

UNDERSTANDING PREGNANCY LOSS - RECONNECTING LATIN AMERICAN HERITAGE - THE LOW RIDGE

Alumni Magazine - Fall 2006

Rensselaer



GOLDEN **OPPORTUNITY**

LAUNCHING A NEW ERA OF
ENTREPRENEURSHIP AT RENSSELAER



RENSELAER WELCOMED nearly 1,300 members of the class of 2010 this fall. Prior to the start of classes, students took part in a weeklong program of events and team-building adventures. At week's end, the group made its way down the Approach steps to the Welcome Festival in downtown Troy.

Rensselaer

www.rpi.edu/magazine

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ON THE COVER: Mark Cafaro '06 and Ben Smith '06, founders of Weardian, located in the Rensselaer Incubator Center. Photo by Mark McCarty.

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First-year students took part in a series of events to acclimate them to campus and each other.

FEATURES



18 Ideas in Action

With a new vice provost for entrepreneurship, Rensselaer is working to infuse the spirit of entrepreneurship across campus and in every student.



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A devastating personal experience drove Linda Layne to devote two decades to studying issues surrounding pregnancy loss. Today she is a leading national advocate for reform.



30 The Latin American Connection

In the 19th century, engineering students from Latin America traveled the long road to Rensselaer. Today their spirit lives on in efforts to bring more Latin American students to the Institute.

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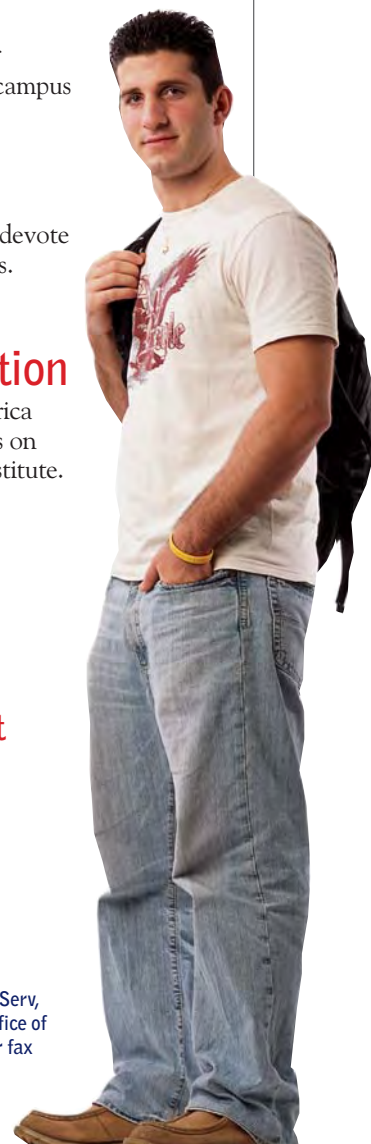
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Moving?

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Making Music, Making Friends

AS PART OF THEIR INTRODUCTION TO campus life, Rensselaer's newest students take part in Navigating Rensselaer & Beyond, a week-long series of activities and events designed to help make the transition to college life more comfortable for incoming first-year students.

One of the activities is called "Fanfare" and is aimed at students with a musical bent. For two days, musicians in the Class of 2010 as well as members of Rensselaer's instrumental ensembles (orchestra, band, and jazz ensemble) came together to practice and learn songs for a final public performance later in the week.

(Clockwise from far left) John Carruth (bass), Connor McBride (acoustic guitar with stickers), Philip Rachwal (bass), Chris Tucker (acoustic guitar), Jake Belcourt (electric guitar), and Jin Yang (electric guitar) worked out the chords to B.B. King's "Let the Good Times Roll" for their part of the jazz ensemble performance. According to Yang, who played the electric guitar solo during the tune, "I have been playing guitar for about seven years now. Interestingly enough, I have never played jazz music on my guitar as part of a jazz ensemble before coming to RPI. I was a new experience for me, but luckily it was pulled off well."

And McBride has since started a band called "sea glass" that plays at venues on campus.



PACE and GM officials joined President Jackson and School of Engineering Dean Alan Cramb to view two GM cars on display at the event.

Rensselaer Sets the PACE for Excellence

Historic partnership invests in faculty and students.

The announcement in September of the unprecedented \$514 million partnership between Partners for the Advancement of Collaborative Engineering Education (PACE) and Rensselaer represents another significant leap for the Institute toward the top tier of global research universities. (See page 8.)

A joint philanthropic initiative of General Motors, EDS, Sun Microsystems, and UGS Corp., PACE supports key academic institutions worldwide with computer-based design tools to prepare students to compete in the future. This partnership reflects our mutual goal to prepare the next generation of innovators. This major gift—the largest in-kind gift in

Rensselaer history—advances our relationships with these leading global corporations, as they rec-

ognize the excellence of Rensselaer students and faculty. Indeed, this gift is the culmination of the great Rensselaer heritage of academic and industry partnerships—and it will only grow in size, in scope, and in commercial value in the

coming years.

The comprehensive modeling and simulation tools from PACE will allow Rensselaer students to work with the latest software used by major corporations, enhancing their ability to design projects ranging from more efficient factories and hybrid vehicles, to the flow of blood through artificial heart valves. These tools offer exciting opportunities for Rensselaer students to collaborate on design projects at the intersection of technology-based fields. While Rensselaer graduates are much sought after by business and industry, the opportunities afforded by PACE will increase their value and appeal even more—as they are ready and able to make a solid contribution to their employers right away.

PACE builds upon existing models for hands-on learning and industry partnerships at Rensselaer. For example, in the School of Engineering, student projects in the O.T. Swanson Multidisciplinary Design Laboratory, in the Advanced Manufacturing Laboratory, and in the Inventors' Studio bring engineering and science applications to life through team interaction and problem-solving. GM recently tapped into our students' expertise in this area when it asked them to identify features of a version of the Saturn Ion

Today's students will enter a rapidly evolving global economy. It is our duty to prepare them for this complex and challenging world. Industry-driven partnerships have proved to be among the best ways Rensselaer can offer students to tap into their creativity, imagination, and talent so that they may become the innovation leaders of tomorrow.

coupe that would appeal to "Generation Y" customers. The students approached the project by conducting market research to understand target buyers and by engineering a number of concepts for the car's features. After pre-

sending their recommendations to GM executives, the students adapted their ideas into an existing Saturn car on the Troy campus. This project is but one example of the exciting opportunities under the PACE partnership.

At the PACE announcement event Sept. 8, John Farnsworth '06, an engineering graduate student, spoke about how learning and using Unigraphics software from PACE partner UGS Corp. has opened doors for him—including one at the NASA Jet Propulsion Lab, where his knowledge helped him secure a coveted summer position. John said his background working with this new software "gave me something to bring to the table that not many other students had to offer." He also became so proficient that he served as a teaching assistant in a pilot course using the software package, which has been integrated into the freshman curriculum this fall. It is interesting that John's experience with this 21st century partnership also embodies the education principle of Amos Eaton, who believed that when the student became the teacher, the student was forced into an active role, thus reinforcing and expanding the student's body of knowledge.

When today's students leave Rensselaer, they enter a rapidly evolving global economy. It is our duty to prepare them for this complex and challenging world. Industry-driven partnerships have proved to be among the best ways we can offer students to tap into their creativity, imagination, and talent so that they may become the innovation leaders of tomorrow. This visionary partnership helps us to answer that call by combining our innovative curriculum, world-class faculty, and the tools and talents of our PACE partners. It is the beginning of a new era of teaching and learning at Rensselaer that will drive change and innovation to benefit humankind.

Science and Religion Spark a Debate

Readers react to controversial letter

This is in response to the letter titled “Science Can Explain Everything” written by Professor Roger Sloboda ’74 of Dartmouth College in the Summer 2006 issue of *Rensselaer* alumni magazine.

It strikes me as very unscientific for Prof. Sloboda to take issue with a quote by Kristen Clark ’09 that “Science can’t explain everything” but then, in an act of faith, he proclaims that science will eventually explain everything. My observation is that until science explains everything and every possible discovery has been discovered as well as explained, wisdom should dictate acknowledgement of the truth stated by Kristen Clark.

Furthermore, taking to task the publication of what is one of the nation’s leading technological universities for not having a more “forward-thinking point of view” seems to indicate a one-sided mind-set that detours true scientific investigation and evaluation.

Professor Sloboda has taken an obvious stance against intelligent design, which is his prerogative. However, his blind faith in science is no loftier than the beliefs of those he chooses to demean.

Scientific method has had and will have a tremendous amount to offer to mankind. Where, however, science is unable to explain, it might be wise to regroup and rethink the possibility of the existence of the “intelligent designer” who might also be the “perfect scientist.”

EUGENE ZAK ’48
Queensbury, N.Y.

What an amazing controversy you’re starting to brew! I was thoroughly amused by Roger Sloboda’s reaction to some Kristen Clark ’09 comments you published. Roger’s perspective confirms that even the most credentialed among us don’t seem to know where science ends and prejudice starts.

The scientific method, which Roger defends, and so should we all, begins with an assumption (postulate, hypothesis, etc.). Most scientific calculations, dissertations, arguments, whatever, are overflowing with assumptions. There are probably more assumptions in science than there are laws. If science can explain everything, and one day it will, according to Roger, than it will have to rely less on assumptions and more on facts.

IAN MOLINEAUX ’69
Norfolk, Va.

Professor Roger Sloboda of Dartmouth College writes that “science can explain everything.” This statement is absurd on its face.

First, “everything” cannot be known, and so it is irrational to assert that science can explain it. Second, “everything” must include the concept of “that which cannot be explained,” or it is not “everything.” Since it contains this concept, then “everything” cannot be explained by science. (If the professor wishes to argue that there is no such thing as “that which cannot be explained” because science can explain everything, then he is

caught in a circular argument. He is defining “everything” as “that which science can explain.” Thus: Science can explain everything, because “everything” is by definition that which science can explain.) Third, the professor blandly asserts that the fact that everything has not yet been explained by science does not prove the weakness of the scientific method. But unless you posit that the scientific method is capable of explaining everything, it does not follow that the method is weak because it cannot do so. It is simply intended to explain those things which are susceptible to scientific analysis. But to assume that everything is susceptible to scientific analysis is also irrational. It is, in fact, an act of faith: “I may not know what it is, but I firmly believe that science can explain it.” And so, in the face of the unknown, the professor makes a leap of faith; yet it is faith, presumably, which he wishes to deny. This is another contradiction.

Why the professor cannot see these contradictions is, to put it simply, inexplicable.

STEPHEN RIVELE
Burbank, Calif.

I came across the sardonic note from one of our ’74 alumni regarding what he felt was inappropriate coverage of spiritual faith in a prior issue. Classic discussion he would lead us into, “is there a supreme entity or, is man all there is.” In stating “science can and will eventually explain everything” I’m left wondering if our eminent Dartmouth professor has just elevated himself above others. Sounds like a cult.

DAVE RYAN ’79
Phoenix, Ariz.

Roger Sloboda’s objection to your printing of Kristen Clark’s quote “Science can’t explain everything” reveals a slant and prejudice which is not a sci-



Newman Catholic Fellowship member Kristen Clark ’09

entific view of our world. Scientists such as Sir Isaac Newton, Robert Boyle, James Clerk Maxwell, and Michael Faraday believed in the Christian God of creation. Mr. Sloboda's blindness has excluded him from this distinguished group of men who had "a more forward-thinking point of view" (as your magazine does). Thank you and I look forward to a scientific study/article on intelligent design.

RICK JOHNSON '73
Torrington, Conn.

The Square Stone

The article on the "square stone" was easily the most enjoyable piece in the whole issue. I have worn my ring continuously for nearly 40 years, except for a stretch of about a year in the 1970s when I lost it but then miraculously found it again. I cannot tell you how many times I have been in meetings where I've spotted the distinctive RPI ring on another attendee. It truly does create an instant connection.

ROY WEPNER '68
Demarest, N.J.

Renaissance Man

Father Tom Phelan, who died last spring, was ever so much more than the RPI Catholic chaplain. He was a wonderful, well-rounded man who also served for many years as dean of the RPI School of Humanities and Social Sciences (H&SS).

I didn't know Tom while I was a student, and in fact never met him until 1989, 40 years after receiving my degree. We met through our mutual interest in early Americana and American folk art, of which we were both collectors. Tom's big three-story house was filled from basement to attic with early American furniture, paintings, and silverware. He had paintings that he loaned to museums to be exhibited. Behind his house, he had many pots filled with a variety of flowers and

his gardens were beautifully landscaped with colorful perennials. He took care of everything himself.

When H&SS wanted to get more incoming freshmen to enroll in its own degree-granting fields, faculty from the school went out to visit high schools to talk with guidance counselors. Tom understood the best way to get the faculty to do this was for him to go himself and lead the way; and that's what he did.

Tom Phelan wasn't just a beloved Catholic chaplain, he was a renaissance man. He was interested in and a leader in a variety of fields and a wonderful example of how an alumnus who never knew a faculty member as a student, can return to the campus and be inspired by him decades later.

DAVID KRASHES '49
Princeton, Mass.

The Little Things

Nanotechnology (*Rensselaer* magazine, Summer 2006) is, unquestionably, a revolutionary scientific and engineering development. Your article was most interesting to this pre-war graduate, who previously had encountered smallness only to the extent of a course—in Walker Lab—of microchemistry.

However, spectacularly new and

bizarre as it may be, nanotechnology is still subject to the limitations of our four-dimensional world. Magnitudes of length, width, depth, and time may be increased *any number* of times. But, they can never be decreased more than one time. One from one is zero!

Hence, my editorial objection to a nanometer being described as "about 80,000 times smaller than the width of a human hair." Or "coatings... with the potential to reduce the rate of wear by 1,000 times or more."

Nit-picking? Not to an RPI-trained proponent of technical accuracy—especially in an RPI-supported publication.

Ironically, the article's title neatly encapsulates my position. "It's the Little Things That Matter."

ED RICE '38
Wilmington, Del.

AUTHOR'S RESPONSE: If you say x is 10 times bigger than y , then that means you would multiply y by 10 to get x ($x=10y$). If, on the other hand, you say that x is 10 times smaller than y , then you would divide y by 10 to get x ($x=y/10$). So when we say a nanometer is about 80,000 times smaller than the width of a human hair (w), then that means a nanometer is

$w/80,000$, which would only be zero if w was zero.

Serendipity

Having just returned from a tour of Greece I want to share a most coincidental and delightful occasion. In the glow of the Acropolis, 29 of us tourists were at an icebreaker libation in Athens, Greece, getting to know one another before setting forth on our adventure. My conversation with a gentleman from Sunnyvale, Calif., turned to Schenectady, N.Y. He replied that he knew about the city because he had gone to school in Troy, N.Y. Sensing where this might lead, I raised my hand with my class ring and asked, "This school?" To which, Jack Joos, E.E., '54 replied, "Yes." Instantly, we embarked on questions about professors shared, pulling "drop dead" question cards from a pile in recitation classes, etc. But there was more to come.

We were introduced to our guide and proceeded to introduce ourselves one by one. At my turn, I expressed my joy at finding a fellow Rensselaer alumnus in our small group. We were somewhat amazed to quickly learn that there were more engineers in the group, one of whom rose to say that he was John Patterson, B. Met. E., '47 from Winchester, Va.

Needless to say, I have made new friends from RPI and, if I may, would like to tweak the alma mater: "...Here's to the friends we've made and *continue to make* at dear old RPI."

HARRY CARLSON '53
Windsor, N.Y.

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.



AT RENSSELAER



RECOGNITION

Rensselaer Named One of America's "New Ivies"

RENSSELAER WAS ONE OF 25 schools named to an elite "New Ivies" list published in the 2007 Kaplan/Newsweek "How to Get into College Guide."

The list was introduced by the Kaplan/Newsweek guide for the first time this August, and included colleges whose first-rate academic programs, combined with a population boom in top students, have fueled their rise in stature and favor among the nation's top stu-

dents, administrators, and faculty—edging them to a competitive status rivaling the Ivy League. The designation was based on admissions statistics, as well as interviews with administrators, students, faculty, and alumni.

"It is wonderful to receive this recognition of Rensselaer's historic strengths and validation of the extraordinary advances we have made under THE RENSSELAER PLAN," said President

Shirley Ann Jackson. "We have been making major investments in our research and education facilities and in the overall quality of the student experience. These investments are paying off, attracting new faculty, students, and research partners from around the world. It is, indeed, an exciting time to be at Rensselaer."

Rensselaer opened a new Center for Biotechnology and Interdisciplinary Studies in Sep-

tember 2004. Construction is under way on the Experimental Media and Performing Arts Center (EMPAC). And in collaboration with IBM and New York state, Rensselaer recently announced the establishment of the Computational Center for Nanotechnology Innovations (CCNI), a \$100 million partnership to create the world's most powerful university-based super-computing center.

MAKING A DIFFERENCE

PACE Contribution Provides Unprecedented Capabilities to Students

New goal for Renaissance at Rensselaer campaign

ON SEPT. 8, BEFORE AN AUDITORIUM TEEMING with faculty, staff, and students, Rensselaer announced an in-kind contribution commercially valued at \$513.95 million from the Partners for the Advancement of Collaborative Engineering Education (PACE).

A collective gasp of surprise and excitement filled the room and the crowd rose to its feet in celebration as Larry Burns, vice president of research & development and strategic planning for General Motors, announced the commercial value of the contribution to Rensselaer — the largest initial contribution by PACE in its history and largest in-kind contribution in Rensselaer’s history. The gift will grow in value as Rensselaer continues as a PACE institution and new software and equipment is contributed.

A joint philanthropic initiative of General Motors, EDS, Sun Microsystems, and UGS Corp., PACE supports key academic institutions worldwide with computer-based design tools to prepare students to compete in the future.

The comprehensive modeling and simula-

tion tools from PACE will allow students to work with the latest software used by major corporations, enhancing their ability to design projects ranging from more efficient factories and hybrid vehicles to the flow of blood through artificial heart valves. These tools offer exciting opportunities for students to collaborate on design projects at the intersection of multiple technology-based fields. At various times and within special courses, most undergraduate and graduate students will have the opportunity to use the PACE software.

The gift resulted in total contributions to Rensselaer’s capital campaign, *Renaissance at Rensselaer: The Campaign for Rensselaer Polytechnic Institute*, exceeding the \$1 billion mark. On Sept. 11, President Jackson announced a vote by the Board of Trustees to increase the campaign goal from \$1 billion to \$1.4 billion.

The extended campaign will close June 30, 2009.

“Additional support is essential to realizing the full potential of *The Rensselaer Plan* as we strive to increase the Institute endowment and continue to implement the Plan in the years ahead,” said Rensselaer President Shirley Ann Jackson. “This support will enable us to add new faculty constellations and chairs and scholarships and fellowships for our students; expand our research capabilities in biotechnology and the life sciences; realize the potential of the unique and unparalleled Experimental Media and Perform-

ing Arts Center; and build state-of-the-art facilities for our students in the East Campus Athletic Village.”

The PACE contribution helps support the overarching goal of *The Rensselaer Plan*, to gain greater prominence in the 21st century as a top-tier, world-class research university with global reach and global impact. Key components of the plan, such as providing students with a technology-rich educational experience, furthering education for working professionals, advancing scientific and technological entrepreneurship, and creating dynamic living and learning communities across campus will be enhanced by the addition of the PACE tools.

The newly acquired software will benefit students across all five schools on campus—in science, engineering, architecture, the arts, management, and the humanities and social sciences. A management student, for example, could use

the software package to collaborate on project management with other PACE institutions (there are 37, with the addition of Rensselaer) across the U.S. and the world. Numerous applications at the intersection of technology and the arts also are possible.

“As educators we must prepare students for the global economy. This visionary partnership combines the innovative curriculum at Rensselaer with the tools and talents of the PACE partners to create an even more technology-rich, multidisciplinary learning environment for our students,” said President Jackson during the event. “The PACE partnership reflects our mutual goal to prepare the next generation of innovators. This historic in-kind contribution to Rensselaer advances our relationship with these leading global corporations and demonstrates their appreciation for the education Rensselaer offers our students and for the expertise of our faculty in educating them to change the world.”

“Computers and math are critical to every aspect of business so it’s essential for engineering students to be proficient at using the latest computer-aided engineering programs and systems,” Burns said. “That’s why the PACE program and institutions like Rensselaer are vital. Our common goal is to help train engineers to succeed in the rapidly evolving engineering environment of the future.”

A collective gasp of surprise and excitement filled the room and the crowd rose to its feet in celebration as Larry Burns announced the largest initial contribution by PACE in its history and the largest in-kind contribution in Rensselaer’s history.



Kris Qua

ENTREPRENEURSHIP

Entrepreneur of the Year Honored

IN OCTOBER, BRENDAN MCKERNAN '00 WAS NAMED THE 2006 William F. Glaser '53 Rensselaer Entrepreneur of the Year. McKernan is co-founder and vice president of operations of Agencourt Biosciences Corporation, a provider of nucleic acid purification products and genomic services for life science research based in Massachusetts.

McKernan is both the youngest Rensselaer Entrepreneur of the Year, and the first graduate of Rensselaer's Lally School of Management and Technology MBA program to be so honored.

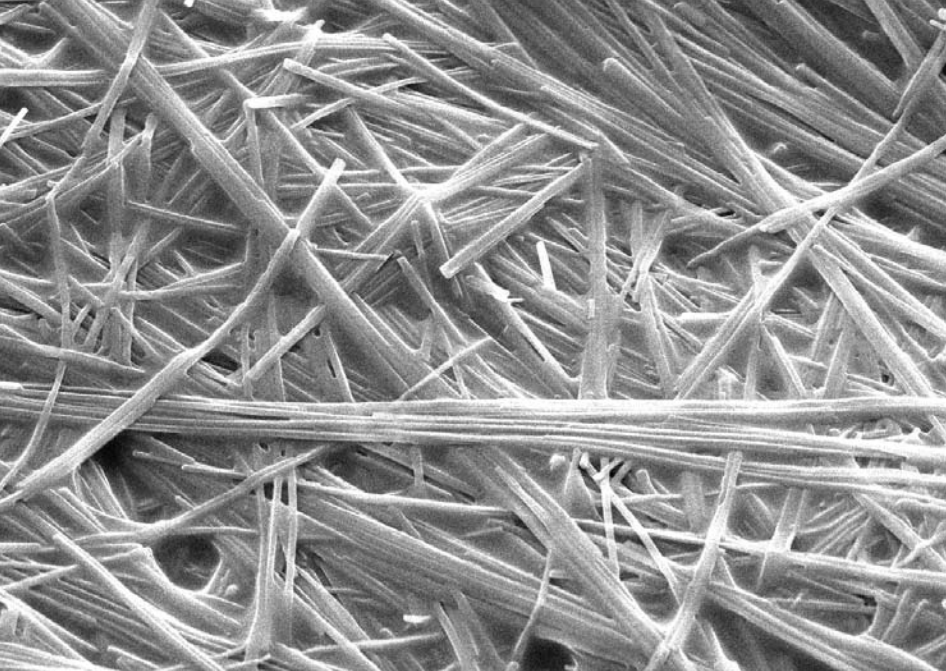
"Brendan has applied his substantial management skills to advancing scientific discovery by accelerating the move of scientific innovation into the marketplace for the benefit of society. In doing so, in the great Rensselaer tradition, he truly is changing our world. We applaud him for what he has accomplished in such a short time, and watch with great anticipation for what is yet to come from this extraordinary, visionary entrepreneur," said President Shirley Ann Jackson.

As Agencourt's vice president of operations, McKernan oversees the implementation and execution of the company's operational strategy. He holds a bachelor's in management science from Muhlenberg College in Allentown, Pa., and an MBA from Rensselaer's Lally School of Management and Technology.

While a student at Rensselaer, he received the Delmar W. Karger Award in Management for outstanding academic and leadership achievements.

During his visit to campus, he spoke about his business and entrepreneurial experi-

ences to members of the Rensselaer and surrounding community during a keynote address titled "This Is My Life." He also participated in a panel discussion titled "The Science, Policy, and Business of Biotechnology" that included Michael Gausling '80, managing partner of Originate Ventures; Kevin Hykes, vice president of Enterprise Alliances at Medtronic; Dr. Lawrence Sturman, director of the Wadsworth Center; and Carl Rosner '63, principal founder of CardioMag Imaging.



The new nanomaterials could be used for pharmaceutical, food, and cosmetic products.

CHEMICAL AND BIOLOGICAL ENGINEERING

Researchers Create New Organic Gel Nanomaterials

RENSSELAER RESEARCHERS HAVE CREATED organic gel nanomaterials that could be used to encapsulate pharmaceutical, food, and cosmetic products and to build 3-D biological scaffolds for tissue engineering. Using olive oil and six other liquid solvents, the scientists added a simple enzyme to chemically activate a sugar that changed the liquids to organic gels.

"We are using the building blocks provided by nature to create new nanomaterials that are completely reversible and environmentally benign," says Jonathan Dordick, the Howard P. Isermann '42 Professor of Chemical and Biological Engineering at Rensselaer. "The importance of this finding is the ability to use the same naturally occurring enzyme both to create chemically functional organogels and to reverse the process and break down these gels into their biologically compatible building blocks."

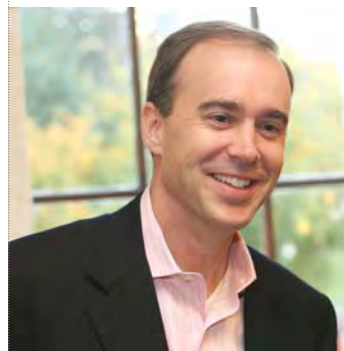
In the experiments, researchers activated a sugar using a simple enzyme, which generated a compound that self-assembles into 3-D fibers measuring approximately 50 nanometers in diameter. As the fibers entangle, a large amount of solvent gets packed together,

trapping some 10,000 molecules.

The resulting organogel materials could be used as biocompatible scaffolds for tissue engineering and designing membranes, according to Dordick. Other possible applications include delivery systems for pharmaceuticals and preservatives for food and cosmetics.

"The development of new materials that are molecularly defined and chemically functional at the nanoscale is of critical importance to biological applications such as drug delivery," Dordick says. "We are finding the natural world has provided tools to create these materials without the need to generate new compounds that may be harmful to the body or environment."

The research is led by Dordick and includes George John of the City University of New York; Guangyu Zhu, postdoctoral research associate at Rensselaer; and Jun Li of the University of Southern Mississippi. Funding was provided by the National Science Foundation-funded Nanoscale Science and Engineering Center at Rensselaer, the Center for Directed Assembly of Nanostructures.





Blinded by the light? The Lighting Research Center is tackling car headlamp glare.

LIGHTING RESEARCH CENTER

Shedding Light on Headlamp Glare

SCIENTISTS IN RENSSELAER'S LIGHTING Research Center (LRC) are examining the causes and effects of car headlamp glare and developing technological solutions to glare using advanced forward lighting systems that meet a car's performance requirements but minimize unnecessary glare.

New headlamp systems presently promoted by lighting and vehicle manufacturers claim to provide drivers with additional visibility under certain driving scenarios. However, there are still many unanswered questions regarding how these new technologies relate to visibility, glare, driver behavior, and safety, according to the LRC research team now delving into these issues.

"Recent headlamp technologies are presenting new oncoming appearances for drivers, which have resulted in increased complaints of glare to the National Highway Transportation Safety Administration," said Mark Rea, LRC director. "To help assess the issue, the LRC is conducting research to examine the intensity, color, and size of

oncoming headlamps and determine the effects of these parameters on visibility, as well as impressions of visual discomfort."

Some drivers may experience problems with visual re-adaptation—the ability of the eyes to recover their sensitivity to see objects after being exposed to glare. According to Rea, glare can be deceiving. A driver's visibility may be impaired by glare without the driver experiencing discomfort.

As the LRC scientists move ahead in their research, the team plans to outline what new aspects of headlamp systems should be further examined. The results of the research will be reported to Congress as part of the requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, signed into law Aug. 10, 2005, by President Bush. This research is funded by a two-year, \$890,012 award from the National Highway Transportation Safety Administration.

LANGUAGE, LITERATURE, AND COMMUNICATION

Tech-Mediated Communication

RENSSELAER'S DEPARTMENT OF LANGUAGE, LITERATURE, and Communication (LL&C) was recently awarded a \$138,000 grant by the Society of Technical Communication (STC). The funding will support the development of standards for analyzing, designing, and testing the usability of tech-mediated communication—ranging from graphics, to Web sites and Web gallery interfaces, to wikis and distance education environments.

Called "post-documents," the electronic interfaces have become increasingly visible as we move toward a paperless society, relying less heavily on traditional, physical documents for informative and educational purposes.

In prior planning work supported by the STC, the researchers explored a variety of exemplary post-documents and developed an overarching framework for what made them usable. Additionally, the team concluded that post-documents engage users in different ways than traditional documents—they are more interactive and allow users more control, they often incorporate some aspects of digital storytelling, and they rely less heavily on highly polished designs. This finding rendered the conventional metrics of document usability (efficiency, accuracy, and satisfaction) inadequate for measuring how well a post-document can be used.

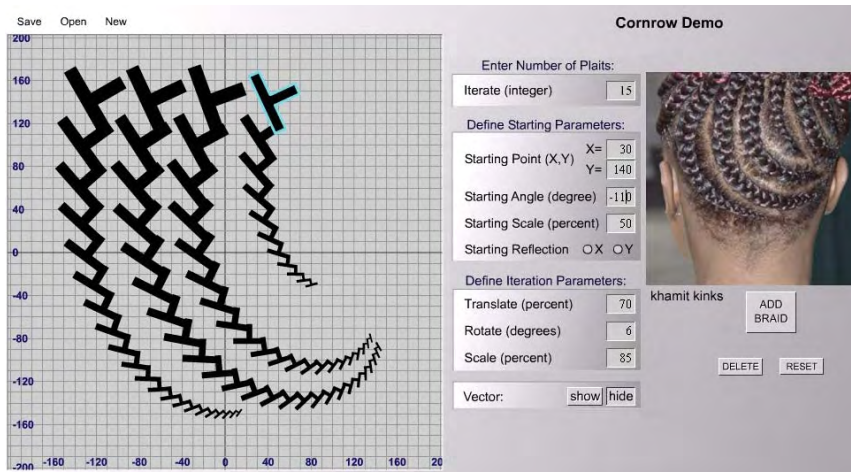
A new usability measurement technique suitable for post-documents will be constructed by the Rensselaer research team to support technical communicators as they transition to an increasingly interactive world. Led by department head Cheryl Geisler, the

group includes six LL&C faculty members and up to six graduate students.

Currently the team is working to identify what

A new usability measurement technique suitable for post-documents will be constructed by the Rensselaer research team to support technical communicators as they transition to an increasingly interactive world.

factors make post-documents usable. Following their findings they'll produce and test a "Post-Document Toolkit," made up of a set of broad characteristics that make electronic content usable, and an associated set of metrics for measuring post-document usability. The toolkit, expected to be completed by 2009, will be made an available resource to STC practitioners.



SCIENCE AND TECHNOLOGY STUDIES

Math Lesson Makeover

STUDENTS IN MATH CLASSES ACROSS THE country can thank a Rensselaer researcher for giving their homework an overhaul. Ron Eglash, associate professor of science and technology studies, has used the mathematics embedded in the designs of various aspects of native and contemporary culture to develop a series of interactive, Web-based teaching tools.

Eglash has created a suite of 11 computer software programs that focus on individual facets of African American, Native American, or Latin American culture where math plays a role in design. Called “culturally situated design tools” (CSDTs), the programs educate students about the mathematics principles used to design cornrow hairstyles, Mangbetu art, Navajo rugs, Yupik parka patterns, pre-Columbian pyramids, and Latin music, among others.

“Making real-world connections—especially connections that tie in students’ heritage cultures—in math instruction has been recognized as increasingly important by educators. Culturally situated design tools provide a flexible space to do that, allowing students to reconfigure their relationship between culture, mathematics, and technology,” Eglash says. “By challenging students to recreate a set of goal images or to construct their own shapes and designs, the tools give them a

hands-on opportunity to explore and manipulate standard curriculum math concepts such as transformational geometry, scaling, Cartesian coordinates, and fractions, while connecting those concepts to their heritage as well as contemporary culture.”

New research reported in the June 2006 issue of *American Anthropologist* suggests that use of CSDTs can raise math achievement and may improve technological career aspirations for ethnic minority students.

Preliminary surveys of students—83 percent of which were underrepresented minorities—who used the design tools for two hours per day over a two-week period displayed a statistically significant increase in their attitudes toward computers, compared to 175 randomly selected students who had not used a CSDT.

Two qualitative evaluations conducted by teachers of predominately Latin American students found a statistically significant improvement in the mathematics performance scores of students using the CSDTs, compared to the achievement of students in classes where the tools were not used as a teaching aid.

All of Ron Eglash’s culturally situated design tools can be found and used, free of charge, on his Web site at www.rpi.edu/~eglash/csdt.html.

STUDENT LIFE

Class of 2010 Arrives

RENSELAEER WELCOMED NEARLY 1,300 MEMBERS OF the Class of 2010 to campus this August. More than 60 percent of the new class come from the top 10 percent of their high school classes, and 110 members were high school valedictorians or salutatorians. The class includes 291 Rensselaer Medal winners.

“Rensselaer’s outstanding faculty, expanding facilities, and model programs are attracting extraordinary students, and this is reflected in our Class of 2010 which is, indeed, top tier,” said President Jackson.

The first-year students—from 38 states, the District of Columbia, Puerto Rico, and other countries—moved into residence halls and participated in a weeklong program of events and team-building adventures, known as “Navigating Rensselaer & Beyond.”

“Members of the Class of 2010 clearly see what Rensselaer is doing to provide a stellar education for



Kris Qiva

our students seeking an opportunity to learn and to grow into world leaders in their chosen fields,” says James Nondorf, vice president for enrollment and dean of undergraduate and graduate admissions. “Our freshman class adds to the rich tapestry that has been a hallmark of Rensselaer’s 182-year history. The Rensselaer community embraces the talents, achievements, curiosity, and imagination of our first-year students, and all of us benefit from the energy that they bring to the campus.”

The Class of 2010 includes approximately 148 students who were captains of their athletic teams, 636 students who participated in sporting activities, 67 Eagle Scouts, and 107 legacies (students who are related to Rensselaer alumni). The class also includes a nationally ranked fencer, a rodeo competitor, a musician who has performed at Carnegie Hall, and one of the top Paralympics swimmers in the world.

ENTREPRENEURSHIP

Rethinking Network Computing and Communications

AS PART OF A NEWLY FORMED ALLIANCE OF INTERNATIONAL scientists, Rensselaer researchers will be exploring advanced technologies for wireless sensor networks in urban environments. The consortium, which is funded through the United States Army Research Laboratory and the United Kingdom Ministry of Defence, will receive up to \$138 million over the next 10 years to rethink network computing and communications. Boleslaw Szymanski, professor of computer science and director of the Center for Pervasive Computing and Networking at Rensselaer, will lead a team supported by \$1.85 million of the total project funding.

The International Technology Alliance (ITA) in Network and Information Sciences is led by IBM and includes top researchers from industry, academia, and government. The project's goal is to enhance the ability of coalition forces to make flexible battlefield decisions using secure networks of sensors. But while it is mainly directed toward military applications, the fruits of the fundamental research are expected to find use in a broad spectrum of civilian contexts.

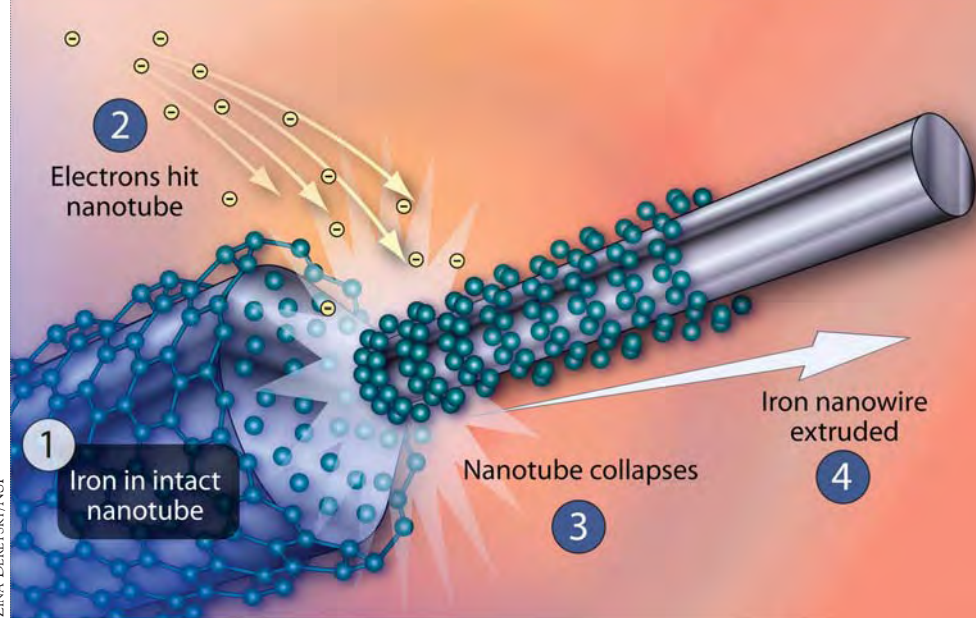
Szymanski is leading one of 12 projects within the ITA consortium. In collaboration

The project's goal is to enhance the ability of coalition forces to make flexible battlefield decisions using secure networks of sensors. The research is expected to find use in a broad spectrum of civilian contexts.

with researchers in both the United States and the United Kingdom, he will investigate ways of managing complexity in sensor data infrastructures. "We are going to take what we already know about sensor network protocols and infrastructure and think creatively about the future designs," Szymanski said. "The goal is to start from scratch and totally rethink every aspect of this technology."

His team will be looking at networks containing a variety of different sensors, including audio, visual, radar, and chemical sensors. "With information coming from these different sources, we need to know how to make them collaborate to provide the best information while minimizing the chance that they will be detected," Szymanski says. Each communication within a sensor network uses energy and resources, so the goal is to develop extremely efficient algorithms that keep the number of communications to a minimum.

ZINA DERETSKY/NSF



When a beam of electrons hits a carbon nanotube, some carbon atoms are knocked away, causing the remaining atoms to contract and the tube to shrink.

NANOTECHNOLOGY

Researchers Explore Nanotubes as Minuscule Metalworking Tools

AN INTERNATIONAL TEAM OF SCIENTISTS, including Pulickel Ajayan, the Henry Burlage Professor of Materials Science and Engineering at Rensselaer, revealed that bombarding a carbon nanotube with electrons causes it to collapse with such incredible force that it can squeeze out even the hardest of materials, much like a tube of toothpaste. The researchers suggest that the carbon nanotubes can act as minuscule metalworking tools, offering the ability to process materials as in a nanoscale jig or extruder.

Engineers use a variety of tools to manipulate and process metals. For example, handy "jigs" control the motion of tools, and extruders push or draw materials through molds to create long objects of a fixed diameter. The researchers' findings suggest that nanotubes could perform similar functions at the scale of atoms and molecules.

The results also demonstrate the impressive strength of carbon nanotubes against internal pressure, which could make them ideal structures for nanoscale hydraulics and cylinders. In the experiments, nanotubes withstood pressures as high as 40 gigapascals, just an order of magnitude below the roughly 350 gigapascals

of pressure at the center of the Earth.

"Researchers will need a wide range of tools to manipulate structures at the nanoscale, and this could be one of them," says Ajayan. "For the time being our work is focused at the level of basic research, but certainly this could be part of the nanotechnology tool set in the future."

Carbon nanotubes have been hailed as some of the lightest, strongest materials ever made, and they are beginning to find use in a wide variety of materials. Yet while many of their distinctive properties have been studied in detail, the strength of carbon nanotubes against large internal pressures has yet to be fully explored, according to the researchers.

The researchers filled carbon nanotubes with nanowires made from two extremely hard materials: iron and iron carbide. When irradiated with an electron beam, the collapsing nanotubes squeezed the materials through the hollow core along the tube axis, as in an extrusion process. In one test, the diameter of iron carbide wire decreased from 9 nanometers to 2 nanometers as it moved through the tube, only to be pinched off when the nanotube finally collapsed.

A Long Road Home

Trapped in Lebanon during the recent period of intense fighting, Salim Najjar, a sophomore engineering major, was one of 25,000 Americans trying to flee the war-torn country. This fall he returned to Rensselaer with an unparalleled story about his summer vacation.

What were you doing in Lebanon?

For the past 11 summers my whole family has traveled to Lebanon to visit family and friends that live over there. It's usually a relaxing trip—we go to the beach, and we just spend time hanging out and catching up—it's like a big family reunion.

What was your reaction when the fighting started?

We were aware of the fighting as soon as it began, but fighting in Southern Lebanon is common and we were in Kfarhazir, a generally safe village up north. We thought Israel had bombed the airport to prove a point.

Was there a defining moment when you decided you needed to flee?

As the fighting continued the bombings started getting closer and closer to us. When the Beirut airport was hit again and more bridges were bombed, we knew we needed to find a way out of there before my fall semester of college started.

You left Lebanon on the last day the U.S. Embassy evacuated Americans; it must've been chaotic.

It was. We knew this was our only chance to get home. We got to the evacuation port two hours early because we knew many families that tried to leave days before, but were turned away because the boats were so overcrowded.

How many Americans fled Lebanon with you that day?

There were 1,700 Americans on board the U.S.S. Trenton. People who got to the boat first slept in bunk beds, but there were about 700 people just sleeping on the ship's deck. When we got to Turkey buses took us to the Turkish Air Force base where we could stay until we got a flight home.

You ended up spending six days at the Air Force base. What was there to do during that time?

Because of the heat, we slept most of the day and tried to stay up at night—the trip was exhausting. There was little else to do but talk to people so we met many other Lebanese-Americans. We're still in touch by phone and e-mail.

How did you finally get home?

My family got the last flight out of Turkey, which took us to Atlanta, Ga. From there we took a flight to New York. On the boat in Turkey they promised us that in 48 to 72 hours we'd all be home. But it actually took us eight days to get back to our house in Wappingers Falls, N.Y.

It must've been a frustrating process.

It was in the sense that we thought we'd get home much sooner than we actually did. But we were so grateful to the U.S. Marines and the U.S. Air Force who did a great job helping us get out. They got us boarded on the boat, helped carry luggage, and reassured us that we'd all get home safe.

How is your family in Lebanon holding up?

A couple days after we made it home the main road my uncle takes to work every day got bombed—luckily he was unharmed. Now, instead of a 50-minute commute to work, it takes him three and a half hours. Other than that, though, everyone is safe and holding up great.

Will you go back to Lebanon next summer?

I'd love to go back—and I know the rest of my family wants to as well. If everything is OK there next year and the airport is rebuilt, then yes, definitely.





GAME STUDIES

Researcher Creates Video Game Art

THIS SUMMER, AS PART OF THE ZEROONE San Jose Arts Festival, Katherine Isbister, associate professor of language, literature, and communication at Rensselaer, created an intriguing public art installation using surveillance cameras and the popular video game *The Sims 2™* as her only tools.

Isbister focused the cameras on the Fairmont Plaza in downtown San Jose to capture images of passersby. She then used *The Sims 2*—a game that allows users to create simulated worlds and fill them with cyber-citizens—to create a virtual version of the plaza, and fill it with avatars (human representations in a shared virtual world) of the people in the plaza who'd been caught on camera. The virtual population grew throughout the duration of the exhibition.

The final installation—called *SimVeillance: San Jose*—had two displays. One screen featured the game running, populated with the simulated transients, while the other showed live surveillance of the plaza itself.

“*SimVeillance* brings the local urban population back into the show in a unique way, as locals may be able to see themselves captured via surveillance camera and transposed into the game,” says Isbister. “Even viewers who don’t catch glimpses of themselves in the installation are bound to reconsider the impact of wandering the urban landscape. The project seeks to evoke feelings of curiosity, voyeurism, and a jolt into the perspective typical of city planners or sociologists.”

Isbister collaborated on the project with Rainey Straus, an installation artist and Web designer based in Oakland, Calif., and Chelsea Hash '06, a recent electronic arts graduate from Rensselaer who is now working at 1st Playable Productions.

The team received one of two honorable mention awards for their project, which was exhibited among installations and artworks from over 200 artists working at the intersection of art and digital culture.

BREAKTHROUGHS

Research Roundup

Seismic Shock Absorbers for Buildings

As part of a major international project to design more earthquake-resistant woodframe buildings, Michael Symans, associate professor of civil and environmental engineering, is testing a damping system designed to act as a seismic shock absorber. The dampers, which have never been tested before in wood construction, will be installed inside the walls of a full-scale, 1,800-square-foot townhouse—the world’s largest wooden structure to undergo seismic testing on a shake table. The unprecedented testing is part of a \$1.24 million international project called NEESWood, funded by the National Science Foundation through its George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES) program. The goal of NEESWood is to safely increase the height of woodframe buildings in active seismic zones through the development of a design approach that considers a wide range of performance levels—from completely undamaged to almost collapsing.

Improving Methods for Biological Separations

A team of researchers has received a four-year, \$1 million grant from the National Science Foundation to study improved methods for biological separations. Led by Ravi Kane, the Merck Associate Professor of Chemical and Biological Engineering, the group plans to develop nanoscale surfaces that actively reassemble in the presence of DNA, which could lead to more efficient separation tools for genomics and proteomics. The researchers are taking their inspiration from nature, mimicking the membranes that surround our cells to create platforms for separating biological molecules. These “lipid bilayers,” which are made up of two opposing layers of fat molecules, act as the cell’s barrier to the outside world. DNA molecules move on these surfaces in two dimensions, much like objects on a conveyor belt.

Tissue Development Communication Signal

Led by Andrea Page-McCaw, assistant professor of biology, Rensselaer researchers have discovered a communication signal between cells that plays an important role in cell adhesion and detachment. The finding provides new information about how cells and tissues determine when to let go from surfaces during new growth. Page-McCaw’s lab studies the fruit fly as a model system to better understand a group of genetic enzymes called matrix metalloproteinases (MMPs). Fruit flies have two distinct MMPs, compared to 22 such enzymes found in humans and mice. In previous work, she found that both MMPs present in fruit flies are critical to their survival.

MINUTIA FILE

“Melody” Maker

IT'S NO SURPRISE THAT THE WORK OF Rensselaer alumni is far-reaching and varied. Bridge builders, engineers, scientists, inventors, and entrepreneurs, Rensselaer alumni have long helped to shape our world.

One particular graduate has also helped provide the soundtrack.

William Stirrat '41 (who used the pen name of Hy Zaret) wrote the words to one of the most recorded songs of all time, “Unchained Melody.” Stirrat wrote the lyrics in 1936 when he was on a summer scholarship at Yaddo's Triuna Arts of the Theatre School in Lake George, N.Y. It was there that he met Alex North, who composed the music. North, who later went on to become a well-known composer of Hollywood movie scores, was on the Yaddo staff. It took 19 years before “Unchained Melody” was performed in public (as part of a B movie called *Unchained*), but when the song came out in 1955 it went straight to the top of the charts and has been there on and off for more than 50 years.

The song experienced a surge in popularity in 1990 when it was used in the popular movie *Ghost* starring Demi Moore and Patrick Swayze. Today, “Unchained Melody” is enjoying another revival, as a featured song in Hallmark's popular “Say It With Music” greeting card collection.

“‘Unchained Melody’ was the top-rated card in our market research in both purchase appeal and song appeal,” according to Tom Esselman, innovation director at Hallmark. “It was the one card the song card team unanimously chose to provide as a sample to our Hallmark retailers nationwide.”

Although Stirrat didn't pursue music as a career, in the late 1950s and early 1960s, he co-produced six albums of science songs for children. After Rensselaer, he became an electronics engineer for the U.S. Army, General Electric, and Northrop Grumman. He retired in 1992 and died on July 2, 2004, in Freehold Township, N.J.



TOM KILLIPS

SPORTS REPORT

Men's Hockey

THE MEN'S HOCKEY TEAM KICKED OFF ITS FIRST SEASON under new head coach Seth Appert in strong fashion in front of a sold-out crowd of 5,152 at the Houston Field House Oct. 14. The Engineers came away with a 4-4 overtime tie against Boston University, the third-ranked team in the nation, in a non-league Division I game.

The Engineers got a goal and two assists from Jake Luthi, three assists from Jonathan Ornelas, and two assists from captain Kirk MacDonald, who made a triumphant return to the ice after sitting out last season while he battled cancer.

Appert is optimistic about the prospects for his new team. “I think we can have success here,” he told the *ALBANY TIMES UNION*. “It's going to take time for the players to get acclimated to how we want to play. Obviously it takes time over a four-year period to bring in the recruits that play the style we want. But I think with the young men we have in our program right now, we can have success, no question.”

“He's a guy who, when he comes in, you just feel the energy coming off him,” goaltender Mathias Lange told the *TIMES UNION*. “He's standing in the middle of the locker room with all that energy, and you just want to go out on the ice and bring some of it out there.”

The lyrics to “Unchained Melody” were written by William Stirrat '41. Hallmark features the song in its “Say It With Music” card series.



Timothy Wei: Building a Multidisciplinary Community

HE MAY BE WEARING THE HAT OF AN academic administrator, but Timothy Wei still sounds an awful lot like an engineer.

The new head of the Mechanical, Aerospace, and Nuclear Engineering Department (MANE) hopes to “optimize” course requirements and “streamline” teaching loads, all while having “zero negative impact” on the quality of instruction. “We need to look at our curriculum to make sure we are teaching efficiently, focusing on what students need to know in the 21st century, and making sure we deliver that in an effective way,” he says, choosing

his words with the precision of (you guessed it) an engineer.

Wei came to Rensselaer in January 2006 after almost 20 years at Rutgers. In MANE he sees a department with all the right pieces; his job is to provide leadership and get everyone on the same page. The goal: a cohesive community that uses its many talents to solve multidisciplinary problems at all levels, from instruction through research. “We are inherently multidisciplinary, with the natural sciences, chemistry, physics, biology, engineering, mathematics, and even the arts, all pulled together on very complex

problems,” he says.

Wei hopes to create broad umbrella thrust areas under which large numbers of researchers can approach these problems—ideally in the form of research centers led by faculty from each of the MANE disciplines. “If you go back to the major initiative areas identified in THE RENSSELAER PLAN, those are very natural for us,” he says. “We should be a microcosm of what the Institute looks like.”

While some might worry that this emphasis on research will detract from the top-notch engineering education MANE is known for, Wei sees no such trade-off. “In

my experience, the best teachers are also great researchers,” he says. “They are thinking big thoughts, asking big questions. Those are the kind of people that bring excitement and passion for what they do to the students.” But, he adds, it is important to remember that MANE is an engineering department. Basic science is critical but engineers should be looking at the problems driving society.

Ideally, research within MANE should run the spectrum from basic to applied, with everything in between, Wei says. Faculty with expertise in fundamental nuclear, chemical, and physical sciences should form the foundation. But the department should also have researchers looking at tools and methodologies, as well as people at the very applied end.

Wei’s career exemplifies this spectrum. His training is in the fundamental physics of fluid flows. “I view that as my intellectual wheelhouse,” he says. “But I am also a problem solver. I like to take this fundamental science knowledge and cross over to solving real-world problems.”

Much of his “bread-and-butter” funding has come from basic research projects for the U.S. Navy, but lately he has expanded into bio-related research—using video-based techniques to measure fluid flows. He is working with a vascular surgeon to study the growth of endothelial cells, and with a neurosurgeon to understand the mechanism behind hydrocephalus, or excess fluid in the brain.

But these days Wei’s favorite project is about as applied as it gets. His video-based tools are helping U.S. Olympic swimmers improve their techniques. He has already found a way to improve the efficiency of the breast-stroke kick, but he is keeping the details quiet to give the team an advantage in the run-up to the 2008 Olympic Games. “I get a real kick out of this stuff,” he deadpans.



MARK MCCARTHY



DONALD FRY has been appointed vice president for institute advancement, responsible for oversight of the division of

advancement strategy, services, and infrastructure; alumni relations; and development, including the Rensselaer Annual Fund, and individual, corporate, foundation, and international advancement. Fry most recently served as vice president for development and advancement at Colorado State University. He received his associate of arts degree in personnel management and bachelor of science degree in business and management, both from the University of Maryland. He received his master of science degree in business administration from Boston University.



STEVEN CRAMER, professor and acting chair of chemical and biological engineering, is the recipient of the 2006 Alan S.

Michaels Award for the Recovery of Biological Products, given by the American Chemical Society's Division of Biochemical Technology. The award recognizes Cramer's many achievements in the area of chromatographic bioprocessing for the recovery of biological products. Cramer is the first recipient of the award.

PHIL PHAN, the Warren H. Bruggeman '46 and Pauline Urban Bruggeman Distinguished Professor of Management, has been awarded the Bosch Berlin Prize in Public Policy. Phan will join more than 20 distinguished American scholars involved in cultural, academic, and public affairs who have been selected to study at the American Academy in Berlin. An expert in the areas of corporate governance, strategy, technological entrepreneurship, and regional economic development, Phan will focus

his research on creating a model for large corporations to more successfully engage in technology transfer and joint innovation when they ally with small, entrepreneurial firms.



LINDA MCGOWN, professor and chair of chemistry and chemical biology at Rensselaer, has been appointed the William

Weightman Walker Chair of Chemistry and Chemical Biology. Established in 1905, the Walker Chair is one of the two oldest named professorships at Rensselaer. A fellow of the American Association for the Advancement of Science since 2001, McGown has served on the editorial boards of several publications and journals, and received the New York Section of the Society for Applied Spectroscopy Gold Medal Award in 1994. She has written more than 100 peer-reviewed publications in areas related to analytical chemistry including dynamic fluorescence spectroscopy, molecular aggregation phenomena, DNA sequencing, bioseparations, and affinity techniques.



ROBERT PALAZZO, professor of biology and acting provost, has been voted president-elect of the Federation of American

Societies for Experimental Biology (FASEB). Palazzo will serve as president-elect until July 1, 2007, when he will assume the presidency of the organization. FASEB is the largest coalition of biomedical research associations in the United States. Its mission is to enhance the ability of biomedical and life scientists to improve—through their research—the health, well-being, and productivity of all people.

JOHN BRUNSKI, professor of biomedical engineering, was honored as the first William R. Laney Visiting

Professor at the Mayo Clinic in Rochester, Minn., in September. The Laney Professorship is supported by the William R. Laney Endowment for Prosthodontic Education at the Mayo Clinic, and honors Dr. William R. Laney, who was among the first clinicians to introduce modern oral and maxillofacial implant technology into the U.S. in the early 1980s.



CURT BRENEMAN, professor of chemistry and chemical biology and director of the Rensselaer Exploratory Center for Chem-

informatics Research, won first place for his results in the Regression 2 category in the 2006 CoEPra (Comparative Evaluation of Prediction Algorithms) competition. The goal of the competition is to advance the algorithms and software for modeling chemical, biological, and medical data.



ACHILLE MESSAC, professor of mechanical, aerospace, and nuclear engineering, recently received a national Sus-

tained Service Award from the American Institute of Aeronautics and Astronautics (AIAA). Messac was cited for "dedicated service to AIAA through leadership of several AIAA conferences and of the Multidisciplinary Design Optimization Technical Committee." The selection was made by the national Honors and Awards Committee of the AIAA, and the award recognizes sustained, significant service and contributions to AIAA by members of the institute.

TOM TARANTELLI, director of the Career Development Center, has been elected president of the Eastern Association of Colleges and Employers—the largest regional college and employer network in the country with approximately

1,200 members representing 817 colleges, 250 employers, and 27 associates from Maine to Virginia.



BARBARA RUEL, director of diversity and women in engineering programs, was honored with the 2006 President's Award from

the Women in Engineering Programs and Advocates Network (WEPAN). The award was presented at WEPAN's annual conference June 11-14 in Pittsburgh, Pa. Awardees were selected based on their contribution to the 2006 WEPAN Annual Conference; Ruel served as conference program co-chair.

MICHAEL SHUR, the Patricia W. and C. Sheldon Roberts '48 Chaired Professor in Solid State Electronics, has been named the 2007 recipient of the Institute of Electrical and Electronics Engineers Leon K. Kirchmayer Graduate Teaching Award. The award, which cites Shur for "inspirational guidance of graduate students and development of novel teaching materials in solid-state electronics," honors teachers of electrical and electronics engineering and related disciplines for admirable teaching of graduate students.

BASIL ANDREW STEWART, CPA, has been appointed assistant vice president for finance/controller. An accomplished financial professional, Stewart brings nearly 17 years of financial management experience with top-tier organizations to Rensselaer. Most recently Stewart served as controller and assistant treasurer at Smith College. Prior to Smith, Stewart served as controller of Wentworth Institute of Technology in Boston, where he was responsible for creating and maintaining financial control policies and procedures. Stewart received a bachelor's degree in accounting from the University of Massachusetts, and is working toward an MBA from the school.

IDEAS

With a new vice provost for entrepreneurship, Rensselaer is working to infuse **the spirit of entrepreneurship** across campus and in every student

BY JODI ACKERMAN FRANK

IN ACTION

ROBERT CHERNOW first ventured into the world of entrepreneurship in 1970 during his Peace Corps mission in a poverty-stricken village on the Brazilian coast where he started a successful fishing cooperative that still operates today. “That was a true venture,” says Chernow, vice provost for entrepreneurship. “I had an idea and had to bungle my way through a different culture to make it work.”

It is this entrepreneurial spirit—trusting an idea, taking risks, plunging into the unknown, and harnessing innovation to turn a concept into a thriving enterprise—that Rensselaer wants to instill in every student, from the freshman to the Ph.D. candidate.

“College campuses are idea incubators where people learn skills and forge work habits and relationships that serve them all their lives,” says Chernow. “We know there’s an entrepreneurial spirit sweeping across college campuses today, and I am thrilled to build on this momentum so that entrepreneurship becomes a natural and vital aspect of the Rensselaer experience.”

“Our plan for entrepreneurship education encompasses every aspect of the Rensselaer experience,” Chernow says. “We plan to integrate existing courses and develop new ones, provide more experiential learning opportunities, new seminars, a speaker series, and networking opportunities for all our students.”



ON THE LEADING EDGE OF A NATIONAL TREND Colleges and universities around the country are increasingly taking a similar approach, with significant growth in entrepreneurship education in the last two decades, according to the Ewing Marion Kauffman Foundation, a national philanthropic organization based in Kansas City, Mo., that promotes entrepreneurship education.

“Entrepreneurship across the curriculum is the fastest-growing field of study,” says Paul Magelli, a Kauffman scholar-in-residence who compiled the “Census of the Status of Entrepreneurship in American Higher Education: 2006.”

According to the foundation, more than 1,600 colleges offer courses in entrepreneurship, up from 1,050 in the early 1990s, and from 300 schools in the 1980s. At least 300 four-year higher education institutions now offer courses designed for students not enrolled in the business school.

Fostering entrepreneurship is one of the main thrusts of *The Rensselaer Plan*, the Institute’s blueprint for success. The plan calls for infusing understanding and encouragement of entrepreneurship throughout all five academic schools and student programs, and cultivating a campus culture that motivates students and graduates to pursue commercialization and enterprise-building activities.

Chernow joined the Institute in January as its first vice provost of entrepreneurship to lead the efforts in integrating the study, research, and practice of technological entrepreneurship across the curriculum.

A highly seasoned entrepreneur, Chernow formed the first of two companies, Corporate Health Strategies in New Haven, Conn., after his fishing co-op venture in Brazil. The move would take him into a 21-year career in the health-care industry, where he specialized in developing new technologies for data analysis. By the time he sold

the company to Metropolitan Life three years later, it had 500 employees and had grown to \$50 million in revenues.

Chernow also was founder and president of Educational Services for Entrepreneurship, a nonprofit organization established in 2004 that assists universities in shaping their entrepreneurship initiatives. He served as senior vice president and head of entrepreneurship programming at the Kauffman Foundation, where he worked with more than 30 universities around the world, as well as women and minority organizations and venture capitalists, to expand programs.

“I’ve worked with a number of schools around the country that were interested in cross-campus entrepreneurship, and after also interviewing hundreds of entrepreneurs as part of my research, my perspective has been greatly expanded to view entrepreneurship as an integral, campuswide activity,” Chernow says.

“No campus program is likely to be successful without support at the highest levels. In this regard, Rensselaer is leading the way by having created an entrepreneurship position at the provost level.”

Chernow defines entrepreneurship at Rensselaer as a process by which an individual develops an idea and applies creativity, initiative, and innovation to transform that idea into something that creates new value, which in turn creates new opportunities. Widely practiced at Rensselaer, it is reflected in commercial, scientific, technological, social, and cultural achievements. “It’s a way to think, a way to learn, and a way to succeed,” he says.

By leveraging its core strengths in innovation and creative thinking across all schools, Chernow believes that Rensselaer will become the premier university in technological entrepreneurship with global reach and impact.

Chernow has been impressed by the breadth of entrepreneurship activities already taking place in the classrooms on campus. Through programs such as Product Design and Innovation (PDI) and the O.T. Swanson Multidisciplinary Design Lab (MDL), and courses like *Inventor’s Studio* and *Introduction to Engineering Design*, the spirit of creativity and innovation exists at Rensselaer. The vision, he says, is to link and coordinate them.

“The PDI program is one of many opportunities, offered by the School of Engineering in collaboration with a number of other schools and departments, that gives students the experience of a professional engineer,” says Alan Cramb, dean of engineering. “Engineers today need to understand not only classical and novel engineering principles, but also aspects of management, business, and economics.”

The Lally School of Management and Technology, which has traditionally served as the academic center for entrepreneurship at Rensselaer, is working to help expand entrepreneurial activities across the disciplines. “The walls between Rensselaer’s departments and schools, certainly compared to other academic institutions, are very low,” says David Gautschi, dean of the Lally School. “And so, we have consciously worked with this to build formal collaborations across campus with the goal of eliminating these walls altogether.”

This year, for the first time, students in any major during their sophomore or junior year will be able to apply for a five-year master’s program in technological entrepreneurship and commercialization.

“The main concept behind this new multidisciplinary model is for students to have a background in management and at least one technical or scientific field,” Gautschi says. “To compete in today’s world as a technological entrepreneur, students have to acquire a breadth of skills as well as a depth of knowledge in a particular discipline so that the basis of product development is firmly planted.”

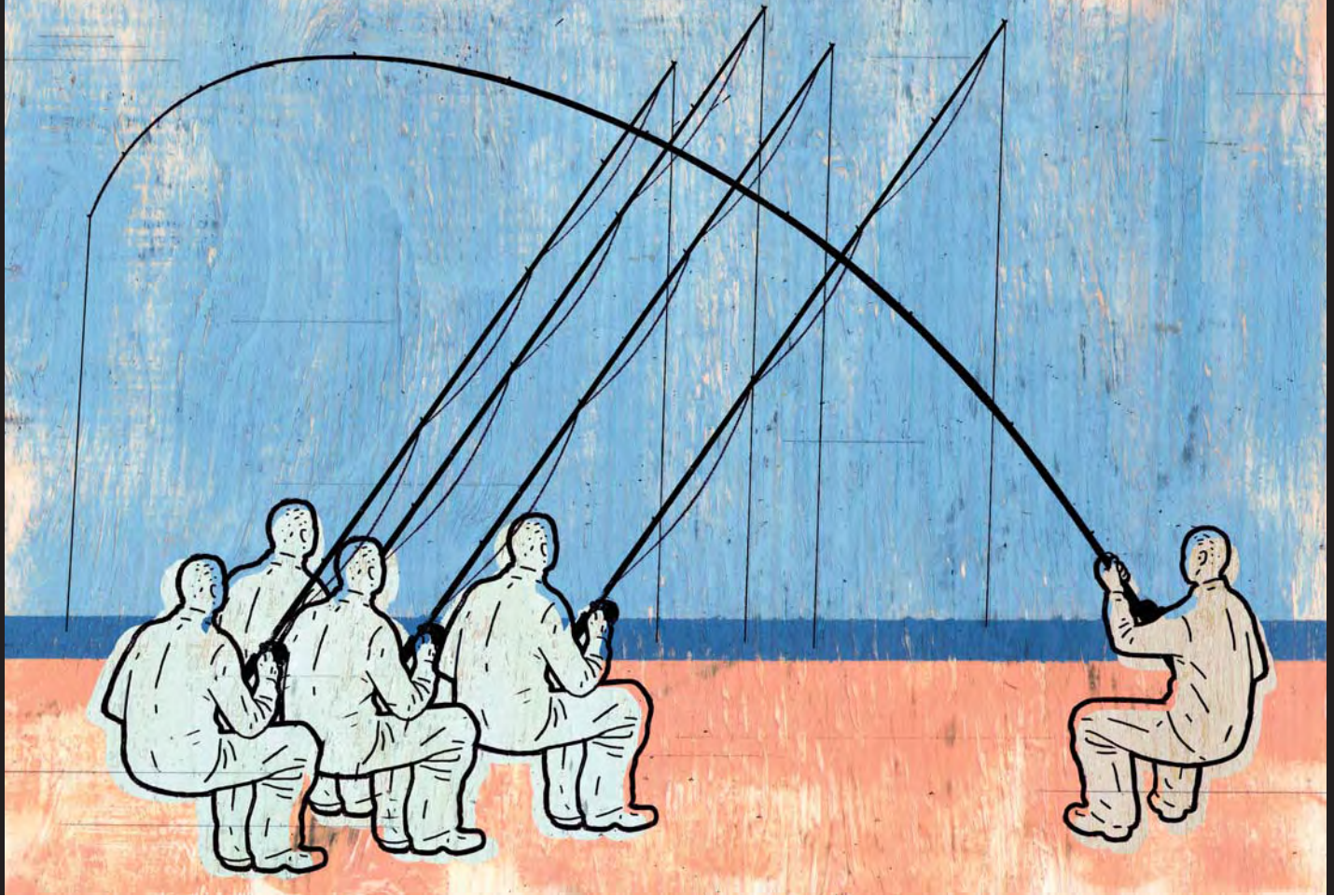
Initially, the program began as a collaboration with the School of Engineering, but rapidly expanded as a campuswide initiative. “Every single school wanted to be involved in this program,” Gautschi says.

Since its founding in 1824, Rensselaer has been known for its entrepreneurial drive and success. With rapid technological change and a global marketplace transforming the world, Rensselaer is adapting to stay true to its original purpose of transferring scientific discoveries and advancing technologies into practical applications—which translate into sustainable enterprises and lucrative business opportunity.

The university’s world-class incubator, the Rensselaer Technology Park, and the Severino Center for Technological Entrepreneurship continue to be national models. Together, they provide resources for those who strive to combine technological know-how with business savvy.

“Rensselaer has a strong track record of students across disciplines working together to combine their creative passion in devising new technologies with business concepts in class,” says Gautschi. “They then move on to create new companies and products in the incubator. As they gain traction in the marketplace, many eventually move their businesses to the Rensselaer Technology Park, where they can continue to take advantage of educational, research, and other university resources.”





That's what longtime entrepreneur and Rensselaer Trustee Paul Severino '69 was motivated by when he and his wife, Kathleen, contributed \$5 million in 1999 to endow the center, which was established in 1988. An engineer and computer-networking pioneer, Severino launched Interlan, one of the nation's first local area network companies, in 1981 and Wellfleet Communications in 1986, also one of the first market-leading Internet router companies. He now serves as chairman of the Massachusetts Technology Development Corporation, a Massachusetts economic development venture capital firm.

"The Severino Center in conjunction with the university's technology and research base along with the incubator is an entrepreneurship model that works very well for Rensselaer," Severino says. "With the Center for Biotechnology and Interdisciplinary Studies now in place and the tremendous increase the Institute has seen in funded research, we continue to build on that model."

"It's the same model that has worked for Silicon Valley, and has worked for the MIT-Boston area. It works for Austin, Texas," he adds. "It's a model of a very strong technological university that generates opportunities for entrepreneurs. And, that attracts investment and venture capital for not only Rensselaer but for the entire Capital Region."

Working closely with the Incubator and the Technology Park, the Severino Center acts as the academic bridge between students and business opportunity, providing the infrastructure and advice to start, run, and finance new high-tech ventures.

Among its robust array of courses, internships, and practical experiences are the popular Tech Valley Collegiate Business Plan Competition for Rensselaer and other area college students, and an annual venture forum that brings in venture capitalists and senior-level executives to hear presentations by early-stage companies in the incubator. There's

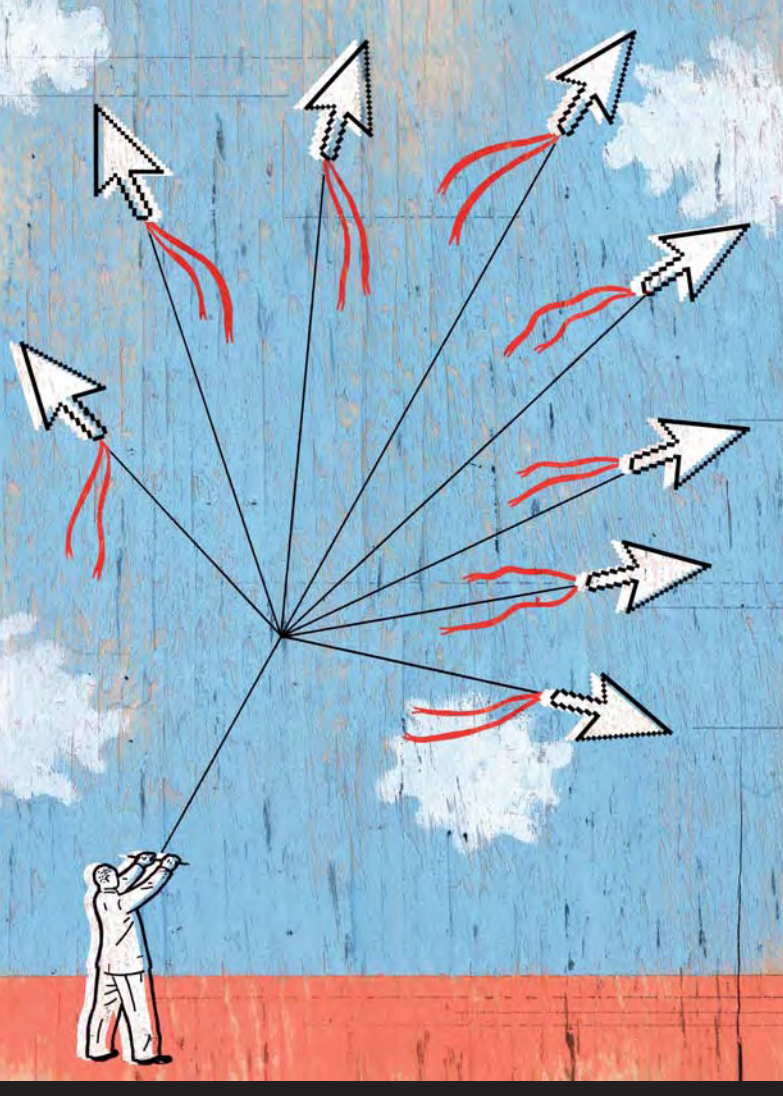
Robert Chernow defines entrepreneurship as a process by which an individual develops an idea and applies creativity, initiative, and innovation to transform that idea into something that creates new value.

"It's a way to think, a way to learn, and a way to succeed," he says.

also the Biotechnology Management and Entrepreneurship Seminar Series and the annual William F. Glaser '53 Entrepreneur of the Year celebration. Through the center, the university also offers the Herman Family Fellowship for Women in Entrepreneurship.

Today's entrepreneurs at Rensselaer are building on the Institute's tradition of innovating businesses across the disciplines. For Mark Cafaro '06, multidisciplinary programs such as the Product Design and Innovation (PDI) courses, offered jointly by the School of Engineering and the School of Humanities and Social Sciences, gave him and his partner, Benjamin Smith '06, the boost they needed in jumpstarting their new company, Weardian. Both PDI majors graduated this year with their bachelor's degrees.

In fact, their company was born while the pair was completing the



“It’s not critical that everyone needs to become an entrepreneur, but they should know how to think like one,” Chernow says. “The skills embodied in entrepreneurship are really life skills—some would say survivor skills—required in today’s global, hypercompetitive world.”

this year, and six more have joined as virtual members. The new tenants have specialties in areas that range from advanced speech recognition to terahertz technologies.

“Weardian is a perfect example of what can happen when coursework, research, and commercialization all merge in the same direction,” says Michael Tentnowski, director of the Incubator Program.

To help fledging companies succeed, Tentnowski pulls from academic, research, and administrative resources across campus as well as connecting tenants to the greater business community of intellectual property attorneys, accountants, angels, and venture capitalists.

The incubator, established in 1980 and one of the oldest university-based business incubators in the country, has a long track record of success, from MapInfo and Albany Molecular Research to the hundreds of smaller companies and entrepreneurs it has served. More than 60 percent of the companies housed in the incubator have evolved from research at Rensselaer or have been started by alumni.

“As all of these companies succeed, they serve as examples and models to the university, stimulating additional research with a renewed focus on commercial application,” Tentnowski says.

Being an entrepreneur today compared with 10 years ago has changed “dramatically,” with a climate of competitiveness more fierce than ever before, Severino says. Corporate scandals have brought an onslaught of new governmental oversight that has made the stakes higher for any company entering the market. But, perhaps the biggest challenge, says Severino, is the new high-performing competition from China and India.

“They have got the bug for entrepreneurship. They’re starting companies, and they’re doing very well,” he says.

When Severino started his companies three decades ago, there was no competition from those countries and very limited competition from Europe and even Japan.

“If you look at all the entrepreneurial activity through the ’70s and ’80s, and even in the ’90s, around computer networking and information technology, it was a totally American phenomenon,” he says. “Now, there’s a tremendous amount of competition coming from places overseas where there is a lot of talent, engineers, and scientists. There is even growing competition for American venture capital.”

With this in mind, the Lally School is enhancing and creating new courses and collaborations focused on technological entrepreneurship with an international component at both the undergraduate and graduate levels.

“To be a competitive business leader today, you have to think globally,” Gautschi says.

Inventor’s Studio, a PDI class that focuses on problem solving, concept generation, and business strategy. A third partner, Meredith Blumenstock, also a PDI major, recently joined the team as she completes her undergraduate degree.

“It was through this course that we identified the need for a chemical-free artisanal gold mining device,” Cafaro says.

Small-scale—or artisanal—gold-mining operations depend on the use of mercury, a well-known neurotoxin, to extract gold from sediment. In the process, dangerous amounts of mercury escape into the air as well as leach into the water and ground, polluting the local food and drinking supply. While the use of mercury for mineral extraction processes has been virtually eliminated in developed countries, its use for gold mining in the developing world has increased exponentially.

“Weardian is utilizing an age-old process of gold extraction through centrifugal force to capitalize on gold’s high density for extraction instead of its chemical properties,” Cafaro says. “While this operation has been traditionally used in large-scale mining operations, we have invested in the idea that it can be used to fit the needs of artisanal miners.”

The company, which has filed for a provisional patent, recently secured a \$17,500 grant from the National Collegiate Inventors and Innovators Alliance to further develop their product while they search out additional mentors and venture capitalists with firsthand knowledge relating specifically to the targeted Brazilian commercial market.

Today, the Incubator is hopping with new activity. Weardian is one of eight new technology companies that set up headquarters at the facility

As part of that mission, the school has identified four areas of the world with which to pursue collaboration. These include China and India, the world's two most rapidly expanding major economies, and Ukraine, the R&D center of the former Soviet Union. The fourth focal point, the Maghreb region, includes Tunisia, Algeria, and Morocco, three countries in northern Africa that, because they are geographically close to Europe, have accelerated their technological progress.

In pursuing connections in Ukraine, the Lally School has begun collaborating with a company, Archimedes Group, geared toward commercializing Ukrainian technologies. The company, which recently moved into the incubator, was founded by George Markowsky, a visiting professor of management and technology. "Our plan is to help build new companies around specific technologies," Markowsky says.

Three interns, one from the Ukrainian company Yuzhnoye and two from Rensselaer, will be working for Archimedes beginning this fall. Yuzhnoye (pronounced Yush-noi), which once built all the intercontinental ballistic missiles for the Soviet Union, now specializes in civilian spacecraft technologies. Through internships and other opportunities, Archimedes will work with Yuzhnoye and other Ukrainian corporations to commercialize many of the spin-off technologies that were developed for specific uses within these companies but can be expanded for a host of other purposes.

"This is the model we would like to build off of to give our students opportunities for experiential learning in an international atmosphere," Gautschi says.

The concept of entrepreneurship is often narrowly defined to only relate to starting a business. Although entrepreneurship is the fastest growing sector, in fact, not everyone will start a for-profit business. The hope is that entrepreneurship education will enable all students to add significant value to any working environment.

Chernow believes those with an entrepreneurial mindset tend to be more productive in whatever they pursue. They run nonprofit organizations more smoothly, are more proficient educators, and become better writers and artists.

"It's not critical that everyone needs to become an entrepreneur, but they should know how to think like one. I can't think of a single discipline that cannot benefit from an entrepreneurial outlook," Chernow says. "The skills embodied in entrepreneurship are really life skills—some would say survivor skills—required in today's global, hypercompetitive world."

"Social entrepreneur" also has become a popular term to describe those who are focused on helping developing countries become more sustainable in solving their own problems.

"The challenges facing the world are, unfortunately, often left to politicians and other liberal arts majors to solve," says Sean O'Sullivan '85, who founded JumpStart International, a non-governmental organization created to focus on reconstruction in war-torn Iraq and in the Gaza Strip. "In fact, many problems in today's world are quite simple but require good engineering solutions to improve a situation. I know Americans in general want to help improve the condition of life on the planet, but since the status quo isn't sufficient, entrepreneurship is the way forward," O'Sullivan says.

Support for Entrepreneurship Education

Rensselaer alumni, foundations and support programs, and industry have played significant roles in building new Institute entrepreneurship programs and opportunities over the last several years.

In 2001, Rensselaer Trustee Mike Herman '62 and his wife, Karen, gave \$1 million in start-up funds to make the Institute one of the first technological universities where students in all fields learn the principals of entrepreneurship. As a result, the topic has been embedded into the First-Year Experience program. It also has become a critical component of the capstone experiences that require students to solve a significant, open-ended design problem, and show competency in assessing market opportunities and executing business plans.

"Our family is very excited with the hiring of Rob Chernow as vice provost to enhance Rensselaer's commitment to entrepreneurship across the curriculum," says Herman, past president of

the Kauffman Foundation. "The Board of Trustees strongly backs Dr. Shirley Ann Jackson's vision, in *The Rensselaer Plan*, that the Institute will be a force in the arena of entrepreneurship."

Last year, Sean O'Sullivan '85 donated \$1 million to create the "Change the World Challenge." Designed to stimulate creativity, innovation, and entrepreneurship, the competition is open to all undergraduate and graduate students at Rensselaer.

"I hope this contest will inspire a stream of innovation," says O'Sullivan, a founder of Map-Info, the world's leading producer of desktop mapping software.

For the competition, students select a topic from a list of challenges and offer a new, long-term, sustainable solution. In addition to the idea competition, in which a group of winners each receive \$1,000, additional support is given in recognition of the "best of the best" ideas to assist students in pursuing patents.

Earlier this year, with significant support from the Lemelson-MIT Program at the Massachusetts Institute of Technology, Rensselaer established the \$30,000 Lemelson-Rensselaer Student Prize to reward student inventiveness. The competition, offered to undergraduate seniors and graduate students beginning next year, will be awarded annually to a student who has created or improved a product or process, applied a technology in a new way, redesigned a system, or demonstrated remarkable inventiveness in other ways.

"Inventiveness—generating ideas and solutions to problems—is a critical component in entrepreneurship," Chernow says. He plans to establish programs to narrow the gap between the real world and the classroom by connecting the stories, wisdom, and resources of entrepreneurial alumni with the spirit, drive, and creativity of entrepreneurial students, faculty, and staff.



motherhood

A devastating personal experience drove Linda Layne to devote two decades to studying issues surrounding pregnancy loss. Today she is a leading national advocate for reform.

Lost

A WOMAN WAKES UP WITH A START in the middle of the night. In pain and unfamiliar with her surroundings, she stumbles in the dark to the bathroom. Sitting alone on the cold floor, she tries to recall the advice a nurse had given her a few days before about how to know if she were bleeding to death. Lacking medical assistance and adequate information about what is happening to her body, she is frightened and alone. | That was Linda Layne's experience during her seventh and final miscarriage. The devastating loss occurred while she was staying the night at a stranger's home in Oregon where she was conducting field research. | At that time Layne, the Alma and H. Erwin Hale '30 Professor of Humanities and Social Sciences, had been dealing with pregnancy loss for 10 years and had received various medical treatments after suffering miscarriages in the emergency room, her doctor's office, an abortion clinic, and her own home. Although each loss differed in the level of care she received, every experience shared the common thread of confusion. | "I was physically or emotionally unprepared for each of my losses, which made the already distressing experiences overwhelming," says Layne. "Our society makes sure that pregnant women know what to expect during labor and what their options are if difficulties arise—such advances have not occurred regarding pregnancy loss. We keep women in the dark about the possibility of miscarriage. Then, when a loss is imminent, caregivers begin to discuss a woman's options with her. A crisis is not the right time to give people information." | **Nearly 1 million women suffer miscarriages annually in the United States alone. For the last 20 years Layne has been fighting for the rights of each of them.** BY AMBER CLEVELAND

Fifteen to 20 percent of all pregnancies end in loss, according to the American College of Obstetricians and Gynecologists. Nearly 1 million women suffer miscarriages annually in the United States alone. Layne calls miscarriage “an utterly common medical event.” So why doesn’t anyone talk about it?

FROM ANGUISH TO ACTION

After her first loss in 1986, which she calls “the worst and most confusing experience of my life,” Layne, an anthropologist, dedicated herself to ending the silence that shrouds pregnancy loss.

When she became pregnant with her first child at age 30, she says she wasn’t even aware that it was possible for her to miscarry.

“Miscarriage never came up during any of my prenatal visits. And I devoured pregnancy books, eager to learn about the minute details of my baby’s development—but they, too, failed to mention the topic of pregnancy loss.”

When she began to show signs of a possible miscarriage at 13 weeks, Layne was told by her midwives to go to the emergency room. They did not go with her, although they would have if she was in labor and something went awry. Afraid, she hoped the doctors in the hospital could explain what was happening. What she got, however, was a gruff physician who announced that the loss was imminent and then left the room. Nurses prepped her for a medical procedure to remove the materials from her womb and wheeled her away. Before she knew it, the pregnancy she pined for was over.

Furious about the lack of information she was given about the potential for pregnancy loss, Layne began to ask questions.

Why had women worked so hard to reclaim control of their pregnancies—fighting for their rights to decide where they could give birth, who could be with them, and for adequate information about the process—but such advances had not occurred regarding pregnancy loss?

In the 64-page booklet her clinic gave to all patients during their first prenatal visit, why was miscarriage not discussed until page 49, and then why were only four lines devoted to the topic?

Why had Layne’s midwives informed her of their protocol in case of emergency cesarean section, but not discussed what would happen in the case of miscarriage during the first three months of pregnancy when pregnancy loss occurs in one in five women?

Why is the comfort and quality of the birth

experience given a great deal of attention, but no such concern is offered to women who miscarry?

Why don’t we expect family members to grieve for the loss of a wished-for pregnancy, the way we grieve for so many other losses in our lives?

Fifteen to 20 percent of all pregnancies end in loss, according to the American College of Obstetricians and Gynecologists (ACOG). Layne calls miscarriage “an utterly common medical event.” So why doesn’t anyone talk about it?

Trying to answer these questions, Layne realized that anthropology could help shed light on the factors that made the devastating experience of pregnancy loss even worse. She joined a local support group and began investigating the experience of loss among the group’s members using an anthropological research method known as participant observation. Using the technique, researchers immerse themselves in the subject being studied to gain deeper understanding. Dealing with her own losses, Layne studied the topic as both an observer and a participant.

SHATTERING THE SILENCE

For nearly 15 years Layne gathered information and tried to determine the causes of society’s silence surrounding pregnancy loss. She found that middle-class American women who suffered miscarriages in the late 20th century dealt with two contradictory forces. Factors like new reproductive technologies, smaller family sizes, and abortion politics, for example, led many to think of the fetus as a “baby” much earlier in a pregnancy than had previously been the case.

Layne presented her findings in the book *Motherhood Lost: A Feminist Account of Pregnancy Loss in America* (Routledge, 2003). The book was immediately endorsed by UNITE and SHARE, two prominent pregnancy loss support groups in the United States. Finally giving voice to a subject shrouded in silence for so long, Layne became an expert in the emerging field of research and was asked to discuss her findings with *The New York Times*, *Boston Globe*, *Newsday*, *Chicago Tribune*, and

other major media outlets.

In the book Layne explored the fact that pregnancy losses in this country are rarely acknowledged or discussed. “Grief for a dead loved one may be both inevitable and necessary, but the additional hurt that bereaved parents feel when their losses are dismissed and diminished by others is needless and cruel,” she says. “It is high time we recognize pregnancy loss and offer our support.”

In the final chapter, “Breaking the Silence: A Feminist Agenda for Pregnancy Loss,” Layne called for four changes that she believed would create a “woman-centered approach” to pregnancy loss: increased information about pregnancy loss, the right to choose how to handle an imminent loss, the option of a caregiver to assist with a loss, and increased social support from the medical community and society. She based her proposals on several principles of the women’s health movement of the 1970s, which empowered women to take charge of all aspects of the birth experience.

“First-person accounts indicate that middle-class American women feel supremely unprepared for pregnancy loss,” says Layne. “First and foremost, women must be informed—knowledge is power. I’d like to see information about pregnancy loss provided to women by their doctors at the earliest possible time, since most losses occur in the early weeks of pregnancy. Many women receive care even before they conceive when they are contemplating starting a family—that would be the correct time to approach the subject.”

Pregnancy loss discussed face to face, supplemented with printed information that women could keep in their homes and refer to in the event that they experience a home loss similar to her own, is the key to allowing women to take control of their situation, says Layne. She also found in her research that many healthcare providers are hesitant to inform women of the risk of pregnancy loss because they fear scaring them, and because it’s an unpleasant topic to discuss during what’s likely to be a happy time in a woman’s life.

“There’s no excuse for not educating a woman—pregnant or not—about the possibility and probability of miscarriage,” says



Layne. “As a society we need to stop being paternalistic and sheltering people from unhappy things. There used to be a time when we didn’t tell cancer patients that they had cancer or that they could die, because it was difficult for us to say, and for them to hear. We don’t do that anymore—it’s considered demeaning to withhold information from the person to whom it directly relates.”

Advances in the management of pregnancies have led to increased early diagnoses of miscarriages. Layne argues that doctors should use this added time to explain to women their care options, allowing them to select a setting that will work best for them. Unlike births—all but 1 percent of which take place in hospitals in the United States—pregnancy losses occur in a wide variety of settings: hospitals, homes, obstetricians’ offices, and clinics.

“Women need to be instructed in the pros and cons of each of these venues so that they may choose the location that best suits them, and so that they will know what to expect during and after a loss in that setting,” says Layne.

She also believes that women who choose to have a surgical procedure should be treated with the same dignity as a woman giving birth. Although women who give birth in medical venues do so in a comfortable room often decorated like a bedroom at home, such courtesies are not extended to women who are miscarrying.

“Women who miscarry are essentially viewed no differently than patients who are having routine surgery,” says Layne. “They receive the necessary medical attention and they are sent on their way, without any concern for their emotional state.”

Home miscarriages are becoming increasingly common with efforts to manage health care costs, and in many ways they can be more traumatic than a medically managed loss, according to Layne. She notes that women who miscarry naturally typically do so alone or with an equally unprepared partner—something that would never happen during a full-term birth.

“The option of a caregiver should be extended to all women who are experiencing a pregnancy loss,” Layne says. She also recommends making available pregnancy loss kits, which could include disposable bed pads, sanitary napkins, pain medication, and instructions.

“Although there are elements of distress over the loss of a wished-for baby that no one can relieve, the presence of a trained caregiver, who



Social support is crucial for women who have experienced loss. Women who miscarry are often caught in “a private space of shame,” left alone to grieve because family and friends can’t comprehend their pain. “The cultural silence is profoundly real,” says Layne.

knows what to expect, who is familiar with what’s taking place physically, and who can reassure a woman during the process, would greatly reduce the fear that accompanies handling this experience in isolation,” says Layne.

Social support also is crucial for women who have experienced loss, says Layne, stressing that women who miscarry are often caught in “a private space of shame,” as she calls it in her book—left to grieve alone because family and friends can’t comprehend their pain.

“The cultural silence is profoundly real,” says Layne. “Many times the remains of a miscarriage are disposed of, and everyone acts as though nothing has happened. The taboo around pregnancy loss in this country stifles a woman’s ability to grieve and to heal.” Layne contends one way to end the silence is by

broaching the subject in popular culture, with more frequent, honest, and detailed depictions of loss on television and in books and magazines.

While Layne was working in Jordan in the 1980s, a pregnant co-worker miscarried. Days later she invited Layne and some other friends over for a ritual meal. Each of the guests brought the grieving woman a gift, acknowledging that she had the loss and more importantly, that she had their support.

“Support rituals that focus on the woman and not on the lost child can help reduce the trauma felt by the would-be mother,” says Layne.

NATIONAL ADVOCACY

Today, nearly two decades into her research,

Real life in the Classroom

Layne's focus has shifted. Not content with simply bringing the subject of pregnancy loss to light, she has become an active advocate for the reforms she detailed in her book.

"The same issues I discussed in my book—the lack of information, the lack of support for grieving women—are still issues women are facing every day," she says. "And I realized that if I really wanted to see changes take place I couldn't just sit around and wait for someone else to pick up where I left off."

Layne has spent the last several years speaking out on the need for pregnancy loss health-care policy reform and lecturing at universities, hospitals, and conferences across the country on society's shortcomings when it comes to educating, caring for, and supporting women who have suffered losses.

Layne delivered one of those lectures at the University of Virginia's medical school. One of the multiple replays of the talk on a regional television network was caught by Susan Kehoe, general manager and executive producer of George Mason University's television station. Kehoe was so impressed she immediately contacted Layne and offered to tape and produce a series of television programs about the topic of pregnancy loss.

"When I suffered my loss, my doctor told me that I wasn't alone, and that a number of my friends, family, and acquaintances had [probably] been through similar experiences but hadn't talked about it. That stuck with me," says Kehoe. "When I saw Linda's talk on television I felt compelled to thank her for voicing the thoughts and concerns of so many women who've suffered miscarriages, and for giving others the freedom to share their experiences. I am pleased to have the opportunity to help her spread her message and to promote understanding and healing."

Layne came up with a list of artists, midwives, novelists, doctors, nurses, lawyers, religious leaders, product designers, environmental activists, and advocates who all, in their own way, were using their expertise to encourage pregnancy loss reform.

From that list evolved a television program called *Motherhood Lost: Conversations*. The first episode, which premiered last year, already has received acclaim from the television and film community, garnering Layne a prestigious Gracie Award for "outstanding talk show," a Silver Davey award, and a 2006 Bronze Telly Award.

Layne has committed to taping 10 episodes

of the show, which will run on the George Mason University station and other educational channels. Each episode is officially premiered at a conference or event at which Layne is speaking. In October, which is nationally recognized as Pregnancy Loss Awareness month, the third episode was premiered at the National Perinatal Bereavement Conference in Chicago.

Layne has even bigger plans for the programs.

"I'd like to see the shows become educational resources on television, and available in public libraries, as well as medical school and nursing school libraries. And because I'm a university professor, I can envision their use in college classrooms and as resources for continuing education programs." [See sidebar.]

Lynn Paltrow, executive director of the National Advocates for Pregnant Women—a New York-based organization committed to protecting and advancing women's reproductive rights by connecting local activism with national advocacy and policy work—praises Layne's work, calling her "a great ally."

"In the highly politicized world of reproductive health, the pain felt by so many women who've experienced a loss is too often ignored," says Paltrow. "Linda's work reminds us of the support and services that so many pregnant women are denied, and points toward significant ways that pregnancy and pregnancy loss healthcare can be improved and humanized."

Layne sees indicators that society is moving toward a positive change in a variety of places, from the recently formed Pregnancy Loss and Infant Death Alliance support group issuing policy statements, to the allocation of \$3 million by the National Institutes of Health (NIH) for research surrounding the causes of stillbirths, to the designation of October as Pregnancy Loss Awareness Month.

"There's a national movement finally happening," she says. "We're moving toward a new stage and becoming more proactive."

Once a lone voice speaking out on what she found was a cultural taboo surrounding pregnancy loss, Layne today is finding more allies and greater hope for her efforts to bring about understanding and policy reform.

"Twenty years ago I was one of the first to advocate for pregnancy loss awareness and policy reform," she says. "Now there are lots of people out there advocating, and I hope more will join me in this endeavor. Together, we can—and will—make things better."

LAYNE IS BRINGING HER RESEARCH ON pregnancy loss to Rensselaer students by developing curricula in conjunction with several episodes of her television program and working with colleagues to pilot them in classes this year.

Steve Breyman, associate professor of science and technology studies (STS), plans to pilot the episode "Linking Environmental Protection and Pregnancy Loss Prevention: A Conversation with Lois Gibbs, Executive Director of the Center for Health, Environment, and Justice," in his *Environment and Society* class.

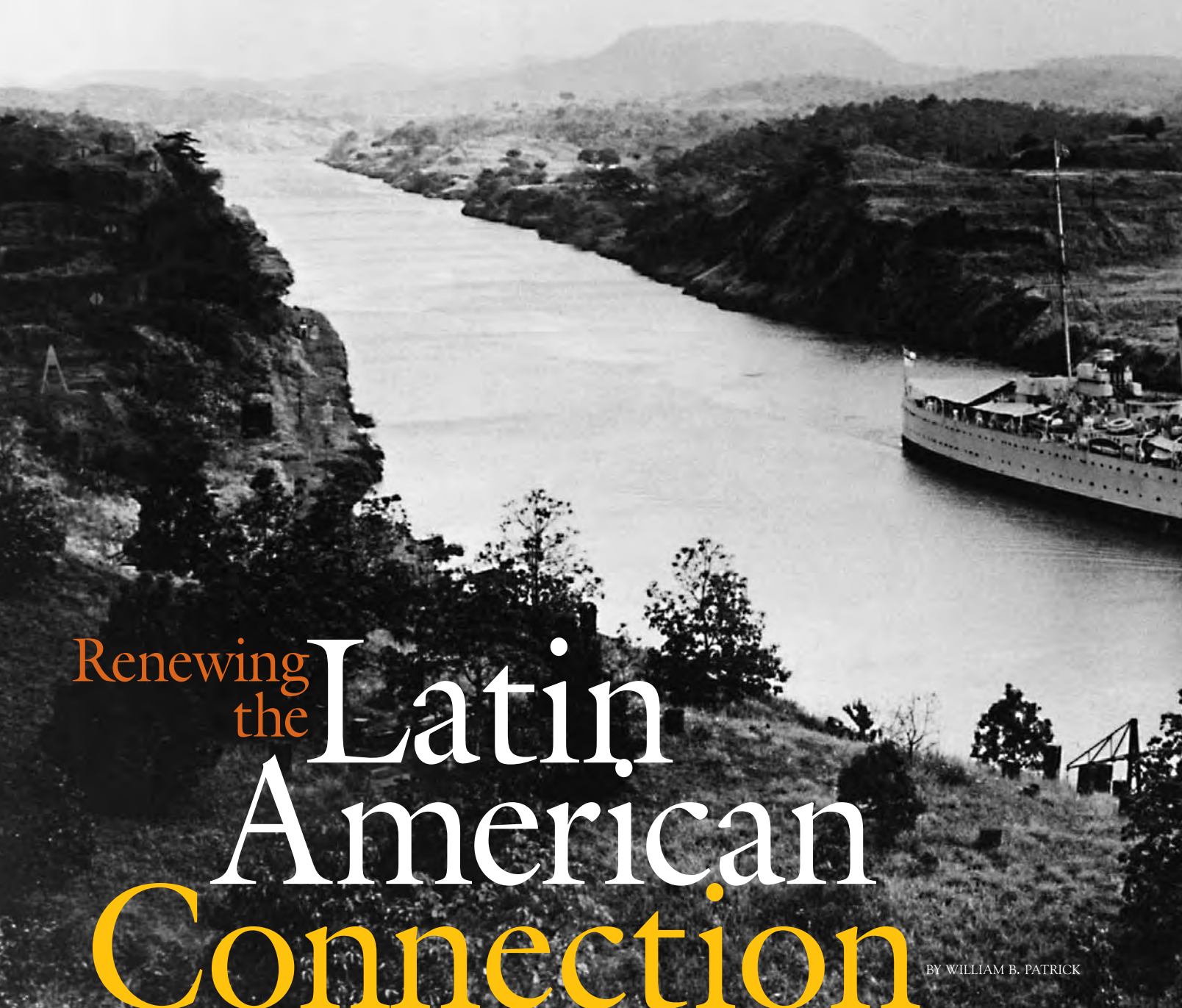
Breyman praises Layne for putting pregnancy loss on the agendas of both the women's movement and the environmental health movement, calling her work "truly inspiring."

Layne is working with STS colleague Nancy Campbell to design a mock trial as the companion curriculum for the episode "Combating the Criminalization of Stillbirth and Miscarriage: A Conversation with Lynn Paltrow, Esq., Executive Director of National Advocates for Pregnant Women." Four lawyers from the Capital Region have volunteered to come to campus and participate in the trial.

"Linda's work is just the kind of publicly engaged scholarship that students benefit from seeing enacted. The mock trial will literally re-enact some of the hardest-held and most difficult positions involved in debates over reproductive rights," says Campbell. "For students to come to terms with these requires deep thinking and knowledge of the politics of pregnancy, which involve the translation of deeply held values into public policy."

Layne and Lois Peters, associate professor in the Lally School of Management and Technology, have recently decided to develop a companion curriculum for the episode "Preparing for Home Pregnancy Loss: A Conversation with Sandy Maclean of WomenCare." The program will be shown as part of Peters' entrepreneurship course this spring.

IN THE 19TH CENTURY, TALENTED ENGINEERING STUDENTS
TO RENSSELAER. TODAY, THEIR SPIRIT LIVES ON IN EFFORTS TO BRING MO

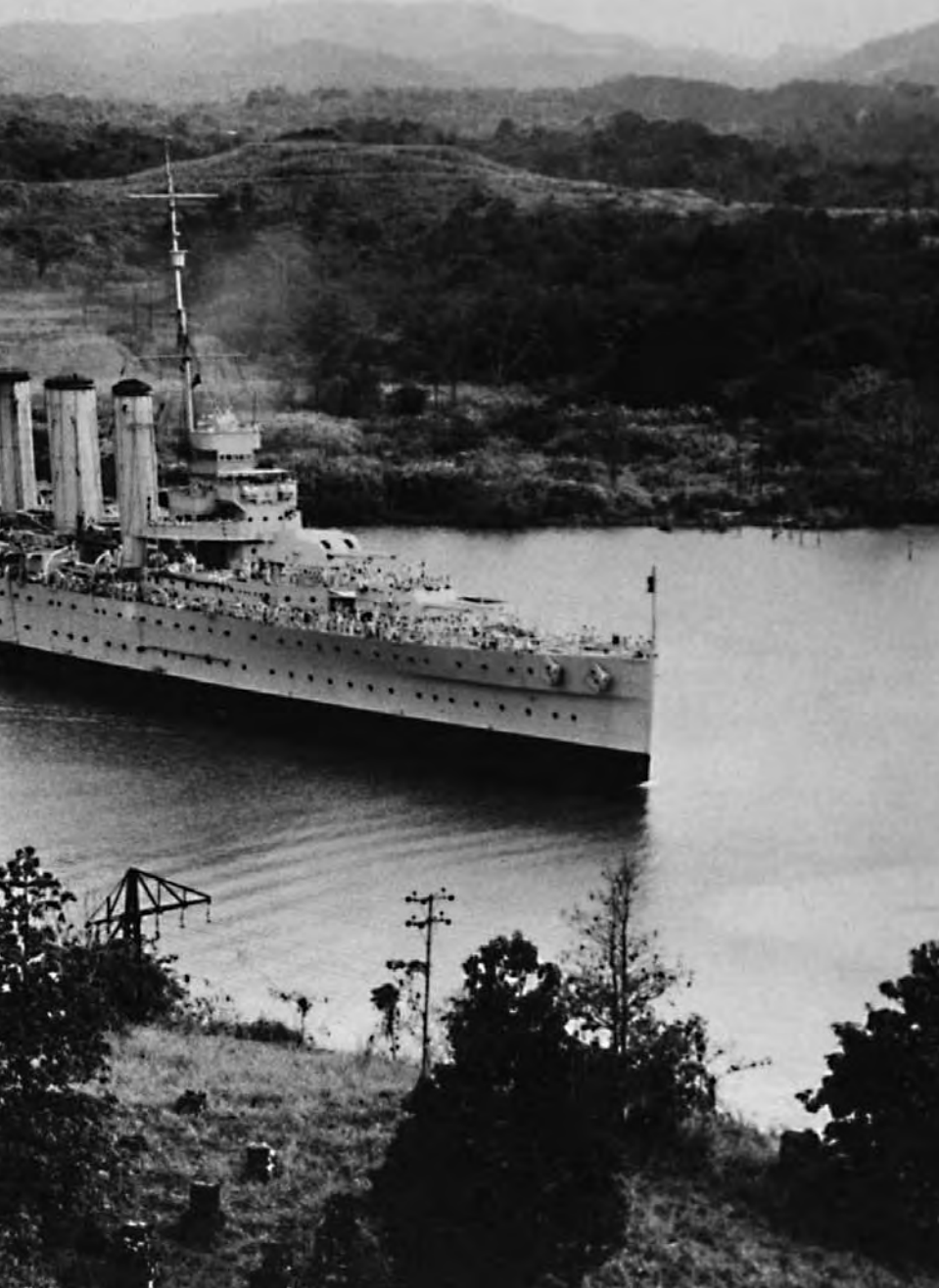


Renewing the Latin American Connection

BY WILLIAM B. PATRICK



FROM LATIN AMERICA TRAVELED THE LONG ROAD RE LATIN AMERICAN STUDENTS TO THE INSTITUTE.



Aniceto Garcia Menocal, Class of 1862



Victor Marrero, graduate student

Graduate student Victor Marrero recently traveled to Caracas, Venezuela, to help renew a Rensselaer tradition that dates back to the mid-19th century. Marrero has joined forces with Napoleon Ferrer '55, president of the Venezuelan Chapter of the Rensselaer Alumni Association, to attract more Latin American students to the Troy campus. In late September, Marrero visited Caracas to meet with Ferrer and other chapter members to discuss how to interest talented students in Rensselaer. While Marrero applauds the Institute's initiative to increase diversity by reaching out to more minority and international students, he believes there is opportunity to tap the talent of young Latin Americans even more.

Marrero, a student in the Ph.D. program in mechanical engineering and president of the Rensselaer chapter of Phi Iota Alpha, the Latin American fraternity, grew up poor in Puerto Rico, but his family's sacrifices allowed him to attend private school and earn his bachelor's and master's degrees in mechanical engineering from universities in Puerto Rico. As an American citizen he was eligible for federal funding and scholarships that have enabled him to study for the last year and a half at Rensselaer.

"I think coming from poverty and being able to accomplish your education gives you the big picture of what the necessities are," Marrero says. "A lot of people in America don't understand what sacrifice is, like having to be the best so you can get out of a country. That takes a lot of discipline. So when you get opportunities, you will then have the perspective to go back and help others."

BORN IN LATIN AMERICA, SONS OF RENSSELAER

Marrero's efforts are building on a rich history of a Latin American connection at Rensselaer that reaches back more than 160 years. This history was documented in a recent exhibit at Folsom Library, "Exporting Engineers: RPI Alumni in Latin America, 1850-1890," which highlighted the crucial roles played by these Institute graduates in building the essential infrastructures of Latin America.

Cuban-born Aniceto Garcia Menocal is a prime example. Born in 1836, the son of a wealthy planter in Cuba, he graduated from Rensselaer in 1862 with a degree in civil engineering and immediately returned to Cuba to become an assistant engineer. Within three years, he was appointed chief engineer in charge of construction at the waterworks of Havana. In 1870, New York City's Department of Public Works enticed Menocal to leave Havana, but he only stayed with the department for two years. At age 36 he found himself looking for a more meaningful challenge—that came his way when the U.S. Navy commissioned him as a chief engineer and offered him a major project in 1872: planning a canal to connect the Atlantic and Pacific oceans.

The idea of a canal in Central America certainly wasn't new in 1872. As early as 1513, the conquistador Vasco Nunez de Balboa had hacked his way through the jungles and crossed the Culebra Range, mountains that rise more than 1,000 feet above sea level, to stand in the surf of the Pacific and claim the Isthmus of Panama for King Ferdinand of Spain. The first canal plan was submitted to the king 16 years later, but the forbidding geography and the poisonous nature of the land prevented any practical progress for 300 years.

Spurred by the needs of thousands of travelers and commercial possibilities following the California Gold Rush of 1848, American entrepreneurs formed the Panama Railroad Company in 1849 and built a railroad that spanned the isthmus over the next six years. That allowed passengers to travel from one ocean to the other in about three hours, and it created the means to cart away the actual mountains of rock and dirt that digging for a canal would create. The French, confident after completing the Suez Canal, were the first to dig in Panama, but their plan to build another sea-level canal became a disaster that cost the lives of more than 20,000 men and \$100 million. Menocal believed he had a better way.

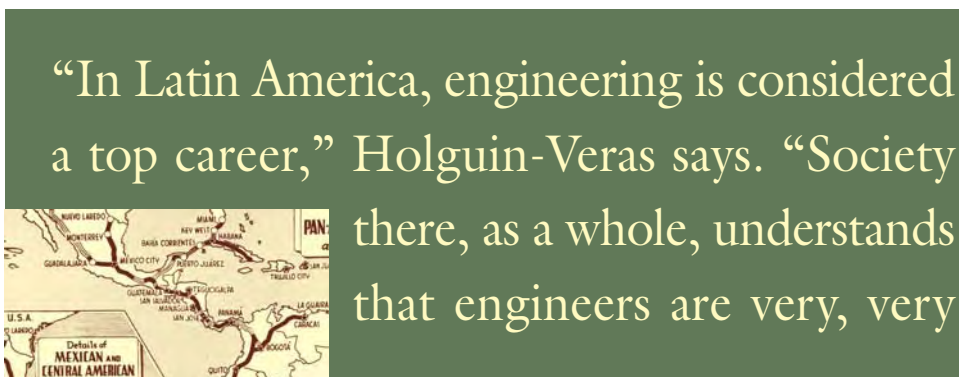
Menocal mapped the two most plausible

routes for an interoceanic canal—initially working through the narrowest part of Nicaragua, which included Lake Managua, and then surveying the route through the Isthmus of Panama that paralleled the existing railroad. He favored the route through Nicaragua, arguing that it possessed lower mountain passes and existing, usable lakes, and that a canal placed there would lie closer to American ports than one built across Panama.

Menocal was able to persuade Ulysses S. Grant to organize first the Provisional Interoceanic Canal Society in 1880. Menocal recommended from the start that a lock system in Panama, rather than a one-level, sea-level

civil engineering degree from Rensselaer in 1897 and debated whether he should return home or look for engineering work in Cuba. At that point, Cuba was still a colony of Spain, and Manuel Coroalles had little idea that he would play such a major role in its future.

Thirty years of war in Cuba (1868-1898) had demolished the infrastructure of that country. When former general Gerardo Machado took office as president in 1925, he ran his campaign with the promise of "roads, waters, and schools" for Cuba and as president set about modernizing the country. Machado wanted to showcase an extensive public works program to appease the public and appointed Coroalles as chief



canal, was the only possible way to surmount the Culebra Range.

A sea-level canal, as the French tried to construct it, would necessitate a cut 300 feet deep and nine miles long at minimum, and that cut alone would require removal of at least 150 million cubic yards of earth. Menocal proposed that they dam the Chagres River in the east and the Rio Grande River in the west to form two inland lakes on both sides of the Culebra Range. Then locks could be built to raise the water level in these lakes and let the water literally lift the ships over the mountains and back down to the ocean on the other side. Few in power were listening, however, and Menocal returned to Washington, D.C., and moved on to his new duties as a consulting engineer with the Navy's Bureau of Yards and Docks. Thirty-one years later, on June 21, 1906, two years before Menocal's death, the United States Senate finally approved construction of a lock canal in Panama.

ENGINEERING MODERN CUBA

In 1875, the same year that Menocal was surveying for the canal, Manuel Coroalles was born in Panama. Coroalles graduated with a

engineer of public works for the Cuban government.

Coroalles found himself in a tricky situation: working for a leader who had quickly grown into a dictator, yet one who had ambitious plans to transform the infrastructure of the struggling country. Nevertheless, Cuba was a major tourist destination for Americans then (increasing from 33,000 visitors in 1914 to 90,000 in 1928), and successful tourism required modern roads, bridges, and transportation systems. Coroalles could not resist taking on the largest road-building project in history at that time. In New York City, he gave an interview to *The New York Times* and described the project. "Our new Cuban Central Highway, for which contracts amounting to \$78,000,000 have just been given out, will be 700 miles long and, beginning at Pinar del Rio, will run to Havana and thence as straight as good engineering permits all the way to Santiago," he told the newspaper.

The road would have a Portland cement concrete foundation for its entire length, but the surface would consist of bituminous concrete or granite in some places and of asphalt in others. In towns, the road would be 26 feet

wide; in the country it would be only 20 feet. And besides the central highway, which would run approximately across the middle of the island, they would also be building branch roads north and south to connect with all seaports and important towns. “This road program is part of President Machado’s effort to open up Cuba more extensively to tourists,” Coroalles told *The Times*.

The project was completed by the spring of 1931 with a final price tag of \$100 million. President Machado hosted engineers from the American Road Builders Association and provided them with a tour of the entire highway, which also included 2,300 bridges, trestles,

That’s kind of a result of engineers building the infrastructure that we know. But in Latin America, there are still a lot of needs.”

Holguin-Veras earned a B.S. in civil engineering in his hometown of Santo Domingo in the Dominican Republic and then traveled to Caracas to get his M.S. in transportation from the Universidad Central de Venezuela. He completed his Ph.D. in transportation at the University of Texas at Austin and has taught and done research in the United States since 1996.

“But guess what,” he warns. “The infrastructure in *this* country is beginning to crumble. It’s 50 or 60 years old. All major roads need

prospective engineering students in Venezuela. But Marrero wonders how Latin American students can afford a private university education in the United States. The young men who came from Cuba and Panama and other Latin American countries in the 19th century had wealthy families and, often, political backing to support their studies at institutions like Rensselaer. “There are fewer Latin American students now because there is little help for them,” Marrero says. “There is no help for them in their own countries and no help in the United States. They aren’t American citizens, so they don’t qualify for federal funding.”

From 1850 to 1950, developing countries sent their elite sons to topnotch schools like Rensselaer so they could go back home after graduation and use their educations to build essential infrastructures—railroads, bridges, waterworks, highways, dams, canals, and manufacturing operations. But engineering is far more specialized today, and many students want to study nanotechnology or aeronautical engineering or other advanced technologies that their own countries may not have the facilities or resources to utilize.

Marrero is a case in point. “The opportunities in Puerto Rico aren’t good. A lot of companies are leaving Puerto Rico, because tax incentives are being taken away. And there are no research opportunities on the island, so a person like me, who has finished a Ph.D., the only chance I have in Puerto Rico is teaching. That’s what I want eventually, but I don’t see myself going there.”

What Marrero envisions is staying here in the United States and working as a research scientist and eventually joining academia so he can help other students from Latin America come here and get a better education.

“A position where I could combine my deep interest in both research and teaching seems particularly appealing,” Marrero says. “I wish to become the type of professor who makes an immediate impact on the lives, and more importantly, the future of his students. In addition, I have found that of the small population of Hispanic engineers, very few have a Ph.D.

“There is a need to strengthen the participation of Hispanics in pursuing graduate degrees, and so I feel obliged to pursue a Ph.D. and hope to inspire others to do the same.”

important. Somehow, in the U.S., they are being taken for granted. But in Latin America, there are still a lot of needs.”



underpasses, and overpasses. A reporter from the *New York Herald Tribune* who accompanied the American engineers wrote that the highway had been visited by experts from all over Latin America and even from Russia “and will, it is believed, exert an influence for the building of good roads throughout the southern continent.”

In 1950, the Rensselaer Alumni Association awarded Manuel Coroalles the Albert Fox Demers Medal, noting that Coroalles became one of Cuba’s best-known citizens, was elected a member of the American Society of Civil Engineers, and “consistently fostered in many ways the prestige and welfare of both the Institute and its alumni.”

BUILDING A ROAD TO RENSSELAER

Jose Holguin-Veras, professor of civil and environmental engineering, is not surprised that Aniceto Garcia Menocal and Manuel Coroalles were celebrated for their accomplishments. “In Latin America, engineering is considered a top career,” Holguin-Veras says. “Society there, as a whole, understands that engineers are very, very important. Somehow, in the U.S., they are being taken for granted.

to be put back into a state of good repair. Major investment is needed, and we don’t see it. We don’t need to get to the point where we’re crashing through the bridges. We basically need to invest, massively, in the major infrastructure before we get to that point.”

He points to the 2005 Infrastructure Report Card for the United States from the Web site of the American Society of Civil Engineers, which assesses the current state of America’s bridges, dams, waterways, roads, schools, railways, aviation, etc. Of the 15 categories rated, solid waste got the highest grade: a C+. Ten of the 15 categories were awarded Ds.

“Civil engineering has a future in this country, that’s obvious,” Holguin-Veras says. “Somebody will have to do something, sooner or later. That’s a good reason for students and engineers from other countries to come here. The U.S. system is not producing as many engineers as are needed by the economy, and there will be an increasing gap between our needs and the supply of new engineers. That’s beginning to happen, and we don’t even know how badly we need them. Engineers will certainly be coming here from other countries.”

It’s a message Victor Marrero can bring to

Young Alumni Council Formed

Group seeks increase in participation by graduates from the last decade

A RENEWED FOCUS ON RENSSELAER'S MOST recent graduates (those who have been alumni for 10 years or less) has led to the formation of a new leadership group dedicated to enhancing the relationship between the Institute and this important group of graduates.

The Young Alumni Council was formed this fall, with a mission that is both social and philanthropic. Their objectives include: increasing young alumni attendance at and participation in Institute events, regional programs, and class Reunion; fostering networking among young alumni; and increasing participation in young alumni annual giving.

Several subcommittees will address some key areas of focus. The Young Alumni Events Committee will explore involvement opportunities both on and off campus. The Reunion Committee will work with the alumni office to engage more 5th- and 10th-year Reunion alumni with the Reunion program. The Young Patron Committee will build young alumni philanthropy by inspiring graduates to become leaders in giving to Rensselaer.



"Our first program will be a series of seminars across the country that address topics of interest to young alumni, such as investing, insurance, and retirement planning," according to Ray Lutzky '02, one of the first volunteer members of the council. "We would love to hear from recent grads who have ideas for seminar topics they would find most helpful."

"Our aim is to recruit a diverse membership for the Young Alumni Council, which will mirror the diverse makeup of Rensselaer's alumni body," says Jeff Schanz, director of alumni relations and annual giving. "Diversity will ensure that our programs meet the needs of all our young graduates. We hope to attract members from the full range of class years, and from different schools and disciplines as well as from different backgrounds."

Are you an alumnus from the last decade? The Young Alumni Council is seeking members to join the group or any of its subcommittees. Contact Lindsay Shea at shea@rpi.edu or (518) 276-8719 or Laura Sadowski '98 at sadowl@rpi.edu or (518) 276-8242.

@RPINET ALUMNI WEB COMMUNITY

Get connected to classmates, make business contacts, and more through Rensselaer's alumni Web community, @RPInet. Sign in at arpinet.rpi.edu, using the alumni ID number printed on the address label of this issue of RENSSELAER magazine. Exclusively for Rensselaer alumni!



SIGN UP FOR E-MAIL NEWSLETTER

Stay up-to-date with a compilation of Rensselaer news items of particular interest to alumni, sent to you via e-mail. Topics include research, news from the schools, alumni events, and more. Sign up at www.alumni.rpi.edu/intouch/alumni_news.html.

EXCLUSIVE LAPTOP DISCOUNT

The RAA and Lenovo have partnered to provide laptops at competitive prices, exclusively for Rensselaer alumni. Various Lenovo laptop models will be available at significant discounts. To take advantage of this offer, visit the alumni Web site at www.alumni.rpi.edu and click on the "Products and Services" link to view current specials.



A SERENGETI WILDLIFE SAFARI— JULY 27-AUG. 8, 2007

The RAA Worldwide Travel Program presents the family experience of a lifetime in partnership with Thomson Safaris, family-owned tour operator specializing in university alumni group and family safaris in Tanzania. Experience spectacular scenery in Tarangire National Park, Ngorongoro Crater, and the Serengeti. Space is limited. Visit www.thomsonsafaris.com/sa_rpi.shtml for details or contact the Alumni Office at alumni@rpi.edu or (518) 276-6205 or Michael Wellner '64 at captmike46@alum.rpi.edu or (212) 486-3064.



Kris Qua



NOVEMBER

15 Rensselaer in Your Region, San Diego, Calif. Join us for networking and a presentation from Alan Cramb, dean of the school of engineering. Contact Susan Haight at haighs@rpi.edu or (518) 276-6042.

15 Rensselaer Reception at Build Boston Conference—World Trade Center, Boston. Guest speaker is Stephen Chung '91, Mod A Architects and HGTV contributor. Contact Kathy Kinsey at kinsek@rpi.edu or (518) 276-2832.

DECEMBER

6 Entrepreneurial Affinity Event, New York City. Join other New York City entrepreneurs, angel investors, and venture capitalists at the Roosevelt Hotel for an evening of networking. Guest speakers will be Larry Bettino '62 of StarVest Partners, and Robert Chernow, Rensselaer's vice provost for entrepreneurship. Contact Kathy Kinsey at kinsek@rpi.edu or (518) 276-2832.

6 Master's Programs at Rensselaer Open House. Learn about degree and certificate programs available on the Troy campus or via distance learning for working professionals. Troy campus, Pittsburgh Building, 6 p.m. Contact Mike Gunther at (518) 276-8351.

JANUARY

20 30th Annual "Big Red Freakout" Men's Hockey Game vs. St. Lawrence. Fans are welcome to watch the alumni hockey game at noon, and then enjoy "Ice House" at the Heffner Alumni House,

featuring a pre-game buffet dinner, face-painting, and more, and a post-game reception with the team and coaches. Contact Peter Pedone at pedonp@rpi.edu or (518) 276-6061.

FEBRUARY

3 Women's Hockey Alumnae Game. Women who played hockey at Rensselaer from 1976 to 2006 are invited to participate in the alumnae day. Show your support for the Rensselaer women's hockey program—the newest member of the ECAC hockey league—as they face off against Harvard. Contact Libby Eldridge Dupee '01 at elizabeth.dupee@ey.com or Coach John Burke at burkej4@rpi.edu.

10 Ninth Annual Black Family Technology Awareness Day. Hands-on workshops designed to interest area young people and their families in pursuing occupations in the fields of science and technology. Troy campus. Open to the public. Contact the Office of Institute Diversity, (518) 276-3060.

15 50 Year Club Luncheon in Sarasota, Florida. Zoria Restaurant. Contact Laura Bedford O'Donnell at bedfol@rpi.edu or (518) 276-3757.

16 50 Year Club Luncheon in Highland Beach, Florida. Holiday Inn. Contact Laura Bedford O'Donnell at bedfol@rpi.edu or (518) 276-3757.

MARCH

6 RAA Worldwide Travel Program Visits India. Visit Rensselaer's newest alumni chapter—in India! Visit the northern cities

of New Delhi, Jaipur, Varanasi, Udaipur, and, of course, the Taj Mahal in Agra. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205 or Mike Wellner '64 at (212) 486-3064 or captmike46@aol.com. www.alumni.rpi.edu/ap/travel.html.

APRIL

14 RAA Worldwide Travel Program Visits the Italian Riviera. Travel with fellow alumni to explore Genoa, Carrara, Lucca, and much more. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205 or Mike Wellner '64 at (212) 486-3064 or captmike46@aol.com. www.alumni.rpi.edu/ap/travel.html.

MAY

5 RAA Worldwide Travel Program Visits Iceland. Visit the capital city of Reykjavik, the Skaftafell National Park, Vik, the world-famous Blue Lagoon, an Icelandic horse farm, and much more. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205 or Mike Wellner '64 at (212) 486-3064 or captmike46@aol.com. www.alumni.rpi.edu/ap/travel.html.

17 RAA Worldwide Travel Program Visits Barcelona & San Sebastian, Spain. Enjoy guided tours through some of Spain's most intriguing cities, including Pamplona, famous for the running of the bulls, and Bilbao, home of the world-famous Guggenheim Museum, designed by Frank Gehry. Contact Alumni Relations at alumni@rpi.edu or (518) 276-6205 or Mike Wellner '64 at (212) 486-3064 or captmike46@aol.com. www.alumni.rpi.edu/ap/travel.html.

Making a Difference in the Lives of Students and Alumni

Rensselaer Alumni Association President Bob Forman '61 reports on the RAA's commitment to Rensselaer

As Rensselaer continues the transformation that began with *The Rensselaer Plan*, and moves forward into a position of global prominence and international recognition, the Rensselaer Alumni Association (RAA) is moving with it. Record numbers of alumni are being engaged, the powerful alumni network continues to grow, and the RAA remains a vital partner in the renaissance taking place on campus.

A key component of the success of the RAA is its close partnership with the Office of Alumni Relations. The mission and goals of the RAA are closely tied to those of the

Alumni Relations Office, and the collaborative effort has resulted in high-quality programs and services and a vibrant worldwide alumni network.

The mission of the RAA is to: "serve and represent alumni and the Institute, by engaging and empowering all alumni as active and effective partners in the Rensselaer community; and by promoting the lifelong, mutually beneficial pursuit of the aspirations shared by Rensselaer and its alumni." We do this through the programs we create, the benefits we provide, and the alumni network that we support.



2007 Action Plan

The RAA's long-range strategic plan for 2007-2012 is in alignment with *The Rensselaer Plan*. Each year, the RAA produces an action plan that is the implementation of this long-range plan.

Over the past several years we have worked to expand and strengthen the chapter and affinity infrastructure. We are today focused on supporting the university's highest priorities.

The 2007 plan contains steps to develop benchmarks for programs and enhancement of the regional alumni chapter network and affinity groups, increased support of student recruitment, increased support of internship and Pathways programs, and greater investment in Rensselaer via campaign support. Alumni will provide support in the key areas of student recruitment and internship/externship programs.

Top: The Rensselaer Entrepreneur Network (REN) is for alumni involved or interested in new business ventures. Alumni often participate in Venture Forums on campus. Above: Reunion 2006 featured two alumni who worked on the Mars Rover program.

Kris Qua



Alumni get a chance to share their wisdom (and RPI tales!) with new students at the annual RAA Welcome Barbecue each fall.



Alumni and Student Engagement

Close to 90,000 alumni worldwide make up the RAA. Approximately 5,600 alumni attended more than 200 alumni events during 2005-06 (Rensselaer's academic year). This represents a 105 percent increase in total alumni attendance since 2001. And 200 alumni were attending their first Rensselaer event. The total number of alumni volunteering for Rensselaer was 2,400—a number we hope to grow in the coming year!

Over 3,500 students attended the many RAA-sponsored campus programs and events, which include the Back-to-Campus Speaker Series, the Red & White Student Organization, a Junior Ring Ceremony, Goldman Sachs Career Day, Zero Year Reunion, and the RAA Welcome Barbecue.

Greek Life

The RAA has positioned itself as an organization that is interested in helping all parties—students, staff, and alumni—come to a workable and sustainable solution. We believe that the Greek life system is an important and integral part of the Rensselaer community.

The RAA, AIGC, IFC, and Pan-Hellenic Council have been working closely to reach consensus and

significant progress has been made by a joint alumni, staff, and student workforce led by Rick Hartt '70, director of the Rensselaer Union.

Greek alumni have answered the call for involvement and many have become a part of the solution. I thank each alumnus/a, student, and administrator for their support during these challenging times.

Chapters and Affinity Groups

There are 27 active U.S. regional alumni chapters, and seven international chapters: Beijing, Hong Kong, Japan, Korea, Malaysia, Taiwan, and Venezuela. More than 3,600 alumni participated in a variety of events including: visits from President Jackson, deans, and other campus personnel; career days; hockey events; local tours; picnics; and more.

A group of alumni who come together because of a common bond, such as mutual professional interest or a shared student experience, is considered an affinity group. Current active groups include biotechnology, building trades, EMBA alumni, information technology, entrepreneurship, technology law and commercialization, music alumni, the 50 Year Club, the Alumni Inter-Greek Council, and a full complement of athletic alumni groups.

2006 Financial Report

Income from operations including the credit card program, RAA travel program, alumni merchandise, insurance, and ring program totaled \$135,445, and investment income was \$65,200. Operating expenses plus investments in Rensselaer programs totaled \$165,950, leaving a year-end balance of \$1,005,000. The RAA has committed \$300,000 to the East Campus Athletic Village, as part of Rensselaer's \$1.4 billion campaign.

Get Involved!

The continued success of the RAA will depend upon increasing numbers of alumni in all our programs. I hope you will consider attending a program, taking advantage of services we offer, or volunteering for a program that interests you. We are committed to growing the alumni network, providing greater benefits to our members, and supporting the work of the Institute. Be involved; don't be stealth alumni!

Bob Forman '61
RAA President

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“Low Ridge,” located in the southern hemisphere of Mars, is the winter home of the Spirit rover.

ONE LAST THING...

Out of This World Connections

The Mars Spirit rover spends winter on “Low Ridge” | BY TRACEY LEIBACH

WRITE TO US!
We welcome contributions to “One Last Thing.” Send personal essays of 750 words or less to alum.mag@rpi.edu.

YOU NEVER KNOW WHERE YOU’LL run into a Rensselaer connection...even in outer space.

The enduring Mars Exploration Rovers, created with the help of more than a dozen Rensselaer graduates, are still rolling along on the Mars surface, nearly three years after landing on the red planet in January 2004. The Spirit rover is spending the Martian winter on “Low Ridge” in the southern hemisphere. The rover team has named Low Ridge after space pioneer George M. Low ’48, Rensselaer’s 14th president and a member of the Rensselaer Alumni Hall of Fame.

According to Jim Bell, lead scientist for the rovers’ panoramic cameras, “Low was a leading figure within NASA from the inception of the agency, and served as deputy administrator from 1969 to 1975. He is perhaps best known for his leadership of the Apollo Spacecraft Program Office, where he was responsible for the successful redesign of the Apollo spacecraft following the Apollo 1 fire in which three astronauts perished.”

“We decided quite some time ago to name the major topographic features after some of the major

pioneers of the space age,” says Steve Squyres, principal investigator for the Mars Exploration Rovers and professor of astronomy, Cornell University. “There’s a Von Braun Hill and a Goddard Hill. Three big outcrops are named after Oberth, Korolev, and Tsiolkovsky. Another outcrop is named after Max Faget. George Low was an obvious person to be included on this list. I’ve always felt that he was one of the most important contributors to the process of putting humans safely on the Moon, so it wasn’t difficult to conclude that he should be among the pioneers we chose to name features after.”

The rovers have worked under harsh Martian conditions much longer than expected; their initial primary missions were to last three months. The rovers rely on solar power. To keep producing enough electricity to run overnight heaters that protect vital electronics, Spirit’s solar panels must be tilted toward the winter sun.

“Low Ridge is ideal for us in two respects: It’s steep, but it’s not tall,” says Squyres. “What that means is that by climbing just a short distance, we were able to place the

size of a basketball, and they’re so close to one another that it’s plausible they were once both part of the same object. It’s not surprising, of course, that there are meteorites on Mars, but they’re not easy things to find. We were very fortunate here.”

“Having a feature on Mars named after George Low is a great honor and is sincerely appreciated by the family,” says Mark Low ’78, one of George Low’s sons. “The remarkable

achievement of the Mars Exploration Rovers, and especially the fact that RPI grads have made significant contributions to the program, would certainly have made him proud. The accomplishment exemplifies everything that he envisaged for science, technology, quality, education, and management coming together in pursuit of far-reaching goals.


“I believe that he would say that also exemplifies the ‘Spirit’ of RPI, and the impact that the Institute and its graduates are making on the world—and beyond.”



NASA Administrator George Low ’48 (far left in group and at blackboard) oversaw the Apollo Spacecraft Program.

rover on a steep slope that faces north. Spirit is in the southern hemisphere of Mars, which means that during the winter the sun is low in the northern sky. By tilting the solar arrays toward the north—and hence toward the sun—the rover can generate more power, enabling it to survive the very harsh Martian winter.”

Squyres says that Low Ridge has “turned out to be an exceptionally interesting place. Among the surprising findings is that we have identified two iron meteorites close to the rover. Each is roughly the



Why do you give to the endowment?

“Outstanding faculty members are the very heart and soul of the university.”

As president emeritus of Rensselaer, Roland Schmitt knows exactly how important endowment gifts are to the financial strength of the Institute. That's why he and his wife, Claire, decided to endow a professorship through a charitable remainder annuity trust. This versatile financial planning tool provides a fixed annual income to the Schmitts while allowing them to fulfill a major charitable goal.

To learn more about ways to support Rensselaer, go to www.rpi.edu/campaign.