TURNING THE TIDE

Our researchers are transforming environmental woes to wins.
Fate was sealed after an off-the-cuff remark by Eliezer Finkman. Entering Technion – Israel Institute of Technology in Haifa, a young Arieh Warshel asked his friend Finkman what he should study.

“Chemistry because you have good vision,” replied Finkman, an army buddy of Warshel’s who was already enrolled at the Technion.

“He assumed since he wore glasses and I did not, I had good color vision,” Warshel, 72, recalled with a shrug. “He thought chemists should see well.”

Warshel filled out “chemistry” under field of study. What started out as a random choice became a lifelong obsession that culminated in October when Warshel won the 2013 Nobel Prize for Chemistry.

The groundwork began in the 1960s at the Weizmann Institute of Science in Israel, where Warshel was a doctoral student. At Weizmann, Warshel started working with Shneror Lifson who had the vision that molecules should be modeled by computers.

Warshel began developing computer programs to find the structure of medium-sized molecules. He came up with an idea to write such a program in a general way, then in 1967 was joined by Michael Levitt, a pre-Ph.D. student. The pair tried something new and outlandish at the time. They developed an extremely powerful program that could calculate the structure and vibration of any molecule, including very large ones.

“THAT’S IMPOSSIBLE”

To prove the impossible, Warshel first used a Golem computer built at Weizmann. The Distinguished Professor of Chemistry and Biochemistry at USC Dornsife told his story inside his office, packed with books, computers, manila folders stacked high on his desk, and photos tacked on a bulletin board, including a few snapshots of his wife of 47 years, Tamar.

Sitting at a small table, leaping up to zip across the room and pull out a book or a photo to illustrate his story, Warshel often paused mid-sentence to offer insight on a topic. He explained that the Golem name derived from a legendary anthropomorphic being created from inanimate matter in Prague of the Middle Ages. Warshel recalled hearing about Albert Einstein’s reaction to the suggestion to build Israel’s first computer preceding the Golem.

“Why does such a small country need such a big computer?” Warshel said, quoting Einstein with disbelief.

“But [mathematician John] von Neumann said, ‘No, they need a computer.’”

At Weizmann, “We had a computer with the highest accuracy. This allowed me to check whether my first derivatives that describe the forces on the atoms — the key to the design of the general program — were correct. Instead of writing the formulas, I just tried to get the forces by seeing how the energy changes while moving atoms from left to right on the computer.”

After earning his Ph.D. in 1969, Warshel conducted postdoctoral research in the laboratory of Martin Karplus at Harvard University. Karplus used quantum mechanics to study very small molecules. Warshel had already experimented with adding a small quantum portion to the

A NOBEL VICTORY

Dubbed the “Sherlock Holmes of chemistry,” Arieh Warshel’s creativity and perseverance lead to the Nobel Prize.

by Pamela J. Johnson
classical description of a medium-sized molecule: Warshel and Karplus decided to research medium-sized molecules with double bonds by combining the classical description from the Weizmann program with the quantum description of double bonds.

After Warshel returned to Weizmann as a senior scientist, Levitt, who had just earned his Ph.D., arrived. They continued collaborating and in 1976 published their seminal work while at the University of Cambridge, England. This work combined quantum and classical descriptions of molecules, which allowed them to describe actual chemical bonds breaking down inside enzymes.

It took the world four decades to catch up with the ideas of Warshel, Karplus and Levitt, who share the Nobel Prize. It took the world four decades to catch up with the ideas that led to rapid cell division and to cancer, it can be used to create targets for drug design that can be used in chemotherapy.

"I’m a strong believer that understanding enzymes can help to find better treatment for diseases than experimenting in a blind way."

Both sides of Warshel’s family descended from Poland. Tzvi Warshel, Rachel Spreicher and their family survivors the Holocaust dias so by immigrating to the then-British-ruled Palestine. Most of Tzvi’s immediate family perished in 1941 in Lachowicze, Poland, when the Nazis assembled all Jewish inhabitants into the marketplace, where they were murdered. Rachel’s mother and two sisters also perished in the Holocaust.

A dual citizen of the United States and Israel, Warshel fought in the Israeli Army as communications officer of a tank regiment during the June 1967 Six-Day and October 1973 Yom Kippur wars, then became a reservist. A scar on his right ear is a reminder of his close brush with death when a bullet pierced his helmet.

Photos taken before he joined the army show Warshel with a thick head of dark hair and a cool yet vulnerable expression that earned him the nickname of “a young James Dean.”

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"For Arieh, this is sweet victory.”

A KIBBUTZMOTH AT HEART

Warshel was born Nov. 20, 1940, at Kibbutz Sde-Nahum in northern Israel. Like most kibbutzim, agriculture and fishery work are the primary income. Growing up, Warshel’s major duty after his studies was working in the fishponds and some weekends picking cotton in the fields. He mainly tended to the large pond, catching carp, which was later sold. Warshel’s father, Tzvi, was also a kibbutz carp fishermen. Despite having only an elementary education, Tzvi became the accountant. Warshel’s mother, Rachel Spreicher, graduated from high school and worked at the kibbutz as a launderer, goat cheese churner and in the “shulday” — the canned fish and grapefruit factory. She was also an elementary school teacher’s aide. Tzvi and Rachel met on the kibbutz, married and had four sons, the eldest Arieh.

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At USC Dornsife, we seek out vendors who share our commitment to protecting and preserving our natural environment. A prime example is Lithographix, which printed this issue of USC Dornsife Magazine. The roof of its headquarters in Hawthorne, Calif., supports one of the largest solar array systems in Southern California with hundreds of solar panel units generating electricity. In addition to the power generated by its solar panels, Lithographix receives power from California's utility grid through the Southern California Edison company. More than 12 percent of this energy is generated through renewable resources (e.g., geothermal, bio mass, wind and solar). Inside the facility, Lithographix presses use the latest regeneration thermal oxidizer (RTO) technology, producing 99 percent clean-up while using less natural gas to fire the afterburner units. We also ensure that the paper and inks used to create publications such as USC Dornsife Magazine are responsibly managed. This issue is printed on Sappi's Opus paper line, which is FSC and SFI chain-of-custody certified and manufactured using 100 percent Green-e certified renewable energy. Lithographix then uses only low VOC (volatile organic compounds) inks — some at “zero” VOC levels — on its presses. Finally, all paper waste is bundled and recycled — none of it goes to landfills.
In Our Nature

Growing up on the small island of Jersey, nestled alongside the coast of France, I learned to respect the sea and cultivate a very special relationship with the maritime world. With my grandfather, a commercial fisherman, I spent many hours aboard commercial lobster boats, which offered me firsthand experience of both the calm and fierce beauty of the sea.

In many ways, I believe the fabric of nature is woven into our very selves. We feel a tremendous, almost innate responsibility to protect and preserve Earth’s waters, land and the air we breathe. At the same time, we are dedicated to the advancement of our society.

With its considerable strengths across the natural sciences, social sciences and humanities, USC Dornsife is uniquely positioned as an epicenter for defining sustainability. Our historians, economists, sociologists and political scientists analyze change, health, and food availability and distribution. We transmit that knowledge into public policy and economic development programs that will help L.A., the nation and the world flourish.

Our scientists probe the structure, function and complexities of our natural systems. Our psychologists and philosophers study the behavior, motivations and ethics of individuals and societies. Our historians, economists, sociologists and political scientists analyze development, conflict and cooperation at local and global levels.

Today, nearly 40 percent of the world’s population resides in coastal cities. As population density and economic activity in these coastal zones increase, pressures on coastal ecosystems dramatically rise. So what better test bed for our pathbreaking ideas to sustain and attain the planet than our university’s urban seaside environment in Los Angeles and the pristine habitat on Catalina Island.

This ideal setting coupled with our cross-disciplinary strengths allows us to generate new knowledge that comprehensively addresses environmental challenges such as climate change, health, and food availability and distribution. We transmit that knowledge to our students here at USC and to those in our local elementary and high schools to prepare the next generation of environmental leaders. And we translate that knowledge into public policy and economic development programs that will help L.A., the nation and the world flourish.

‘Our Voices Have Been Heard’

Residents in low-income communities in Los Angeles County are benefiting from the Program for Environmental and Regional Equity. By producing critical research, the program is becoming a statewide model for environmental justice. By Michelle Salmon-Booth

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Alumna Julia McGinnis knows the trash cans and can’t waste management. McGinnis works at Orange County Waste & Recycling, the nation’s third-largest trash gas-to-energy project. By Pamela J. Johnson

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Geraldine Knute’s motto is “It’s impossible, it’s difficult, it’s done.” Preparing for retirement, the first woman executive director of the Port of Los Angeles gave it her all to turn the ship around. By Susan Bell

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On Catalina Island — and the University Park campus — the legendary Wrigley family has created a kingdom of scientific researchers. By Pamela J. Johnson

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These superheroes are fighting against human suffering and pollution, and to keep the desert tortoise alive. For the first time, the environmental engineers remove their masks. By Laura Paisley

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Residents in low-income communities in Los Angeles County are benefiting from the Program for Environmental and Regional Equity. By producing critical research, the program is becoming a statewide model for environmental justice. By Michelle Salmon-Booth
4.15.13

What you find is that women now are much less interested in whether their partners are going to be ambitious and industrious. Women are now much less interested in ambition and industriousness.

Men are now more interested in ambition and industriousness. What you find is that women now are much less interested in ambition and industriousness.

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Among the more than 3.5 million dollars awarded during the COMMENCONCERNSENIORS4Ubine, 2,335 bachelor’s, 2,335 master’s, 1,000 graduate certificates, and 189 PhD’s. View photos at dornsife.usc.edu/facebook.

1. Download the USC Dornsife Augmented Reality (AR) app on your smartphone or tablet to view inspiring multimedia content about our community of scholars.

3. Open the USC Dornsife AR app and hold your device level with the page you’re viewing to begin.

4. The app will launch enhanced content that brings to life the printed page.

No mobile device? Relax — videos are also at dornsife.usc.edu
Gateway to Your Career

Undergraduates participate in the Gateway Internship Program, which offers opportunities to explore a career, gain insight from a mentor and take an academic course on leadership skills. By Susan Bell

James Freymuth sat in a spacious office on the 20th floor of an investment management company’s sleek postmodern skyscraper overlooking downtown Los Angeles.

The undergraduate, a participant in the USC Dornsife Gateway Internship Program, was poring over charts with his boss, Michael Reilly, at the TCW Group.

At the same time that many undergrads were enjoying themselves on vacations, Freymuth spent his summer gaining invaluable experience shadowing Reilly, chief investment officer of the company’s equities group and director of U.S. equity research.

“I don’t come from a finance or business background so it’s definitely been a lot of learning on the job,” said Freymuth, a philosophy, politics and law major.

While the two examined the charts, Reilly, a USC Dornsife alumnus and member of the USC Dornsife Board of Councilors, showed the intern how he uses graphs to make complex financial information easily accessible to an average person.

Then, Reilly and Freymuth headed into a meeting with the company’s portfolio analytics group.

Six weeks into his paid summer internship, Freymuth was completely comfortable with investment management terminology and talked confidently to Reilly about his research findings.

Freymuth said Gateway has given him a sense of real achievement in an environment where the overwhelming majority of employees have an MBA under their belt.

“Gateway has instilled confidence in me, because despite not having the same qualifications, or decades of experience, I realize that as a USC Dornsife major, I, too, have something to contribute.”

The Gateway Internship Program was launched last year, led by Donal Manahan, vice dean for students and professor of biological sciences. The program offers paid summer internships in banking, finance, entertainment, education, law, insurance and real estate in the Los Angeles and Orange County areas.

Taught by Manahan, a “Career Leadership” course provides students with insight from expert guest speakers. Individualized support is offered through mentor matching with a distinguished business professional who can provide valuable one-on-one advice and support.

“Programs such as USC Dornsife Gateway provide students with unique opportunities to enhance their collegiate experience and be prepared for the next step in their professional development,” Manahan said.

Freymuth had never considered a career in business before signing up for Gateway. Now he said his positive experiences interning with TCW have inspired him to seriously consider pursuing an MBA.

“Participating in the Gateway program confirms what USC Dornsife taught me — namely, not to count anything out until you’ve actually tried it.”

Gillian Miller, a double major in international relations and theatre, interned in the programming department at Starz Entertainment in Beverly Hills.

“As an intern you’re not always thinking about leadership, she said. “But ultimately that’s what you’re striving for — to be a leader in your field.”

The USC Dornsife/Los Angeles Times Poll

The USC Dornsife/Los Angeles Times Poll is a series of statewide public opinion polls of registered voters in California designed to measure voter attitudes on a wide range of political, policy, social and cultural issues. Conducted throughout the year, the widely cited polls help to inform the public and encourage discussion on key political and policy issues.

58% of Californians support the right for same-sex couples to marry, according to the June 2013 poll.

45/37

The percentages of voters who oppose and favor, respectively, fracking in California. Voter support for the drilling practice increases once potential economic benefits are mentioned.

+27%

The rise in the number of California voters in the past two years who are optimistic about the state economy. In all, 42 percent of voters said the economic outlook is on an upward trajectory, the first time hope has outstripped fear.

74% of voters favor reducing sentences for people who commit nonviolent, low-level crimes in order to reduce the state’s prison population — although they oppose releasing prisoners if it would harm public safety.

Lexicon

Genocide

[1915–1923] noun [From Greek genos race, tribe or nation; From Latin coele killing] the deliberate and systematic destruction of a racial, political or cultural group committed by a group or government against one’s own people or another in pastime or in wartime.

Origin: The term “genocide” was coined by Raphael Lemkin, a Polish-born jurist who served as an adviser to the U.S. Department of War during World War II, to describe the premeditated effort to destroy a population. In 1947, the United Nations General Assembly declared genocide a punishable crime. Although the term itself is of recent origin, genocide arguably has been practiced throughout history.

Usage: “We need to understand the history of genocide — the factors that brought it about and the ones that enabled people to prevent, resist or recuperate from mass violence.”

Wolf Grant, Skokop-Guerin Chair in Jewish Studies and professor of history (above), in-scholo at their 2013-2014 research cluster, “Resisting the Path to Genocide,” which led to the creation of an interdisciplinary minor of the same name that launched to Fall 2013 and draws upon contributions of the USC Shoah Foundation’s Visual History Archive.

Vagifapa Budanov’s (right) “Hakkinda Memleketi” as part of the genocidal campaign against the Armenians in 1915-16. He wanted to usurp his death and joined the resistance.
City Electric

Los Angeles, Calif., 1965

A brightly lit streetscape in downtown Los Angeles illustrates the birth of a modern metropolis.

The pink neon sign advertises Clifton’s Cafeteria, which opened in the heart of L.A. in 1933. This defining image of a newly electrified cityscape is featured in the innovation online exhibition Form and Landscape in the Los Angeles Basin, 1900–1990, co-organized by William Deverell, professor and chair of the USC Dornsife Department of History. “Los Angeles suffers from a stereotypical caricatured notion that it has no history,” Deverell said. “One way to reveal that erroneous way of thinking is to see the streetscapes and talk about what has changed.”

The photographs featured in the exhibition are drawn from the Southern California Edison Institute’s archive at The Huntington Library, Art Collections and Botanical Gardens, where Deverell directs the Huntington-USC Institute for Visual History and Education and adjunct professor of biological sciences and adjunct professor of religious studies, has been named the inaugural holder of the UNESCO Chair on Genocide Education. The position will help facilitate collaborations between internationally recognized researchers and educators.

CT scans show that heart disease is a serial killer that has been stalking mankind for thousands of years.

Lessons from Mummy

CT scans show that heart disease is a serial killer that has been stalking mankind for thousands of years.

Turns out, ancient folks had clogged arteries, too. Research revealing that hunter-gatherers also suffered from clogged arteries shows that the plaque building, blood clots, heart attacks and strokes is not just a fact of aging or modern habits.

USC University Professor Caleb Finch, ARCO/William F. Kieschnick Chair in the Neurobiology of Aging, who has joint appointments at USC Dornsife and the USC Davis School of Genomics, was senior author of the study published March 10 in the journal The Lancet.

The researchers performed CT scans of 137 mummies from four continents and found artery plaque in every population, studying 26 agrarian-based hunter-gatherers in the Atenian Islands to the ancient Puebloans of southwestern United States.

‘“This is not a disease only of modern circumstance but a fundamental feature of human aging in all populations,” Finch said. “This is not a disease only of modern circumstance but a fundamental feature of human aging in all populations.”

For example, a man who lived 5,000 years ago in ancient Egypt had calcified carotid arteries. “We found that genetic variation in aggressiveness shaped group sizes with consequences for mating,” Saltz said. “What was surprising was that we found it wasn’t that aggressive males were more successful at mating as was previously thought, but that either aggressive or nonaggressive males could do well depending on the social environment they created.”

Nonaggressive genotypes should not be considered “loser males,” Saltz said, but are pursuing “an alternate social strategy,” which brought them mating success.
“No department has improved more over the last decade than USC’s.”

Which discipline could the speaker be describing? Economics? Video gaming? Immunology? Or maybe stem cell medicine? All good guesses of top USC programs — and all wrong.

In recent rankings of graduate philosophy departments nationwide, USC Dornsife’s School of Philosophy, in which scholars study the likes of Plato, Kant, Russell and Wittgenstein, has surged to No. 11, up from No. 46 just a few years ago. Within a few years, USC Dornsife’s School of Philosophy Web pages, including a list of others who use the same pronunciations: philosopher Ralph Cudworth, composer Ralph Vaughan Williams and actor Ralph Fienne. The same goes way back to his family on his father’s side, who were in the fine china business in the Midlands of England. Teapots, saucers, that kind of thing. Humble potters, really, until his fifth great-grandfather created a new earthenware that so impressed the then-British queen that it came to be known as “queen’s ware.”

That Wedgwood, if that’s not enough, his great, great, great, great uncle was among the most revolutionary scientists in the history of humankind. Hypothesis: “We’re talking about the naturalist behind the theory of evolution: Charles Darwin.”

“Do I guess I did come from a family that put an enormous emphasis on the value of intellectual pursuits and scholarship,” said Wedgwood, who also cites novelists and historians among his family. “My family always thought scholarship was exciting and delightful — and fun.”

But Wedgwood isn’t only interested in gaining knowledge. He wants to dissect the theory of knowledge itself. Find out what distinguishes true from false knowledge. Joining USC Dornsife in 2012, Wedgwood is an expert in epistemology. He studies ethics, but rather than ask what is the right thing to do, he asks how can we know right versus wrong? The field is meta-ethics.

“You could call it an evolutionary career path for Wedgwood, as an undergraduate classics student, and later, at the University of Oxford, he studied Greek and German. Focusing on Greek, he began reading works of ancient philosophers. ‘I got quite fascinated by Plato,’” said Wedgwood. “It’s partly because it’s the beginning of the history of Western philosophy. They are confronting these big questions — what is knowledge, what is the best way to live — for the first time.”

Studying German, Wedgwood became interested in poet, playwright and philosopher Friedrich Schiller, who wrote extensively about his contemporary, German philosopher Immanuel Kant. “In all those ways I was sort of primed to move into philosophy,” said Wedgwood, who earned his master’s in philosophy at King’s College in London, then his Ph.D. in linguistics and philosophy at the Massachusetts Institute of Technology. He called its move to USC Dornsife this Fall.

“We’re bringing in world-class faculty and building innovative programs around them,” said Scott Soames, who came from Princeton University in 2004 and, as department chair, has helped engineer philosophy’s meteoric rise. “This is just the beginning.”

Uzquiano and Wedgwood said USC Dornsife’s quick ascension caught their attention: “I felt like I was moving to a department that would soon amass the best in the world,” Uzquiano said. — M.B.
Psyched Up

Top social psychologists Norbert Schwarz and Daphna Oyserman will open the USC Dornsife Mind and Society Center at USC’s first interdisciplinary social sciences building. By Pamela J. Johnson

Not surprising, people in a good mood tend to evaluate situations more positively than when in a bad mood. People report higher life satisfaction when they are in a good mood on a sunny day and lower life satisfaction when they are in a bad mood on a rainy day.

However, if the interviewer mentions the bad weather before they ask the life satisfaction question, this mood effect disappears. People will then attribute their current mood to the weather rather than their life satisfaction.

When people make judgments, they rely on their feelings as diagnostic information. But sometimes their feelings produce inaccurate responses.

“Whenever people become aware that their feelings may be due to an incidental source, the informational value of the feeling is discounted and people turn to alternative inputs to arrive at a judgment,” said Norbert Schwarz, who will join USC Dornsife in January 2014 as Provost Professor of Psychology and Marketing.

USC Provost Elizabeth Garrett recently announced the appointment of Schwarz and his wife, Daphna Oyserman, as Dean’s Professor of Psychology, and professor of psychology, education and communication.

Oyserman and Schwarz will open the USC Dornsife Mind and Society Center at the Verna and Peter Dustkrive Hall, which upon its completion will be USC’s first interdisciplinary social sciences building. At the hall, faculty and students university-wide will tackle the most pressing social problems affecting our region and global community.

Schwarz’s research focuses on human judgment and cognition, including the interplay of feeling and thinking. He examines the socially situated and embodied nature of cognition — and how basic cognitive and communicative processes impact public opinion, consumer behavior and social science research.

A member of the American Academy of Arts and Sciences and German National Academy of Sciences Leopoldina, Schwarz is among the most frequently cited researchers in social psychology and consumer psychology. His publications include 20 books and about 300 journal articles and chapters.

Oyserman is among the most frequently cited researchers in the fields of self and identity, and is internationally known for her research on self, culture and motivation. Using experimental and field-based methods, her research focuses on identity-based motivation and its cognitive and behavioral consequences. Her publications include about 130 journal articles and chapters and she is currently completing a book project.

Oyserman’s work shows how cultural mindsets and identities can be engaged to improve life outcomes, including academic performance, and mental and physical health. Her research demonstrates that when three mindsets and identities undermine rather than bolster goal pursuit, the result is less effort in school. Students are then tempted to procrastinate or engage in goal-undermining behaviors.

Both professors will arrive from the University of Michigan.

“When we came to USC, we were thrilled by the excitement in the air and the seriousness of purpose,” Oyserman said. “At USC, we know we can make a societal impact.”

FROM THE HEART OF USC

Word

IN THE NEWS QUOTABLES

No matter how sincere reformers of the Vatican Bank are, they are up against an age-old problem: the long history of European banking suggests that secretive, absolute government and long-term successful banking do not coexist well.”

JACOB SOIL, professor of history and accounting, in a June 8 Boston Globe op-ed on the challenges of reforming the Vatican Bank, located inside Vatican City, Rome.

“People make a rational cost-benefit analysis and say, ‘Am I going to spend the time casting a vote or working, spending time with family, etc., when I don’t think my vote is going to make a difference.’”

SARAH GAULTIER, associate professor of political science and gender studies, in a May 23 interview with VOGC on low voter turnout for the 2013 Los Angeles city election.

“People have lost friends because of disagreements. It’s a topic of debate at dinner tables.”

ANNE MARIE HANFORD, associate professor of political science and gender studies, in a May 23 interview with VOGC on low voter turnout for the 2013 Los Angeles city election.

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“We have lost friends because of disagreements. It’s a topic of debate at dinner tables.”

SARAH GAULTIER, associate professor of history and American studies and ethnicity, in a May 23 interview with VOGC on low voter turnout for the 2013 Los Angeles city election.
I grew up in Riverside, where pollution can seem like a normal part of life. It was ‘reality,’ ‘normal,’ to realize it’s not supposed to be that way.

A Southern California native whose father is Nigerian, Otama Jakpor visited Nigeria for the first time last Christmas. In addition to spending time with extended family, the aspiring physician shadowed doctors to see what practicing medicine was like in the West African city.

The last thing she expected was to get a cell phone call from Glamour magazine.

The magazine’s editors had been choosing their “Top 10 College Women” for 2013. Each of the magazine’s “Top 10 College Women” for 2013 was to get a cell phone call from Glamour magazine, followed by the question, “What is your advice to other young women?”

But in the opening, I wanted a kind of innocence,” St. John said. “I wanted that sense of a child at the tide pools. It seemed to me if I could do that, I could give Frank [Ticheli] some room to move with the text.”

In the third poem, the boy has grown.

In June signing ceremony, USC Dornsife and the Farhang Foundation solidified a relationship to develop the university’s instruction in Iranian studies.

The markers of the official launch of the three- phase second phase’s second step — to offer a minor in Iranian studies at USC Dornsife. As part of the second phase, USC hired its first lecturer of Iranian history and culture, Hani Khalepour, who will facilitate the newly created minor. The first phase occurred in fall 2013, when Persian language courses, taught by Peyman Nojoomian, assistant professor of Persian, were launched through USC Dornsife’s School of Communication and Journalism. The second phase plan’s second phase — to offer a minor in Iranian studies at USC Dornsife in 2010.

In the third phase, the now young man is in Italy — a place dear to St. John — where he might become and for the first time contemplates death.

“As the tide rises / I am the man’s eye / As the fallen eyes of the moon / Not even in my pocket / Walking alone / I knew that they could see / A future only seen for me / I knew that they could see”

This is the beginning of a song cycle for USC Thornton School of Music, called “The Shore,” a chorus and orchestra piece. By boats aligned like sentinels.

“This is the concert of the 2012-13 season, called ‘The Moon, the Sea and the Stars’,” St. John said. “We’re at a place where something ends and something else begins. When we come to these different shores and junctures, we each make choices as to how we are going to encounter whatever is next.”

In fall 2013, Steven Lamy, professor of international relations and vice dean for academic programs, led the event, which was organized by the Center for Active Learning in International Studies (CALIS), housed at USC Dornsife’s School of International Relations.

“Studies were divided into groups, each representing a country or an NGO, and coached on basic foreign policy theory by Lamy, aided by 45 international relations students serving as mentors.”

Local high school students were asked a series of questions and shared their experiences with curricular, extracurricular and personal experiences.

“In the third poem, the boy becomes and for the first time contemplates death.

Across the night into / A mandala of moonlight / By boats aligned like sentinels / The Shore received a deeply emotional outpouring.

“It’s just the beginning,” USC Dornsife and the Farhang Foundation solidify a relationship to develop the university’s instruction in Iranian studies.

“The financial support has come from Farhang, but mainly from the Iranian American community and friends of Farhang,” she noted. “We find this signing ceremony solidifies our partnership with USC Dornsife. Not the end; it’s just the beginning.”

“USC is also one of the greatest universities in the United States,” Lamy said. “If we can reach generations by sharing the arts and culture of the Middle East, I believe we can create more compassion, more understanding.”

The conference was funded by the Arslany Program of Ludwig Family Foundation, the University Gateway and the USC Philanthropy Fund Board.

“Next year,” Lamy added, “we should really move the discussion to the United States.”

“By the end of the day, terms such as colonial legacy and balance of power roll off the tongues of these high school students.

“It’s Just the Beginning”
The USC Dornsife Center for Economic and Social Research (CESR) has opened a new shared space with USC Information Sciences Institute’s office in Arlington, Va.

Opened May 28, the Development Portfolio Management Group (DPMG) helps clients throughout the world get expected results from their economic development investments.

For instance, if you are a funder, how can you ensure your funding will be effective? How can you identify and address the risks?

If you are a developing country, or an organization undertaking a development project, what assurances can you give to funders that their investments will achieve the desired results?

Addressing these questions, the group was previously attached to the RAND Corporation, a nonprofit global policy think tank based in Santa Monica, Calif. Xavier Legrain, DPMG’s executive director, said he decided to follow Arie Kapteyn, formerly senior economist and director of RAND Labor and Population, to USC Dornsife. The creation of CESR was a major pull.

After arriving in November 2012, Professor of Economics Kapteyn established CESR, which conducts basic and applied research in economics and the social sciences in many fields, disciplines, and methodologies. One of CESR’s research areas includes financial decision-making with the goal of improving an understanding of how people reach decisions affecting their economic status, particularly in old age. Another seeks a deeper understanding of health disparities with regard to socioeconomic status. CESR researches how racial and ethnic minority groups, geographic locations, genders, age groups and disabilities affect an individual’s health and income. The center also studies the science of happiness.

“DPMG is a perfect fit for us,” Kapteyn said. “I have worked with Xavier since he moved his group from the World Bank to RAND and have been deeply impressed by his professionalism and dedication. Having DPMG joining CESR is a major step toward fulfilling our ambitions.”

USC Dornsife Dean Steve Kay noted DPMG’s international reach.

“Our presence in Washington, D.C., and the international development work they do is another example of the global reach of our USC Dornsife faculty and their research programs.” — P.J.F.

We Are Family

Reconstructing European ancestry, Peter Ralph uses DNA to demonstrate just how closely everyone on Earth is related.

The Tinajon Family is not a metaphor. New research by Peter Ralph, assistant professor of computational biology, provides DNA-based evidence to confirm the mathematical theory that everyone on Earth is related.

Using whole-genome sequencing data from more than 40 European populations, Ralph and co-researcher Graham Coop, a geneticist at the University of California, Davis, identified 1.9 million shared segments of DNA that were millions of base pairs long, proving their owners were related.

“They estimated how long ago their common ancestor lived from the length of the segment. “Our research confirmed everybody alive in Europe a thousand years ago who had children is an ancestor of everyone alive today with some European ancestry,” Ralph said, adding that the research may help solve long-standing questions in history, archaeology, linguistics and ecology.

His research also showed Europeans living closer to one another were more closely related, and that Eastern Europeans tended to have more shared ancestors than Western Europeans. — S.B.
Students travel to Russia, where they cross five time zones on the Trans-Siberian Railway.

Spring break tends to conjure images of tropical beaches, sunshine and around-the-clock swimsuit fashion. There’s one thing it definitely does not bring to mind: Siberia.

Putting the “alternative” in alternative spring break, 38 USC Dornsife undergraduates spent theirs on the frozen tundra as part of a two-unit study-tour course. In addition to coursework statewide, in March 2013 the group spent eight days in Russia.

The class gave students of all majors a broad view of Russian culture, history and geography — topics that otherwise might not be broached in their undergraduate studies. The course was led by Tatiana Akhshina, professor of Russian, Sally Pratt, professor of Slavic languages and literatures, and vice provost for graduate programs; and Dan Bayer, executive director of the USC Dornsife Language Center.

During the trip, the group rode the legendary Trans-Siberian Railway (made famous in the 1965 film Dr. Zhivago, based on the novel by the same name). Completed in 1902, it is the longest railway in the world, spanning 11 time zones and connecting Moscow with Vladivostok in the Russian Far East. Students traveled for three days straight to Lake Baikal, located just north of Mongolia in the heart of Siberia.

We followed the river to the city of Irkutsk, where we found the headwaters of the Angara River that carry Andean sediments from the Andes in South America and flow toward the sea. The mission of the group lectures on environmental issues affecting the lake.

Volunteering at organic coffee farms in Costa Rica, Pam Mizuno rose with the sun each morning around 5 a.m.

In a tropical downdpour, Fan and her classmates entered Victoria Park in Hong Kong, where people huddled under umbrellas holding flickering candles. Thousands were there for the 25th anniversary vigil of the 1989 pro-democracy protests in Beijing’s Tiananmen Square, where Chinese leaders sent troops to stop a student demonstration by opening fire, killing hundreds. Born in China and raised there for the 24th anniversary of the 1989 pro-democracy protests in Beijing’s Tiananmen Square, where Chinese leaders sent troops to stop a student demonstration by opening fire, killing hundreds.

FACULTY
Pam Mizuno

The following is a first-person account of a research trip to southeastern Peru by Jose Joyce Feakins, assistant professor of earth sciences. The tourists travel from Cuaco along the Inca trail to Machu Picchu, our scientific expedition followed a different path downhill with the rivers that leave the Incan highlands.

In a tropical downdpour, Fan and her classmates entered Victoria Park in Hong Kong, where people huddled under umbrellas holding flickering candles. Thousands were there for the 25th anniversary vigil of the 1989 pro-democracy protests in Beijing’s Tiananmen Square, where Chinese leaders sent troops to stop a student demonstration by opening fire, killing hundreds. Born in China and raised there for the 24th anniversary of the 1989 pro-democracy protests in Beijing’s Tiananmen Square, where Chinese leaders sent troops to stop a student demonstration by opening fire, killing hundreds.

FACULTY
Jose Joyce Feakins

Our journey followed a major tributary of the Amazon from the high Andes to the Amazonian Amazon of the Cuaco and Madre de Dios regions of Peru.

Volunteering at organic coffee farms in Costa Rica, Pam Mizuno rose with the sun each morning around 5 a.m.

Joining me on this trip were Camilo Ponton, a Colombian-born ecologist and postdoctoral scholar; and Joshua West, Wilford and Daris Zinsmeyer Early Career Chair in Marine Studies and assistant professor of earth sciences.

We followed the river to the city of Irkutsk, where we found the headwaters of the Angara River that carry Andean sediments from the Andes in South America and flow toward the sea.

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FACULTY
Jose Joyce Feakins
Bits of greasy pizza boxes ( ), Styrofoam peanuts, apple cores ( ) all churning into one, massive heap. A single black car tire ( ) bounces down the mountain of debris as screeching seagulls ( ) swoop overhead. Think this is just garbage? Rubbish! Some is turned into electricity ( ). Alumna Julia McGinnis ( ) knows that …
I see energy. I see money.” alumna Julia McGinnis said, of garbage surrounding her,

RUBBLE TO RUBIES

into energy is being used at the Olinda Alpha Landfill to

Launched in the early 1980s, the technology turning trash
treated and used to produce electricity or heat buildings.

Methane is also the major ingredient in natural gas.

rots in landfills, it creates methane gas.

from a chimney.

$130 million plant — mostly paid for with federal funds

renewable energy, McGinnis was visiting the Olinda Alpha Landfill in Brea, Calif. Downspouting the aroma, she noted, that the facility moves trash and covers it so quickly that the odor is far milder than at most landfills.

She has reason to be proud. The landfill is the country’s third-largest gas-to-energy project, which generates about 37.5 megawatts of electricity and millions of dollars annually.

PHOTOS BY JOHN LIVZEY

But when methane is trapped in landfills, it can be cap-
tured and used to produce electricity or heat buildings.

before graduating magna cum laude in 2003.

“I had this epiphany,” she said. “Law just wasn’t in my heart.” She
couldn’t envision herself in court arguing cases. Wanting to be part of the decision-making process on policy, she earned her master’s degree in public administration from the USC Sol Price School of Public Policy in 2006.

Raised by a single mother in the military, McGinnis has always been drawn to the public sector. As a girl, her family lived on the Travis Air Force Base. When her mother, Patrica Henry, retired and took a job with the state, the family moved 44 miles east to Sacramento, Calif.

“It’s always been public service, public service, public ser-

Ambition is part of her nature. In high school, she was an

advanced student already taking community college courses.

“I’m probably overly ambitious,” she said. “But it was all

internal. My mother set the bar, but then she stepped back and said, ‘trust you.’ I would come home with a B-plus and be devastated. She would say, ‘I’m crying out loud, ease up on yourself.’

McGinnis had learned about USC during a higher education

event at her high school.

No one in my family had gone to college so I didn’t really

know anything about the college process,” she recalled. “I know about CSUS [California State University, Sacramento] and about Harvard. I thought I had to book covers that said ‘Harvard.’ But that was it.”

When recruiters from USC started speaking with her, she

began with, ‘You’ll have to forgive me but I’ve never heard of

USC.’ McGinnis was impressed with what she heard.

“So I started researching USC on my own and told my

mother, ‘This is a great school, it’s where I want to go’.”

While McGinnis pursued higher education, Henry re-

turned to school to earn her bachelor’s and master’s degrees

in social work at CSUS.

“I really took to academia,” McGinnis said. “I have a

fascination with learning and creating and having expertise in an area.

Whether it’s water management, homeland security and con-

terterrorism, or waste management, I have to take it for granted

that everyone’s intrinsically motivated. But not everyone.”

The examples she threw out were not arbitrary. She has

held high-powered jobs in all of those fields. After gradua-
tion, McGinnis was offered a position at the U.S. Depart-

ment of the Interior’s Bureau of Reclamation.

At 25, she became the chief of the bureau’s Enterprise Program Manage-

ment Office, among the Department of the Interior’s

youngest managers.

“I just applied,” she said of landing the job. “Everyone

thought I had made some kind of an interesting career be-

cause it was really unheard of to be in someone to the program

management level who was a complete outsider.”

It helped, she said, that the person who became her super-

visor had completed an overseas program at USC.

“I had never worked with water before,” she said. “I

had no background in the field.”

At the Department of the Interior, she oversaw Califor-
nia’s Central Valley Project, which manages one of the nation’s biggest water conservation developments.

“We had something in common,” she said. “Having USC

as my backdrop spoke volumes.”

As the aviation security liaison for the Transportation Security Ad-
mnistration (TSA) assigned her to John Wayne Airport in

Orange County, Calif. As the aviation security liaison for

luggable to Rubies

Surveying the mountaintop of garages surrounding her,
alumna Julia McGinnis said, “I see energy, I see money.”

Her implementations are credited with saving the bureau

more than $10 million. “Working on sustainability issues feels good,

it feels right. I keep remembering that quote, ‘We do not inherit the Earth from our ancestors, we borrow it from our children.’

Working with high-level government officials and political

leaders, she addressed issues surrounding drought, climate change and population growth. She became an ex-

pert in water shortage and management — among the state’s most pressing issues.

The bureau was McGinnis’ first career stop dealing with the

environment. When it comes to a cause, she usually can be

found volunteering to help those in need. She spent part

of a recent summer aiding earthquake victims in Haiti. “I’ve

always had a heart for people,” she said.

Also, she’s always been environmentally conscious.

“I believe in recycling and being a good steward of our

resources,” she said. “So that’s always been kind of a ticke-

ler in the back of my mind. My family’s also Native American,

so I think that stewardship of nature has been an underlying

strand in my life. But I never thought of it as a career path.”

Yet when she left the bureau for a position at the U.S.

Department of Homeland Security, she didn’t think of it as an

environmental cause. The Transportation Security Ad-
mnistration (TSA) assigned her to John Wayne Airport in

Orange County, Calif. As the aviation security liaison for

airlines, McGinnis served more than 9 million passengers

and a workforce of more than 450 employees.

That meant putting out fires when crises erupted at all hours of the day and night. Power outages, evacuations, threats — all security issues that occur at an airport — McGinnis handled them as liaisons between TSA and the airlines.

“It was, ‘ok, crisis averted, move on, crisis averted, move on,’” she recalled. “I was always so focused on one crisis and nev-

er looking at the bigger picture. It didn’t force me to think.”

“I wanted to put her organizational development skills to

work.

“My brain needs to be stimulated and I need opportunities to utilize those skills,” she said. Waste and recycling were

things she could get behind.

“We need to make recycling a fascinating field,” she said. “It’s a

completely different area for me and I have such respect for it.”

She also wants to better balance life and work. This winter

she will exchange wedding vows with Jason Lizana, an ac-

countant, during an intimate church ceremony in Orange

County. She’s already enjoying how her newest position has

given her the perspective of being a mother at 37-year-old William.

In her waste management role, she is working with county supervisors on regulations and legislation affecting Orange County waste. At 32, she hasn’t ruled out the possibility of

running for public office.

“Working on sustainability issues feels good, it feels

right,” she said. “I keep remembering that quote, ‘We do not inherit the Earth from our ancestors, we borrow it from our children.’

With a background in strategic planning, she implement-

ed changes, merged operations and accounted for the bureau, which manages the country’s water supply through reser-

voir, canals, dams and power plants.

24 USC Denix

Fall 2013 / Winter 2014 25
When it comes to green energy, producing power is just a sliver of the goal. The real challenge comes in storing that energy for occasions when the sun doesn’t shine and the wind doesn’t blow. Or there is high demand. Right now, batteries require expensive metals and materials with short life cycles. Two projects at USC Dornsife’s Loker Hydrocarbon Research Institute, funded by the Advanced Research Projects Agency-Energy, seek to make rechargeable batteries safer, cheaper and more sustainable.

### Iron-Air Battery

**How it works**

The iron-air battery — also known as a rust battery — uses elemental iron that is electrochemically oxidized into iron hydroxide during discharge and reverted to iron metal during charging at the positive electrode. At the negative electrode, oxygen from the air becomes hydroxide ions during discharge and is released back into the air during charging.

**What it costs**

G.K. Surya Prakash, Loker Hydrocarbon Research Institute director, and Sri Narayan, professor of chemistry, estimate that at 25 percent of the battery’s theoretical energy output, the iron-air battery will exceed the energy storage of current state-of-the-art lithium-ion batteries — at just a tenth of the cost. Narayan points out that unlike lithium or other current materials, iron is cheap, safe and ubiquitous — and oxygen from the air is free. He notes that the battery can be built for less than $10 per kilowatt-hour of storage.

**How long it lasts**

The team is aiming for a battery life of 5,000 cycles, which would mean a battery that lasts about 15 years. Such batteries could be used to store electricity in massive amounts for residential areas, power plants and on the energy grid.

### Methanol Economy Expands Overseas

Founded by George Olah and entering its 36th year, the USC Dornsife Loker Hydrocarbon Research Institute continues to advance sustainable energy storage and the methanol economy. The idea to replace petroleum oil-based fuels with methanol is taking off across the globe. In Iceland, the first-ever power plant that uses carbon dioxide and water to produce methanol opened in 2011. The George Olah Renewable Methanol Plant has a capacity of 5 million liters per year and expects to use around 85 percent of the carbon dioxide produced by a nearby power station. In China, 10 percent of transportation fuel is now methanol. Additionally, Iran is now routinely blending gasoline with methanol.

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### Organic Aqueous Redox Flow Battery

The eco-friendly aqueous organic battery goes one step further, replacing all metal with organic substances known as quinones. The substances are oxidized and reduced at the surface of the carbon electrodes from water-based solutions. Without using organic solvents, and by choosing the best compounds, the batteries can charge cheaply and safely — no metal is needed. “Without metals, there are no life cycle issues,” Prakash said.

Quinones have a charge capacity of about 200 to 490 Ah/kg and cost about $10 to $20 per stored kilowatt-hour, just a tad of the battery cost of $100 per kilowatt-hour. Ditching metals and organic solvents adds another important benefit: safe disposal at the end of the battery’s life.
Ray of Sunshine

Organic photovoltaics are the next big thing. Traditional silicon solar cells are booming, but cost and environmental concerns abound. Brutchey and Thompson are working on different ways to take on the same thorny problem: making better solar cells using new materials. Both are part of the same Department of Energy-funded research center that four years ago received a $12.5 million grant.

The research takes into account that while silicon cells top out at about 29 percent efficiency, organic cells could go much higher in the future — and they have other benefits to boot. The light and flexible organics could be painted onto houses, threaded into clothing and even used as window tinting — feeding energy back into a building’s power supply.

Richard Brutchey researches cells made of a mix of organic polymers and inorganic nanocrystals. Researchers make semiconducting cadmium selenide nanocrystals (also known as quantum dots) that are about four nanometers in size and disperse them in a liquid solution. Special molecules called ligands are stuck to the surface of the cell. These ligands are critically important for charge transfer and collection, which is why the researchers are working on them — they are one way to chemically optimize solar cell performance.

The cells absorb light on either the polymer or nanocrystal phase. The light forms an exciton — a kind of excited electron/hole pair that migrates to the interface of the two materials. There it splits — the electron moves in one direction and the positive hole moves in the opposite direction, creating a current. Eventually, Brutchey aims to create eco-friendly nanocrystals that are cheaper, less toxic and more Earth-abundant. He expects his research will convert more of the solar spectrum into electricity than the nanocrystals and polymers in use today.

Mark Thompson’s research takes a slightly different approach. Instead of using an organic and inorganic mix, he sticks with all-organic molecular materials — his research is currently using a cousin of chlorophyll.

The materials are carefully deposited onto a sheet of glass in two super-thin layers, and when light hits them, it creates a voltage between base and the top electrode. The efficiency of the all-organic cells is currently higher than that of the inorganic mix cells, but both are below the level of silicon. “We are less interested in chasing records and more interested in understanding the fundamental limitations of the system — and then overcoming those limitations,” Thompson said.

Right now, his lab is working on coaxing the cells to absorb light not just in the visible spectrum, but also in the near-infrared spectrum. Thompson adds that lighter, more flexible organic cells would decrease the cost of putting the technology onto roofs.
Growing up in Wayne, N.J., Geraldine Knatz loved nothing more than going crabbing with her family on the Jersey Shore. Until, heading home one summer evening, she was overcome by remorse. Insisting her father turn around, she made him drive back to the beach.

“He was annoyed,” Knatz said. “He didn’t like having to get off the parkway and pay extra tolls to go back, all because I wanted to let my crabs go. We quit crabbing after that, but that moment was the start of me.”

Knatz was in junior high by then and often watched French underwater explorer Jacques Cousteau on TV. She also had a laboratory set up in the family’s basement, where her older brother played with his chemistry set.

“My brother used to blow stuff up down there, but then he lost interest and I started using the laboratory to look through a microscope at pond water. That’s when I became more aware of life. Other life.”

Fast forward to 2005 and Knatz — who earned a master’s in environmental engineering in 1977 from USC Viterbi School of Engineering and a doctorate in biological sciences in 1979 from USC Dornsife — had risen through the ranks at the Port of Long Beach to the No. 2 position. She oversaw a $2.3 billion capital improvement program and had spearheaded a number of environmental initiatives, including development of the Green Port Policy. She was already serving as chair of the International Association of Ports and Harbors’ Port Environment Committee when she was offered the top job at the Port of Los Angeles, the nation’s busiest container port.

Encompassing 7,500 acres on 43 miles of waterfront, the port handled more than $273 billion in

Geraldine Knatz’s motto is “It’s impossible, it’s difficult, it’s done.” Preparing for retirement, the first woman executive director of the Port of Los Angeles gave it her all to turn the ship around.

by Susan Bell

TRANSFORMATIVE VISION

Geraldine Knatz ’79 and her team have transformed the nation’s busiest commercial port into the nation’s greenest while continuing to implement strategies to maintain its No. 1 status.
"You have to know how to inspire people. USC teaches people to be fearless. To think big. To strive."
Treasure Island

On Catalina Island — and at the University Park campus — the legendary Wrigley family has created a kingdom of scientific researchers.

by Pamela J. Johnson
One National Science Foundation (NSF)-supported, three-year interdisciplinary project brings together a biologist and linguist to engage in fundamental discovery. Andrew Gracey, associate professor of biological sciences, recalled when Khalil Iknasik, assistant professor of linguistics, invited him to be a project that uses twisting, squeezing octopuses and the worm Caenorhabditis elegans to study the human tongue during speech.

IN AN OCTOPUSES’ GARDEN

“It took a while for me to get my head around the research,” Gracey said. “Khalil explained that the human tongue is almost like an ancestral octopus tongue. It’s found in octopuses that have many different limb movements. Khalil’s theory is that these limb movements reflect similar movements that the tongue uses within the mouth. Both use very highly controlled hydrostatic muscles. So his idea was that we would compare and contrast the movements of the tongue with those of the octopus and worm to find general principles about how this type of muscle is controlled.

Octopuses are kept in tanks at the center. Researchers videotape them while they content their limbs in various ways — to pivot, walk and run. “Both corroborate movements to ultrasound images of human tongues in motion.”

Gaining a deeper understanding of the principles of natural movement can give scientists a better handle on the effect on speech due to Parkinson’s and other diseases.

“You have biologists working on octopus limb movements and you have linguists working on tongue movement,” said Gracey. “So you have biologists and linguists working in the same arena.”

Both use very highly controlled hydrostatic muscles. So Khalil’s theory is that these limb movements reflect similar movements that the tongue uses within the mouth. Both use very highly controlled hydrostatic muscles. So his idea was that we would compare and contrast the movements of the tongue with those of the octopus and worm to find general principles about how this type of muscle is controlled.

Gracey and Iknasik have received a four-year NSF grant to predict the winners and losers in ocean acidification, a term used for the ongoing decrease in pH in the Earth’s oceans caused by carbon-dioxide absorption from the atmosphere. Even within species, biological responses to ocean acidification vary.

A fuller understanding of how marine animals function during environmental change requires a merging of physiological, genetic and environmental research, Manahan and Hedgecock said. They are researching Pacific oysters, which have genetic and genomic resources unparalleled for most marine animals.

“Hybrid vigor is an example of trying to improve the growth rate of animals in the face of ocean acidification,” Hedgecock said. “This is an aspect of the sustainability issue.” The pair is bringing in undergraduate, graduate and post-doctoral researchers to assist in the study, said Manahan, USC Dornsife’s vice dean for students. The two have worked closely with the West Coast oyster industry for more than a decade. They expect their research to translate directly into improved breeding programs for the West Coast oyster industry, valued at more than $100 million annually.

Moreover, findings may be applicable to other highly fecund marine species, such as fish and other commercially important species that provide a major source of food for human consumption. An estimated nine billion people will occupy the Earth by 2050, according to United Nations experts.

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Moreover, findings may be applicable to other highly fecund marine species, such as fish and other commercially important species that provide a major source of food for human consumption. An estimated nine billion people will occupy the Earth by 2050, according to United Nations experts.

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In a study published in September 2013 in *Nature Geoscience*, Hutchins examined which organisms will thrive and which will perish with the altering ocean. Changes in nitrogen-fixing cyanobacteria — bacteria that obtain energy through photosynthesis — have implications for every living thing in the ocean, because all forms of life require nitrogen fixers to survive.

In the same issue, Caprone and Hutchins reviewed the array of chemical and physical parameters being modified in coastal upwelling systems as a result of human influence, including climate change, and the implications of such changes for these highly productive marine ecosystems. “Our findings show that CO₂ has the potential to control the biodiversity of these key keystone organisms in ocean biology, and our fossil fuel emissions are probably responsible for changing the types of nitrogen fixers that are growing in the ocean,” Hutchins said.

David Caron, professor of biological sciences, and Hutchins recently published an article in the *Journal of Plankton Research* discussing these new lines of research. They are investigators for an ongoing NSF grant that led to the recent publication of three papers by Avery Tatters, a Ph.D. student in Hutchins’ lab.

Caron, Hutchins, Tatters and other USC Dornsife researchers are conducting first-of-their-kind, long-term experiments on the reaction of microbes to increasing levels of carbon dioxide — which lower the pH of water making it acidic — in seawater.

With Hutchins as the principal investigator, researchers have obtained a four-year NSF grant to continue studying how nitrogen-fixing cyanobacteria may evolve in response to variables that include increasing carbon dioxide and temperature.

Researchers, including Tatters and graduate student Yongsheng Luo, conduct these experiments in labs on Catalina and the University Park campus. They are also studying the triggers of potentially deadly algal blooms, known as red tides.

“These huge, toxic blooms that are already causing big problems in our area may get worse in the future as the pH of the ocean decreases,” Hutchins said.

**BLOOMING AWFUL**

In 2005, King Harbor in Redondo Beach, Calif., experienced a massive fish kill. Millions of dead fish later clogged the harbor.

Some worried that the episode was due to red tides, which occur after the rapid reproduction of microscopic plankton. This eventually releases powerful neurotoxins that can damage the brains of shellfish and marine mammals such as sea lions and pelicans — and humans who may eat the seafood.

“It actually fires the nerves and will literally burn out synapse connections in the brain, which causes various symptoms ranging from nausea all the way to convulsions and death if you take enough of it,” Caron said.

Caron is working with a team that has launched two missile-shaped, robotic gliders into the sea — one between the USC Wrigley Marine Science Center on Catalina Island and Point Fermin and another off the coast of Huntington Beach. As the gliders scour the ocean, they gather vital information Caron uses to detect potentially dangerous developments in the ocean that could lead to a major loss of marine life.

The glider project is funded by the National Oceanic and Atmospheric Administration, National Science Foundation, U.S. Environmental Protection Agency, NASA and the Office of Naval Research. Each glider costs about $120,000. Most recently, in 2011, a few million silvery sardines went belly up at King Harbor. Caron was among the first at the scene. He and his researchers checked their sensor equipment suspended in the harbor since the 2005 fish kill. Their sensors record the measurements of temperature, salinity, chlorophyll and plant pigment in the water every half hour, detecting any possible algal blooms and toxic algae.

“IT’S NOT JUST ABOUT SCIENTIFIC FINDINGS, IT’S ABOUT TRANSLATING THE SCIENCE FOR PUBLIC BENEFIT”

The instruments suspended in the harbor throughout the event revealed that the fish were killed by a lack of oxygen in the harbor water. There was no algal bloom or toxic alga present.

Caron conducts this research as part of a five-year National Oceanic and Atmospheric Administration grant to investigate early detection of harmful algal blooms in coastal California. The causes of red tide are hotly debated among scientists, with nutrient inputs from agricultural run-off and sewage, and climate change as possible culprits.

“In the case with King Harbor in 2011, too many fish entered the marina, and there wasn’t enough oxygen for them to survive,” Caron said. “Gliders help us wire the ocean, and with this constant surveillance, we are on the verge of being able to predict and mitigate these events.”

The Redondo Beach City Council has honored Caron and his researchers for their efforts concerning the fish kill. Caron is also working with the Orange County Sanitation District (OCSD) and the Hyperion Treatment Plant in Los Angeles to examine the effect of effluent discharging from pipes in deep water five miles offshore.

“They discharge secondarily treated sewage, and that effluent contains tons, literally tons, of nutrients,” Caron said. “We’ve been looking at what the potential impact of that discharge might be to local phytoplankton communities.”

Most of the nutrients boil down to ammonia and phosphate. If they are discharged deep into the water column below the light zone where algae photosynthesize, there is less concern. However, in Fall 2012, the OCSD had a “discharge event” in which it had to use an older, shorter pipe while the longer pipe was being repaired. The shorter pipe is only a mile long and discharges in shallow water, Caron said. “So, the potential is that the shorter pipe introduces nutrients directly into the lighted surface waters, and they could cause massive phytoplankton blooms.”

Caron and his team worked closely with Orange County to ensure proper planning and monitoring and will do
same with the Hyperion Treatment Plant when it goes through a similar diversion event in 2014.

We’ve worked with Orange County Sanitation District and Hyperion for years now,” Carson said. “We’ve developed a trust and a relationship. They could try and hide everything under the rug, but they don’t. They know that we will do a good, honest and objective job of looking at the effects of events like diversions.

“They’re very eager to make sure they have informed and impartial people participating.”

Carson smallest improving the community’s environmental health and tapping into L.A.’s resources are part of the institute’s broader mission.

“It’s not just about scientific findings, it’s about transacting the science for public benefit,” she said. “It’s about talking to other disciplines that are helping us understand how we can communicate with people to let them know that, for example, the choice of their next vehicle could not only lower their fuel costs and reduce the cost of the car, they should think about the environmental implications.

“People are now seeing the beauty of a lot of these things, especially in the aspect of environmental responsibility embedded in them,” she said.

Among the institute’s newest, most cutting-edge disciplines is environmental humanities. Looking through a spatial lens takes geography to a whole new level.

A SPACE IN TIME

“We live in an evermore crowded and connected world,” said John Wilson, professor of sociology, civil and environmental engineering, computer science and architecture, and director of the Spatial Information Research Institute. “Our success in teaching GIS programs. The students had to know all of the road, how wide they were, characterize what kinds of surface they have and note all walls.

“They had to go literally everywhere. They went to a little bluff at the coast and worked their way back up toward the road that leads to Two Harbors; they pretty much had to get to the top of the cliffs because they were pretty beat up by the end of three days.”

Undergraduate Research Experience for Undergraduate programs draws students nationwide. In collaboration with the USC Wrigley Institute, Ruddell and Wilson are working with student GIS research, and Location-Based Services — have evolved tremendously in the past three decades. Some geographic information is as small a set of core infrastructures,” Wilson said.

“We live in an era when we have unprecedented tools to help us with these issues,” he said.

Fundamental geoprocessing tools — Geographic Information Systems, remote sensing, and Location-Based Services — have evolved tremendously in the past three decades. Some geographic information is as small as a set of core infrastructures,” Wilson said.

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THESE SUPERHEROES ARE FIGHTING AGAINST HUMAN SUFFERING AND POLLUTION, AND TO KEEP THE DESERT TURTLE ALIVE. FOR THE FIRST TIME, THE ENVIRONMENTAL AVENGERS REMOVE THEIR MASKS. by Laura Paisley

This planet patrol toils diligently to combat forces working against environmental health. Recent alumni from USC Dornsife’s dynamic Environmental Studies Program pursue a host of professional paths — from law to medicine, business and conservation — and are united by their shared interest in making the world a healthier place for all.

Whether it’s briefing Gov. Jerry Brown on issues or rising at 3 a.m. to beat the punishing desert heat to track threatened desert tortoises, these heroes are fighting the good fight.

WHY DID YOU DECIDE TO GO INTO MEDICINE?

My drive crystallized after suffering severe spinal trauma in a skiing accident in 2010. Shattered bone fragments punctured my spinal canal, resulting in a lack of feeling and movement from the waist down. After 13 hours of reconstructive surgery, I could wiggle my left foot for the first time since the accident. It was an incredible moment. I was given a new direction in life.

My subsequent care as I recovered exposed me to the complexity of health care systems and formed my interest in the delivery of health care. While shadowing physicians, I have seen how approaching a problem from multiple viewpoints is a critical skill. This is something my background in environmental studies has instilled in me: thinking systematically about complex problems.

BRIAN RODYSILL ’12 IS ATTENDING MEDICAL SCHOOL AT THE MAYO CLINIC COLLEGE OF MEDICINE IN ROCHESTER, MINN. HE GRADUATED FROM USC DORNSIFE WITH A BACHELOR’S DEGREE IN ENVIRONMENTAL STUDIES AND A MINOR IN NATURAL SCIENCE.

HOW DID YOUR INTEREST IN ENVIRONMENTAL STUDIES DEVELOP?

My concerns about the environment and sustainability began in high school, when I started a group that led to a statewide award from U.S. Sen. Amy Klobuchar. After I graduated, I was encouraged to see students from the group finish a project that raised $170,000 to put solar panels on Rochester’s four high schools.

The dynamic interactions between human and natural systems fascinate me. In my coursework at USC, I learned how changes in one system impact various others. Learning about pollution and food production related to public health clarified my interest in the medical field.

IF YOU COULD CURE ANY MEDICAL MALADY, WHICH WOULD IT BE?

Curing people of debilitating neurological/neuropathic pain and suffering. Given my personal experience, I have real empathy for this type of suffering and hope to develop surgical and regenerative medicine therapeutics in this area.

TALK ABOUT YOUR UNDERGRADUATE PROBLEMS WITHOUT PASSPORTS (PWP) OVERSEAS TRIP.

The PWP program in Belize was among the most gratifying experiences in my life. We were studying the collapse of societies using ancient Maya as a case study. We lived in traditional thatched-roof bungalows, ate local cuisine and toured organic farms. We also taught at schools in the Belizean jungle.

Through anthropological and archaeological analyses, I learned about the current natural preservation and conservation efforts in Belize. I learned that it is possible for a population to outgrow the capacity of an area, even with advanced technology, and that sociopolitical establishments can quickly fall apart when food scarcity and climatic crisis occur.
WHY DO YOU LOVE WORKING IN CONSERVATION? We take in desert tortoises, a threatened species, and rehabilitate them, raising public awareness while conducting research. After tortoises are released for relocation, they are radio tagged and go out and track them. I love being in the field, being outdoors and contributing to research that furthers scientific understanding. In conservation we’re not just protecting these resources for ourselves, we want to spark public interest for a better understanding of what we do. It’s fulfilling to me but I hope that when people see the results, it fulfills them, too.

YOU ARE ALSO AN ARTIST. HOW DO YOU VIEW YOUR ROLE IN THE INTERSECTION OF SCIENCE AND ART? I love being in the field, being outdoors and contributing to research that furthers scientific understanding. In conservation we’re not just protecting these resources for ourselves, we want to spark public interest for a better understanding of what we do. It’s fulfilling to me but I hope that when people see the results, it fulfills them, too.

DESCRIBE YOUR THESIS ON THE LOS ANGELES RIVER. The river is considered by many to be little more than a storm drain, yet it contains life, its riparian ecosystem exists in the northern reaches, giving birth, fish and even humans a safe haven. I researched this ecosystem from a dual artistic and scientific perspective. I created anthotype and cyanotype photographs, developing the pictures with the extracts of fruit I also created an oil painting of the river on unprimed canvas using tar from the La Brea Tar Pits. But I consider the temporality of it all, through the sun’s rays and oxidation, all those works will eventually fade away. The tar will eat at the canvas just as pollutants make it difficult for life to exist in the ecosystem. This idea of temporality causes us to think deeply about what we value.

IF YOU WERE ANY ASPECT OF THE L.A. RIVER, WHAT WOULD YOU BE? The collective spirit of the people who are trying to revitalize the river — the people who use and appreciate the river, not seeing it as storm drain age but as a living ecosystem.

LAURA WANG ’12 IS AN EXECUTIVE FELLOW FOR RENEWABLE ENERGY IN THE OFFICE OF CALIFORNIA GOV. JERRY BROWN. PREVIOUSLY, SHE WORKED FOR THE WHITE HOUSE COUNCIL ON ENVIRONMENTAL QUALITY. WANG GRADUATED FROM USC DORNSIFE WITH A PROGRESSIVE MASTER’S DEGREE IN ENVIRONMENTAL STUDIES.

DESCRIBE YOUR JOB WORKING ON GOV. JERRY BROWN’S RENEWABLE ENERGY TEAM. I work in the executive branch on energy and environmental policy for the state, preparing talking points and memos on issues, and managing some of the governor’s own initiatives. I wrote a summary of climate change impacts and consequences for California, which the governor used in his 2013 State of the State address. It’s exciting, you read about issues in the news, then the next day you’re actually working on that same controversial hydraulic fracking legislation. California has a very diverse population, and this must be reflected in our environmental policies. In the governor’s office, we’re serving the people of California, who have many disparate interests. Balancing those is a big challenge.

HOW DOES THIS JOB BUILD ON YOUR EXPERIENCE INTERNING IN THE WHITE HOUSE? My internship directly exposed me to executive branch management, which is a lot of corralling and directing agencies, while representing an administration’s view. My boss was the associate director of National Environmental Policy Act (NEPA) Oversight, which essentially directs every government department or agency to write up an environmental impact statement that examines the environmental affects of agency actions. NEPA was enacted in 1969, but there is a push to reinvigorate it since today’s environmental planning has evolved. Interns worked on initiatives to modernize it — using electronic tracking and finding better ways to streamline the policy processes.

TALK ABOUT YOUR SCIENCE DIVING EXPERIENCES AT USC. I was particularly impacted by my Micronesia PWP course on ecosystem management. One thing that always stuck with me is the statistic that 99 percent of scientists believe in climate change but less than half of politicians do. I wondered why we don’t follow the science. It drove home the fact that we have good science data, but the policy context is where I want to focus. This was reinforced by my science diving at the USC Moulton Marine Science Center on Catalina Island, a big Fisherman’s Cove, a protected marine area. An in independent research project, I developed a methodology for monitoring the health of the marine protected area. The project is still being used by USC students.

IF YOU COULD HAVE ANY SUPERPOWER RELATED TO GOVERNMENT WORK, WHAT WOULD IT BE? The ability to comprehend draft legislation and bill analyses with lightning speed. In government you still have to read about issues in the news, then the next day you’re actually working on that same controversial hydraulic fracking legislation. California has a very diverse population, and this must be reflected in our environmental policies. In the governor’s office, we’re serving the people of California, who have many disparate interests. Balancing those is a big challenge.
WHAT PROMPTED YOU TO PURSUE A DEGREE IN LAW? I have known since high school that I wanted the environment to be a prominent part of my career, and that I wanted to pursue law. I am specifically interested in working with environmental companies and legislation. My lifelong goal is to improve consumer products by changing product labeling to give clear information about the impact the product and its manufacturing has on human health and the environment. Consumers have the right to know what’s in the products they purchase.

TALK ABOUT YOUR RESEARCH ON PRODUCT LABELING AS PART OF YOUR PROGRESSIVE MASTER’S DEGREE. Many people want to be “green” or vote with their dollar, but without readily available product information, they aren’t going to do the economic impact analysis on their own. So my research explored the idea of employing a universal grading scale, labeling all products with a green score for environmental impact on a scale of one to 100 so that consumers can make an informed decision when they buy. People put a lot of trust into companies to do the right thing with their resources, so it’s the job of the people and the government to ask companies to give back to communities.

HOW DID YOUR INTERNSHIP AT GREEN CHAMBER OF COMMERCE (GCC) INFORM YOUR LAW WORK? I’m really interested in green businesses both from a business and a law perspective. I think the key to environmental change is leveraging both business and policy change. GCC was great because it brought together so many green businesses; I would never have been exposed to otherwise. It devoted itself to policy promotion, and many of the policies were new to me. Now I’m informed at the local (San Francisco) level about the Styrofoam ban, opting in to the yellow pages, the banning of plastic bags, and the sale of shark fins. So the experience gave me a great introduction to businesses interacting directly with environmental policy.

IF YOU COULD HAVE DINNER WITH ANY ENVIRONMENTALIST, WHO WOULD IT BE? Al Gore. The former vice president was a huge inspiration for my interest in environmental studies. He directed much-needed attention to the topic of climate change, bringing it from an environmental issue to a human issue, affecting how we live daily.

HOW DO YOU MAINTAIN A POSITIVE OUTLOOK IN THIS FIELD? I feel cynical when the Environmental Protection Agency is supposed to release rules for regulating emissions from power plants and it keeps taking longer and longer. Same thing with cap-and-trade. Money is being borrowed from the auctions to balance the budget in California, but those funds were originally intended for projects that reduce greenhouse gas emissions. But I see encouraging things in the private sector — companies that voluntarily offset or mitigate their emissions and find efficiencies. That motivates me to be a part of the driving force shifting some of the biggest companies in the world toward sustainability.

DESCRIBE HOW YOUR CURRENT JOB HELPS IMPLEMENT CALIFORNIA’S LANDMARK CAP- AND-TRADE PROGRAM. The Climate Action Reserve specializes in the regulatory and voluntary carbon offset market. We work on projects related to forestry, livestock and landfills. In a landfill operation, the decomposition of waste creates methane — a greenhouse gas — that goes into the atmosphere. We create the guidelines for how to destroy the methane. Landfills own the project; implement those guidelines and get certified by a third party. This is where my job comes in. The verification body creates a report and submits it to us, and as an administrator I review it and make sure the reductions are real and accurate. We’ll look for tiny details like, were they calibrating the instruments correctly, according to the guidelines we established? When we approve their project, we generate climate reserve tonnes, a unit with a price on the market. Companies buy these carbon offsets so they can mitigate their emissions profiles.

HOW DID YOUR PWP ECOSYSTEM MANAGEMENT COURSE IN MICRONESIA SHAPE YOUR CAREER INTERESTS? That course was research meets projects meets global development. We did a case study in Guam looking at the impact of military development on the coral reef ecosystem, contrasting it with Palau, a well-managed marine environment. I saw how establishing a baseline is a key starting point in developing long-term resource management. It’s the same with the industry I’m in, without baseline data you cannot create effective carbon reduction projects. I also learned that business is the main driver behind climate change and the biggest area that must be shifted in order for the global population to reduce its carbon footprint.

HOW DO YOU IMPLEMENT ONE ENVIRONMENTAL/SUSTAINABILITY WISH, WHAT WOULD IT BE? I would install a worldwide smart grid in order to effectively integrate renewable sources of energy and end reliance on fossil fuels.
The early morning hour was taking its toll on Maria Guzman as she stood near a freeway underpass in Pacoima, Calif. As the sun rose and traffic chugged by, she diligently recorded her coordinates with a Global Positioning System receiver. The numbers ticked up on her handheld air monitor. Guzman noted the air-quality levels.

She frowned. “Most people in this neighborhood don’t realize what the polluted air does to your health,” Guzman said.

The mother of two knows all too well. Guzman, who resides in nearby Sylmar, lived in Pacoima for many years. Her son and daughter suffered from severe asthma in their youth. She wants to ensure that other children and families are not affected by toxic emissions.

A health promoter at the environmental health and justice nonprofit Pacoima Beautiful, Guzman and a team of volunteers took turns monitoring air contamination levels in their communities. Trained by Manuel Pastor, director of the Program for Environmental and Regional Equity (PERE) at USC Dornsife, and James Sadd, professor of environmental science at Occidental College, they did this eight times a day for one week as part of a community-based participatory project called Ground Truthing — finding facts on the ground about the true state of local air pollution.

Pacoima is nestled in the northeast corner of the San Fernando Valley, hugged by long stretches of the 5, 118 and 210 freeways. Clusters of residential streets lined with single-story ranch houses alternate with roads dotted with signs advertising tire services, auto body shops, custom granite countertops, plastering services and car batteries for sale. The small community, covering approximately seven square miles, also contains an airport and a scrap metal recycling plant. At the community’s eastern border is the Los Angeles Department of Water and Power’s Generating Station in Sun Valley. A few blocks from an elementary school, planes constantly arrive and depart from an airport. “I know these are not things that are good for the environment, especially when you have a school nearby with little kids,” Guzman said. “When their lungs are growing, it’s really, really bad.”

Low-income communities of color, like Pacoima, are particularly at risk because they are more likely to live close to air pollution sources. Studies show such communities have higher risk and incidence of cancer and respiratory illnesses such as asthma. According to the Los Angeles Times Mapping Project, roughly 85 percent of Pacoima’s population is Latino and median annual household income is...
enough energy to power more than 43,000 single-family homes. As part of a collaborative effort toward policy change to protect vulnerable communities, PERE is a research center focusing on issues of regional equity, social movement building and environmental justice. PERE's goal is to move research from university halls to public policy by partnering with change agents on the ground — such as Guzman's work with Pacoima Beautiful — to help improve communities.

"We don't change the world, we work with people who change the world," Pereira said. "Our fundamental motivators are issues of social justice and inclusion," Pastor said. "We have found that the environment is something everyone thinks should be enjoyed universally, so understanding inequity in exposure to environmental hazards helps people to see that inequity may exist in other aspects of society — access to education, jobs, etc. — and that it is structural and should be remedied."

Under the approach of what Pastor terms the "new three Rs" — rigor, relevance and reach — PERE provides the foundational research central to making a case for action. Staff expertise includes data analysis, urban planning, racial equity, grassroots organizing and policy development. Fall-
ing in line with the program's mission, every report produced by PERE is made freely available to the public online.

Pastor launched PERE when he joined USC Dornsife’s faculty in 2007. A long-time advocate for environmental justice and regional inclusion, he wanted to continue his work as a faculty member at the University of California, Santa Cruz, and before that at Occidental College in Los Angeles, Calif.

The professor of sociology and American studies and ethnicity also co-directs USC Dornsife’s Center for the Study of Immigrant Integration (CSI), which gathers data to understand the plight and impact of immigrants as they acculturate into American life. CSI and PERE share much of the same staff, which, in addition to professional data analysts, includes undergraduate and graduate researchers.

Tiffany Pereira, an environmental studies major who earned her bachelor’s degree from USC Dornsife in 2011, had never heard the term "environmental justice" until Pastor presented the topic on one of his courses on sustainability.

"I didn’t know much about it, but it really struck me because growing up in Los Angeles, we are in an envi-
nronment that’s so intertwined with the urban landscape," Pereira said. "It’s something most people don’t think about." That summer she worked with PERE as a student assistant, participating in a program that brought local high school students to campus to teach them about environmental justice.

Pereira said students got fired up.

"Wait, is this going on in my community?" they asked her incredulously.

PERE is contributing to a number of research projects that tackle environmental justice concerns in Los Angeles from different angles. Collaborating with researchers from the University of California, Berkeley, Occidental College and elsewhere, they have created a body of research investigat-
ing what’s known as the climate gap, the way vulner-
able communities are disproportionately affected by climate change. They have also contributed to pivotal research helping to produce more solar power in L.A. (see sidebar below). In addition to environmental justice concerns, they...
Justice — a term used to plethora of research projects PERE is contributing to a ASSURING EQUITY from generating plants — tal hazards such as pollution in L.A., as well as at the state level. Their conclusions were published in a 2010 report reducing socioeconomic disparities — and social movements. called “Hidden Hazards.” The communities’ research also revealed that air pollution levels regularly exceeded safety standards recommended by the state. The technical model for Ground Truthing was an envi- ronmental justice screening method developed for statewide use by Pastor, Sadd and their longtime collaborator, UC Berkeley professor Rachel Morello-Frosch. The California Air Resources Board (CARB), the part of the California Environmental Protection Agency dedicated to protecting residents from air pollutants, commissioned the trio to identify vulnerable California communities.

“What was really innovative about their work was that they used a science-based approach to mapping environmental justice communities throughout the state,” said Al- varo Alvarado, manager of the Health and Ecosystem As- sessment Section of CARB. The screening method sorts neighborhoods’ proximity to hazards as well as their health risks, social vulnerability indicators and land use designa- tions. The information collected is then presented visually on a map that can be used in citing, zoning and policy de- velopment processes identifying overburdened communi- ties, as was done to inform the Clean Up Green Up policy.

Those findings became the basis for the land use and plan- ning proposal called Clean Up Green Up, which would look at the cumulative effects of environmental pollutants produced by businesses. The status quo was considered each pollution source individually. Clean Up Green Up would create green zones in Pacoima, Boyle Heights and Wilmington, where pollutants would be targeted for tougher inspections and enforcement. Businesses would receive re- sources to help them green up, by providing technical as- sistance to help them understand environmental rules and acquire green technology.

In June 2013, the Los Angeles City Council moved the plan forward by directing the L.A. City Planning Depart- ment to research, analyze and draft the Clean Up Green Up policy. It was a major victory for environmental justice.

“PERE’s researchers have really been willing to go outside the traditional arenas of laboratories and libraries. They in- vestigate and understand the problems from many different facets, including the people on the ground,” she said.

Reyna Hernandez, a volunteer with Pacoima Beautiful who also participated in Ground Truthing, said that while it’s just the beginning, it was rewarding to see the Clean Up Green Up proposal come to fruition.

“We know our voices have been heard,” Hernandez said in Spanish. As a 17-year Pacoima resident, she sees environ- mental awareness building. More people are participating in community cleanups, she said, adding, “I’m hopeful for the future.”

While there is progress on the local level, PERE’s re- search has made inroads at the state level as well. The national conversation was advanced significantly by their research.

“The fact that their research has been informed by the participation of the community is very unique and special,” she said. “PERE’s researchers have really been willing to go outside the traditional arenas of laboratories and libraries. They in- vestigate and understand the problems from many different facets, including the people on the ground.”

The birth of Little Ricky on I Love Lucy may have been the biggest event on television back in 1953, but Ricky wasn’t the only popular culture icon to reach his bold head that year. Six decades ago, TV viewers also met the USC scholar who taught them the wonders of literature, history and science, all from the comfort of their living rooms. Having been voted students the most popular professor in America, Frank C. Baxter, a Cambridge-educat- ed English professor, seemed a natural choice when Los Angeles CBS affiliate KNX approached USC with the idea of developing a weekly hour-long program to fill the station’s public service obligation. Every Saturday morning, more than 400,000 people in Southern California tuned into Baxter’s Shakespeare on TV to watch the popular lecturer discuss the Bard. Viewers were invited to enroll in English 356a. Nearly 400 paid up and took it for credit, while others audited the course.

Instantly recognizable because of his round face and ever-present glasses, Baxter became a local celebrity. His celebri- ty grew when CBS de- cided to take Shakespeare on TV to a national audience. The show ultimately garnered a show of its own in a Peabody, Silver’s Emmy Award and seven Emmy Awards.

Baxter followed up Shakes- peare on TV with other educational programs, such as how to use the Sears Roebuck catalog, television series on the technological age, remains an important component of education at USC. — D.A.

Although the medium of televi- sion made him famous, Baxter preferred books to a flickering screen. In his last lecture at USC, he remarked that “The idiosyncratic TV... think

people are best placed at the low, hypothetically base level. There is no loss in America with deprive people of reading.”
Historian and wave rider Peter Westwick co-written a history of one of the world’s oldest sports. Whether wearing shorts in Malibu, Calif., or hanging ten in Waikiki, Hawaii, surfers have long held a reputation for counterculture cool. With their bronzed bodies and kissed tresses, surfers occupy a spot in popular culture where carefree attitudes, athletic prowess, and a connection to nature meet close to the authors’ hearts.

“Surfers ride the interface between civilization and the oceanic wilderness. Since they emerge at the beginning of the 20th century and how issues such as the Cold War, technology, race relations and gender have transformed the sport.” — Peter Westwick, also the director of the Aerospace History Project at the Huntington-USC Institute on California and the West.

“Despite their direct experience of swimming in surf, surfers as a group have often proved to be indolent activists; they were relative latecomers to environmental politics, and though they have become much more mobilized and have won some victories through groups like Surfrider, their influence struggles to keep pace with increasing threats to the environment.”

In the end, surfing is that fun, about the adrenaline rush of catching the perfect wave and communing with nature. The World in the Curl demonstrates why surfers like to say, “Surfing is life, the rest is details.” — D.K.
Lew Can Do Medicine

Mitchell Lew ’83 is a physician and USC Alumni Association Board of Governors president. Lew, a general internist in private practice in Beverly Hills, is a graduate of Stanford Medical School and has spent three decades in health care management. In 2012, he was appointed vice chair of the American Medical Association’s Board of Trustees and a board member of the USC Board of Governors.

In his work as a governor, he has focused on the need to raise the profile of primary care, expanding health care access and lowering costs through more efficient health care delivery systems.

In May 2012, Lew became the first Asian-American president of the USC Alumni Association Board of Governors. Previously, he served as president of the USC Asian Pacific Alumni Association (APAA) from 2009 to 2011.

“Mitchell is an accomplished physician, a far-sighted businessman and an extraordinary Trojan,” said USC President C. L. Max Nikias. “His dedication to advancing our academic mission, and to raising awareness of our students’ accomplishments in teaching, research and community service, is unfailing. I look forward to his contributions as a member of our Board of Trustees.”

Lew, who has a Ph.D. in health care administration and policy, is currently a member of the board of directors for the USC School of Policy, Planning and Development. In addition to his work with the university, Lew also sits on the board of several non-profits, including one devoted to volunteerism.

“Mitchell is a respected physician, administrator and community leader who has devoted his career to improving the health care system for all Californians,” said USC Board of Trustees Chairman William McClure ’76.

SUSAN FORSBURG

Professor of International Relations, director of the Center for International Studies and coordinator of the European Studies program, Forsburg is a leading specialist on security policy in Europe.

Between Women’s Numeric and GenderxFFX


Announced at the Conference on Gender XXII, Forsburg’s presentation was titled “The Continuing Role of Science in Democratic Decision-Making.”

Forsburg’s presentation focused on the role of science in democratic decision-making, particularly in Europe. She discussed the importance of involving scientists in policy-making processes and the challenges that scientists face in communicating their research to decision-makers.

In her closing remarks, Forsburg emphasized the need for continued dialogue and collaboration between scientists and policymakers to ensure that scientific evidence is used effectively in making decisions that impact the lives of all citizens.

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Giselle Rodriguez-Forté will be the first to tell you, she’s a sneakers girl. So it was a bit of a surprise when searching for something to wear to her grand -

**High Heels, High Goals**

Master of Professional Writing Program student Giselle Rodriguez-Forté nab a dream job at Condé Nast Entertainment. Still writing, she braves topics from her grandmother’s emigration from Cuba to her love affair with a particular pair of shoes.

**TELL GUDDERT (B.A., biologi
c., ‘04)**, the president of the University of Florida, an expert on biodiversity, environment & sustainability at The Florida State University, was named the 2013 Guggenheim Fellow in Environmental Science. He is a graduate of Hiram College in Hiram, OH.

Dr. Timothy P. Delield (B.A., linguistics, ’79) is retiring as dean of the School of Communication at the University of Colorado at Boulder. He has served as dean for 20 years of service as anintellectual giant.

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In Memoriam

Harvey A. (Jr.), biochemistry, ’59; Farmington, CT (7/16/13) at age 82, owned a successful real estate company, and was known for his generosity. His wife, the former Claire L. Roes, died in 2012.

George W. Bernheim, Jr., political science, ’79; San Diego, CA (5/21/13) at age 86; U.S. Navy veteran; joined law firm, Quinn,23; followed; serving in 1932 in served on University’s Alumni editorial board. His 1962 book, “The Great Depression,” is a classic of historical research.

Mary L. Buchanan, M.A., philosophy, ’66; High Point, NC (3/25/13) at age 79; during her career, taught philosophy, history, and political science at Meredith College and the University of North Carolina at Chapel Hill.

Gary R. Cabe, Jr., physical chemistry, ’57; Anthony, TX (2/26/13) at age 17, coached; high school education, college, and professional football.

Christopher John Caleffie, B.A., German, ’85; San Francisco, CA (7/24/13) at age 72; taught at Dakota Wesleyan University, and was a professor in the University of Nebraska at Omaha.

Howard S. Dattner, political science, ’49; Cambria, CA (7/5/13) at age 87; served in the U.S. Army as a combat infantry officer in the Korean War; was a professor at the University of California, San Diego, and was active in the American Friends Service Committee.

Richard Sherwood-Dodge, political science, ’72; Cambria, CA (7/13/13) at age 69; served in the U.S. Army during the Vietnam War; was a professor at the University of California, Santa Barbara.

Frederick Oliver Evans III, B.A., economics, ’94; Beach, CA (3/28/13) at age 43; was a member of Sigma Nu; worked for Realogy, Inc.; was an accomplished singer, musician, and writer.

Ernest L. Estes, B.A., economics, ’50; J.D., ’53; Montebello, CA (3/1/13) at age 94; served in the U.S. Navy during World War II; was a professor at the University of Arizona; was a member of the American Bar Association; was a member of the California Bar.

Charles S. Furbush, B.A., political science, ’72; Charlotte, NC (9/7/13) at age 53; commissioned as a lieutenant junior grade; served in the U.S. Navy Dental Corp aboard the USS George Washington; was a professor at the University of California, Berkeley, and served as a U.S. Navy veteran; was a member of Sigma Nu; served as a member of the American College of Physicians.

Yvonne Brul, P.H.S., chemotherapy, ’53; Princeton, NJ (7/20/13) at age 81; beloved to be only female scientist in cancer research; was a member of the Association for the Advancement of Science.

Mary E. (the former) Davis, B.A., (international relations, ’53); Alvord, TX (3/12/13) at age 85; was a member of the American Political Science Association.

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In the early 1970s — when passengers smoked on airplanes and flight attendants were called stewardesses — uniforms consisted of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses — uniforms consisting of micro hot pants, accented with thigh-high go-go boots and a waist-cinching belt, were de rigueur called stewardesses -

In her book, The Jet Set: Airline Stewardess and the Making of an American Icon (University of Pennsylvania Press, 2013), Victoria Vantoch explores how multi-tier forces — such as business strategy, advertising, race, sexuality and Cold War politics — transformed the concept of an air hostess. Vantoch (Ph.D., history, 2011) illustrates how airlines, which had a predominantly male clientele, used stewardesses as a key marketing device. As the aviation industry grew, air hostessing became one of the most idealized careers for young women.

Vantoch — whose interest in the subject germinated through watching her mother work as a hostess during America’s sexual revolution of the 1970s and 80s — writes that “While the wholesome homemaker stewardesses of the 1940s and 50s traveled primarily within the United States, the jet stewardesses would travel all over the globe and she would become an iconic, cosmopolitan, glamorous ‘career girl’ on a crusade to experience the exotic destination-hopping, social elite dubbed the Jet Set...”

Then came the rebellion by many stewardesses against hot pants in the 1970s — a wave of young women who rejected the Jet Set image and its attendant was ranked among the 10 worst jobs for 2013 by careercast.com in its annual rankings — just below dairy farmer, meter reader and roofer — due to its high stress, low pay and declining employment opportunities. — D.C.

Tell Us About Your Book Write to USC Dornsife Magazine, Citigroup Center 8206, 41st Floor, Los Angeles, CA 90089-8206 or magazine@dornsife.usc.edu

Fall 2013 / Winter 2014 6351
TROJANALITY

Teaching Trojan Values

Devoted alumna Heidi Tyler loves nothing better than sharing her love for USC with her middle school students.

When a box brimming with cardinal and gold USC memorabilia arrived at Place Bridge Academy in Denver, Colo., sixth grade teacher Heidi Tyler (B.A., 1999) was thrilled.

“USC is my life,” Tyler said. “I was so excited to get these items from my alma mater, I was literally jumping up and down.”

She was delighted when her name was announced as the first Trojan Family member to receive the USC-donated swag.

The box of USC-donated swag contained pamphlets, shirts, pens, banners, note cards, coasters, pens and a photo album.

“My students were so excited, too, and couldn’t wait to see what was inside the box,” Tyler said, who has taught in Denver schools for nearly 16 years. “It means the world to me to share the excitement and energy I feel about USC and hopefully inspire them in one day become Trojans themselves.”

Tyler said USC Dornsife enabled her to become a better teacher by exposing her to various languages and cultures.

“Being at USC Dornsife taught me to appreciate ethnic and cultural diversity to a much higher degree than I could have experienced at any other university,” she said.

A Trojan football fan, she had great memories of having 50-yard-line seats behind the marching band at the Los Angeles Memorial Coliseum during a 1987 game against UCLA. USC won 17–13 and the crowd went wild.

Tyler, who comes from a long line of Trojans — including her father, aunt and uncle — was instinctively drawn to a career in education.

“I want to impact kids’ lives and help them realize they can dream about a bright future,” she said. “They can attend a top university, regardless of their background.”

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A Philosophical Icon

Hailed as an Icon of Christian scholarship, Dallas Willard was a best-selling author and beloved teacher whose work at USC Dornsife spanned nearly a half-century.

Professor Emeritus of Philosophy Dallas Willard, an expert in Christian spiritual formation who taught at USC Dornsife’s School of Philosophy for 47 years, died May 8, 2013, in Woodland Hills, Calif. He was 77.

“Beloved by decades of undergraduates, Dallas was one of the most popular, versatile and dedicated teachers the School of Philosophy has ever known,” said Scott Soames, Distinguished Professor of Philosophy and philosophy director. “He was a pillar of our undergraduate program.”

Willard studied metaphysics, contemporary European philosophy, ethics, and the history of ethics, with a particular emphasis on the status of moral knowledge in contemporary society. His research specialties included systematic metaphysics, ontology of concepts, language and thought, phenomenology, the history of ethics; and philosophy of religion. Two of Willard’s most recent courses, designed and introduced by him in the last decade, became cornerstones of the interdisciplinary philosophy, politics and law major.

“Dallas was really a hero to many of our Christian students,” said Yann Sené, dean of the USC Office of Religious Life. “He was the ultimate scholar-practitioner. He bridged the divide between philosophy and theology and showed us all how to bring together our spiritual and scholarly lives in a meaningful way. He will be deeply missed on our campus.”

Willard was an award-winning writer on religion. Among his best-known works inspired by his Christian faith were The Spirit of the Disciplines: Understanding How God Changes Lives (HarperCollins, 1980), The Divine Conspiracy: Rediscovering Our Hidden Life in God (HarperOne, 1998), and Renovation of the Heart: Putting on the Character of Christ (NavPress, 2002).

In August 2012, Professor Emeritus of Philosophy Dallas Willard passed a window at Modul Hall of Philosophy in a small grate beyond. At his last day at USC Dornsife where he taught for 47 years.
Sustain and Attain

A successful career woman, mother of six and grandmother of eight, Cynthia Maxwell-Dillard is just getting started.

Sustainability usually refers to issues of maintaining the environment and ecosystem or improving the ozone layer. How about personal sustainability? For nearly 60 years, my determination to fulfill a commitment never wavered. When I was 17, I promised my father that I would obtain my college degree no matter how long it took. No matter the obstacles or other delays I encountered along the way. Let me tell you, there were many.

An abusive marriage, raising three children as a single parent and a career with county government were a few. After acquiring the necessary units at a community college in Highland Park, Mich., and transferring to Wayne State University in Detroit, one would think I was on the home stretch.

But the ensuing decades proved difficult. Just maintaining my self-esteem was a major hurdle. I silently survived physical and emotional abuse at the hands of my then-husband while struggling to provide guidance and nurturing for my children — and juggling a full-time job. Yet I still squeezed in college courses.

I ultimately garnered the strength and insight to survive the emotional stress of divorce, and embraced the unspoken support from my children that sustained me as a family unit. I didn't realize it at the time, but my children were sustaining me in an enormous way, along with my now-deceased parents, who were my pillars both emotionally and financially, when needed. They were nurturing and giving grandparents.

In 1976, I moved from Detroit to Los Angeles with my two girls; my son had started his first year at Morehouse College in Atlanta, Ga. In California, I married my childhood sweetheart and we became a blended family of eight in 1979. Over time I was able to build a successful career as a vice president in corporate banking in Los Angeles, then as acting executive director at a nonprofit in South Los Angeles — all of which required different levels of sustainability. I grew to understand that allowing myself flexibility and time to reflect meant that I was capable of success in whatever goals I set for myself.

My time at USC has been the most enjoyable and rewarding part of my educational journey. I first attended USC in 1980 while working at First Interstate Bank and taking a night course in accounting. I didn't return to USC until 2000 when my husband, Ernie, joined the university, which provided me with educational benefits (available to employees and their families) to complete my education as a Trojan.

My professors, advisers and the administrative staff have been the best of the best. My professors at USC Dornsife were inspiring, available, very conversant in their subject matter and provided the educational support I needed to succeed. My advisers were also available and supportive and kept me informed about courses in my major that might be of special interest to me.

In life there are obstacles that can hinder progress and growth. I never even mentioned my house burning down and my three knee surgeries. Our challenges may call into question the choices we make; however, sustaining my values meant keeping my promise. In May 2013, I earned my bachelor's degree in sociology at age 75.

I kept my promise to my father, who died in 1984. But this journey has not been about holding that diploma. It's about knowing who I am in this world. This required not only my own ability to sustain from within, but also the loyalty from those who supported and believed in me. For brand it takes only one person to believe in you. In my case, I had friends and a Family. Cynthia Maxwell-Dillard graduated with her bachelor's in sociology at USC Dornsife in May 2013. Her first job was at age 17 with the U.S. Department of the Army. She was cleared to work on top secret documents and quickly learned to hold a crucial job. Her most fulfilling career experience has been learning about and understanding the complexities and politics of working in a poor and underserved community of Los Angeles.