

# CIVIL and ENVIRONMENTAL ENGINEERING

CORNELL ENGINEERING

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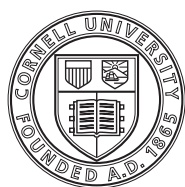
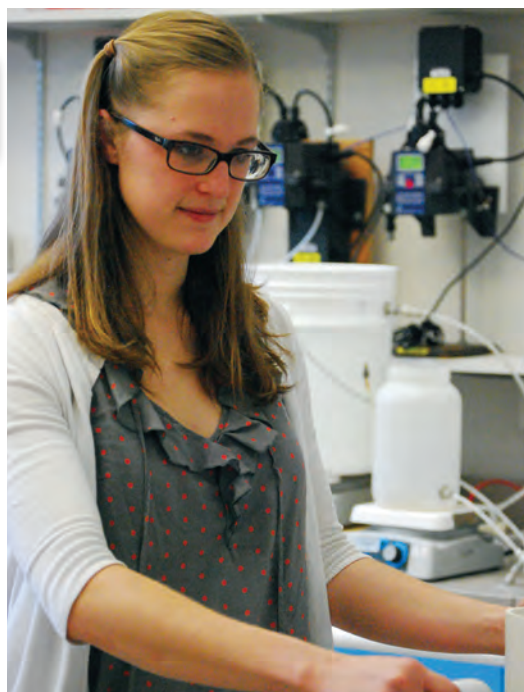
## UPDATE

SPRING 2012



## WOMEN IN CEE

**Four decades  
of success**



Cornell University



## FROM THE Director



Phil Liu

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Director:  
Philip L.-F. Liu

Director of Administration:  
Joe Rowe

Newsletter Production Coordinator:  
Jeannette L. Little

Editor:  
Katelyn Schultz

Writers:  
Metta Winter, Gary E. Frank

Designer:  
Valerie McMillen

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On cover:  
Cornell students—engineers of the future

Top row left to right: Cathy Henderson,  
Jasmine Williams, Julia Morris and Eriko  
Inagaki. Bottom row left to right: Karen  
Swetland, Danhong Luo.

Dear alumni and friends,

Greetings! I hope that this *Update* issue finds you well. Here in Ithaca we had an unusually mild winter; only a few inches of snow have fallen throughout the entire season. Now we are enjoying an early spring.

We have had another very busy and productive year! We initiated three faculty searches in the following areas: stochastic mechanics in structural engineering, sustainable environmental systems engineering, and environmental processes engineering. The first two searches have reached the final stage. We are hopeful that we will be able to welcome two new faculty members in either fall 2012 or spring 2013.

The third search in the environmental processes engineering area is still in the initial stage, which will continue into fall 2012. Since we plan to recruit an experimentalist, we have initiated a small renovation project to upgrade the environmental processes teaching and research laboratory. This project will be completed by the end of summer 2012. In the longer term, we plan to develop a comprehensive plan for renovating the entire environmental engineering laboratory complex on the second floor of Hollister Hall. With the College of Engineering, we are developing a capital campaign project to accomplish this strategic goal.

Our faculty members continue to conduct cutting-edge research in many fronts and receive national recognition. I am pleased to announce that Professor Christine Shoemaker was elected to the National Academy of Engineering (NAE), among the highest of professional distinctions for an engineer. Professor Shoemaker's career at Cornell and her research are highlighted in the newsletter.

Two of our senior faculty members, Professor Pete Loucks and Professor Wilf Brutsaert, will retire on June 30 this year. Both of them are NAE members and have had long, distinguished careers at Cornell. Professor Loucks was a pioneer in developing Cornell's environmental systems engineering program, and Professor Brutsaert played a leading role in establishing and contributing to the field of modern physical hydrology. They both are world renowned in their professional community. You can find the highlights of their careers in this newsletter.

The most exciting news is that Cornell is building a new tech campus in New York City. CornellNYC Tech will house 300 faculty and 2,500 graduate students by 2017. According to the plan, the campus will focus on three interconnected research hubs: built environment, connective media, and healthier life. Most of CEE's teaching and research activities are relevant to the proposed built environment hub. We anticipate contributing to the development of the applied science programs at CornellNYC Tech. More information can be found at [cornell.edu/nyc](http://cornell.edu/nyc).

As always, we like to hear from you. Please feel free to send me an email or drop in to see us when you have a chance. Of course, don't miss the annual Alumni Breakfast during reunion weekend, June 7–10. Come celebrate with us!

Sincerely yours,

Class of 1912 Professor and CEE Director

# Safe, Dependable, Sustainable

## Three women faculty focus on environment, energy, and bioremediation processes

**S**troll through Hollister Hall on a spring morning and you'll see women everywhere: in the hallways, classes, labs, and faculty offices. So, it's startling to be reminded that it was just 40 years ago the first woman to be promoted to tenure in the College of Engineering moved into her office on the fourth floor. Christine Shoemaker would remain on her own for many years to come.



"I was here for a long time, more than 14 years, before we had any other long-term women faculty in the entire College of Engineering," recalls Shoemaker, the Joseph P. Ripley Professor of Engineering. "The difference now, it is night and day."

Shoemaker had trained as a mathematician because, in the 1960s when she was an undergrad, that's where the women were—all intending to become math teachers.

"If I could do it over again I would have done engineering, but there were almost no women who graduated in engineering at the University of California, Davis, in those days." While in graduate school at the University of Southern California, Shoemaker's political activism in the early protests against the Vietnam War exposed her to the burgeoning environmental movement.

"As a professional, what I wanted to do was use mathematics to solve environmental problems and reduce pollution," she recalls, when she accepted Professor Walter Lynn's invitation to do a post-doctoral year at Cornell. "I was thinking more about saving the world than what I needed to do to promote my academic career."

When Shoemaker joined the then Department of Environmental Engineering in 1972, she was a single parent and felt, she recalls, "a bit apologetic."

"Here I was working with all these men who didn't have such family responsibilities, and I had to bend over backwards because I wanted to carry my fair share."

She did, and perhaps more so, as she was appointed by the dean to chair the Environmental Engineering Department of 18 faculty 13 years later in 1985. At that time, she was one of a very small number of women department chairs in all engineering fields at research universities in the United States.

Her multidisciplinary research interest has continued to focus on finding inexpensive and effective solutions to environmental problems using optimization, modeling, and statistical analysis. It includes the development of general purpose, numerically

efficient nonlinear and global optimization algorithms utilizing high-performance computing and applications to data from complex, nonlinear environmental systems. Her work has been applied to physical and biological groundwater remediation, pesticide management, the calibration of climate models, and surface-water pollution transport in large watersheds.

Shoemaker is a sought-after teacher. Her engineering computation course draws about two-thirds of the 100-plus undergraduates from fields outside CEE, including mechanical engineering, electrical engineering, and material science. And her graduate course in heuristic optimization—one of the largest graduate courses in the college—is cross listed with computer science and operations research and information engineering and draws PhD and MEng students from many fields. So far, she has supervised 26 PhD students from CEE, operations research, and applied mathematics. Of them, six have been women and there are five more in progress.



PhD candidate, Sue Nee Tan, reviews a hydropower-wind model design.

All along the way, Shoemaker used her position to create an environment welcoming to women. In that first decade, she addressed all prospective freshmen.

"I'd talk about how to combine career and family," she says. "At that time this was seen as a big problem for women aspiring to an engineering degree." A recent reunion of these early members of the Society of Women Engineers, for which Shoemaker served as advisor, showed how successful they were, with many now vice presidents in corporations.

By the late 1980s, Engineering Dean William Streett asked her to accompany him to meet with each department and share the new studies that were demonstrating how search committees exhibited unrecognized gender bias in evaluating applicants for faculty positions. Too, she discussed how women bring gender



*"I greatly benefitted from the people who had to blaze the way. What that allows you to do is not worry about your gender."*

— Ruth Richardson

differences to the workplace and, with the dean's full support, emphasized that "we, as a college, have to be sensitive to what these differences are." Shoemaker was also the founding chair of the Status of Women Committee for the College of Engineering, which took on issues such as maternity leave. "For a long time, the college had a better maternity leave policy than the university did," she says.

In 1991 Shoemaker received a national award from the Society of Women Engineers for "her scholarship and efforts to encourage women engineers."

It was a year after Shoemaker received this award that Professor Linda K. Nozick joined the CEE faculty.

### Linda Nozick joins faculty



"By the time I arrived, I know that a lot of effort had gone into making the environment better for women, and I benefitted from that," says Nozick, whom President Obama recently appointed to the U.S. Nuclear Waste Technical Review Board. Her role on the board is as a transportation analyst to support the safe transport and storage of waste from nuclear power plants.

"Making sure there's reliable, safe, affordable energy is a very important

thing to spend our efforts on," Nozick says. "Our economic growth and quality of life depend on it."

Nozick's desire to be an engineer had been with her from the start. Her fascination with complex-systems modeling began at the age of 17 when she was an undergraduate at George Washington University. She soon developed a special interest in the uncertainty aspects of those models, essential for making them useful in decision making. Nozick completed an MSE and PhD in systems engineering from the University of Pennsylvania by the age of 25.

"I don't think I noticed the gender aspect when I was an undergrad or a graduate student," Nozick says. "I knew what I loved, and nobody stood in my way all the way through." But when she came to Cornell, there were fewer women and, she says, "I noticed it then."

Nozick says she found a culture of excellence here, with a "lot of smart people doing interesting things" that helped promote her own success. That, and when asking for help, she got it.

Five years after Nozick's arrival, President Clinton awarded her the prestigious Presidential Early Career Award for Scientists and Engineers for her studies on planning under uncertainty the moving of hazardous materials. Her ongoing work in this area is what makes her valued as a member of the U.S. Nuclear Waste Technical Review Board.

On the teaching side, although she'd never been a teaching assistant as a grad student and had no idea how she'd like it, Nozick found the classroom very enjoyable. In 2001, she co-founded the



PhD candidate, Natalia Romero, adjusts controls in computer cluster.

College Program in Systems Engineering, which has become a highly useful educational paradigm for teaching the core ideas of how to design and improve complex systems across application domains in all the units of the college, from software, satellite, and telecommunications to power and embedded systems.

In 2003 Nozick was awarded a full professorship. She had waited to marry and have her family, a son and daughter, until the intense time pressures of the promotion process was over.

"Having kids while on this faculty has been great. Cornell's parental leave policies and the day care center have been really helpful," Nozick says. The university-sponsored day care center offers faculty their choice of 50 hours of childcare per week. "And you need those hours."

Unlike in Shoemaker's early days, responsibility for balancing the demands of career and family is no longer just a women's issue. In Nozick's observation, men are partaking of parental leave at about the same rate as women. And both men and women view day care as a quality of life issue that lets individuals, who also want to have a family, be successful.

"When I speak to young hires who are men, they talk like women when it comes to day care," Nozick says. "The model of the present is a 50/50 split in family responsibilities between husbands and wives."

In the last 10 years about half of the graduate students whom Nozick has supervised have been women, so she's not found a shortage of women in the field. But, sadly, not as many as she had hoped have become academics.

"I think that it's the number of hours in the day you work as an assistant professor," Nozick says. "I benefited a lot from being 25 when I joined the faculty. If I had been 35 it would have been a lot harder to do. The same thing is true for the men."

### Ruth Richardson arrives

Associate Professor Ruth Richardson is the most recent woman to join the school's faculty. She arrived in 2002 and was awarded tenure in 2008. An expert in bioremediation processes, Richardson was attracted to Cornell because it's home to the scientists who discovered that an anaerobic bacteria, *Dehalococcoides*, can detoxify waste. One is Richardson's mentor, CEE Professor

James Gossett, and the other is Professor Stephen Zinder of the Department of Microbiology.

"In graduate school I had become interested in *Dehalococcoides*," Richardson says, "so it was really great to come here."

This bacteria has been so successful in turning toxic chlorinated compounds, such as chlorinated solvents PCE and TCE, into ethylene, that *Dehalococcoides* and its relatives are being used at many sites across the country to clean up historical groundwater spills. Richardson's on-going research in this area employs molecular biological tools, enabled by the genome era, to develop biomarkers that indicate the presence and activity level of the organisms in the ground. These biomarkers then help site managers employ the organisms most efficiently and also provide lines of evidence they need to demonstrate to regulators that biological remediation is getting the job done.



Professor Richardson works with Asha Marathe in the lab.

In other areas, Richardson is beginning studies on genome-enabled biomarkers for monitoring the productivity and stability of algal biofuel production. Her other studies investigate organisms that can be used to generate methane and also ones that show promise in the bioremediation of metals and uranium.

In addition, Richardson teaches graduate and undergraduate courses that focus on microorganisms, the foundational undergraduate courses: Laboratory Research in Environmental Engineering and Engineers for a Sustainable World.

To her pleasure, Richardson has supervised more than 30 undergraduates conducting open-ended laboratory research projects. Of these, about 75 percent have been women. "It's definitely an opportunity to teach students how to integrate and plan in ways conventional coursework doesn't," Richardson notes.

She currently has three undergrads in her lab who are being given a rare real-world experience in designing studies to help the university accelerate the clean up of its own plume of chlorinated solvents in a former chemical disposal site near campus. They'll be

building laboratory-scale reactors with material from the site to see how *Dehalococcoides* behave under different conditions and will make recommendations to the site manager there.

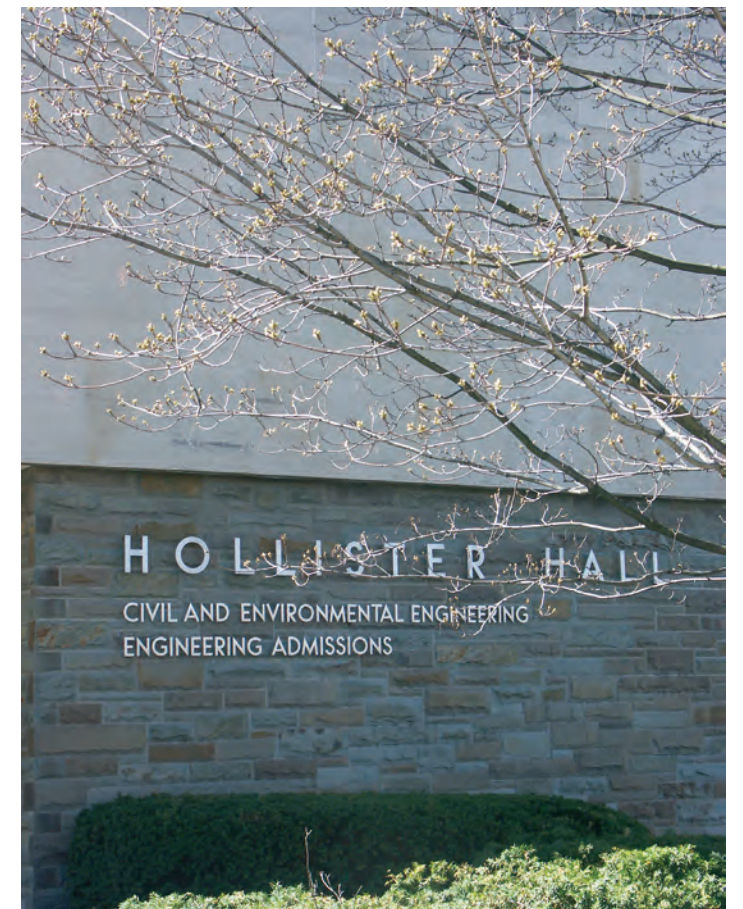
Because of her commitment to undergraduate education, Richardson has been awarded both the Cornell University College of Engineering Excellence in Teaching and Excellence in Advising awards, each twice.

Being around scientists came naturally to Richardson. Both of her parents are scientists, and by the end of the mid-1990s the number of women in chemical, environmental, and civil engineering fields was significant, so she never recalls feeling like an outsider.

"I greatly benefitted from the people who had to blaze the way," Richardson says. "What that allows you to do is not worry about your gender."

Still, experience has shown her what an excellent fit environmental engineering can be for women.

"It's risky to say this since, taken out of context, it can sound sexist, but I do think that women—whether by nature or nurture—are particularly good at integrating multiple things, thinking about synergies, interactions, optimization, prioritizing, and so on," Richardson says. Then she notes that so much of what environmental engineering does is engage in "that space where the environment, society, and the economy intersect. To take care of water, of energy—these basic human needs—resonates with me as a great way to contribute to the world."





# Savvy Women Can Have It All



Barbara (front row, second from right) took her class to China in March to collaborate with students from Tsinghua University on water sustainability projects. Here are some of the students in front of the Forbidden City in Beijing.

With a dad and a brother who were engineers, it never occurred to **Barbara Minsker** '86, PhD '95 that she couldn't become one, too.



"I remember after I made the decision to come to Cornell, one of my high school teachers saying to me: 'Oh, you're going into engineering. Wow! That's really brave for a woman!' I was taken aback, like 'Really? I had no idea.'"

What Minsker—now a professor and Nauman Faculty Scholar in the Department of Civil and Environmental Engineering at the University of Illinois, Urbana-Champaign—was questioning, was whether she wanted to follow in the family footsteps or not. But after attending a Society of Women Engineers recruiting weekend at Cornell, and falling in love with Ithaca, she chose to study operations research and industrial engineering. Of her college applications, Cornell's was the only engineering program to which she'd applied. It turned out to be the right choice.

As a senior, Minsker took Christine Shoemaker's course in environmental systems analysis and "got inspired," she says, to switch into environmental systems engineering for her advanced degrees. With Shoemaker as her advisor, Minsker wrote a dissertation on the bioremediation of groundwater. Since taking an academic

position, her research has shifted to other areas of water resources systems analysis, which bridges environmental and water resources engineering, operations research, and computer science. In her studies, she applies machine learning and cyber infrastructure technologies to pressing world problems.

When Minsker decided to have her first child during her final year in graduate school, there were those on the faculty who questioned whether she'd see her degree through to the finish. Minsker had no doubts. Neither did Shoemaker.

"Chris was very flexible about how we were going to work together successfully despite having a new baby on my hands," Minsker says. "Her support proved pivotal."

Yet seeing the pressures of Shoemaker's life, as a parent and an academic, didn't necessarily inspire Minsker to follow suit. "I had doubts," she recalls. "Chris's life seemed so crazy, but she strongly encouraged me, and I couldn't think of anything else I wanted to do more, so I gave it a shot."

The second year Minsker was at Illinois she had another child—the first member of her department to do so. "That was 1998, so they didn't quite know what to do with me," Minsker recalls. "I wanted to be a team player, so I didn't quite have the courage to ask for what I needed to really make it work. That year was a very challenging time!"

Now she advises women faculty who are having babies to ask for a year off from service commitments (commonly women carry more of these than men anyway, she points out) and at least one semester, or better yet two, of relief from teaching so they can get some sleep and keep their research moving forward.

Now, after 16 years on the Illinois faculty and with two thriving teenagers, Minsker says that for women who are savvy about how they spend their time—what activities to choose—it can be incredibly rewarding and very possible to do both well, equally challenging and fun. "I would not have wanted to give up either one," she says. Minsker has written a book and gives workshops on how she learned to better integrate work and family life, called *The Joyful Professor: How to Shift from Surviving to Thriving in the Faculty Life*.

She would like to see more women doing computational engineering, such as systems analysis. At Cornell, Minsker was only the third woman to receive a PhD in systems programs across all the advisors in the different areas. The first two were already at Cornell when she arrived.

"I thought, 'Wow! Yea! Three women. Great!' I had no idea how unusual that was," she says. "This is still an issue today. We need to be encouraging more women to take computationally-oriented paths."

*Barbara Minsker is a member of the CEE Advisory Council.*

## For the Good of the Nation

The Cornell chapter of the Society of Women Engineers (SWE), whose recruiting weekend so influenced Barbara Minsker's decision to come to Cornell, was established when **Barbara Cook** '75, MEng '76 was a sophomore—the year before she transferred into the college.



Barbara Cook performs an inspection of a new coal ash landfill in Maryland.



"The beginning of SWE was so exciting! I was so disappointed that I couldn't be a charter member," says Cook who was still in the College of Arts and Sciences.

Now president of GeoEnvironmental Group, LLC, located in Silver Spring, Maryland, Cook had enrolled at Cornell in physics because engineering hadn't been on her radar in high school—no role models to be seen! But she soon found physics too theoretical for her taste so she went to the career counseling center on campus to see what might be a better fit. After taking a battery of tests, the male career counselor told her the results showed hers was the "classic profile for an engineer." Without skipping a beat, he went on to ask if she'd "ever considered biology." With that, says Cook, "I thanked him and marched myself down to the engineering admissions office. They welcomed me with open arms, encouraged and supported me all the way through."

There were 30 or so other women, about five percent in her class, who had found their way to the college as well. Five or six were in CEE. In the classroom, Cook remembers no gender distinction, apart from the fact that the male students and faculty all seemed to know the women's names; the expectations for women were neither "higher nor lower" than those of their male counterparts. Outside the classroom, however, it was another story. With SWE just getting started, ratification of the Equal Rights Amendment in the national news, and the "women's lib" movement, the momentum was intense toward opportunities for women.

Having specialized in geotechnical engineering and waste management, Cook joined Dames & Moore (now part of URS Group), a well regarded international consulting firm, right out of graduate school. She stayed the next 21 years, then became a senior technical advisor to Howrey & Simon, an international law firm, for the next three.

"In contrast to my experience at Cornell, I did feel I needed to work harder to prove I was as good as a man," Cook recalls of her early days in practice. "But I encountered relatively little workplace bias from colleagues, clients, or contractors, and, as my confidence in my performance as an engineer grew, I gradually backed off."

She allows, though, that in the 1970s and 1980s the demands of the job (especially the national and international travel for which she avidly volunteered) would have made it difficult to have a family. Having such a good time at her job, she didn't feel she could do justice to both. (This is no longer the case. Firms offer ample positions, for both men and women, that feature regular and flexible hours to encourage a balance of work and family life.)

Eleven years ago, Cook embarked on the most enjoyable phase of her 35-year career with the founding of GeoEnvironmental Group, LLC. She has as much work (or more) than she wants, offering waste management support to the fossil-fuel electric power industry. Currently she's an onsite consulting engineer for the construction of a landfill for power plant by-products and also consults on past and present use of the by-products for beneficial use as structural fill.

"Having my own firm has given me the most control over my career, the most flexibility to pick and choose clients and projects," Cook explains. "I've had a really wonderful time under my own control more or less."

Cook has always actively participated in events that entice young women to consider STEM careers by making it clear they can do this kind of work. She cites studies that show only nine to ten percent of practicing civil engineers are women.

"We can't afford to cut off 40 to 50 percent of the potential pool of engineers by discouraging women," Cook says. "Society needs their numbers and their cooperative, negotiating, teamwork approach."



## Wilfried Brutsaert's Career

After having served half a century on the faculty of CEE, **Wilfried Brutsaert**, W.L. Lewis Professor of Engineering, decided to retire in June 2012. During his fifty years at Cornell, he has been active in teaching and research in hydrology and fluid mechanics, with special focus on groundwater and soil water flow, land surface-atmosphere interactions, atmospheric boundary layer turbulence, and, more recently, climate change effects on the water cycle. All the while, he has advised countless undergraduate students and has mentored some 35 MS and PhD students.



Professor Brutsaert was born and grew up in Ghent, Belgium. Upon graduating with a degree in water and soil engineering from the University of Ghent, he originally aspired to a career in practice with a U.N.-based or other international organization to improve the plight of people in developing countries. To round out his background, he followed up with an MS in irrigation engineering in a more arid environment at the University of California, Davis. During these studies, he soon realized that no good technology is possible without the underpinnings of fundamental science—this made him change direction and decide to pursue a PhD. After its completion in 1962, he was invited to join Cornell's faculty. He has been there ever since, except for sabbatical or other short leaves of absence in New York City, Japan, the Netherlands, Belgium, and Switzerland.

Professor Brutsaert is author and co-author of more than 200 publications, of which some 180 are refereed papers in scientific journals. Beside his many published articles, major factors for his present renown are his two often-quoted books. The first, *Evaporation into the Atmosphere* (1982, Springer), was also translated into Russian (1985, Hydrometeoizdat, Leningrad). His second and more recent book, *Hydrology: An Introduction* (2005, Cambridge University Press), is already an international best seller in environmental science; it was translated into Japanese (2007, Kyoritsu Shuppan), Macedonian, and Albanian, and it is currently being translated into Chinese.

For his scientific contributions, Professor Brutsaert is widely recognized in the profession and he has received numerous awards. Among the more important ones, in 1994 he was elected as a member of the U.S. National Academy of Engineering, in 1995 he was awarded "Doctor Honoris Causa" by the University of Ghent, Belgium, and in 1999 the American Geophysical Union (AGU) awarded him the Horton Medal, generally acknowledged as the highest recognition given to a hydrologist. In addition, the AGU selected him

for the Hydrologic Science Award in 1988 and for the Langbein Lectureship in 1997. The American Meteorological Society (AMS) selected him to present the Horton Lecture in 1993, gave him the prestigious Charney Award in 2003, and made him an honorary member in 2012. Overseas, the Japan Society of Hydrology and Water Resources chose him for its International Award in 2002, and made him an honorary member in 2010. The Japan Society for the Promotion of Science (JSPS) gave him the Award for Eminent Scientists in 2005; this award is intended for "Nobel Laureates and other leading scientists to come to Japan for the purpose of associating directly with younger Japanese scientists." In 2001, the College of Engineering awarded him the Lewis chair of engineering.

Over the years, Professor Brutsaert has been active in service to the university as well as to the profession in many different capacities. At Cornell, most notable were his two prolonged stints as director of graduate studies of CEE. In the American Geophysical Union, an organization of some 8,500 members, he was elected as president (1992–1994) of hydrology. In 1996–1998 he served as council member of the AMS, and in 2010–2011 he served as section chair in the U.S. National Academy of Engineering.

## A Half Century of Having 'Fun'

**Daniel Peter Loucks** is retiring in June after a 47-year career at Cornell, but he believes that very little of whatever he's been doing in the School of Civil and Environmental Engineering since 1965 was "work."

That's because Loucks looks back at his time at Cornell as being "fun," so much so that his career here would justify a statement in his obituary that "he never worked a day of his life."

"What can be more satisfying than to work in such a multi-disciplinary environment involving anthropologists, engineers, biologists, ecologists, economists, lawyers, planners, politicians, and sociologists," says Loucks. "An academic career at a major research university is anything but boring. And that is perhaps why it has been so much fun."

A graduate of Pennsylvania State University who earned a master's degree at Yale University, Loucks came to Cornell on a fellowship in 1962 to study what was then a new emerging subject—systems engineering or systems analysis. He started his training as a graduate student learning how to develop and



apply systems methods to water resources and environmental management problems, never realizing "that he would be forever a student at the same place for the next 47 years."

In addition to teaching and directing research in the development and application of economics, ecology, and systems analysis methods to solutions for environmental and regional water resources problems, Loucks has published numerous articles and co-authored several books on these subject areas, including two widely used text books on water resources planning and management. He has also served as department chair and associate dean for research and graduate studies in the College of Engineering.

"Both water quantity and quality management impacts our economy, our environment, and our ecosystems in ways not always easy to predict," says Loucks. "The ways we have typically characterized this uncertainty are now considered themselves uncertain, so how can anyone plan for a future under such uncertain uncertainties?"

Loucks says he has learned that the major challenges in water resources discipline are due to people and their institutions.

"These are integral parts of any water resource system, but are often ignored by engineers seeking technical solutions to what are often social problems," he says. "But the fact that people are both a part of any management problem and its solution makes the 'systems' discipline so much fun."

During periods of leave from Cornell, Loucks has taught at several other universities in the United States, Australia, Germany, and the Netherlands. He also served as an economist at the United Nations and the World Bank, as research associate at the International Institute for Applied Systems Analysis in Austria, and as a consultant to numerous governmental and international agencies and consulting companies.

"It's easier for me to say where I haven't traveled to," he quips. "I haven't been to Mongolia and Antarctica."

Loucks is hopeful that his life won't change very much in retirement. He intends to continue advising a few graduate students, teaching a graduate course in public affairs, and participating in some water resource systems courses at several universities overseas. He also plans to continue writing and editing, and advising on projects, as he currently is in Africa, Southeast Asia, and Australia. Loucks also hopes to continue his "attempts" at playing squash and tennis, and keeping his pilot's license current.

"I was lucky to get support for what I wanted to do most of my career, and I've had good students, and students keep you young, God knows," says Loucks. "The road to success, to the extent I consider myself successful, is dependent upon who one picks to work with. My advice is always pick people who are better than you. In my case, that was easy."

## Christine Shoemaker Elected to National Academy of Engineers

In September, Christine A. Shoemaker, the Joseph P. Ripley Professor of Engineering, will be inducted into the prestigious National Academy of Engineers. Membership—one of the highest professional distinctions for an engineer—is by election of their peers. Shoemaker was cited for her work on the "development of decision-making optimization algorithms for environmental and water resources problems."

Her research focuses on cost-effective, robust solutions for environmental problems by using optimization, modeling, and statistical analyses. This includes development of general purpose, numerically efficient nonlinear and global optimization algorithms utilizing high-performance computing and applications to data from complex, nonlinear environmental systems.

Shoemaker joined the faculty in 1972. She holds a bachelor's degree in mathematics from the University of California, Davis (1966) and a doctorate in mathematics from the University of Southern California (1971).

She is the first woman to be promoted to tenure in the College of Engineering, as well as the first woman to serve as an Environmental Engineering Department chair. In 1991 she received a national award from the Society of Women Engineers for her scholarship and efforts to encourage women engineers during years when there were very few women students or faculty in engineering. She is a distinguished member of the American Society of Civil Engineers and a fellow of the American Geophysical Union and the Institute for Operations Research and Management Science.

The mission of the National Academy of Engineers is to advance the wellbeing of the nation by promoting a vibrant engineering profession and by marshaling the expertise and insights of eminent engineers to provide independent advice to the federal government on matters involving engineering and technology.



Dragon Day 2012



# news

## student, alumni, and faculty

### AguaClara

The Cornell AguaClara Team and their partners Agua Para el Pueblo in Honduras were named laureates of The Tech Awards 2011, an award that recognizes global innovators each year for applying technology to benefit humanity and spark global change. The Tech Awards, a signature program of The Tech Museum, selected AguaClara from among hundreds of nominations representing 54 countries. The group will be honored during the Tech Awards annual gala on October 20, 2012 in Santa Clara, CA.

### ASCE

The Cornell student chapter of the ASCE Steel Bridge Team has been selected to receive the Albert George Student Team Award from the Cornell Engineering Alumni Association (CEAA).

This year's ASCE Regional Conference will be hosted by Clarkson University and SUNY Potsdam in Potsdam, New York on April 19–21. ASCE members plan to compete in both the Concrete Canoe and Steel Bridge competitions. Go teams!

### ESW

The **E**ngineers for a **S**ustainable **W**orld student chapter, based in Hollister Hall, is developing and working with a consistent fuel source for a diesel van (previously converted by ESW) to run on used or waste vegetable oil. They are also organizing an annual competition to reduce energy use in North Campus residence halls, designing and building solar chargers for cell phones, and working on a new solar kiosk project.

Two course projects are under way. The first is the development of two human-powered electricity generation systems, one from scratch and one using a commercial generator. Both generators will be driven by human energy through a bicycle rig and a rowing machine rig. Another project is a cooperative effort with Grupo Fenix (an NGO associated with Nicaragua's Universidad Nacional Ingenieria) and Las Mujeres Solares de Totogalpa (a rural women's collective in northern Nicaragua) to design, build, and use solar technologies, especially cookers and food dryers, to help these women's families live better lives and spread the use of alternative technologies.



Graduate Research Symposium awardees with CEE director, left to right: Professor Philip Liu, Kristopher Baker, Dimitra Bouziou, Brad Wham, and Brett Davis. (Not pictured: Karen Swetland and Michael Adelman)

### Student Awards

**Rudolph Powser CEE '12** is the recipient of the 2012 Moles Scholarship. The annual scholarship goes to a deserving, academically qualified senior studying civil engineering with high academic standing and who has expressed interest to pursue a career in the construction industry.

**Jordan Dick CEE '12** is a recipient of the Moles Student Award. The award, consisting of a cash prize and certificate, is given to a qualified civil and environmental engineering junior or senior who is selected in recognition of high academic achievement, enthusiasm, and effort, and who shows outstanding promise for a career in construction engineering and management.

**Hannah Kiem CEE '12** was selected as one of the 2011 ASCE New Faces of Civil Engineering. Hannah was selected for this honor because her "academic and personal achievements represent the bold and humanitarian future of civil engineering."

**The fourth annual CEE Graduate Research Symposium** was held on March 9, 2012. The symposium provides an opportunity for CEE graduate students to present to their peers and faculty a paper, poster, or both on their current research. The following students won cash prize awards (there was a first place tie in oral presentations):

**Karen Swetland** first place prize for her talk on *Influence of Influent Water Chemistry on Flocculation Performance*.

**Michael Adelman** first place prize for his talk on *Design and Implementation of a*

*Sustainable Stacked Rapid Sand Filtration System*.

**Brad Wham** second place prize for his talk entitled *Jointed Pipeline Response to Earthquake Induced Ground Failure*.

**Kristopher Baker** third place prize for his presentation on *The Importance and Outlook of Multiscale Simulations of Deformation and Fracture*.

**Brett Davis** first place prize for his poster titled *Simulation of Delamination Growth in Composite Laminated Structures*.

**Michael Adelman** second place winner for his poster on *Polyurethane Foam Filter as an Emergency Response Water Treatment Solution*.

**Dimitra Bouziou** third place winner for her poster on *Seismic Propagation Effects on Pipelines Rehabilitated with In Situ Linings*.

### Alumni

**Harry Bovay '36** passed away on May 24, 2011 in Houston, Texas. Harry was instrumental in helping the school kick off its laboratory renovations campaign in 2004.

Mr. Bovay started his own company called Bovay Engineers, Inc. During his career the company worked on projects that included engineering and problem solving for NASA, the Atomic Energy Commission, government agencies, large industries, as well as projects in foreign countries. Mr. Bovay once said in an article published in *CEE Update* in 2004: "As a proud member of the Class of '36 with a degree of civil engineer, I am indeed fortunate to have had a wonderful career as a professional engineer based on

my excellent Cornell education." CEE was among the organizations that benefitted from Harry Bovay's generosity and dedication to education.

**SawTeen See '77, MEng '78**, managing partner of Leslie E. Robertson Associates in New York City, is the partner-in-charge of the design of three supertall structures. The Lotte Jamsil Super Tower, a 555-meter tall building currently under construction, will become the tallest building in Korea when completed. Another design is the Shanghai World Financial Center, which was completed in 2008. The third is the design of a tall building to be built in Kuala Lumpur, Malaysia.

**Henry T. Yang PhD '69**, the chancellor of the University of California, Santa Barbara, was appointed by President Barack Obama to be a member of the President's Committee on the National Medal of Science.

### Faculty

**Peter Diamessis** was recently promoted to associate professor with indefinite tenure.

**Christopher Earls** is a recipient of the 2011 College of Engineering's James and Mary Tien Excellence in Teaching Award.

**Ken Hover** is the recipient of the 2011 Chi Epsilon Professor of the Year Award. Hover is also one of three College of Engineering faculty members who will collaborate with New York businesses in spring 2012 through the Cornell Center for Materials Research JumpStart Program. He will collaborate with Thalle Industries, Inc. of Briarcliff Manor, New York to develop a manufactured sand blend, yielding a workability desired by concrete producers and turning a waste product into a resource. On March 22, 2012, Hover completed his 18-month term as president of ACI (American Concrete Institute).

**Jim Jenkins** is the 2011 recipient of the College of Engineering's James M. and Marsha D. McCormick Advising Award.

**Linda Nozick** has a presidential appointment to be a member of the Nuclear Waste Technical Review Board.

**Jery Stedinger** was selected as the recipient of the 2011 Warren A. Hall Medal. The recipient of the Warren A. Hall Medal is recognized for his or her unusual accomplishments and distinction in the water resources field. The recipient should be an educator, devoted to the advancement of knowledge in water resources (through teaching, research, and/or public service), and with a strong commitment to the education and welfare of his or her students.

**Derek Warner** is a recipient of the 2011 College of Engineering's Daniel M. Lazar '29 Excellence in Teaching Award.

Contact us with your news: [civil\\_env\\_eng@cornell.edu](mailto:civil_env_eng@cornell.edu) • 607.255.3690 • [www.cee.cornell.edu](http://www.cee.cornell.edu)

### In Memoriam

**Walter R. Lynn**, a distinguished professor of civil and environmental engineering at Cornell University, died on June 6, 2011 at the age of 82. Since retiring from teaching in 1998, he maintained an active professional life, including serving as the University's Ombudsman for the past twelve years.



Walter will be best remembered as the pioneer who brought systems techniques aided by emerging computer capabilities to Cornell for the framing and analysis of solutions for many civil engineering problems, particularly those dealing with water supply, water treatment, and broader environmental and public health concerns.

Walter began his professional career managing a sewage treatment plant in Miami after earning a BS in civil engineering at the University of Miami (1950). He then earned an MS in sanitary engineering at the University of North Carolina (1954). Walter's enthusiasm for using systems tools grew, and he earned

his PhD at Northwestern University in 1963.

Walter came to Cornell as an associate professor of sanitary engineering in 1961. Early on, he held a joint appointment at the Weill Cornell Medical College in New York City where he taught courses on systems methods and worked on modeling epidemiology to understand the interface between human biological and civil engineered systems. After becoming a full professor at Cornell in 1964, he served in many academic administrative positions over the years. The faculty elected him a trustee (1980–1985) and he later served as the dean of the faculty (1988–1993). In his community, he served three terms as the mayor of the Village of Cayuga Heights, NY (2002–2008).

Walter's far more important legacies were his son, Michael, his wife, Barbara and their many friends. This social network included individuals from across society at every level and of every age.

Over the years, Walter served on a large number of National Academy panels and working groups, including one to study the regionalization of the Washington, DC water supply system. In 1985 he was appointed chairman of the New York State Water

Resources Planning Council, a tremendous responsibility, following a series of droughts in 1964–1966 and again in 1984. He also chaired and consulted groups that focused on natural disasters, both locally and internationally.

Walter's many honors include fellow and life memberships in several organizations, but, to Walter, the highest reward was to be greeted cheerfully on the street. He also enjoyed fishing, flying (airplanes), wood-carving, calling square dances, and an occasional game of poker.

Valdimir (as mis-spelled on his birth certificate) Royal Lynn was born in New York City on October 1, 1928 to Norman Lynn (from Poland) and Gussie Gdalin (from Russia) who soon moved to Florida. Walter is survived by his wife Barbara Lynn of Ithaca, New York, their son, Michael Lynn of South Lake Tahoe, Nevada, an older brother, Robert Lynn of Miami, Florida, and a nephew, Jeffrey Lynn of Hollywood, Florida.

To read the full memoriam as published in the *Ithaca Journal* visit: [www.legacy.com/obituaries/theithacajournal/obituary.aspx?n=walter-royal-lynn&pid=151989584](http://www.legacy.com/obituaries/theithacajournal/obituary.aspx?n=walter-royal-lynn&pid=151989584)

## Upcoming Events

### Reunion 2012

June 7–10

Saturday, June 9

Alumni breakfast buffet: Plan to attend this year's CEE alumni breakfast—especially if it's your reunion year. The breakfast is free and will be held from 7:30–9:30 a.m. in McManus Conference Center, Hollister Hall. All alumni(ae) and their families are invited. If you are planning to attend, please contact us at [civil\\_env\\_eng@cornell.edu](mailto:civil_env_eng@cornell.edu) or by phone at 607.255.3690.



**Class of 1961 Members Who attended CEE Alumni Breakfast on June 11, 2011:**

Seated from left to right: Pat Tatlow; Chuck Streeter; Alice Bergstrom; Lance Bergstrom; Dick Tatlow; John Sobke; Diane Dollinger; Joan Whitaker. Standing from left to right: Jack Richards (class of '60); Don Whitaker; David Marks; Jody Dreyfuss; Bob Miller; CEE Director Professor Philip Liu; Peter Dollinger

### Homecoming 2012

September 21–23

Cornell vs. Yale