepreneurial ventures, perhaps multinational companies. “It’s about being transformative,” he says. “Our job is to be proactive and to define how science and technology evolve and progress.”

THE PROCESS BEHIND THE PLAN

Perhaps just as important to the creation of The Rensselaer Plan 2024 was the process of developing it. President Jackson’s goal was to take stock of the current position Rensselaer holds as a major technological research university, and to position the Institute for its 200th anniversary. Last summer, she established an interdisciplinary Reassessment Leadership Committee, ReaLCom 2.0, chaired by Hajela, to
initiate an Institute-wide discussion for updating the original Rensselaer Plan. She also convened a Writing Committee, consisting of Hajela, Dordick, and Sams, along with Virginia Gregg, vice president for finance and CFO; John Kolb ’79, vice president for information services and technology and CIO; and William Walker, vice president for strategic communications and external relations.

Guided by the original plan and the five questions posed when developing it, ReaLCom 2.0 posted online an early draft of the new Rensselaer Plan, and solicited input from constituencies within the university, from student leaders to endowed professors to the faculty senate to the Pillars of Rensselaer. The committee held four open public sessions—as well as separate sessions specifically for students and alumni and alumnae—so that everyone had an opportunity to attend and offer comment in person or online. In addition, all vice presidents and deans conducted discussion sessions with their own portfolios. The Rensselaer Alumni Association played a key role in garnering alumni and alumnae input to the new Rensselaer Plan. The Writing Committee then reviewed and distilled the feedback section by section with President Jackson, as the final draft plan was being developed.

Overall, the process was a very collaborative effort that considered all perspectives. President Jackson commends ReaLCom 2.0 and the Writing Committee for a magnificent job. “We had this very open process that allowed different constituencies and parts of the Rensselaer family to give their direct input,” says President Jackson. “People are invested in this plan because they had a stake in creating it. That is why the process matters.”

THE NEW POLYTECHNIC

The “poly” in the name Rensselaer Polytechnic Institute stands for “many,” President Jackson spoke in London earlier this year of a construct she calls “the New Polytechnic,” which she defines as a collaborative endeavor across a multiplicity of disciplines, sectors, and global regions that facilitates novel approaches to global challenges—a concept that underpins The Rensselaer Plan 2024.

The New Polytechnic does that by harkening back to the original meaning of the liberal arts, where the arts and social sciences interact with the natural sciences, mathematics, and engineering, an approach necessary to devise fresh solutions to today’s pressing issues. As the world becomes more digitally connected, generating a massive growing library of data, the New Polytechnic—and specifically the resources at Rensselaer Polytechnic Institute—enables new approaches to harness that power, such as tools to access and use data to address societal problems, and online tools and networks to enable people to collaborate in new cross-cultural ways.

As Rensselaer advances toward its bicentennial with the updated Rensselaer Plan firmly in place, President Jackson has done a little crystal-ball gazing. She envisions the Rensselaer students of 2024 benefitting from significantly more opportunities. She pictures a growing university in terms of the number of students and faculty, as well as one with greater global impact, through innovative teaching and world-class research, but also by virtue of alumni and alumnae doing great things. And she sees a Rensselaer with a much stronger financial underpinning.

“Not too many places I know have the unique compilation of assets—human and infrastructural—that we have put together,” says President Jackson. “The best is yet to come.”

“Not too many places I know have the unique compilation of assets—human and infrastructural—that we have put together. The best is yet to come.”

PRESIDENT SHIRLEY ANN JACKSON
While working to transform the lives of people worldwide, members of Rensselaer’s Engineers for a Sustainable World chapter are themselves being transformed.

BY JANE GOTTLIEB
An 8-by-20-foot shipping container was delivered to the North parking lot of the Rensselaer campus last spring. A team of students, professors, and volunteers from the community, organized by the Rensselaer Engineers for a Sustainable World chapter, cleaned it out and then got busy turning the empty box into something that could help a lot of people. They installed walls, insulation, electricity, and ventilation. They painted it white to deflect heat.
The container-turned-medical-facility stands as a testament to the Rensselaer ESW chapter, which has inspired scores of students to use technical skills from the lab and classroom to benefit others directly.
“with the ward?” explains Cindy Schmehl, who enlisted the Rensselaer ESW to assist her Haiti relief organization, To Love a Child, and has traveled back since to view the results. “I have been told that people don’t have to die anymore before they get medical care. That really hit home.”

The container-turned-medical-facility stands as a testament to the Rensselaer ESW chapter, which has inspired scores of students to use technical skills from the lab and classroom to benefit others directly. Since its launch in 2005, Rensselaer’s ESW has played a significant role in planning and building projects in Haiti, Mexico, and Peru. Participants do so by affiliating with organizations such as To Love a Child, that have strong connections in those places.

The Rensselaer chapter is part of the national ESW organization, which mobilizes college students, faculty, and professionals in the community to apply engineering to social needs. Established in 2002 at Cornell, the national organization develops projects to boost the environment and public health, spur energy efficiency, and upgrade community medical facilities, schools, and housing.

Today there are 32 college chapters in 18 states. Some keep the focus close to home. The University of Rochester, for example, has established a facility that converts cooking oil used in its dining halls to biodiesel that powers campus shuttle buses.

Rensselaer’s ESW is actively engaged in making the campus and community more environmentally sustainable. Ray Parker, a freshman chemical engineering major, is applying for grants to
study how the school might convert its
used cooking oil into fuel that can be
sold. ESW members teach elementary
students to build water filters and
green roofs. The group is finalizing
plans to install solar energy in Troy
city schools and introduce sustainable
technology into the curriculum.

The work in Haiti followed five years
ago, when members of St. John’s Episcopal
Church in Troy recruited the Rensselaer
ESW to assist with their ongoing efforts
in that country. The team first installed
photovoltaic panels in a church rectory in
the village of Lascahobas that serves as a
community center.

On the next trip, the group converted a
computer classroom in the same commu-
nity to solar power and Rensselaer used
the opportunity to donate 10 personal
computers. General Electric donated more
than 20 solar panels to projects in the
region. The collaboration has done more
than show the benefits of solar energy.

“Much of the region is off the grid or
served by the system, which fails a lot,”
says Timothy Schmehl, who with his wife,
Cindy, is devoted to poverty relief in Haiti
and elsewhere. Schmehl is an engineer
with GE who, volunteering through St.
John’s Church, has brought Rensselaer’s
ESW to Haiti twice. “Now students see
that by installing solar panels, people there
can do things at night they could not do
before without a campfire,” he says.

The medical ward was completed on
the third trip. Now, a second shipping
container has been delivered to the Rens-
selaer campus and will soon be converted
and shipped to Haiti. This empty box will
become a day care center for orphans,
whose older siblings can be freed up to
go to school. The group also will build a
fenced-in playground. Andrew Chung
looks forward to returning.

“It is entirely different when you know
what the situation is like,” says Chung,
a past ESW president. “It’s so important
for engineers to understand the people,
culture, and way of life.”

The ESW group also has a substantial
presence in Ek’Balam, a Mayan commu-
nity in Mexico’s Yucatan Peninsula. The
traditional way of life there is threatened
and the natural resources are becoming
stressed as people leave agriculture to join
the tourism industry. Rensselaer works in
Ek’Balam with the Albany-based Founda-
tion for Developing Sustainable Societies
to introduce technologies that can help
boost the standard of living without harm
to the ground, air, and water.

To do so, they are retrofitting a tra-
ditional Mayan house with solar panels,
composting toilets, and stoves that vent
smoke outside. Local residents can view
these fixtures and consider what might
work in their own homes.

Better World
Engineering

Brown is interested in finding alterna-
tives to practices that pollute. Once, he
assumed a liberal arts college would be the
best route. But at Rensselaer he has seen

Global Outreach

Out of the gate, the Rensselaer
chapter is also gaining a reputation
based on its impressive track record
overseas.

Erin Lennox ’07 helped start the
chapter as an undergraduate and
remains involved as she pursues her
Ph.D. in ecological economics at
Rensselaer. She notes that the organi-
zation is relatively new nationally and
some chapters are starting slowly.

“Rensselaer is definitely recognized
at the national level for being very
successful overseas in a relatively short
period of time,” says Lennox, who
volunteers as director of outreach for
the national ESW team. “We have
had very devoted members who have
established partnerships, gotten fund-
ing, and become involved in some
complex, major projects.”

The first was in Peru, where the
ESW worked with students from Pont-
fíficia Universidad Católica del Perú to
design an eco-home showcasing new
technology appropriate for the Andes
region. Though the Rensselaer group
is not currently involved there, the
home is in use and the Lima university
students remain active.
that he does not have to choose between a rigorous science education and an education that shapes solutions to environmental problems.

"Through ESW I have seen how my programmatic subjects could be put to use immediately," says Brown, who is now the group’s co-president.

The Engineers for a Sustainable World chapter is one of at least a half-dozen student-led groups at Rensselaer devoted to using tools of engineering and other sciences to promote the public good. The concept is not new. Rensselaer has always asked students to apply both precision and creativity to challenges close to home and far away.

“Engineering is unfairly characterized as dull and about big corporations, and

Opportunities include a first-year course and support for academic and research programs that seek to improve the quality of life globally and at home. The Better World Engineering platform also includes service learning and entrepreneurship activities, many directed by student organizations. In 2012, the alumni-funded Dean’s Grants Program was established.

A number of student organizations, including ESW, have benefited.

The academics are clearly supported in the projects. First-year students with little technical knowledge advance to upper-level students who do much of the analysis, design, and logistics of working engineers.

“We have taken significant steps over the last four years to break down barriers and smear the definitions of undergrad-

ate vs. graduate, teaching vs. research, curricular vs. co-curricular, student vs. faculty, and even between the traditional disciplines within the School of Engineering,” says Dean David Rosowsky, who was recently appointed provost at the University of Vermont.

Rensselaer’s interdisciplinary degree programs combine social sciences, the humanities, and technical sciences to foster real-world experiences. Among the fast-growing majors are sustainability studies and the program known as design, innovation, and society (DIS).

“DIS brought me to RPI because I am interested in using design centered on social responsibility,” says Alex Allen, a sophomore who is majoring in DIS and mechanical engineering.

Over time, the students came to see ingenuity rather than ignorance in the poverty. The people used vines for jump ropes, plugged holes in walls with materials on hand, and cut down trees to haul a storage container through mud and onto its foundation.
After joining ESW, she found her niche in the sustainability project in Mexico. Allen took the lead on writing an owner’s manual, translated into Spanish and laminated, that explains how to use and repair the solar panels and other components introduced in EK'Balam. She delivered the manual earlier this year, on the ESW’s third trip to the site.

“I’m from rural Maine and I’ve worked on organic farms,” she says. “I want to use engineering to see how to use farming in a sustainable way. Already, I have gotten to do something in a direct way.”

The Art of Troubleshooting

Sam Brown and Liam Moynihan had issues. “The airline lost our luggage and so we were missing all the wires we needed for the solar panels and lights,” says Moynihan, a physics major, recalling his trip to Mexico last summer with ESW.

“After four days we got it back,” says Brown. “But when we started installing the solar system there was a problem and it didn’t work. There were Mayan construction workers there working on a house and Liam and I looked at each other and we were both very embarrassed.”

They called several professors, who said it sounded like they were doing everything properly.

“Then we called Liam’s dad—he’s an engineer and handyman,” says Sam. “We described how we wired it and he asked a few questions and he finally figured it out. We saw that if we have a small problem, there is a way to solve it.”

“Also, you can get it right 100 times at home but it still might not work,” adds Moynihan. Being on the job without the right parts is something engineers are used to. But troubleshooting in a different country that lacks basic infrastructure poses unique challenges. From not being able to purchase a simple bolt to dealing with an earthquake, ESW members have experienced the unexpected quite a few times.

“You learn to pull your own weight,” says Chung, who should know. On his first trip to Haiti, the customs officials declined to release the solar panels General Electric had shipped for several days, jeopardizing the project until the bureaucratic snag was resolved. Later in the trip, the earthquake struck 40 miles from where the
Rensselaer group worked. The group was not in imminent danger, though this was not immediately clear.

“I was in the computer classroom when the earthquake shook the room,” says Chung. “I thought the room was shaking because of the schoolchildren—until the shaking wouldn’t stop. I ended up running down the stairs for my life.”

Since cell phone service went down it took ingenuity to reach his family. A few students visited a satellite Internet cafe—the only place the Internet was working. Andrew “snuck” into the wireless network with his iPhone, whipped out his American Express card, bought Skype credit, and called his parents.

The Port-au-Prince airport shut down so the group needed to wait several days for a flight from the Dominican Republic. Timothy Schmehl, who was supervising, said the young engineers remained resilient. “I have probably had more issues with some adults going to these countries than students,” he notes.

Even without a natural disaster, the adjustments are numerous. The American students visiting Mexico ate their meals with host Spanish-speaking families. The food was tough for some students to get used to. And there is no flushing the toilet paper and no drinking the water. And hammocks.

“All the students sleep in hammocks while they are there, which is what people in the village do,” says Lennox.

Students visiting Haiti seemed to need a great deal more water—and endure good-natured teasing—than people who live in that humid country. The restrooms were rustic and there were no showers, nor running water. There was also very little privacy and the day begins at 4:30 a.m. when families cut wood to start their fires.

The cultural distinctions are also striking. Faculty adviser Jensen recalls falling asleep one night to drumbeats he learned were coming from a voodoo ceremony. He found himself strongly suggesting that a female student refrain from a walk that male students were perfectly safe to take. On one occasion, he saw small children point at the Rensselaer group and cry. “Their mother was laughing,” he recalls. “She said ‘they have never seen white people before and thought you were ghosts!’”

Harder to grasp was the poverty. People asked for their shoes, asked for money. Chris Warmann, a junior chemical engineering major, was overwhelmed by what he found in Port-au-Prince. “People would come up to the car and put their arms through the windows. They are very desperate.”

Over time, the students came to see ingenuity rather than ignorance in the poverty. They saw how people used vines as jump ropes, plugged holes in walls with materials on hand, and cut down trees in order to haul a storage container through mud and onto its foundation. There was frequently openness toward new techniques in farming and new forms of energy.

“I started to see a happy, healthy community that opened me up to a completely different way of life,” says Warmann, who is ESW co-president. “These are not backward people. They are a communal society that could honestly teach us a thing or two about making the most of what we have and working together for the greater good.”

Lennox next volunteered in Guatemala to build cook stoves that help minimize respiratory problems by venting the smoke. She returned to Rensselaer to earn her master’s degree. Now, as a doctoral student she is on track for an academic career that will allow her to pursue her humanitarian goals as an engineer. Lennox recently supervised a trip to Mexico with the Rensselaer ESW chapter, the group she helped create.

She says her fellow former Rensselaer ESW members pursue short-term projects in developing countries or pursue degrees centered around sustainability. Or, like Cindy and Timothy Schmehl, they combine full-time careers with an almost full-time commitment to poverty relief.

And as Chung mulled his next move, Lennox was devising a plan.

“We are currently recruiting professional engineers for a professional ESW chapter in the Capital Region,” she says. “And once Andrew graduates, I’m hoping he’ll stay and be a member and continue to follow his passion.”

“I realized in Haiti that I want to do this for the rest of my life. This has become a calling. I am so committed to ESW I’m not sure I can leave it.”  

ANDREW CHUNG ’13
IN THE INTERDISCIPLINARY PRODUCTION, INSTALLATION, PERFORMANCE COURSE, STUDENTS COLLABORATE WITH ARTISTS TO STAGE AN AMBITIOUS PRODUCTION.

BY JODI ACKERMAN FRANK
Every so often, one of these performers randomly plucks someone from the crowd, and you watch what appear to be abducted individuals being whisked away in silence. Amused and a little hesitant, you take your seat in front of a video screen in which an airship captain informs you that it’s your lucky day. Today’s flight is stopping at the Machine, which no one has ever seen. And so your journey begins as you realize that, as an airship passenger, you are part of the performance itself.

Called “The Machine Starts,” the multimedia show was produced by students taking the Production, Installation, Performance (PIP) design studio. Third- and fourth-year students in the School of Architecture collaborate with students in the Department of the Arts to build a performance set for a visiting artist that’s emblematic of 21st-century ideas and technology.

“In the PIP design studio, students have produced some of the most ambitious art projects in the Capital Region,” says Associate Professor of Architecture Michael Oatman, who oversees and teaches the course.

Most PIP students are art or architecture majors, but students in any major who have access to art courses can take PIP.

“The design lab represents an extraordinary opportunity for architecture students to work with a variety of students in related art-oriented disciplines such as cognitive science, gaming, video, and music. The course frees their imagination to continually think ‘outside the box’ and overcome obstacles or challenges in the most creative and ingenious way,” says Evan Douglass, dean.
“Taking this class is like going to a foreign country. It’s a culture shock in a way. The pitch to students at the beginning of the course is that we’re going to work with a visiting artist to make something. But we have no idea what we’re going to make or how we’re going to get there, which means you’ll be learning some skill sets that you probably don’t have right now.”

MICHAEL OATMAN

Clockwise from top left: Attendees of “The Machine Starts” were photographed and then traveled through an “airline terminal” to enter, a local parkour group maneuvered through a tensegrity structure that represented the Machine, Center Stage, a local group of poets, participated in the show; faces from the photographs taken at the beginning of the show rotated on the walls during the performance; visiting artists Mary Ellen Strom and Joanna Haigood with Professor Michael Oatman.
and ingenious way,” says Evan Doughis, dean of the School of Architecture, who played the airship captain in “The Machine Starts.”

The most recent PIP performances and installations have taken place over the last three years, twice in Rensselaer’s Curtis R. Priem Experimental Media and Performing Arts Center (EMPAC) and once off campus. PIP is supported by the Chris and Marcia Jaffe Foundation, established by internationally renowned acoustician Chris Jaffe ’49 and dedicated to the memory of his wife.

Students, given a budget to work with, collaborate with an invited sound or performing artist to design, test, and build a deployable “performance architecture” in one semester. The following semester, they organize, produce, and market their performance or installation.

SUPPORTING A NARRATIVE

For this year’s PIP course, taught jointly by Oatman and Shawn Lawson, associate professor of computer visualization, architecture students and students from Lawson’s Art & Code & Interactivity class worked with two visiting artists: Mary Ellen Strom, a video artist and faculty member of the School of the Museum of Fine Arts in Boston, and Joanna Haigood, choreographer, dancer, and founder of Zaccho Dance Theatre in San Francisco.

Students were assigned to architecturally and aesthetically develop a series of spaces in EMPAC to support a narrative based on “The Machine Starts,” a 1909 science fiction novella written by E.M. Forster that describes how technology destroys the human civilization it was intended to save.

Central to the story is the Machine, an omnipresent force that controls the lives of humans as they are isolated in their “pods,” individual rooms far beneath the ground that protect them from the uninhabitable surface of the Earth. Eventually, the Machine breaks down and civilization comes to an end. In his story, Forster foresees such technologies as television, Skype, and commercial air travel.

It was clear from the beginning that the students would be challenged not only to build an architectural platform to support the story, but also to develop and direct the entire stage production.

One of the first tasks the students undertook was to change the story line, reflected in the performance’s title—“The Machine Starts.”

“As the machine shuts down and the people are dying, the son assured his mother that the Machine will never be restarted. And, we were thinking that, in today’s world, somebody would restart it,” says Brittanie Bradley ’15, who took the lead in rewriting the narrative along with fellow architecture student Katelyn Rauth ’15.

“We were also challenged to find nontraditional performers to participate in the performance,” Rauth says.

After exploring the possibility of including musicians, dancers, glassblowers, potters, and others, the students chose three groups: the Rusty Pipes, a Rensselaer student a cappella singing group; a local parkour group, which practices the emerging sport that combines acrobatics, running, and tumbling in nontraditional environments; and Center Stage, a local group of poets.

The performance incorporated singing, narration, movement, and video. Faces from the photographs taken at the kiosk at the beginning of the show rotated on the walls in three-dimensional images along with electrical impulses on a grid to indicate the inner workings of the Machine.

Parkour members then maneuvered around each other through a structure that represented the Machine. As they began to symbolically destroy the Machine, the video projections pixilated out of control. Near the end, Haigood floated down from the ceiling, holding a glowing blue globe, which symbolized the restarting of the Machine. The orb was then given to the audience to pass around.

Creating and connecting the sound elements throughout all the spaces, from the back hallway to the studio rooms and the café, and even the outside of the EMPAC building, were critical parts of setting up the performance, a challenge that Ryan Ross Smith, a Ph.D. candidate in electronic arts, and Conor Sjogren ’13, an electronic media, arts, and communication major, were willing to take on.

“EMPAC has this incredible connectivity from anywhere to everywhere, so we did our best to utilize that and help the narrative along in building the sound system,” Smith says.

XPLORING SOUND AND SPACE

The 2012 PIP project, called S(around)OUND (pronounced “Surround Sound”), was equally as ambitious and is the largest PIP project to date.

The performance with digital violinist Todd Reynolds took place in Troy’s historic 1872 Gasholder Building, where students combined art, music, architecture, and video animation to create a massive installation designed to impress.

Through the late 19th and early 20th centuries, the brick cylindrical building housed a soaring steel tank containing compressed coal gas to supply power to the city’s streetlamps and homes. The tank has long since been removed, and today the 60-foot-high interior is used mostly for storage.

Students used the entire building for their installation project. Now owned by Sage Bros. Painting, the Gasholder was filled with company equipment, vehicles, boats, and the like. This meant that the class had to estimate the structure’s acoustic ability. Also, to ensure that their installation would fit properly inside the building, students made detailed architectural models to gain a better idea of the spatial conditions for the actual setup.

“The students got a very good idea of the acoustics just by standing in the Gasholder and shouting and clapping their hands.
We knew that once the stuff was gone, the delay would be even longer,” says Oatman, who noted that the building was emptied of its storage items for the first time in 75 years.

At the beginning of the semester, students were given one week to design, build, and learn how to play tunable stringed instruments, which were critiqued and amplified by Reynolds. Students also constructed floor-to-ceiling instruments used to explore the acoustics throughout the space. One instrument was created by stringing a series of vertical iron support beams with piano wire, making it possible to “play” the building.

“The acoustics were very alive. Audience members played the instruments. Then the violinist set the reverberation of the building on high. The music—the wild projections—drove everyone a bit crazy. It was really wonderful,” says Jaffe, who traveled from his Connecticut home to attend all three PIP performances. Jaffe, who specializes in theater and concert hall architectural acoustics, has taught at the Juilliard School and City University of New York, as well as at Rensselaer, where he is founder of the master’s program in architectural acoustics. Jaffe is a member of the Rensselaer Alumni Hall of Fame.

Through custom-built collapsible walls, students exposed the space of the building little by little to slowly open the audience’s senses to its grandeur and sheer size. As Reynolds concluded his first violin piece during which a towering shadow of color revealed his figure on a screen, the walls folded to the ground, allowing viewers to move into the interior. The audience then could explore enormous inflatable tunnel-like structures that were lit and animated. Scissor lifts, which were set up to emphasize the height of the Gasholder Building, carried audience members 50 feet vertically into the space.

“It’s all about perception,” says architecture student Tyler Hopf ’13. “We changed the perception of the spectator based on closing the space with the walls and then opening them up again.”

“This was a giant-scale project that was very popular with the community. We had more than 1,500 people attend the three performances,” Oatman says.

Blindfield, the first of the three PIP projects, was not as baroque and massive as the other two projects. Nonetheless, the immersive sonic installation, which also took place in EMPAC, was as thought-provoking.

For this studio lab, Oatman collaborated with Doug Van Nort, a Rensselaer research associate, instructor, and experimental musician. Van Nort invited electro-acoustic musician Francisco Lopez to serve as the visiting artist. The Spanish artist records sounds from world cities and diverse biotas, such as the Amazon basin and the Antarctic. Lopez, who traveled to campus three times from his home in the Netherlands, worked with students face-to-face and via email and Skype until the installation in EMPAC came to fruition.

“Through developing Blindfield, students learned a deeper appreciation for the materiality of sound and the dramatic influence that the built architectural environment has on the overall sonic character of a space,” Van Nort says.

Blindfield utilized 100 student-designed translucent banners, lit with LEDs, and strategically hung at different lengths to create a “sound forest” through which viewers could walk and listen to an original work developed by Lopez. Attached at the bottom and top of each banner was a strip that served as a resonant speaker box, which played 32 stereo channels (for a total of 64 channels of sound), created by using low-cost commercial software, audio transducers, and a mixing board.
“Conceptually, we were working to challenge the relationship between performer, audience, and the designer. There was no traditional beginning and end to the performance, and the arrival, movement, and departure from the installation was calibrated fantastically,” says Kristin Diotte ’11, who now works at Re4orm Architecture in Schenectady. Her tasks for the project included soldering LED circuits, attaching cables, and working on the suspension supports from the overhead grid.

**ULTURE SHOCK**

Students from all three PIP design studio classes will tell you that the yearlong course is not for the faint of heart. But, they can’t say that Oatman didn’t warn them.

“Taking this class is like going to a foreign country. It’s a culture shock in a way,” Oatman says. “The pitch to students at the beginning of the course is that we’re going to work with a visiting artist to make something. But we have no idea what we’re going to make or how we’re going to get there, which means you’ll be learning some skill sets that you probably don’t have right now.”

“Developing these projects can be stressful and require long hours of collaboration,” Lawson says. “Students are dealing with peers with a diverse range of interests and talents, not to mention personalities. On Michael Oatman’s side, all the students are architecture majors. My class has no architecture students. So, PIP provides a real-world experience on multiple levels.”

Michelle Lahnemann ’14, who participated in the S(around)OUND installation, worked on the corrugated plastic origami-like walls, each 30 feet high. She remembers the challenges she and her team faced in hoisting them up.

“We found that the small pulleys we were using couldn’t lift them because they were so heavy, so we had to go with a block and tackle system,” she says.

For Lahnemann, the course made her think about her career as an architect. “After doing this project, I realized that I have to be more hands-on—I can’t just sit at a desk and draw all day. I have to be involved in figuring things out and managing the entire process,” she says.

“These interdisciplinary projects help students realize the power and potential of collaboration in design and production,” says Mary Simoni, dean of the School of Humanities, Arts, and Social Sciences. Despite the challenges, students seemed to relish the experience. “It was a rare and profound opportunity to observe our creation that was experienced by the public at large, especially at such an early stage in our careers,” says architecture student Joey Fala ’15, who was the lighting designer and production stage manager for “The Machine Starts.” “What we achieved in engaging our audience in an emotional and experiential dialogue is ultimately at the heart of architecture as a discipline.”

“The ultimate goal of this course is for the students to be impressed with themselves,” Oatman says. “That is, to have conceived, designed, and re-designed a project, and then to build it and finally present a final product. To know everything about it, and yet for the final result to still exceed their expectations—that’s what I want for them.”
As The Rensselaer Plan 2024 is introduced and implemented, the Rensselaer Alumni Association (RAA) remains committed to building alumni community, empowering alumni, and strengthening Rensselaer. A great university needs a great alumni association, and we continue to meet this challenge through alumni programs and services, student alumni interaction, and expansive communications and social media outreach.

Regional Outreach
The RAA has recommitted itself to strengthening our alumni networks across the country and, increasingly, the world by growing our regional chapters and clubs and fostering the development of the new Rensselaer Alumni Network (RAN). Regional chapter participation set new highs again last year, with programs focused on bringing Rensselaer to our alumni. Our new deans were introduced to alumni in a series of events that brought these new, talented leaders and their exciting research and programs to chapters and clubs in New York, New Jersey, Boston, Houston, Los Angeles, and Northern California, among others. In total, approximately 3,000 of you have participated in regional programs this past year.

We are inspired by the commitment and hard work of our chapter leaders who invest their valuable time in building a strong Rensselaer presence in their communities. We are equally impressed with the new RAN initiative, with over 30 network captains around the country and the world. Recently, new groups were established in Seattle and Vermont, and outreach is being done in many other areas. The singular goal for RAN is to establish a community of networked alumni that stretches across the globe, and connects individuals to each other and to Rensselaer.

Student-Alumni Interaction
There is no doubt that The Rensselaer Plan has fundamentally changed the way we work with our students. With Navigating Rensselaer and Beyond, the First-Year Experience, and CLASS (Clustered Learning, Advocacy, and Support for Students), our students are now part of a world-class and best-practice student life experience. A great deal has changed in 100 years, and so has the RAA’s commitment to our future alumni.

The Red & White Student Organization has been consistently recognized as one of the best student alumni associations in the country, winning two national “best student organizations” in the last three years. Building on the success of Red & White, the Alumni Office and the RAA have established weR: The Spirit of Rensselaer Society, a group of talented and motivated students whose goal is to inspire, engage, and empower students to get the most out of Rensselaer and recognize the remarkable things happening around them. This year, more than 3,500 students will participate in alumni programs that now begin when they enroll. For the last several years, newly admitted Legacy
students have received a congratulatory note in the year that they applied. The RAA knows that consistent collaboration with our colleagues in student life will yield great results for all of Rensselaer.

**Expanded Communications and Social Media**

Our social media program continues to lead the way in the rapidly changing virtual space. The RAA has a strong presence in most all of the leading social media sites, including Facebook and Twitter, and we recently announced a partnership with LinkedIn as part of their College Pilot Program involving just 14 universities nationwide. The RAA LinkedIn group already tops 14,000 members and this partnership will enable our alumni to connect faster and easier.

The goal today is to use the various media platforms including email, Web, and social media to grow engagement and enhance the alumni network while strengthening the Institute and alumni association’s brand and reach. Nearly 13,000 alumni have used the website to access members-only options including the online directory. A targeted email program, interactive web content, and online giving and event registration help facilitate easy access to information, business contacts, and the Institute. Staying on top of changing technology is crucial to continuing to reach our tech-savvy alumni base. The RAA remains committed to staying at the forefront of the use of communication and social media tools.

**Financial Report**

The Travel Program continues to meet expectations with a vast array of programs and destinations in place through 2013. Almost $25,000 in third-party revenue has been received by the RAA since July 1. We again are offering the private jet travel tour titled “Heaven and Earth.”

One of the most exciting developments of the past year was the creation of the Rensselaer Alumni Association Endowment Fund, which helps to support the mission of the RAA and Rensselaer. The RAA’s endowment is important for Rensselaer, because the income provides a source of funding restricted to the purposes, programs, and priorities of the RAA.

The RAA Endowment Fund managed by Harvey Zeve ’52 (H. L. Zeve Associates, a division of JFS Wealth Advisors) currently stands at just above $1 million.

The RAA has already contributed nearly $300,000 from existing resources to support and establish the endowment fund. Add your support by visiting alumni.rpi.edu/giving, and designating your gift to “RAA Endowment Fund.” See page 42 for more information on the RAA Endowment.

**Leadership Transition**

The RAA Board of Trustees and the Office of Alumni Relations acknowledge the outstanding service of outgoing RAA President Paul Cosgrave ’72. We thank Paul for his commitment and support to his alma mater and the RAA. Under his leadership, the RAA has made important advances in building the alumni community.

Additionally, we wish to thank the following dedicated members of the RAA Board of Trustees who are stepping down this year: Ann Dodson ’86, David Haviland ’64, Ray Lutzky ’02, Sandeep Nandy ’94, and Raj Bawa ’90, Ph.D.

We also wish to welcome incoming RAA President Roger Mike ’70, who received his B.S. in mechanical engineering. After teaching high school science for several years, he embarked upon a career in sales. Since 1982 he has guided thousands of school groups in raising the necessary funds for their programs. He serves as chapter adviser for his fraternity, Delta Phi, and is very active in the Greek Life community on campus. Roger’s commitment to Greek Life will serve him well in his tenure, and under his leadership we look forward to continued growth and strengthening of the alumni network.
FOUNDED IN 1869, THE RENSSELAER ALUMNI ASSOCIATION (RAA) is one of America’s oldest alumni organizations. Its mission is to engage, assist, and empower Rensselaer’s nearly 100,000 alumni as lifelong partners with Rensselaer. The Rensselaer Alumni Association Endowment Fund has been established to support Rensselaer and to strengthen the program and mission of the RAA.

The RAA has continued to grow and evolve over the past decade, increasing involvement in alumni programs worldwide, strengthening the alumni network, tripling attendance at Reunion & Homecoming, expanding communications channels to reach nearly 80,000 on social media such as Facebook and LinkedIn, and growing the number of regional chapters, networking opportunities, and special interest programs to reach out to all its constituents. The new fund will provide important support for the Institute, allow for continued and expanded growth for the RAA’s programs, and best of all, your gift directly benefits Rensselaer.

The RAA’s endowment is important for Rensselaer because the income provides a source of funding restricted to the purposes, programs, and priorities of the RAA.

As with all donations to Rensselaer, gifts to the RAA Endowment may qualify for matching funds from companies and organizations with matching gift programs. For the donor, a gift to the RAA Endowment will not only count toward RAA donor recognition levels, but also will count toward all of Rensselaer’s annual and lifetime Patroon giving societies, as well as toward the donor’s Class Gift. And, gifts to the RAA count toward the Institute’s donor statistics, both in dollars and in percent of alumni giving.

The RAA Endowment Fund presently stands at over $430,000 in commitments from donors. You may add your support by visiting the Giving to Rensselaer page at alumni.rpi.edu/giving, and designating your gift to “RAA Endowment Fund.”

Visit alumni.rpi.edu/raaendowment.

New RAA Endowment Fund Created
Support will provide funding for alumni programs at Rensselaer

Supporting Rensselaer
The new RAA Endowment Fund will provide important support for RAA priorities, including campus and regional events, networking opportunities, and special interest programs.

JUNE

15 Garden Party to Welcome the Class of 2017. Hosted by Trustee Nancy Mueller, Palo Alto, Calif. Join area alumni to welcome incoming students to Rensselaer. Special guest will be Dean of Science Laurie Leshin. For more information, contact Kathy Kinsey at kinsek@rpi.edu or (518) 276-2832.

20 Alumni Reception at the AIA Conference. Denver, Colorado. Join Evan Dougis, Dean of Architecture, and alumni in the fields of architecture and building science for this exclusive Rensselaer reception at the American Institute of Architects Convention. Contact Susan Haight at haight@rpi.edu or (518) 276-6042.

JULY

20 Annual Rensselaer Alumni Day at Del Mar Racetrack. San Diego, Calif. Join local alumni in a private box for an exciting day at the races at one of America’s most picturesque and prestigious horse racing tracks! For more information, contact Susan Haight at haight@rpi.edu or (518) 276-6042.

AUGUST

4 Rensselaer Club of New Jersey Annual Summer Picnic. Join the chapter as they honor the incoming Class of 2017. Nomahengan Park. Free. To register, contact the Office of Alumni Relations at (518) 276-6205 or alumni@rpi.edu. For questions, contact Sandeep Nandy ’94 at rcnj94@yahoo.com.
ALUMNI STUDENT SUPPORT
New Microgrant Program, weR Gold, Supports Student Groups

The Office of Annual Giving has created an innovative program called weR Gold to help provide funds for Rensselaer student groups and student-run projects. The program supports student groups and projects representing all aspects of academic and student life, giving donors the opportunity to fund a project they are passionate about. Student agents from weR (The Spirit of Rensselaer Society) help promote student involvement on campus.

Gifts to weR Gold help to enrich the student experience. All of the projects are student-run, grassroots, and impactful, according to the group. Jacob Andrews ’15, 2012-2013 weR chief visionary, says, “When you first go to college, all your friends and family tell you that you will not be able to do everything you did in high school. The great thing about RPI is you can. RPI has so many clubs and organizations that everyone can join what they want. The goal of weR Gold is to get the extra cash so these clubs can keep doing their thing.”

“The first weR Gold program to be fully funded was the RPI Players. There are still opportunities to help fund other worthy student programs.”

Clubs chosen to participate in weR Gold include: RPI Clothes Closet, providing free professional clothing to students; RPI Embedded Hardware Club, for their small parts vending machine; Design/Build/Fly, affording students airplane design experience; Engineers Without Borders, developing clean water for Isla Popa II, Panama; and RPI CANstruction, which aims to raise money, awareness, and interest in helping the hungry of the Capital Region. “We have an extremely talented student body, and as alumni, this is a new, grassroots way for us to contribute to new projects and ultimately bring student ideas to reality,” says Donald Pendagast III ’07, young alumni co-chair, Annual Giving Leadership Council.

To learn more about weR Gold and to support one, or all, of the featured student projects, visit the website at alumni.rpi.edu/weRgold. Join the conversation on Twitter: @RPIAlumni and #weRGold, or at facebook.com/rpialumni.

UPDATE YOUR EMAIL
Most communications from the Alumni Office, including details and registration information for Reunion & Homecoming, are sent via email. Please help us continue to “go green,” and make sure you don’t miss out on any information. Write to alumni_update@rpi.edu with your email address and updated contact information, or go to alumni.rpi.edu/gogreen to update it yourself online.

RAA VISA CREDIT CARD
The RAA Visa card is offered through a partnership with U.S. Bank. The card features no annual fee and your choice of benefits and rewards. A percentage of each purchase goes directly to support the programs and services of the RAA. Visit alumni.rpi.edu/visa for details.

RAA AFFILIATION WITH CORNELL CLUB – NEW YORK
This affiliation allows for any interested Rensselaer alumni to join The Cornell Club – New York at surprisingly affordable rates. Rensselaer is one of only a few select university affiliations approved by the Cornell Club. In addition to access to the New York City Club, you get access to over 90 similar clubs throughout the world. Visit alumni.rpi.edu/cornellclub for details.

AUGUST
20 Welcome Barbecue for Incoming Class of 2017 Students.
The Commons, Troy campus. Local alumni volunteers are needed to help greet new Rensselaer students at this annual picnic. For more information, contact Geoff Seber at seberg@rpi.edu or (518) 276-2324.

21 “Traditions” Tour. Alumni are invited to volunteer for a daylong program welcoming the Class of 2017 to Rensselaer. Join us to spend the day with new students to teach them traditions and to share your experiences. For more information, contact Geoff Seber at seberg@rpi.edu or (518) 276-2324.

RAA WORLDWIDE TRAVEL PROGRAM
Visit exciting and beautiful destinations with people who share your interests—fellow Rensselaer alumni. Go to www.alumni.rpi.edu/service/travel for a schedule, or contact Michael Wellner ‘64 at captmike46@alum.rpi.edu or (212) 486-3064.

RAF OFFICE OF AUTOMOTIVE INSURANCE
Liberty Mutual is offering a fascinating 12-month internship program. The position is available in Troy, New York and includes working with Liberty Mutual’s auto insurance products. To learn more and apply, visit alumni.rpi.edu/insurance.

RAA WORLDWIDE TRAVEL PROGRAM
Visit exciting and beautiful destinations with people who share your interests—fellow Rensselaer alumni. Go to www.alumni.rpi.edu/service/travel for a schedule, or contact Michael Wellner ‘64 at captmike46@alum.rpi.edu or (212) 486-3064.

UPDATE YOUR EMAIL
Most communications from the Alumni Office, including details and registration information for Reunion & Homecoming, are sent via email. Please help us continue to “go green,” and make sure you don’t miss out on any information. Write to alumni_update@rpi.edu with your email address and updated contact information, or go to alumni.rpi.edu/gogreen to update it yourself online.

RAA VISA CREDIT CARD
The RAA Visa card is offered through a partnership with U.S. Bank. The card features no annual fee and your choice of benefits and rewards. A percentage of each purchase goes directly to support the programs and services of the RAA. Visit alumni.rpi.edu/visa for details.

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4-6 Reunion & Homecoming.
Classes ending in 3 and 8, Greeks, athletic teams, and special interest groups will be planning programs to celebrate. Mark your calendar, and make this YOUR year to return for the largest alumni celebration on campus. For details, visit alumni.rpi.edu/reunion.

STAYING CONNECTED
Rensselaer/Spring 2013 43
Class Notes

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Click to view Alumni/ae Notes and the complete Class Notes section (log-in required)

Forty-five hockey alumni returned to campus for
a reunion and alumni hockey game in February and were feted in an on-ice ceremony during the annual Big Red Freakout game.
The Red Behind the Yellow Ribbon

Programs and initiatives to make Rensselaer more veteran friendly

BY SAMANTHA ROSS

Perspective is a funny thing. It can come when you’re in the middle of something and be a spur to action or it can be through reflection when a task is complete. As the new chair of the Army ROTC Department at Rensselaer, I had a unique view into the programs for veteran students at both Siena and UAlbany, but did not now what was in place at Rensselaer.

I read a November 2011 survey in a magazine titled Military Times Edge, a list of the “Best for vets: Colleges” and Rensselaer was missing! Being new to the Rensselaer community, I phoned a friend, Colonel (Retired) Jim Knowlton, a fellow Army Engineer and current director of athletics at Rensselaer, who agreed to meet with me to discuss Rensselaer’s support for veteran students. I thought he would tell me that I had looked in the wrong places to find Rensselaer’s veteran support program. Interestingly enough, he reviewed what I presented and promptly made an appointment with Vice President for Student Life Tim Sams. Not the outcome I had hoped for, but there it was, my call to action. Jim and I met with Vice President Sams, who thought this was a perfect example of the CLASS (Clustered Learning, Advocacy, and Support for Students) initiative at Rensselaer.

Vice President for Student Life Sams and other members of the community, including Chuck Carletta (general counsel), Jim Knowlton, Joe Cassidy (director of the Rensselaer Union), Roger Johnson (director of public safety) and myself, wanted to better understand how a school with such a storied history of connection to the military could better communicate the reality that, indeed, Rensselaer is veteran friendly—and that support goes beyond the GI Bill’s Yellow Ribbon Program.

The Veterans Education Task Force (VET-F) includes representatives from Student Life, the Health Center, Public Safety, Registrar’s Office, Admissions Office, Housing Office, and the Career Center—all organizations key to how their specific programs provide support for veteran students. The committee found the systems to support and integrate veterans into the fabric of the Rensselaer community to be well established. This was reinforced by the president of the Student Veterans Association (SVA) Rensselaer chapter, Dave Runkel, who shared some candid feedback about the systems already in place.

The SVA suggested some adjustments to the current systems and recommended that the group continue to focus on building a collaborative process across the spectrum of a veteran student’s experience, from application to matriculation and beyond—moving closer to the goal of seeing Rensselaer identified as a school of choice for veterans looking to enroll in college once they’ve completed their service to our country.

The VET-F believes that Rensselaer is the perfect place for veterans who wish to begin or further their education. You may wonder how we can be so certain—and here’s where we share what the “Red” behind the Yellow Ribbon really is.

In just one year, the committee made key changes to the admissions process to identify students who are veterans; specifically tailored information for veterans during orientation, to include introducing them to key members of the VET-F and the SVA; created and launched a website that serves as the clearinghouse for all the key support systems on campus for veterans (www.rpi.edu/veterans); and the Career Center hosted a breakout session for veterans with employers who specifically value the training, education, and background of veterans in building their teams.

Programs are important, but even more important are the people who must be connected personally and socially. A “Welcome Back BBQ” was hosted at the Watervliet Army Arsenal, complete with a bounce house for some miniature Engineers. This event helped veterans build social connections with people who have shared experiences in service and sacrifice for country.

Service members represent less than half of 1 percent of the entire population and they have given much of themselves to serve, as have their families. Rensselaer wants veterans to know that their service matters, that their sacrifices are appreciated, and that their experiences and background enrich our campus in meaningful and important ways.

Recognition as a veteran-friendly campus on the national level is important, but not as important as supporting those already at Rensselaer in the best “Engineer” way possible!

Lieutenant Colonel Samantha Ross, professor of military science, began her Army career as an enlisted soldier in 1989. She has served in Afghanistan, Germany, Korea, and elsewhere.
“Our intent was to have Rensselaer emerge re-energized, re-awakened, refocused. It meant that we had to imagine a different, bolder future for the Institute. We needed to recognize that, while building on its legacy and existing strengths, Rensselaer had to change.”

President Shirley Ann Jackson

Renaissance at Rensselaer: A President, A Plan, A University Transformed

Written by national higher education writer Stephen G. Pelletier for the Institute, with a foreword by Dr. Paul Gray, Professor and President Emeritus, Massachusetts Institute of Technology, this book chronicles the extraordinary transformation of Rensselaer Polytechnic Institute that has occurred under the leadership of President Jackson under *The Rensselaer Plan*.

Available in hardcover and e-book format. Go to www.rpi.edu/transformed for details on downloading.
Make This Your Year!

October 4-6, 2013

Everyone is Welcome!
Come back for Reunion & Homecoming, Rensselaer’s largest single on-campus event for alumni. Don’t put it off any longer—this is YOUR year!

Special gatherings of groups and organizations include:
- Reunion classes ending in 3 or 8,
- fraternities and sororities,
- athletic teams, and
- special interest groups.

Visit the Reunion & Homecoming Website at alumni.rpi.edu/reunion.
See who is planning to attend, add your name to the list, and get the most updated information. Registration will be available online in mid-August.

Visit alumni.rpi.edu/gogreen to update your email address so we can keep you informed.

Make Your Hotel Reservations Soon!
Local hotels book up quickly! A listing is available at alumni.rpi.edu/reunion. Click “Where to Stay.” Register at select hotels before Aug. 25 to be entered into a drawing to receive one night free!