THE GAME'S
ON
THE MINDS BEHIND
INTERACTIVE DIGITAL
ENTERTAINMENT
Known as the "Hunt II Archway," this portal serves as a main entry to the campus from 15th Street. The archway and adjacent Hunt I, Hunt II, and Hunt III residence halls are part of the Quadrangle residence complex. They are named in honor of Robert Woolston Hunt, an early trustee of the Institute. Hunt is one of four new members of the Rensselaer Alumni Hall of Fame (see page 28).
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Rensselaer is preparing to launch the first undergraduate computer game design program in the country. Not surprisingly, alumni were making significant contributions to game design before it was even considered a technology field.

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MFA graduate Julia Christensen '05 examines how communities are creatively dealing with empty “big box” stores.

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Rensselaer Alumni Hall of Fame to induct four new members.

ON THE COVER: Special thanks to Avery and Byron Martin Hutchison, sons of Elizabeth Martin '01, for lending us the video game controller pictured on the cover. Photo by Mark McCarty.

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Asia Trip Extends Global Reach

Ten-day tour carries Rensselaer message to science, technology, and education leaders—and Asian alumni

This spring I had the extraordinary experience of leading a delegation of Rensselaer faculty and administrators on a trip to Asia. In China, Hong Kong, Singapore, and Malaysia, we met with leaders in industry, science, government, and education, interactions that are leading to several collaborations of value that will further our mission to become a truly world-class university with global reach and global impact. Indeed, our work at Rensselaer contributes in an important way to global innovation, to security, and to economic growth. After all, it has been our heritage to educate the innovators who changed the world for more than 180 years.

On this trip we also celebrated the establishment of the first China chapter of the Rensselaer Alumni Association. That fact alone is significant, because it means that Rensselaer alumni are making their impact in a part of the world that we know is a powerful—and ever-growing—force in the global economy. In fact, as we met with alumni in all the cities we visited, I came away from this trip with the strong impression that Rensselaer is arriving on this world stage.

There were many highlights of this trip. It began in China, which has the fastest-growing economy in the world and is the center of the overall economic emergence of Asia. In Beijing we met with leaders in industry, science and technology, and university officials. I was honored to give a speech titled “Energy and China’s Future: A Perspective” to the Chinese Academy of Sciences, as well as to the American Chamber of Commerce. The delegation also toured the Tianjin Economic Development Area (TEDA) in Tianjin, Beijing’s port, where we met with local officials. Several Rensselaer alumni are prominent players in making TEDA a leading site for science and technology.

More meetings with business and university officials were held in Hong Kong, where we also introduced Renaissance at Rensselaer: The Campaign for Rensselaer Polytechnic Institute to a gathering of alumni. We made similar campaign presentations in Beijing and Kuala Lumpur.

In Singapore, we met with the leadership of the Agency for Science, Technology and Research (A*STAR) to discuss education challenges and possible collaborations. A*STAR offers international scholarships and fellowships in science and technology for students ranging from undergraduates to post-doctoral fellows.

In Malaysia, I met with Dato’ Dr. Jamaludin Dato’ Mohammad Jarjis, the country’s Minister of Science, Technology, and Innovation, who spoke of plans to grow the education and research base of Malaysian universities and the need to develop opportunities for Malaysian students to study abroad so that they may return to their home country fully prepared for careers in science and technology. The minister also spoke at the alumni reception in Kuala Lumpur, along with Christian LaFleur, the U.S. Ambassador to Malaysia.

This was a memorable trip from the standpoint of forging important and potentially beneficial connections for Rensselaer and for reconnecting with alumni who are leading the economic, scientific, and technological development in Asia. Indeed, a great university builds relationships and alliances all over the world, and fosters global innovation. The trip was an important step toward reaching those goals for Rensselaer. I look forward to extending and expanding our connections all over the world, and to reporting on the success of these ventures.

Joining President Jackson as members of the Rensselaer delegation to Asia were: Prabhat Hajela, Ph.D., vice provost and dean of undergraduate education; Omkaram Nalamasu, Ph.D., vice president for research and director of the Center for Integrated Electronics; David Haviland ’64, vice president for institute advancement; Iftekhar Hasan, Ph.D., acting dean of the Lally School of Management and Technology; Robert Palazzo, Ph.D., professor and chairman of biology and director of the Center for Biotechnology and Interdisciplinary Studies; Lester Gerhardt, Ph.D., associate dean of engineering; Dawn (Xia) Chen, director of international advancement; and Tom Apple, Ph.D., former vice provost and dean of graduate education.
Standing Up for Science

I was delighted to read President Jackson’s speech excerpt in the Spring 2005 Rensselaer (“Where Science Meets Society”). The appalling pullback from using pure science in public policy threatens basic freedoms, our environment, and the standing of our country in the global community. RPI alumni have a continuing duty to society as well as our children to make the case for the role of science in the United States. I have found it isn’t surprisingly easy to make a difference, and I would encourage my far more talented peers to do the same. Get involved with your school boards, or volunteer with a nonprofit, write some checks, showing us the way.

CHARLES VON THUN ’89
Denver, Colo.

Reading Is Fundamental

I wonder what Selmer Bringsjord means when he says that “humans learn best and most efficiently by reading” (“Building A Better Brain,” Spring 2005). If he means that reading is a better way to obtain information than other forms of human communication, he is flying in the face of some popular beliefs in the technical community.

The current rage in software development is agile methods and one of their principles is “working software over comprehensive documentation.” With little or no written documentation available, agile programmers are encouraged to get information through oral communication, usually a face-to-face meeting with the person who has the information that they need. Proponents of agile programming contend that this is a better method than reading documentation.

Bringsjord’s comment also seems to contradict the premise behind the concept of “group learning” that was popular at RPI when I was a teaching assistant there (1991-1996). In group learning, a group of students discusses a problem and arrives at a solution by talking with each other. If anyone is reading, it is done before the problem session starts.

I tend to believe that Bringsjord is right, particularly when he notes that readers ponder what they are reading. Certainly this is what I did when I asked how his statement might apply to two of the latest trends in software development and teaching.

VICTOR SKOWRONSKI, PH.D. ’96
Woburn, Mass.

Earthquake Forecasting

Concerning earthquakes and tsunamis (“Better Earthquake Forecasting”), you should be advised that James M. Gere, BCE ’49, Ph.D. ’54, and retired head of the Civil Engineering Department at Stanford University, was also an expert in earthquakes and tsunamis.

When visiting Jim back in 1986, he showed us the seismograph mounted in the center of the department office. He also generously gave me a book he authored on tsunamis, which I have recently donated to our local library.

It should also be noted that Jim was an excellent cross-country runner for RPI.

J. RICHARD MANIER ’48
Fayetteville, N.Y.

RPI on eBay!

I was happy to see your article “RPI on eBay.” I’ve been collecting vintage postcards of Rensselaer since I graduated in 1996. I recently created this site which features many of the cards in my collection: http://www.rpiviews.com/.

Hopefully I’ll have a chance to get back to Troy and visit the archives to do some more research for the site, but for now hopefully other alums will enjoy seeing some of the old scenes around campus.

ERIC LARSON ’96
Chelemsford, Mass.

Regarding the “RPI on eBay” article: The words “and EVEN a set of beer mugs emblazoned with a red letter ‘R’ on each” suggests that they are somehow unusual. Not so. I don’t know over how many years, but when I was on campus we received one of these mugs with the current year for voting in the student election—our activity fees at work as an incentive to vote. They were everywhere, especially on the windowsills of dorm rooms.

DICK GREET ’60
Rye, Colo.

An Unforgettable Day

My most powerful memory of the old [RPI Players] Playhouse is not of events that took place there, but of something that never happened. In the fall of 1963 we prepared a production of an English comedy called The Brass Butterfly. Opening night was set for Friday, Nov. 22, 1963—the day John F. Kennedy was assassinated. Of course we canceled that weekend’s performances. I don’t think anyone told us to, we just knew that, despite legend and song, there are times when the show simply cannot go on. We drove to the empty Playhouse that evening and wandered around, lost in thought.

Although the production had been planned to run two weekends, it had been a troubled effort from the beginning, and no one had the heart to try again the following weekend.

DAVID KENT ’63
Newington, Conn.
RPI’s Gone Liberal?

I was reading a book recently that discussed how all the major universities have moved to the left in their curriculum and position of the faculty. I thought this could not be the same at engineering schools like RPI. Then I saw that this year’s Commencement speaker was Senator Hillary Clinton, one of the most liberal politicians in the country. Why does RPI entertain such an anti-national defense and anti-business person? I guess RPI has moved to the left along with all the liberal arts universities.

RICHARD PICARD ’64
Cincinnati, Ohio

Picture Perfect

My father [Charles Ewels ’50] graduated from RPI on the GI Bill after World War II. He died last December, but my mother, who still receives the alumni magazine, opened it today, and saw a picture of dad standing in a cafeteria line [page 34]! He is the dark-haired one, V-neck dark sweater standing “alone,” mid-back row. Thin and all ears! Looking directly into the camera. He vowed that after WWII and the Army life that he would never stand in line again! Your picture proves otherwise.

The funny thing is that mom had decided this morning to cancel the magazine, no subscription, no news. Had to get up early with her dog. She thought the alumni magazine would put her back to sleep, enjoyed an article, then flipped the page and there was Dad! It was a shock, then a comfort, and then a kind of gift from him to her, because their anniversary is May 19 and her birthday is May 12... so in a way it is a “hi” from him.

He so loved his education at RPI, and more so because his family couldn’t afford it. The GI Bill made it possible. He was a chemical engineer for General Chemical, then Allied. He was proud of his career.

CAROLYN EWELS
Potomac, Md.

Remembering Professor Henry Hollinger

I noted the Spring 2005 report of Professor Hollinger’s death, and feel we have all lost a truly unique person, a gifted teacher, and friend. Henry was a great listener who taught and counseled a community of students—from RPI, Sage, and Hudson Valley—in matters ranging from statistical mechanics and group theory to college entrance. He gave his time willingly to all students, on the belief that most learning comes from individual interactions with the faculty. I met Henry in 1963 as a chemistry major, and studied theoretical chemistry with him as my Ph.D. adviser. Henry had the gift of considering an idea, forming a model, and creating equations to predict the behavior and properties of systems. His enthusiasm for understanding led him to personal studies of chemistry, math, philosophy, music, and religion.

Those of us who were taught by Henry have indeed been privileged.

BRUCE MORRISSEY ’64, PH.D. ’70
Wilmington, Del.

More RPI Players Memories

I thoroughly enjoyed the article on the RPI Players in the Fall 2004 issue as it brought back memories of my four years in the Players. Mostly I was part of the stage crew and in my last two years, production manager for some of the shows. Maybe the most vivid recall is of the night Art Rosenthal and I were sitting in the orchestra checking the appearance of the lighting of the set that we were working on for the coming production. All of a sudden we heard a tremendous crash right behind us. When we recovered our senses, we looked back and saw that the main chandelier’s chain had broken and pieces of it were then in the seats a few rows back of where we were sitting. I am sure this contributed to our move from the Playhouse at the foot of the Approach to the 15th Street Lounge.

I also remember our faculty adviser Bob Healy and the intense games of charades he organized at many of our post-show parties. I also remember that I got talked into taking a small part in one show. It was very good and got great reviews that included the comment that “the cast was all great except for Kulakofsky. We and he are all lucky that he had such a small part.”

MICHAEL KULAKOFSKY ’52
San Jose, Calif.

We’d love to hear from you! To provide space for as many letters as possible, we often must edit them for length. Contact us at: Rensselaer Magazine, Office of Communications, Rensselaer Polytechnic Institute, Troy, NY 12180, alum.mag@rpi.edu, or call (518) 276-6531.
BIOLOGY
Understanding Alzheimer's

Chunyu Wang, Assistant Professor of Biology at Rensselaer, has received one of 10 New York State Office of Science, Technology, and Academic Research (NYSTAR) James D. Watson Investigator Program Awards. The $200,000 grant will support Wang's research, which focuses on the application of nuclear magnetic resonance (NMR) spectroscopy to study Alzheimer's disease and other significant problems in neuroscience and aging. NMR spectroscopy provides a powerful modern analytic technique for understanding the structure and function of biological molecules, such as proteins and nucleic acids.

The NYSTAR support will allow Wang's laboratory to investigate a key protein-protein interaction in the development of Alzheimer's using state-of-the-art NMR equipment at Rensselaer. Wang is seeking a better understanding of the disease's structural mechanisms, and his research may lead to the development of new treatments for Alzheimer's, which is the most common form of dementia in elderly people.

"Professor Wang's long-term goal is to find a cure for Alzheimer's. Contributing to a better understanding of complex and common diseases is one of the many areas of vital research under way at Rensselaer's Center for Biotechnology and Interdisciplinary Studies," says Wolf von Malztahn, associate vice president for research at Rensselaer.

Wang is a medical doctor who also holds a doctoral degree in biochemistry and molecular genetics. "Current medications for Alzheimer's primarily treat symptoms of the disease instead of the disease itself. This is partly due to our incomplete understanding as to how a key peptide, amyloid β peptide, interacts with other molecules in brain cells and causes neuronal dysfunction," says Wang. "Our research seeks to yield a comprehensive understanding of how amyloid β peptide interacts with an important enzyme, which will lead to the identification of better options for treating the disease."

The James D. Watson Investigator initiative is part of the $225 million Generating Employment through New York State Science (Gen*NY*sis) program.
Launching the Class of 2005

Blue skies and mild temperatures prevailed for the nearly 1,100 graduates at Rensselaer’s 199th Commencement May 21. More than 10,000 family members, friends, and university alumni and staff attended the festive ceremony on Harkness Field, followed by a picnic on campus.

“The world has changed enormously in your time here,” President Jackson said in her address to the Class of 2005. “But, my hope for you is that, as you move forward, you will hold fast to your core values and to your principles—they will be your North Star, your guide to navigating the challenges, which are sure to lie ahead.

Commencement speaker United States Senator Hillary Rodham Clinton (D-N.Y.) encouraged the graduates to “always stand true to yourselves” and to “stand up for research and for open inquiry” in her address. Clinton challenged students to use their technological and scientific degrees for themselves, the nation, and the world. She also urged students not to turn their backs on objective science in the face of political or other world pressures. “We need to be willing to face up to scientific facts and not permit them to be distorted or spun out of proportion.”

Clinton received an honorary doctor of laws during the ceremony. Also receiving honorary degrees were economist Paul Volcker, former chairman of the Federal Reserve; former NHL player Joe Juneau ’91, who is a partner in Harfan Technologies, which supports management of municipal infrastructures; and Robert Coonrod, former president and CEO of the Corporation for Public Broadcasting.

Volcker, Coonrod, and Juneau joined President Shirley Ann Jackson the day before Commencement in a colloquy on “Personal Achievement—Public Lives—Public Responsibility.” The broad-ranging conversation touched on issues including economic policy, the environment, globalization, workforce development, and challenges of communicating complex issues in the current media environment—all discussed in an ethical framework.
ENVIRONMENT

New Book Examines Environmental Issues

In his new book, *Wisdom for a Livable Planet* (Trinity University Press, April 2005), Carl McDaniel provides an introduction to many of today’s critical environmental issues, including toxic waste, biodiversity, globalization, population, economic justice, climate change, and environmental education. McDaniel is professor of biology at Rensselaer.

The book examines environmental issues through the life and work of eight individuals who have worked toward improving the ecological health of their communities and the world beyond. Organized topically, each chapter of the book summarizes one person’s persistence, creativity, and dedication in the face of challenging environmental issues, according to McDaniel.

The profiled individuals are: Terri Swearingen, nurse, mother, and environmental advocate; Dave Foreman, co-founder of the Wildlands Project; Wes Jackson, geneticist and co-founder of the Land Institute; Helena Norberg-Hodge, founder of the International Society for Ecology and Culture; Werner Fornos, president of the Population Institute; Herman Daly, University of Maryland professor and past World Bank economist; Stephen Schneider, Stanford University climate expert; and, David Orr, professor of environmental studies at Oberlin College.

McDaniel avows that a durable, healthy society begins with the work of individuals who take action. He writes in the last chapter, “My hope is that if we all fully grasp the stories that express our connection to the rest of life and our absolute dependence on the bugs and the weeds of the world—and we tell these stories—they will become part of humanity’s sacred beliefs and lay the foundation for a future of continuous progress. Through the actions of each one of us, global culture can embrace an urgently needed ecologically centered pattern of living.”

McDaniel is co-author, with Rensselaer economics professor John Gowdy, of *Parable of Nature* (University of California, 2000). He joined Rensselaer in 1975, where he teaches environmental and introductory biology courses.

MATHEMATICS

A Winning Solution

A RENSSLEAER UNDERGRADUATE TEAM HAS won the 2005 Society for Industrial and Applied Mathematics (SIAM) Award in the Mathematical Contest in Modeling, competing in the 21st annual Mathematical Contest in Modeling, besting competitors from Harvard University, MIT, and others.

Team members Meral Reyhan, a senior with a dual major in physics and mathematics, and John Evans, a junior majoring in applied mathematics, competed in the 21st annual Mathematical Contest in Modeling (MCM) with 663 other teams representing academic institutions from 10 countries. The MCM contest is administered by the Consortium for Mathematics and Its Applications.

In the MCM contest, competing teams have four days to solve one of two challenging problems by using mathematical tools. Reyhan and Evans tackled a problem requiring teams to propose a model to help determine the optimal number of toll booths in a barrier toll plaza, “Problem B” in the contest.

The Rensselaer team was designated as “outstanding” in the Problem B category, a designation shared by only seven other teams representing Harvard University, Massachusetts Institute of Technology, Duke University, University of California, Berkeley (2 teams), and University of Colorado.

Each year SIAM officials select one team from each problem group to honor for their winning solution. The Rensselaer team was selected to receive the 2005 SIAM Award in the Mathematical Contest in Modeling for Problem B.

“We are proud of Meral Reyhan and John Evans for their ability to perform at this level as undergraduates,” said G.P. “Bud” Peterson, Rensselaer provost. “Their accomplishment is a testament to an exceptional mathematical sciences department at Rensselaer that prepares our students to creatively apply what they’ve learned in the classroom to solve complex, realistic problems.”

“Success in this contest, the team must effectively work together to research, model, and present a creative and coherent solution by connecting mathematical analysis to a real problem,” says Peter Kramer, assistant professor of mathematics at Rensselaer and faculty adviser for the MCM contest. “Meral and John demonstrated their ability to combine teamwork with creativity and knowledge to achieve this impressive honor.”

This year’s contest is the first time a Rensselaer team has been selected to receive the SIAM Award for its mathematical solution.
GEOCHEMISTRY

Taking the Earth’s Early Temp

Researchers at Rensselaer and Australian National University have found new evidence that environmental conditions on early Earth, within 200 million years of solar system formation, were characterized by liquid-water oceans and continental crust similar to those of the present day. The researchers developed a new thermometer that made the discovery possible.

“Our data support recent theories that Earth began a pattern of crust formation, erosion, and sediment recycling as early in its evolution as 4.35 billion years ago, which contrasts with the hot, violent environment envisioned for our young planet by most researchers and opens up the possibility that life got a very early foothold,” says E. Bruce Watson, Institute Professor of Science and professor of geochemistry at Rensselaer.

According to Watson, the research provides important information and a new technique for making additional discoveries about the first eon of Earth’s history, the Hadean eon, a time period for which still little is known. The findings are reported in the May 6 issue of the journal Science.

Watson collaborated with co-author T. Mark Harrison, director of the Research School of Earth Sciences at Australian National University and professor of geochemistry at UCLA. The work was supported by the National Science Foundation, the Australian Research Council, and the NASA Astrobiology Institute.

Watson and Harrison developed a new thermometer that involves the measurement of the titanium content of zircon crystals to determine their crystallization temperature. Zircons are tiny crystals embedded in rock that are the oldest known materials on Earth. Zircons predate by 400 million years the oldest known rocks on Earth. These ancient crystals provide researchers with a window into the earliest history of the Earth and have been used to date the assembly and movement of continents and oceans.

“Zircons allow us to go further back in geologic time because they survive processes that rocks do not,” says Watson. “Although they measure only a fraction of a millimeter in size, zircons hold a wealth of information about the very earliest history of Earth.”

In Watson and Harrison’s work, zircons from the Jack Hills area of Western Australia ranging in age from 4.0 to 4.35 billion years were analyzed using the thermometer. The new temperature data supports the existence of wet, minimum-melting conditions within 200 million years of solar system formation, according to the researchers. In the Science paper, the researchers discuss how the thermometer provides clear distinction between zircons crystallized in the mantle, in granites, and during metamorphism, thereby providing consistent information about the conditions on Earth during the crystals’ formation.

Watson describes his research as “materials science of the Earth,” because it involves designing and executing lab experiments at the high temperatures and pressures found in the Earth’s deep crust and upper mantle.
SPORTS REPORT

Field Hockey Highest GPA in Nation

Rensselaer’s Women’s Field Hockey team has the highest team grade point average in the nation when considering all the Division I, Division II, and Division III squads.

The Rensselaer team, coached by Bridget LaNoir '99, earned the 2004 NFHCA Division III Academic Team Award with a team grade point average of 3.53 for the fall '04 semester. Sixteen student-athletes from the team have been named to the 2004 National Field Hockey Coaches Association (NFHCA) Division III National Academic Squad.

"Ranking first in the nation is an extraordinary achievement," said Vice President for Student Life Eddie Ade Knowles. "We are extremely proud of these student-athletes, who are excelling both in the classroom and on the field."

Those individually recognized include: Ruthie Baer, a sophomore graphic design major from Manchester, Mass.; Katie Baratta, a junior civil engineering major from Belmont, Mass.; Emily Carroll, a sophomore biomedical engineering major from Rensselaer, N.Y.; Mia-Bianca Fabiano, an architecture major from Freehold, N.J.; Andrea Flynn, a sophomore biology major from Guilford, Conn.; Alison Haeffe, a senior majoring in mechanical engineering from Ilion, N.Y.; Melissa Holstein, a freshman chemical engineering major from Ann Arbor, Mich.; Amanda Lund, a junior bioinformatics and molecular biology dual major from Chester, Conn.; Sarah Merlin, a freshman electronic media, arts, and communication (EMAC) major from Sharon, Mass.; Elisa Prange, a senior civil engineering major from Arlington, Va.; Bridget Rice, a senior EMAC major from Bowie, Md.; Patty Rodziewicz, a junior majoring in aeronautical engineering and mechanical engineering from Wayside, N.J.; Michelle Roy, a freshman management major from Rensselaer, N.Y.; Nina Saxena, a freshman engineering major from Rhinebeck, N.Y.; Sondra Sherman, two-time captain, management major from Gaithersburg, Md.; and Liz Szwczak, a sophomore biomedical engineering major from Enfield, Conn.

TEAM SPORTS TALLIES

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The new technology dramatically increases light output and efficacy of white LEDs, and could play a fundamental role in the evolution of white LEDs for lighting in homes and offices."

Commercially available white LEDs combine a light-emitting semiconductor with a phosphor, a rare earth compound, to produce visible white light. However, more than half of the light, or photons, produced by the phosphor is diverted back toward the LED where much of it is lost due to absorption. This reduces the LED’s overall light output.

Narendran’s research group developed a method to extract the backscattered photons by moving the phosphor away from the semiconductor and shaping the LED lens geometry. When combined, these changes allow the photons that would typically be absorbed inside the LED to escape as visible light. The new technology is patent pending.

Compared to commercial white LEDs, prototypes of the new SPE LED technology produced 30 to 60 percent more light output and luminous efficacy—light output (lumens) per watt of electricity. This means more visible light is produced without increasing energy consumption.

According to Narendran, his group is the first to use the SPE method to improve white LED performance. The research was funded by the U.S. Department of Energy and is a collaborative effort with the University of California, Santa Barbara.
ARCHITECTURE

Going to Extremes

FIFTH-YEAR ARCHITECTURE STUDENT Stephanie Cramer didn’t have to look far for inspiration for a project for her Extreme Drawing class. Cramer created an exhibit featuring the word “TROY” in large red letters on the idea of the Record newspaper building. The installation, measuring 25 feet by 9 feet, hung on the eastern facade of the building for a week in May.

“I wanted to do something that would tie together the building, its function, and the city,” Cramer told the Record. “And I wanted to use recyclable and found materials.”

Cramer found her materials on a walk downtown. Stacks of red plastic tubes used for home delivery of the Record were alongside the three-story Record building. On another walk, she found a pile of wooden shipping pallets.

Once the Record building manager was assured the project wouldn’t damage the building, Cramer and several architecture students installed the exhibit from the rooftop.

“It just all came together. The materials I needed were right here. The combination of the letters T-R-O-Y spelled out using elements with the word ‘Record’ seemed like a good way of showing pride in the city. And, you can see it from the Approach up the hill.”

Michael Oatman, clinical assistant professor of architecture, says the goal of Extreme Drawing, which was inspired by the phenomenon of extreme sports, is to expand the territories of drawing. He awarded Cramer an A for the class.


How Stuff Works features hundreds of articles that explain the inner workings of everything from diamonds to chocolate to a rotary engine, as well as hypnosis, cell phones, home appliances, audio electronics, holiday traditions—you name it and Brain or one of his staff members is researching and writing about that topic right now. Visitors even can learn how the site itself works.

But lightsabers? A caveat at the bottom of the page explains: “Well, that’s how they would work. Lightsabers are only a figment of George Lucas’ imagination, of course. This is an entirely fictional article, based on information in Star Wars movies and books.”

The sidesplitting feature describes the inner workings of lightsabers, and lists many common usages.

“Nearly anything you would normally find around the home or office is easy to cut with a lightsaber, including steel pipes, reinforcing beams, mounting struts and so on. If you happen to find yourself hanging upside down in a cave, a lightsaber is the perfect tool to use to cut the rope.”

“A lightsaber is like a sword on steroids,” the site says. Suggested household usages include food preparation (“the big advantage of using a lightsaber, of course, is that you can both cut and toast the bagel in one stroke”), or reheating coffee and slicing a cake. Landscapers can use them to trim hedges or fell a tree.

The Web site describes how lightsabers are powered, referring to arc waves, cycling field energizers, crystal energy, and such.

Lest you think Brain has gone to the Dark Side, the Web site also carries an “important safety” warning: “A lightsaber is not a toy! Keep it out of reach of children at all times. Lightsaber locks are required in most states.”
MAKING A DIFFERENCE

A "Born Entrepreneur" Gives Back

The son of Irish immigrants, Jack McDonnell '61 fully recognized that all of his later accomplishments would not have been possible, he says, "without the education that was literally given to me." A pioneer in the telecommunications industry, McDonnell—the 2002 William F. Glaser '53 Entrepreneur of the Year—is the founder, chairman, and chief executive officer of TNS Inc., an international data communications company specializing in point-of-sale transaction and e-commerce services.

"I was the recipient of someone else's philanthropy—several times," says McDonnell, beginning with his education at the all-scholarship Regis High School in New York City. McDonnell also received a full scholarship to attend Manhattan College, where he earned a bachelor's degree in electrical engineering, and a Link Foundation Fellowship that brought him to Rensselaer. Besides earning a master's degree in electrical engineering, he recalls, "I actually made money at RPI. They gave me room and board to be an RA in the freshman dorms."

In 1994, he and his wife, Jackie, established the McDonnell Charitable Foundation, whose sole purpose is to support education. "There is no question that we both feel the need to give back," he says. "We have done everything from establishing scholarships and funding capital campaigns to sponsoring a chair in ethics at Marymount University in Virginia. One of our more recent and favorite projects is funding an integrated school in Ballycastle, County Antrim, Ireland."

Their philanthropy now extends to Rensselaer, with their recent unrestricted gift commitment to support Renaissance at Rensselaer: The Campaign for Rensselaer Polytechnic Institute. "I made it unrestricted because I have served, and still serve, on some charitable boards," McDonnell says. "The hardest money to come by is unrestricted funds."

"While I only spent a year at RPI," McDonnell recalls, "there is no question it added a lot to my academic credentials and credibility." Commissioned as a lieutenant in the United States Air Force after his graduation, McDonnell served as an engineer assigned to the National Security Agency (NSA). He returned to NSA as a contractor to build a variety of classified systems, with his final project the establishment of the first encrypted data link between NSA and the Central Intelligence Agency. His career in data communications was launched—McDonnell then became an entrepreneur with two partners, including Rensselaer alumnus Ed Etess '59.

"I firmly believe that entrepreneurs—like athletes—are born, not made," McDonnell avers. "While both can improve with training, each has at their core the self-confidence and optimism essential to success." He has been involved in several ventures over the years—two of them unsuccessful, the rest successful to varying degrees and culminating with TNS Inc.

"I guess I saved the best for last," he notes. "There is no question that my current venture has built on all of my previous ones—including the failures."

"I view my donation to RPI, first and foremost, as a payback," McDonnell says. "It was there that I was first exposed to computers. I built a special-purpose computer for my master's thesis and never looked back."

CAMPAIGN UPDATE

Reunion Giving

Renaissance at Rensselaer: the Campaign for Rensselaer Polytechnic Institute earned a boost at Reunion 2005 to reach $650 million in gifts and commitments.

At the annual Rensselaer Alumni Association Awards reception, after receiving the 2005 Distinguished Service Award, Samuel Wait '53, associate dean of science at Rensselaer, surprised President Jackson and touched the audience by presenting a check toward his own commitment to the campaign—the Carol D. and Samuel C. Wait Jr. '53 Undergraduate Research Scholars fund.

The Waits' gift added to outstanding campaign support by returning alumni classes, including the 50th Reunion Class of 1955, which earned the President's Award for participation with 54 percent of the class contributing, and the Reunion Award for the greatest number of new Patroons. The Chairman's Award for highest total class gift went to the Class of '60, with more than $3.8 million in gifts and commitments. Not surprisingly, they also achieved the largest increase in dollars to the Annual Fund. Among the younger classes, the Class of '80 earned the Emile Nippe's 38 Award for the largest increase in donors, and the Class of '70 earned the Annual Fund award for highest class gift to the Annual Fund.

For more information about Renaissance at Rensselaer: the Campaign for Rensselaer Polytechnic Institute, contact Terri Cerveny at (518) 276-2634 or by e-mail at tmcpat@rpi.edu. Look for more photos and coverage of Reunion in the fall issue of Rensselaer.
FOCUS ON:

Andrea Page-McCaw: Analyzing Enzymes

WHEN ANDREA PAGE-MCCAW interviewed last year for a faculty position, she knew that Rensselaer's Center for Biotechnology and Interdisciplinary Studies was still in the making. "But the plans were promising. I could see that Bob Palazzo [the center's director] had a vision of where Rensselaer was going and I trusted in it," says Page-McCaw, assistant professor in developmental genetics and molecular biology.

Page-McCaw is one of eight new faculty members appointed in Rensselaer's Biology Department in the past two years. They are helping to expand the university's research scope in biotechnology with their expertise in cellular, biochemical, and biophysical approaches to the life sciences.

Page-McCaw came to Rensselaer last fall after a six-year research fellowship at the University of California, Berkeley, where she conducted seminal research on a group of enzymes called matrix metalloproteinases (MMPs), which have been associated with many illnesses, including inflammatory diseases, and have been implicated in all stages of tumor progression in cancer. Although there is evidence that their normal purpose is to help in wound healing and joint lubrication, little is still known about how MMPs work normally in the body.

Major stumbling blocks are that the family of enzymes is large—about 22 in humans and mice—and they exhibit complex interdependence with one another. But Page-McCaw has opened a new door to MMP research by studying the fruit fly, which only has two such enzymes. At UC Berkeley, she discovered that each enzyme is critical for fruit fly survival. "If either one is disabled, the fruit fly dies," she says.

Page-McCaw, who grew up in Belmont, Mass., earned her undergraduate degree in history and science at Harvard. After college, she landed a job in a law firm in Washington, D.C., tracking clean-air legislation for lobbyists.

In 1990, while at the law firm, she took a night class in biochemistry at American University. The following year she accepted an entry-level position as a research technician at Harvard Medical School, where she studied DNA methyltransferase, an enzyme that likely controls gene expression. She next moved on to MIT, where she earned a Ph.D. in biology in 1998.

She first turned to the fruit fly at MIT to conduct research in cell division. For her postdoctoral research, she wanted to do something that would have immediate medical significance. To do so, she assumed she would have to switch from fruit flies to mice. However, as she attended a variety of cancer seminars, she found time and again the seminal insight in each research program came from genetic work in fruit flies. "I realized I didn't have to give up on the tools I worked with, but apply the tools to a new problem," she says.

A seminar in Boston first exposed her to MMP research, but the research program was one of the few that didn't highlight insights from fruit flies because the enzymes were only studied in vertebrates. "I realized that if they could see how MMPs worked in flies, they would have much clearer hypotheses to test in vertebrates," Page-McCaw says.

Today at Rensselaer, she is focusing on which proteins and cells rely on the enzymes in fruit flies. "If we can better understand MMPs and distinguish differences between normal and pathological function in each one, then we perhaps can improve inhibitors for new cancer drugs," Page-McCaw says.
OMKARAM "OM" NALAMASU has been appointed vice president for research. Nalama­
sus is director of the Center for Integrated Electronics, and professor of materials science and engineering and of chemistry and chemical biology. He serves as co­
director of Rensselaer's Interconnect Focus Center and director of the new Future Energy Systems CAT. He leads Rensselaer's largest research center with more than $10 million in funding, 50 faculty members, and 100 graduate students, staff, and post-doctoral fellows. Nalama­
sus has published more than 170 papers, articles, and book chapters; edited two books; and obtained 14 patents (plus six pending). He also serves on several advisory boards including Brookhaven National Labora­
tory's Center for Functional Nanomaterials and the National Institute of Standards and Technology Materials Science and Engineering Division.

RICHARD LAHEY JR. '64, the Edward Hood Jr. Professor of Engineering, has been awarded an Alexander von Humboldt Senior Scientist Fellowship, one of the most prestigious honors given to senior researchers around the world. Lahey is a pioneer in the field of nuclear reactor technology and safety who is now exploring a new form of nuclear fusion. With the fellowship, he plans to spend a year conducting research at the German National Nuclear Energy Laboratory in Karlsruhe, Germany. In another major honor, Nuclear Engineer­ing & Design journal is publishing a special edition in recognition of Lahey’s 65th birthday. The "Festschrift" edition (a collection of articles to honor a scholar) includes lectures delivered in a special symposium held on Sept. 25, 2004, in Pisa, Italy, in honor of Lahey's birthday, as well as papers from the International Symposium on Two-Phase Flow Modeling and Experimentation.

KATHLEEN FORDE has been appoint­
ed curator of time-based arts for the Experi­
mental Media and Performing Arts Center (EMPAC) at Rensse­
laer. Forde will be responsible for develop­
ing, implementing, and managing EMPAC programs for artist residencies, events, performances, installations, and symposia in collaboration with EMPAC Director Johannes Goebel. She will also curate, produce, supervise, and manage performances and projects in cooperation with Goebel. Forde comes to EMPAC from New York City where she worked in 2004-05 as an independent curator for both electronic audiovisual performance and installation. Prior to her work in New York, Forde was an Alexander von Humboldt Foundation German Chancellor Scholar and curatorial director for live arts and new media for the Goethe-Forum in Berlin, Germany.

HARRY MCLAUGHLIN, professor of mathematical sciences, received the David M. Darrin Counseling Award at Commencement 2005. The award was established by David Darrin '40 to recognize a faculty member who has made an unusual contribution in the counseling of students and who demonstrates special concern for the welfare of students in and out of the classroom. The selection is made by Phalanx, the student leadership honorary society, based upon nominations received from campus. "Professor Mclaughlin serves as the prime example of what an adviser should be. He is responsive toward and aware of students' concerns and situations. He encourages students to learn and take ownership of their educa­tion," said one nominator.

ARTHUR BERGLES, the Clark and Crossan Professor of Engineering, Emeritus, was recently elected a fellow of the American Institute of Chemical Engineers. He received this distinction for his work in improving process heat exchangers and for his service to the Institute, most recently as a director of the Transport and Energy Processes Division.

CHRISTOPHER BYSTROFF, associate professor of biology, has been awarded a Facul­ty Early Career Development Award (CAREER) from the National Science Foundation (NSF). Bystroff will use the project­ed five-year, $783,768 grant to develop five statistical models that represent various stages in the folding of proteins. Bystroff is a computational biologist who cre­

Donna Bedard, research professor of biology, has received a Ful­bright Lecturing Grant in Biological Sciences. She will use the grant to travel to Prague, Czech Republic, to teach and conduct research at the Institute of Chemical Technology. Bedard, an international expert in environmental bacteria and polychlorinated biphenyl (PCB) biodegradation, has led many studies of diverse and unusual bacteria and has contributed to a better sci­

Nikhil Koratkar, assistant professor of mechanical, aerospace, and nuclear engineering, received the Rensselaer Early Career Award at Commencement 2005. The award honors productivity in both teaching and research.

GEORGES BELFORT, the Russell Sage Professor of Chemical and Biologi­
cal Engineering, received the William H. Wiley Distinguished Faculty Award at Commencement 2005. Established by Edward P. Hamilton '07 in memory of William H. Wiley (Class of 1886), the award honors those who have won the respect of the faculty through excellence in teaching, produc­tive research, and interest in the totality of the educational process.

SHARON ANDERSON-GOLD, professor and chair of science and technology studies, has received the Jerome Fischbach Faculty Travel Grant, which was funded by Jerome Fisch­
bach '38 for contributions faculty members have made to the education and motivation of students.

BILL KALBAUGH, former basketball coach, was inducted into the New York Basketball Coaches Hall of Fame. He was honored for his life­
time contribution to area basket­
ball, first as coach of the Mechan­
icville High School Red Raiders, and then as legendary coach at Rensselaer where, in his 34-year career he amassed 298 victories, including 18 victories—a school record at the time—in the 1969-70 season. He was inducted into Rensselaer's Athletic Hall of Fame in 1986.

MILESTONES
Race Car Driver Erin Crocker '03 Takes Aim at NASCAR

ERIN CROCKER '03, an engineering graduate from Wilbraham, Mass., has spent more than a decade racing cars, competing on dirt tracks in quarter midgets, mini sprint and winged sprint cars, and trucks. In 2003, Crocker became the first female in history to qualify for the Knoxville Nationals at Knoxville Raceway in Iowa. Last December, she became the first woman to win a World of Outlaws sprint car feature event. Now the 24-year-old is seen as one of the most promising drivers on the NASCAR circuit. In March, Crocker became the first woman to sign on with Evernham Motorsports to a driver development program, positioning her to work her way up the ranks in racing as she competes in the ARCA RE/MAX Series and the NASCAR Busch Series. This year, she also will race six United States Auto Club (USAC) Silver Crown events in a car owned by champion driver Kasey Kahne.

Q: When did you start racing?
A: I got into a quarter midget go-cart when I was 6 and raced when I was 7. My dad never raced himself, but he was always involved in cars and he helped out some teams when he was younger. He got my [two] older brothers into go-carts. That's how I got involved.

Q: Who was your biggest influence in shaping your desire to become a race car driver?
A: My brother, Seth. We were best friends growing up. We were always out in the yard racing with our mountain bikes, and we had a golf cart we used to ride around in.

Q: In your first attempt at the ARCA RE/MAX Series in March, you won the Pork Pole Award at Nashville Superspeedway for the PFG Lester 150 race, making you the third female driver in the series to qualify for a pole position. Knowing that the series is a springboard for NASCAR racing, how did you feel about the possibility that in the near future you may be competing with the likes of Jeff Gordon and Tony Stewart?
A: It was definitely big. [It was] my debut driving a stock car, my debut race driving for Ray Evernham, and he's one of the top team owners in NASCAR. He's only seen me race a time or two. He knows my accomplishments. But, it's another thing to actually see someone you hire do something well and he was thrilled that day, and that goes a long way.

Q: You qualified for the pole position racing 165 mph. What's it like driving that fast?
A: That's the average speed of the lap. On the straightaways, you're going upward of 190. It's pretty neat going that fast, but at some point you forget about it. You're focusing on your job. I'm more worried about making perfect laps and getting the most out of the car, so I don't even realize how fast I'm going.

Q: Do you weigh the risks involved in racing? Are you ever afraid you're going to fatally hit the wall, for example, such as what happened to seven-time Winston Cup champion Dale Earnhardt in 2002?
A: You can't think about that as a driver. If you did, you'd never be successful. Obviously, there are risks involved in racing, but when you really look at the stats, you're probably safer in a race car than you are driving down the street. And, they've made a lot of safety improvements over the last few years, which decrease the impacts when you hit the wall. There's a new harness device that holds your head in place, which Dale did not have. If he had, it would have saved his life. Your neck muscles just aren't strong enough to withstand 13 Gs when you hit a wall and that's what killed Dale. You're never perfectly safe, but you're never perfectly safe doing anything.

Q: You participated in 102 races last year. You must have had a few wrecks.
A: I've had a few. Sprint cars, when they tangle, very often flip. So I've gone over a number of times. I had a pretty bad wreck in Washington [state] last year. I flipped a few times and I backed into the wall. I tore a ligament and messed up my back pretty bad. One time last year, I broke a front axle on my [sprint] car at a big half-mile track and it just shot the car right in the wall probably going something like 140 mph.

Q: What kind of racing did you watch as a kid?
A: I always watched the NASCAR races on Sundays. My dad was a big NASCAR fan. We also used to watch the sprint car midgets every Thursday on this two-hour show called Thursday Night Thunder. On that show, I watched Jeff Gordon win a lot of races. I watched Tony Stewart. I watched a lot of guys who are now in the Nextel Cup series.

Q: When did you realize that you wanted to make a career of being a race car driver?
A: It wasn't until I was in college when I start-
ed racing in sprint cars that I realized that this is what I wanted and it could happen.

**Q:** What was your first big break?

**A:** Going into my freshman year in college, a friend of the family from Connecticut owned a sprint car... and he gave me the opportunity to make some laps in his car. In the meantime, Dave Miller from Connecticut, who also was there and saw me, said 'hey, if you want to run a few races next year we'd love to have you drive.' It was how I first got my start. From there, I met the guy who I have driven for for the last three years, Mike Woodring. At the time, he was the eight-time champion of a fairly small series out of New York, but a very competitive series. He offered to run me in a second car, and that was a big break.

2002 was the first year that I drove for him. I ran every race as a teammate to Mike, and won five races that year. So, that was the beginning of the success and the beginning of the whirlwind.

**Q:** Much of your experience is racing on a dirt track in sprint cars. How different is it now racing on pavement in stock cars?

**A:** A stock car weighs 3,400 pounds, and a sprint car weighs 1,200 pounds. A sprint car probably has a little more horsepower as well. So, on the dirt, you're really trying to control something that's out of control. After a while, the dirt track gets dry and dusty, and you're trying to find any moisture you can to get traction. When you're on pavement, you can only push a car so far before the rubber on the tire is going to stick on the track. You don't really want to slide your tires too much in a stock car because the tires can get too hot. So, you're trying to get the same feel—you're looking for traction—but it's a totally different type of racing and a totally different type of car.

**Q:** Your mission statement says: "To utilize my engineering education and acquired skills to reach the highest levels of success as a professional race car driver." How do you use your engineering degree in race car driving?

**A:** Every time we go to a track to practice, we use all sorts of data acquisition, which monitors everything I do—throttle, break, steering. Every time I come off the track, I'm looking at this data to figure out where I can improve, where the car can improve. Just to understand how the car works and how a change to a spring can affect the car. I mean, it's all physics and engineering. So, I think pretty much every time I go to the track, I'm utilizing my engineering degree.

**Q:** How did you balance college with car racing?

**A:** It was really difficult. In my junior and senior years, I raced a lot. Starting in January, I raced in Oklahoma. In January and February I raced in Florida. Even though it was the off-season, you still raced. But luckily, through my sponsorship with RPI, the university paid for my airfare and it definitely helped me get back and forth to class. But, it was hard. I'd go away for a weekend racing, and I'd come back and, you know, I'd have a report due or a project or some homework, and the last thing I wanted to do was to come home and sit down and try to figure it out. But I knew it was something I had to do.

**Q:** Now that Danica Patrick has placed 4th in the Indy 500, do you think more women will consider entering the sport?

**A:** I do think you will see an increase in women trying to make careers in auto racing since Danica's success. Any young girl who had aspirations of becoming a race driver before will now see that it can happen and there are opportunities. I think Danica's success has probably opened up parents' eyes as well; they may now encourage their daughters to pursue racing where they might not have in the past. However, I don't think you will see a huge jump in numbers for females in the higher levels of this sport, just because it is such a male-dominated sport. There are probably 100,000 young men trying to make it in race car driving, and probably 200 girls. So, in looking for the fastest drivers, the pickings are much better looking at the guys.

**Q:** You moved from your hometown in Massachusetts to Charlotte, N.C., last year to start your program with Evernham. How long do you plan to stay in North Carolina?

**A:** Hopefully for life if things continue to go well. Most of the NASCAR teams are based out of this area.
Rensselaer is preparing one of the first undergraduate computer game design programs in the country. Not surprisingly, alumni were making contributions to game design before it was even considered a technology field.

In the Game

The entrepreneurial journey of Karthik Bala ’97 has taken him from his parents’ basement in Rochester to meetings with Hollywood stars Tobey Maguire and Kirsten Dunst to get their voices just right for the video games spun off from their films.

Today, Bala and a staff of a hundred design games with the special effects, production costs, and the buzz of highly anticipated blockbuster movies. Vicarious Visions, housed in offices near the Rensselaer campus, is behind such megahits as "DOOM 3" for Xbox and "Spider-Man 2" for the new PlayStation Portable platform. The company has produced 15 million units, with retail sales exceeding $500 million. If you’ve played “Finding Nemo” or “Shrek 2” from Game Boy Advance, that’s due to Vicarious Visions, which also produced the Japanese versions.

Bala started the company when he was 15 years old, in the days before CD-ROM, 3-D graphics, and the Internet. The teenager was drawing backdrops by hand and scanning them at Kinko’s and attending game developer conferences. “I put on a suit and tie and no one knew,” says Bala, at 30 an elder statesman of his profession. “I had to do what it took. No one was teaching this.”

Typical of students who entered college in the 1990s, Bala grew up hooked on interactive entertainment. But unlike most, he went into the business before he finished high school. Colleges were not teaching game making and, in fact, students were largely ahead of their professors. At Rensselaer, however, Bala got a rigorous grounding in the academics—majoring in computer science and psychology—along with support from professors eager to help him cultivate his business. 

Artist Edward Bowman II at Vicarious Visions, which is behind such megahits as "DOOM 3" for Xbox and "Spider-Man 2" for the new PlayStation Portable platform. The company has produced 15 million units, with retail sales exceeding $500 million.
He developed and published his first game in Rensselaer's Incubator Center and it was there that he nurtured what would become a multimillion-dollar venture. He and his brother, Guha Bala, recently sold Vicarious Visions to Activision, the world's second largest game maker. But the brothers will remain as the company's leaders, Karthik as CEO and Guha as president, and they will stay close to Rensselaer.

"Rensselaer is uniquely positioned to provide great talent to the next generation of game developers because of the way it brings together the arts, technology, and psychology," says Bala, who draws about a third of his staff from the Institute.

In the years since Bala graduated, Rensselaer has formalized its commitment to interactive game design. A precursor was the Electronic Media, Arts, and Communication (EMAC) program—launched a decade ago—which uses technology to merge art and communications (and the departments that represent those disciplines). Five years ago, Kathleen Ruiz, associate professor of integrated electronic arts, taught her first video games class, titled Games and Guts, in which she challenged students to come up with a game that did not center on violence. At the same time, Marc Destefano, clinical assistant professor of cognitive science, was planning game design courses. "The students said it would be great if we could talk to each other," says Ruiz. "It was the students' energy that made it happen."

Ralph Noble, an associate professor of cognitive science, collaborated with Ruiz and Destefano on a game studies minor, which was introduced last fall. Now a working group of faculty is developing a major in this area [see sidebar, page 21]. The new discipline will take students through rigorous core courses before they select an interdisciplinary concentration, which can include combinations of social science, engineering, arts, psychology, management, and science classes. As a result, game design students will be knowledgeable in a range of areas, not just focused on the entertainment game field.

Today, "games" are associated with leisure time. But month by month the equation is changing. Interactive technology is being devised to help elementary students learn. National defense strategies are mapped out as computer simulations. Fitness, biomedicine, and anti-terrorism training are all subjects for so-called serious games. There are games that teach Japanese; even world peace. On campuses, for instance, students create games to promote dialogue between feuding ethnic groups, or use them to challenge players to go through life as a member of a racial minority.

"We're encouraging our students to play an active role in shaping the future of this evolving genre, not learn an industry, but shape it as time goes by," says Ruiz. "The games program encourages intense, inter-

North Americans spend $10 billion on video games each year, more than they spend going to movies. Some estimates put worldwide sales at $28 billion. The average age of "gamers," as they are called, is 28, with slightly more of them men than women.
disciplinary teamwork, which of course is necessary to solve some of the new complex problems in medicine, biotech, and the environment."

While these graduates will be able to take their place as the first degree "specialists," Rensselaer graduates have made significant contributions to game design before it was even considered a technology field. From "Pong" to "DOOM," alumni have helped to invent or improve "downloadables," hand-held, subscriber-based, communal, and casual games—often before there was a blueprint for any of it.

North Americans spend $10 billion on video games each year, more than they spend going to movies. Some estimates put worldwide sales at $28 billion. The average age of "gamers," as they are called, is 28, with slightly more of them men than women. Constructing these worlds and stories—making them both believable and engaging—takes large teams of programmers, artists, and engineers.

The field didn't exist during the 14 years that Tobi Saulnier '84, CEO of 1st Playable Productions, spent at Rensselaer studying for her bachelor's, master's, and doctoral degrees in electrical engineering. She did not grow up with computers, nor especially enjoy them before it was even considered a technology field. From her says.

"At about the time I was graduating with my B.A.," she says, "I started out there with people who were probably born with a Game Boy and became hooked."

"I became the unconventional person who came in at a high management level without years of experience with games. I had a lot of homework to do," she says. "I was a freshman, and Lewis recalls playing multiple user dungeon (MUD) games. He admits that playing games distracted him from his studies. But it also promoted the collaboration and strategy-building that would be key to "Heroes."

He and a partner he met in the Rensselaer computer lab started a game company in the incubator after graduation. They worked on creating a video card with the 3-D graphics that would provide the illusion of being inside the game environment rather than just watching.

Three years later, the revolutionary 3-D game "DOOM" was released. But Lewis persevered for another four years. The result, in 1999, was a graphics-chip company which earned him $17 million when he sold it to Broadband. His next company, Cryptic Studios, based in San Jose, Calif., began work on a role-playing game spun off the MUDs Lewis played at Rensselaer. He guessed that the superhero genre, a la Spider-Man, would catch on. He was correct. Launched less than two years ago, "City of Heroes" has about 130,000 players in the U.S. who follow the monthly plot twists Cryptic introduces in Paragon City as if they are characters in their own movies. Players choose their costumes, weapons, physique, and powers. At any moment 15,000 people might be doing all of this.

The ability to create such worlds has evolved so quickly that the innovations of even 20 years ago are treated like ancient history.

"I was at it long enough ago that I get asked every year to lecture at the Classic Gaming Expo," says Lee Actor '74, who broke ground in the industry. "My
friends and I are the honored alumni. I hear someone 30 years old say, 'Way back in the early days when I started, in 1996, and I think 'Oh brother. I started in 1982.'"

Actor designed some of the popular coin-operated video games of the 1980s. Among them were "Hat Trick," "Snake Pit," and "Street Football." "Hat Trick," a hockey simulation, was ranked No. 1 in Replay magazine for eight weeks in a row in the mid-1980s. It provided the major plot twist for the acclaimed movie The Accused, based on the true story of a horrifying rape in a Rhode Island bar.

"In the movie, they showed the high score screen that proved the guy was there at the time," says Actor, 52. "If you look at the names, the first one is 'Lee' and all the rest are my friends, except the name of the guy who committed the crime."

By today's standards Actor's arcade games appear simple and one-dimensional. They reflect the fact that three or four people, not dozens, worked on them. And before he worked on those, Actor designed games for home consoles entirely on his own.

"I did most of the art and the sound effects and this was a very difficult system to program," he recalls. "We had to reverse-engineer the hardware. This entire game took up to 4K in memory. Nowadays, you can't do anything in 4K. We only had 128 bytes of RAM."

At Rensselaer, Actor remembers seeing one of the earliest video arcade games, called Space War. He took numerous computer courses using the school's IBM 360 mainframe. He incorporated programming this into his electrical engineering studies. Just as important, though, he indulged in his first love: music.

Actor, a violinist, took every music course available. He was concert master for the RPI Orchestra and the first Rensselaer student to perform with the Albany Symphony Orchestra. Later, he studied composition when he and his wife, Geri Actor '75, moved to Boston and then to California. He bought an Atari computer and wrote some software to help him program music. Actor bought the product, called Advanced Music System, and Actor began designing games for the company.

Eventually he also created games for Sega, including popular versions of "PGA Tour Golf" and "Sonic Spinball," which sold 2 million units. After working for himself and several creative groups, including Universal Digital Arts, Actor left game-making rather than follow it into the era of large teams and big money. He still works in music, serving as assistant conductor and composer-in-residence for the Palo Alto Philharmonic. He looks back fondly at the career course he plotted on his own.

"I had such a good time running my own company while my kids were growing up. I was at home and didn't need to work for somebody else," Actor says.

Games designers, who work grueling hours and often miss sleep for days in order to meet a deadline, value the creative freedom that most in the field enjoy. They are prone to spend hours pondering how effectively Mars is represented in "DOOM 3," or how well the Xbox is holding up. Because of their creativity and ingenuity, they usually are exempted from many corporate conventions. Typical are the entrepreneurs, even fabulously successful ones, showing their stripes by wearing T-shirts with action figures to work that the average fourth-grader would covet.

Joe Cassavaugh '79 was drawn to games as an alternative to the 9-to-5 world. A New Hampshire native, Cassavaugh came to Rensselaer as a math major and assumed he would teach high school. Instead, he started on the winding path that would bring him to so-called casual games, an entirely different realm from the fantasy- or Hollywood-driven story lines.

"Our players are in their mid-40s and 50s. They're not 'shoot em up [games],' says Cassavaugh, who works out of his home near Binghamton, N.Y. "You can play them when you're on the phone. They don't take your full attention."

He took just one computer course at Rensselaer, but the year after he graduated, the computer lab opened in the renovated Voorhees Computing Center. Cassavaugh visited the new space once and instantly decided to become a programmer. After various programming jobs, he found his passion at Interactive Network. The company made a hand-held unit that allowed people to play Jeopardy! and other TV game shows as they were broadcast. Two years later, in 1995, the company went under. Cassavaugh and colleagues started another company, Imagination Network, that made downloadable games.

"People were paying $8 an hour, plus phone charges, to play checkers, bingo, and backgammon," he says. When AOL bought Imaginat on Network, he went out on his own to launch puzzlesbyjoe.com which, in his words, "made zero money for three years."

But as video games have become more complex, there has been a steady interest in old-fashioned parlor games. Cassavaugh has discovered this as a designer and programmer for the San Francisco-based company iWin.

He was the chief designer and programmer on iWin's "Mah Jong Quest," an animated version of the classic tile game that sold 70,000 in its first four months. He was a member of the team that produced "Jewel Quest," which was the No. 1 downloadable game last summer, selling 200,000 copies. These products furnish low-impact amusement that represents the polar opposite of the high-tension buzz of playing "Spider-Man" or "Grand Theft Auto."

Cassavaugh estimates that more than 700,000 people have bought the games. He credits Rensselaer with raising his expectations of himself.

"At RPI you find out how good you really are," he says. "The cool thing was really having smart people to bounce things off of, try different things. I know people who are programmers who are happy doing that first language they learned for the rest of their lives. But I get to be an entertainer."
A team of Rensselaer professors from the sciences, social sciences, and the arts worked for a year to come up with the calculation of credits and practical research that should go into an undergraduate degree in computer game studies. Their ideas have been debated in academic circles, publicized in THE NEW YORK TIMES, and discussed at campus forums. In the fall the plan will begin the rigorous approval process needed to launch a major in September 2006.

Even so, the group has yet to finalize a name for the program.

"I think getting a consensus on what to call this will be challenging," says Ralph Noble, associate professor of cognitive science. "We're creating a program for a world that is only beginning to take shape."

He and other members of the team have created a blueprint for what is believed would be the first undergraduate computer game design program in the country. In September, the proposal will go before a series of academic review bodies on campus, including the Faculty Senate, before landing on the desk of President Shirley Ann Jackson. And since computer game design is a new field, outside experts will need to testify that computer games are a credible academic pursuit. If this is done and President Jackson approves, the proposal would go for review by the state education department.

The selective curriculum—just 25 students are slated for the program each year—would expand on the popular computer design minor introduced last fall. Completing the major would require a rigorous journey through classic liberal arts and technology, followed by self-styled interdisciplinary study and original research.

Students would be required to meet broad liberal arts requirements, drawn from life sciences, computer science, math, literature, and fine arts. They would choose from a core of classes that examine the art and technology of games, including the history and culture of games, game design, interactive storytelling, and experimental game design. Finally, they would move on to a specialty area such as interactive arts, artificial intelligence, psychology, or game management.

Some question whether the field of interactive computer games deserves its own bachelor's degree. Among the skeptics is Jesse Schell '92, who became a luminary in the game world after designing the Pirates of the Caribbean game at DisneyQuest.

Schell, who majored in computer science, credits Rensselaer with providing a broad education that emphasized strong ideas over flashy technology. He now teaches game design in the graduate program of the Carnegie Mellon Entertainment Technology Center. But Schell worries that younger students are not fully served by an education that prepares them for a specific field.

"One of the big mistakes that schools can make is to follow the money," he says. "Computer science enrollment has been declining steadily and now programs are saying 'What can we do to get kids to sign up? Computer games are hot.' That's not lifelong learning."

But Noble points out that the computer is a jumping-off point for any number of careers.

"We don't expect everyone to go into computer games. But right now game design makes the most demands on computers. It's the standard for showing what computers can do," he says. "If you educate students to work at the highest possible standard, they will have an excellent 21st century education no matter what they do with it."

"If you educate students to work at the highest possible standard, they will have an excellent 21st century education no matter what they do with it."

Game Design by Degree

James Powers creates a hovercraft for a video game he is developing, with the help of Chris Mortonson. They are located in Rensselaer's Visualization, Animation, & Simulation Technologies (VAST) lab.
Recycling the Big Box
IN SPRING OF LAST YEAR, Julia Christensen ’05 tossed a couple of suitcases in her 1999 white Subaru Forester and drove nearly 20,000 miles across the United States. But her road trip of several months was not the sightseeing, soul-seeking excursion of a typical college student. Instead, the multimedia artist traveled coast to coast on a mission to connect communities in the midst of a growing phenomenon: abandoned “big box” buildings that once housed megastores.

“Each town I've visited, people are very aware of their own situation. They're very aware of the empty building they have to deal with,” says Christensen, who received a master of fine arts in electronic arts in May. “But until I came along, they didn't realize that this is a nationwide pattern happening everywhere. By sharing the experiences of other towns, I hope to open people up to understanding alternative ideas for how these spaces can be utilized.” BY JODI ACKERMAN FRANK
The "big box" store is generally defined as a large, freestanding, warehouse-like building with one major room. Stock comes off the truck and onto the shelves, so there's no need for backroom storage space. Wal-Mart, Target, and Home Depot are a few retailers that fit this category. Many of these superstores close because of lack of business or, more often, says Christensen, they move into bigger and better space across town. As a result, they leave behind their original quarters, which often remain empty for years.

There are few public statistics on the number of empty "big boxes" or the rate at which they are being abandoned across the country's landscape. But Christensen suspects that communities are dealing with thousands of such structures in the United States. For example, she says, "Wal-Mart alone generally upgrades to a new store in five to seven years. So the turnover rate on these buildings is astounding."

Christensen, who lives in Troy, has visited nearly two dozen renovated Wal-Marts, Kmart, and other commercial buildings. She has met with the people who, with their creative resourcefulness, have turned the deserted, less-than-appealing buildings back into an integral part of their communities.

The 28-year-old's research has resulted in a growing collection of photographs, interviews, stories, and other documents that she uses when she gives presentations at churches, civic centers, city council gatherings, and colleges about how other communities are dealing with this common situation. Among other places, she has spoken at the civic center in her hometown of Bardstown, Ky., Yale School of Architecture, Stanford arts department, Los Angeles Forum for Architecture and Design, and at Rensselaer as part of the university's School of Architecture lecture series. Christensen is now working on a book to further document her research and experiences.

Christensen grew up in Bardstown, Ky., an old whiskey-production town with more than 20 distilleries and nearly 300 buildings listed on the National Register of Historic Places. She watched Wal-Mart move in and out of three big-box stores in her hometown as the superstore's operations progressively increased. The first Wal-Mart, which was erected in the early 1980s, was torn down and replaced by a courthouse eight years after the retailer moved across town to open a bigger store in 1990. Wal-Mart vacated the second building when it opened an even larger store in Bardstown this year.

"That reclamation of space in building the courthouse on the Wal-Mart lot really got me interested in how other towns are dealing with abandoned buildings," says Christensen, whose research on the issue was the focus of her master's thesis at Rensselaer.

Although the courthouse replaced a torn-down big-box building, Christensen's project is largely focused on the megastore structures that have been converted into reusable space.

Christensen's work has attracted the attention of the Center for Land Use Interpretation (CLUI), an organization with headquarters in Culver City, Calif., that explores land and landscape issues through research and art exhibition.

"Julia is the only person we are aware of who's looked at the [big box] phenomenon systematically, up close, and on a national scale," says Matt Coolidge, CLUI director who was on Christensen's thesis committee.

Last year, CLUI opened a Northeast regional office in Troy where a reception was held to celebrate Christensen's thesis presentation. The reception included an exhibition of some of her digital photography, which documents the renovated commercial buildings including churches, schools, a medical center, a fitness center, and even a racetrack that she has visited.

"Each story is completely different," she says. "Each place offers a different look at how these buildings are being renovated and re-used."

For example, the Central Kentucky Comprehensive Medical Center, housed in a renovated Wal-Mart, is owned by four doctors who funded the $4 million renovation. The medical complex includes 88 exam rooms, a 24-hour urgent care center, cardiovascular center, chiropractic suite, wellness center, and physical-therapy center, complete with pool and indoor walking track.

The Head Start Family Resource Center in Hastings, Neb., is in a renovated Kmart. The 40,000-square-foot building houses 13 classrooms and four larger rooms for infants and toddlers. It also holds a resource center for immigrants, computer labs, cafeterias, conference rooms, and offices.

Some of the converted commercial structures that Christensen has visited, such as the Grand Union grocery store that now holds the Grace Fellowship Church in Latham, N.Y., are considered big-box buildings. Still, Christensen felt compelled to include them in her project.

"When I was talking to people about big boxes in their towns, they would invite me to look at something. I would get there and it would sometimes be a grocery store in a strip mall or a department store," she says. "But, I've included all those experiences too because they informed the discussion about big-box retailers as well. A lot of those situations touched on relevant issues, such as downtown revitalization."

The Grand Union building that Grace Fellowship occupies was abandoned in 1996 as the grocery store chain began to close all over the Northeast. The building had been empty for about five years when church officials bought it in 2001. The renovated space was opened to worshippers the following year. The nondenominational church, which has doubled the size of its congregation since it opened, contains a 1,500-seat sanctuary, 15 classrooms, two cafes, space for a youth club, and several meeting rooms and offices.

**CHANGING FACE OF AMERICA**

Studying the reuses has offered an interesting portrait of the changing face of America today, Christensen says.

"The fact that towns have churches that see a Wal-Mart or a grocery store fit for use is a new insight into how downtowns are changing in this country," she says. "As towns become less reliant on everything being within walking distance, and more reliant on access from the highway, these structures are becoming the new town centers."

**Thinking outside the big box:**
- (top) Calvary Chapel (former Wal-mart), Pinellas Park, Fla. (l-r) Grace Fellowship Church (former Grand Union), Latham, N.Y.; Head Start (former Kmart), Hastings, Neb.; RPM Indoor Raceway (former Wal-Mart), Round Rock, Texas; Snowy Range Academy (former Wal-Mart), Laramie, Wyo.

Religious and many other organizations are taking advantage of that."

A main reason for rethinking about reusable space is a practical one, Christensen adds. When a big-box retailer moves into town, stoplights are put into place, roads are built, and exits off the highway are constructed so that consumers have easy access to the store. When the retailer moves across town, all the invested infrastructure is left in place, making the location ideal for any number of civic uses.

As a multimedia artist, Christensen is talented in digital photography, video, and computer-based music and visual art. Her electronic installation work has been exhibited at Lincoln Center in New York City, and she plays a host of musical instruments.

In high school, she attended the Interlochen Arts Academy, a performing arts boarding school in Michigan, where she majored in theater.

Christensen's acting career took a backseat...
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when she attended Bard College in Annandale-on-Hudson, N.Y., where she was introduced to computers, video, and electronic music as an undergraduate student. She was a member of the first class to receive degrees in Bard’s new integrated arts program in 1999. She also received a master’s degree in electronic music and recording media at Mills College in Oakland, Calif.

The multidisciplinary approach to art was the same reason she was attracted to Rensselaer.

"What is really exciting about RPI’s arts department is that there’s so much collaboration with other departments and schools," she says. "More and more there are projects happening in academia that don’t fit into just the arts department, or just the music department, or any of the other traditional departments."

As for her big-box project, Christensen is letting her audiences decide for themselves on what the art is—whether the art is in the photographs, in the creation of her Web site, in her presentations, or in the interactions between the audience and Christensen.

Arts department chair Kathy High says Christensen has made the most of Rensselaer’s innovative approach to art and research. “She exemplifies the arts department’s dedication to providing students with opportunities to combine artistic development with interdisciplinary creative research.

"Art is about communicating, and that’s what Julia continues to do with this piece," High says. "She approached her project in an open-ended way without a particular political agenda, which made it possible for all kinds of people to become involved."

This summer, Christensen will go on another cross-country trip to continue her research and finalize her book. She plans first to return to Kentucky to document any new developments on the empty Wal-Mart building. She is then scheduled to travel to Wisconsin, Florida, and Texas.

Although her research is based on what she considers an important social issue, she doesn’t think of herself as an activist but an artist interested in social practice, disseminating information, and leaving the interpretation to her audiences.

"I’m putting out this information so that people can take it as they will," she says. “These buildings are relevant to people on all sides of the empty big-box issue, so it is important that the artwork itself is relevant to everyone as well.”

How long will she be on the road this time? “However long it takes,” she says.
The Alumni Network Goes Virtual

RENSES L EAER, A PLACE RICH IN HISTORY AND tradition, is undergoing a transformation. Over the course of 180 years, slide rules have given way to laptops. Lecture halls are being transformed into interdisciplinary research labs. "Tin Town" has been replaced by residence halls fully equipped for modern living and learning. And while the global Rensselaer alumni network remains as vital as ever, the methods alumni use to tap into also are changing with the times.

The virtual alumni network has become a powerful tool for connecting with fellow graduates for personal and professional growth. Just ask Sheriffl Mohammed '02 and John Hamilton '73, two alumni from different backgrounds, class years, and parts of the world, who ended up in Dallas, Texas. They might never have met if not for an online networking program offered by the alumni office. "I was excited to be able to mentor an RPI alumnus," says Hamilton, "and I guess my enthusiasm rubbed off on Sherrif!" Inspired by the benefits they found in the mentoring relationship they formed, they decided to restart the Dallas alumni chapter as a way for other alumni to "connect with each other and RPI so we can socialize and network," as their mission statement says.

"The online networking services made all the difference, for me personally and for the new Dallas chapter," says Mohammed. "With the resources available online, the alumni Web community, we've created a chapter e-mail account, started a discussion board for our members, we register for our events online, and search the alumni database for new members."

The Dallas Chapter now boasts a planning committee of approximately 10 members who communicate with more than 550 alumni in the Dallas area. They've already held several successful events, and are looking forward to planning more in the future. (Visit www.alumni.rpi.edu/st/regional.html for more information on Dallas and other alumni chapters.) And Mohammed and Hamilton have built a strong, mutually beneficial partnership based on their Rensselaer connection.

@RPInet has a full range of services for alumni seeking to connect with other graduates. The Alumni Search feature helps match alumni based on a range of criteria. You can update your contact information, and choose what you would like to have available for other alumni to see with "My Profile." E-mail for Life provides an @alum.rpi.edu address that you can keep regardless of changes in your service provider. Online event sign-up is secure and simple. Discussion groups on a wide variety of topics exist to allow you to converse with alumni in your class, professional affinity, or chapter, or you can start your own group for your particular topic of interest. And new modules are being added all the time.

Sign up for @RPInet at https://arpinet.rpi.edu using the ID number that is printed on the mailing label of this issue of Rensselaer magazine, and join the virtual networking revolution!

RAA WORLDWIDE TRAVEL PROGRAM PRESENTS "2005 TRIPLE-HEADER"

Three ballparks, four games, six teams, five days! Sound good to you? Then sign up for the RAA's 2005 Triple-Header baseball vacation Aug. 24-28. Games include Cincinnati at Washington, Annapolis, and Detroit at Baltimore, and between cities, hotel accommodations, game tickets and admission, and stadium and city tours when available. The RAA has teamed up with Sports Travel and Tours to bring you this exciting opportunity. Visit www.alumni.rpi.edu/ap/baseball.html for more information, or call 877-RAA-TRIP.

CHAPTERS HOST SEND-OFF PICNICS

Each year, alumni chapters all over the country hold summer picnics. These get-togethers are a wonderful opportunity for alumni who live in the same area to meet and socialize, but they have an even more important purpose: to welcome incoming freshmen from the area to the Rensselaer family. If an event is being held in your area, consider coming out to greet the future alumni in your hometown. Scheduled events include: Westchester/New York City (July 30); Washington, D.C. (Aug. 6); Detroit, Mich. (Aug. 7); Hartford, Conn. (Aug. 7); and Boston, Mass. (Aug. 7). Still to be scheduled: Austin, Texas. For more information, visit us online at www.alumni.rpi.edu for details.

NEW RAA VISA CARD

The popular Rensselaer credit card program has a new provider and a new look. U.S. Bank offers the brand-new RAA Visa card, which offers competitive rates and services. This new Visa card is the only one that carries the image of the Heffner Alumni House, and supports the programs of the Rensselaer Alumni Association. Visit www.alumni.rpi.edu, or contact the alumni office at (518) 276-6205.
AUGUST

10 "Alumni College in Scotland." The RAA Travel Program will visit Scotland Aug. 10-18. Beginning in Edinburgh, where you’ll be welcomed with a traditional Haggis ceremony, the tour will visit Stirling, with its historic castle and the Wallace Monument, the “bonnie, bonnie banks of Loch Lomond,” and the world-famous Loch Ness. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205. www.alumni.rpi.edu/ap/travel.html

23 Legacy Move-in Day Reception. A chance for first-year legacy students and their families to meet as they begin their Rensselaer experience. Contact Geoff Seber at seberg@rpi.edu or (518) 276-2324.

23 Welcome Back Barbecue. Sponsored by the RAA to welcome all incoming students to campus. Contact Geoff Seber at seberg@rpi.edu or (518) 276-2324.

26 Welcome Fest. The Class of 2008 is officially welcomed to the City of Troy at this "communiversity" picnic and carnival. Games, rides, entertainment, and more! Community is invited. Downtown Troy. www.fye.rpi.edu

SEPTEMBER

10 Rensselaer Medalist Open House. High school seniors who have won the prestigious Rensselaer Medal will come to campus to explore state-of-the-art class-

12 "That Curious Mr. Cluett: Sanford L. Cluett, Ingenuity and Invention." The Rensselaer County Historical Society (RCHS) features a new exhibit that focuses on the many facets of the life and career of inventor Sanford Cluett, Rensselaer Class of 1898. Documents, diaries, photos, patent information, and other materials are included. Through Nov. 19. RCHS, 57 Second Street, Troy. (518) 272-7232. www.rchsonline.org

14 Family Weekend. Highlights of the weekend include Honors Convocation, Fall Fest, the International Festival, tours of academic labs, demonstrations, open houses, and more! Contact the Office of the First-Year Experience at (518) 276-6864. www.rpi.edu/fye/famweek

16 Homecoming Weekend. Alumni athletes, Greeks, and other alumni groups are invited to return to campus for a variety of events including a football game and picnic. Contact Peter Pedone at pedonp@rpi.edu or (518) 276-6061.

24 Archer Center Annual Student Leadership Conference. Hosted by IBM. The conference provides leadership training for students. Rensselaer Union. Contact the Archer Center at (518) 276-2119.

OCTOBER

14 "Build Boston" Conference. Rensselaer will hold an alumni reception during the 21st annual Build Boston conference. Seaport World Trade Center, Boston, Mass. Contact alumni relations at (518) 276-6205 or alumni@rpi.edu

NOVEMBER

4 Civic Engagement and Service Learning for the Environment: The Challenges for Higher Education. Third annual conference organized by the Environmental Consortium of Hudson Valley Colleges and Universities, an organization comprised of 36 institutions of higher education in the Hudson Valley region. The mission of the consortium is to help shape the future of the regional and global environment through collaboration, education, and research. Heffner Alumni House. For more info, contact EnvtlConsortium@pace.edu or visit www.environmentalconsortium.org.

16 "Alumni College in Scotland." The RAA Travel Program will visit Scotland Aug. 10-18. Beginning in Edinburgh, where you’ll be welcomed with a traditional Haggis ceremony, the tour will visit Stirling, with its historic castle and the Wallace Monument, the “bonnie, bonnie banks of Loch Lomond,” and the world-famous Loch Ness. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205. www.alumni.rpi.edu/ap/travel.html

15 Legacy Reception. Legacy students and their families will gather for a special afternoon. Contact Geoff Seber at seberg@rpi.edu or (518) 276-2324.

Showcase of Achievement
Rensselaer Alumni Hall of Fame announces four new members

Rensselaer Polytechnic Institute enjoys a rich history shaped by the vision and accomplishments of leaders and educators who built the university and alumni who took inspiration in its halls. Since Rensselaer's founding in 1824, these distinguished individuals have forged frontiers in industry, science, education, and technology. They have built bridges, probed outer space, revolutionized new industries and technologies, and discovered new knowledge.

In 1995 the Rensselaer Alumni Association, with the full endorsement of the Institute Board of Trustees, created the Rensselaer Alumni Hall of Fame to preserve and celebrate the exceptional heritage of alumni accomplishments throughout the years. The stories of these innovators, pioneers, and entrepreneurs provide a powerful source of inspiration for all who follow in their paths and who, like them, will continue to shape our world.

Four new members have been selected for induction into the Alumni Hall of Fame, bringing total membership to 53. They include a steel industry pioneer, a Troy landscape engineer, an electric power visionary, and a deep-Earth geologist. They will be formally inducted at a ceremony on campus Sept. 9. This 2005 class of inductees carries on the tradition of Rensselaer's distinguished legacy.

The Rensselaer Alumni Hall of Fame was created to honor the past while celebrating all generations of Rensselaer pioneers. The inaugural class was inducted in September 1998. Three additional classes were inducted in October 1999, September 2001, and September 2003. Etched windows have been placed centrally on campus to commemorate their contributions.

The RENSSELAER ALUMNI HALL of FAME

Chemist EBEN
HORSFORD developed processes for manufacturing baking powder and condensed milk.

THEODORE JUDAH and EDWIN CROCKER made significant contributions to the successful completion of the transcontinental railroad.

GEORGE FERRIS designed the original Ferris wheel.

ALLEN DUMONT was the foremost inventor of television.

STEPHEN VAN RENSSELAER established the Rensselaer School in 1824.

JOHN FLACK WINSLOW promoted construction of the Civil War's ironclad Monitor warship.

EMILY and WASHINGTON RODBLING oversaw construction of the Brooklyn Bridge in New York City.

PALMER RICKETTS, Rensselaer's ninth president, led a major transformation of the Institute.

KEITH MILLIS invented ductile iron, which dramatically improved the manufacture of the automobile.
GARNET DOUGLASS BALTIMORE
Landscape Engineer
Class of 1881 (1859-1946)

Garnet Douglass Baltimore, a distinguished civil engineer and landscape designer, was the first African-American to earn a bachelor's degree from Rensselaer. He was the grandson of a Revolutionary War soldier and slave who eventually escaped and settled in Troy. Baltimore participated in the design and building of bridges, railroads, canals, and waterways around New York state, including supervising the extension of the notoriously difficult "mud lock" on the Oswego Canal. Designer of many cemeteries, Baltimore found his true calling as a landscape engineer. He made his most notable and longstanding contribution to Troy in 1903 when he designed the once-private lands of Mount Ida into the popular Prospect Park, one of Troy's greatest assets. Baltimore was active in civic activities and alumni affairs at Rensselaer; he served as secretary of the alumni association's 50 Year Club until his death. In 1990 Rensselaer created the Garnet Baltimore Lecture Series in his honor.

ROBERT WOOLSTON HUNT
Inventor, Metallurgist, Trustee
Class of 1916, Hon. (1838-1923)

A pioneer in American steel manufacturing, Robert Woolston Hunt established the first analytical laboratory for iron works in the country, at Cambria Iron Co. in Johnstown, Pa., and was instrumental in introducing the Bessemer process to the steel industry, in Troy. He was a co-inventor of automatic rail mills and held patents in steel and iron processes and machinery. In 1888 he founded the Robert W. Hunt Co. to apply demanding standards of inspection and testing throughout industry; the company still operates today. Hunt was the recipient of prestigious engineering awards, including the John Fritz Medal in 1912 and the Washington Award in 1923. Elected a trustee of Rensselaer in 1886, he persuaded his friend Andrew Carnegie to give the Institute $125,000 for a new building after the 1904 fire destroyed Rensselaer's Main Building. Hunt was the first individual in modern history to be awarded a Rensselaer honorary degree. Through his estate, he endowed the Hunt Professorship in Metallurgical Engineering at Rensselaer.

CHAUNCEY STARR
Electric Power Visionary
Class of 1932, Ph.D. 1935 (1913-)

Chauncey Starr has been a true visionary at the forefront of ground-breaking work in nuclear energy, energy production and policy, and risk analysis. During World War II, he worked on the early development of nuclear energy. A former vice president of Rockwell International, Starr was a pioneer in the development of nuclear propulsion for rockets and ramjets, miniaturized nuclear reactors for space, and atomic power electricity plants. While dean of the UCLA School of Engineering and Applied Science, he wrote a landmark paper on how to weigh the risks and social benefits of various technologies that became the basis of modern risk analysis. He founded the Electric Power Research Institute in 1973 as an industrywide cooperative program for electricity and environmental research; he remains its president emeritus. Among his many awards and honors, Starr received the Atomic Energy Commission Award in 1974 for his work in the peaceful uses of atomic power. In 1990 President George H.W. Bush presented him with the National Medal of Technology.

DON L. ANDERSON
Deep-Earth Researcher
Class of 1955 (1933-)

As one of the world's most prominent researchers in the geosciences, Don Anderson epitomizes a tradition of outstanding geologists associated with Rensselaer. He is acknowledged as a fundamental contributor to our understanding of the structures and processes in the interior of the Earth. In 1998 Anderson received one of the highest honors bestowed on a scientist, the Crafoord Prize, which is awarded by the Royal Swedish Academy of Sciences for disciplines not covered by the Nobel Prizes. Anderson is professor emeritus of geophysics at the California Institute of Technology, where he was director of the Seismological Laboratory from 1967 to 1989. In 1989 he published Theory of the Earth, a synthesis of his broad and provocative research and a guide for future exploration of the dynamics of the deep parts of the Earth. Elected to the American Academy of Arts and Sciences and the National Academy of Sciences, Anderson was awarded the National Medal of Science by President Bill Clinton in 1999.

To read more about the achievements of all the members of the Alumni Hall of Fame, go to www.rpi.edu/dept/NewsComm/Magazine/.
Class Notes Deleted for Privacy Concerns
Rensselaer student Tyler Hinman, 20, won the American Crossword Puzzle Tournament this spring, making him the youngest champion in the 28-year history of the competition. The tournament is the nation's oldest and largest crossword competition. It was founded in 1978 and is directed by New York Times crossword editor Will Shortz.

Hinman, a third-year information technology major, has been solving crossword puzzles since ninth grade. And he's been creating them nearly as long. Hinman was the youngest person ever to publish a puzzle in The New York Times, at age 15.

Hinman created this puzzle—"He Shoots, He Scores"—for Rensselaer magazine. "The theme is one of my favorite RPI subjects: the grand game of hockey," Hinman says. "I also throw solvers a curveball (forgive the pun) in discussing a hockey puzzle), as you'll see."

**HE SHOOTS, HE SCORES!**

**ACROSS**

1 Lucky one?
6 Fraternity letter
9 Abs arrangement
14 Word with solar or control
15 Sought office
16 Presumed Innocent author
17 Year of RPI's first NCAA men's hockey championship
19 Iridescent gems
20 King of singing
21 Quitting time, for many
22 RPI's second championship
26 Rival in the ECAC
29 Police blotter initials
30 Kan. neighbor
31 Angry shout of denial
32 Kirstie's role on "Cheers"
37 1987 sci-fi hit
39 Contrary girl
40 Eastern European resident
41 Debunker
44 Finished off, as leftovers
46 Lane's partner
48 Trendy
51 Popular pizza chain
52 Excellent
53 RPI's victim in 22-Across
56 Halved
57 English class assignment
58 Near-perfect grade
59 Rosie's bolt
63 RPI's victim in 17-Across
67 "Am not!" response
68 Abbr. after a date
69 Took it easy
70 Scam
71 Shakespeare's Bottom
72 Big name in bulk food

**DOWN**

1 Number on the beach
2 Mai
3 Like Beethoven's sixth symphony
4 Canine command
5 Attack headlong
6 It ends with QED
7 Land, as a big fish
8 Backwards
9 Score against 63-Across
10 Innocent crush
11 "The Passion" language
12 Bow's opp.
13 Power units: Abbr.
14 Stay in the sun too long
15 Musical sense
16 Likable candidate?
18 Yak, yak, yak
25 "The Hot Zone" subject
27 DiCaprio, to friends
28 What a 41-Across doesn't believe in
33 What the kids leave behind when they go to college
34 Jazz fan
35 Make curvy
36 "Dios mio!"
38 Take one's cuts
41 Take to the slopes
42 Jeopardy! whiz
43 Salad leaves
45 Vow taker
46 2005 basketball champs
47 Macabre author
49 Scam
50 Stand-up folks?
51 Tarzan's transports
52 Where to spend the night
53-Across
54 "So few," in a Churchill speech
55 Score against 53-Across
56 Slaps may precede them
57 English class assignment
59 Stand-up folks?
61 "So few," in a Churchill speech
62 Savings for later: Abbr.
64 Lb., parts
65 Rated, for short
66 It's often about nothing
Join us on a remarkable journey.

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