The Food Issue
FACING
THE FORK

At the crossroads, USC Dornsife researchers tackle food scarcity and our eating culture.
Led by Rhacel Parreñas, the Problems Without Passports course “Forced Labor and Human Trafficking in Dubai” took place this past summer in the United Arab Emirates. Students investigated why individuals agree to legal servitude and the ways human rights discourses shape the conditions of employment across various occupations in Dubai. Students also studied the ways gender, race and ethnicity shape labor migration. Migrants, who comprise 95 percent of the labor force in Dubai, are legally bound to work only for their sponsoring employer. In Dubai, students met government officials, labor recruiters, NGOs, migrant workers, and runaways.

“The students gained a more nuanced perspective on human trafficking,” Parreñas said. “I want them to see that the problem is not black and white and there are multiple solutions.”
I consider myself adventurous when it comes to trying new foods. I enjoy traveling to foreign countries, whether representing USC Dornsife or with my family, introducing my children to exotic flavors. I delight in opening a menu that must be translated for me, or returning to a favorite restaurant and ordering “the usual.”

But I always keep in mind that in many parts of the world — including this country — people do not have the luxury of perusing menus. They struggle to have enough sustenance to survive. As much as a liberal arts curriculum is centered on in-class instruction, it must offer students the opportunity to learn firsthand about the world they don’t see every day. At USC Dornsife, we encourage undergraduate and graduate students to engage in problem-based research. We challenge them to delve deeply into issues such as food security and malnutrition, as well as obesity and diabetes, from all perspectives — whether through biology, history, public health, psychology, or environmental studies.

I believe one of the best ways to connect with other people — and with ourselves — is to sit down over a meal and share the tastes, company and nourishment. Through their studies, students get a flavor of the ways politics, culture and gender are sprinkled into everyday meals. Bite by bite, students get a flavor of the ways politics, culture and gender are sprinkled into everyday meals. By Michelle Salzman Boston

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Advancing Genocide Research

A newly established center will examine the how and why of mass violence on an international scale.

By Rahn Magid

Seeking to build on the USC Shoah Foundation — The Institute for Visual History and Education’s 20 years of success in gathering testimonies of Holocaust and other genocide survivors, USC has established the Center for Advanced Genocide Research to study how and why mass violence occurs, and how to intervene in the cycle that can lead to genocide. The center, said to be one of the largest digital video libraries in the world, will represent genocide survivors from around the world.

USC President C. L. Max Nikias and USC Trustee Steven Spielberg, the institute’s founder, announced the new center at a campus press conference on April 25. A panel discussion followed, moderated by USC Dornsife Dean Steve Kay, with institute Executive Director Stephen D. Smith, Beth Meyrowitz, vice president for faculty affairs, and Wolf Gruner, Shapell-Guerin Chair in Jewish Studies, and professor of history. Gruner will direct the new center.

Housed in USC Dornsife, the center will serve as the research and scholarship unit of the institute, building off of the substantial academic work the institute has accomplished since joining USC in 2006. It will also integrate the Reisiting the Path to Genocide research cluster, part of the interdisciplinary Dornsife 2020 initiative that has opened new avenues of research on mass violence for the past four years.

“The new center will identify and study the early origins of genocide,” Nikias said. "It will look at the patchwork of patterns that lead to violence on a mass scale and it will help us understand not only how genocide begins but how we may bring it to an end.”

Spielberg credited Nikias for providing the institute a place to “put down roots” and advance the study of genocide.

“We’ve made tremendous progress in the 20 years we’ve been in existence, but every single year it seems our work has hardly even begun,” Spielberg said. "There is such tremendous potential for the groundbreaking research led by Stephen Smith and Wolf Gruner.”

Spielberg credited Nikias “for providing the institute a place to ‘put down roots’ and advance the study of genocide.”

“The center aligns with the university’s strategic vision of creating scholarship with consequence by bringing together experts from various fields to tackle today’s grand challenges,” Nikias said. "By combining ongoing research with the vast amounts of information already collected by the USC Shoah Foundation, I believe we will be able to decode the conditions that can lead to genocide,” Kay said. "And by finding what we learn through our Digital Humanities Program, we will be able to teach tomorrow’s leaders new ways of stemming the tide of violence and intolerance.”

Gruner stressed that the new center will allow researchers and scholars from various disciplines throughout the world to collaborate and come together at a single institution to study genocide in ways that would not otherwise be possible.

The center will uniquely position USC as the only world-renowned private research institution with substantial original material from the Holocaust and other genocides.

“Writer and Composer” is a unique interdisciplinary collaboration that involves students from three graduate-level courses offered through USC Dornsife and USC Thornton School of Music. Student writers, vocalists and composers work on creative projects culminating in a public performance of student work at semester’s end. "In these works, words and music in ways that transcend what either words or music alone can do," Frank Ticheli said.

The class covers the business side of creative works, such as personal contract agreements, publisher agreements, performance rights, ownership and royalty allocations. It can also act as a springboard for ongoing projects. "We were drawn to this opportunity primarily for the collaboration," Manuel said, "and being able to see my work envisioned through somebody else’s eyes.” —L.P.
The board cobbler,” Phranc created a feminist art collective. She was also a famous artist at The Women’s Building, Los Angeles, California, 1975. Phranc’s early nonmusical body of work. In 2007, Phranc’s cardboard paper dolls to the ONE National Gay and Lesbian Archives. Phranc’s paper dolls of the ONE National Gay and Lesbian Archives, housed in USC since 2010, ensures the preservation of the artistic legacy of Phranc, as described by Phranc’s written work. Phranc's cardboard paper dolls as an homage to her mentor, Jeanne Córdova, the pioneering gay rights activist, author and editor-in-chief of Lesbian Tide, a groundbreaking newspaper for which Phranc wrote. The Phranc paper dolls remain an important part of Phranc’s early nonmusical body of work. In 2007, Phranc’s cardboard- and kraft-paper, the art works were exhibited at New York’s CUE Art Foundation. The New York Times compared her work to that of Andy Warhol and Claes Oldenburg. 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Aloe Blacc '01 aims to create positive social change, as evidenced by his recent efforts to eradicate food deserts. Blacc's philanthropic goals include working to undo the damage done by winning fame as a performer could help him fast-forward his philanthropic goals.

“When I was in school I was influenced by the civic leadership I saw demonstrated by USC professors and programs,” Blacc said. “I always thought, ‘If I get the chance I’d really like to see my celebrity and social capital to create change, whether through standing for international peace, furthering medical research or reducing poverty. Peace, furthering medical change, whether through positive social change, or through community involvement.’”

To help develop careers of artist-activists, Blacc recently launched his company Artivist Entertainment.

“I believe one of our most important challenges is fair distribution of resources, so everyone has basic, sustainable levels of healthcare, education and nutrition,” Blacc believes that food deserts — areas where affordable and nutritious food is inaccessible, particularly for those without a car — can be eradicated. Food can be cultivated in these areas if people come together, he said.

“My goal is to work with communities to transform food deserts into food oases. I hope to inspire change the way Sean Penn is doing for Haiti, or Don Cheadle and George Clooney are doing for Haiti, or Don Cheadle and George Clooney are doing for Haiti. We need a Dollar” was chosen to Make It in America for one campus talent show, Shrine Through, followed by 2010’s Good Things.

Blacc began writing hip-hop lyrics at age 5, and took up the trumpet in high school, where he played in the orchestra and marching band. He also started making hip-hop music, teaming with producer Aleksander Manfredi, better known as Exile, and forming Emanon, a mainstay duo on the underground rap movement.

At USC, Blacc, a Renais- sance and Trustee Scholar who described himself as “very studious,” didn’t promote his music, except for one campus talent show he entered at the urging of friends. His song with a catchy song title said “I Live USC.”

Which became a tailgate hit. Upon graduating in 2001, he landed a corporate job but was laid off, allowing him to concentrate on music. By the mid-2000s, despite Emancor’s success, the bra- vado and machismo of rap no longer felt comfortable and Blacc “decided to focus on affecting emotions, rather than projecting my own.”

In 2006, he signed to Stones Throw Records and released his debut solo album, Shine Through, followed by 2010’s Good Things. His big break came the same year when the song “I Need a Dollar” was chosen as the theme for HBO’s How to Make It in America. The song sold two million copies worldwide, while Good Things went gold in France, Germany and the U.K.

In 2012, he signed with Interscope Records. That was followed by his “The Man” and in 2013, “Wake Me Up,” which topped the charts in 105 countries. "Wake Me Up" was nominated for a Grammy for Best Song Written for Visual Media at the 55th Grammy Awards.

Undominated by fame, Blacc’s sensibility led him to work with anti-poverty organization Global Citizen and create songs with strong social messages. “In the past I’ve written very specific lyrics about cer- tain issues, but these don’t tend to be the most popular songs,” he admitted. Instead, Blacc began creating thoughtfully crafted vid- eos for songs such as “Wake Me Up,” in which he teamed with the National Day Laborer Organizing Network to speak out in favor of immigration reform, and “Love in the Answer,” which challenges suspensions for “wildlife def- once” in California schools.

“I like to use my videos in conjunction with a social message or nonprofit organi- zation, so my music stands for something more than just another pop song,” he said. “The idea is to take a cue from Bob Marley or Marvin Gaye. A song like Marley’s ‘One Love’ does more than any protest song I could write.”

His advice to USC students: Blacc chooses his words carefully.

“Enjoy your passion for art and use your educational experience to inform it and help you find perspective. Find a way to communicate compassion, whether that’s by creating social programs or through community in- volvement.”

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Aloe Blacc? Yes, you can tell everybody.

“His words, Man. — L.L.H.

“Those programs show that the department cares about how we do after graduation,” Barnett said. "Having strong alumni connections offers me a sense of reassurance — a safety net. The informal lunches have been great because you can ask more personal questions about things like how to balance your career with family life. These are important things that are not often taught in class.” — L.L.H.

Economic Thinking

The Department of Economics ramps up initiative to connect students with alumni mentors.

The Department of Economics is reaching out to under- graduate and graduate students by offering networking opportunities and guidance on how to use the skills they learn in the classroom to secure and succeed in jobs after graduation.

The brainchild of Mark Moore, associate professor (teaching) of economics, and director of the department’s undergraduate studies, the programs were implemented by the newly formed Economics Leadership Council (ELC), a group of alumni advisers successful in business.

The ELC members meet regularly to create ways to mentor students on career-targeted skills they will need in the workforce.

This year, the department began offering the course “Career Development for the Tiedest Economist” for sophomores and juniors. The course is under the auspices of USC Dornsife’s Second-Year Inquiry (SYI) program, launched in 2013, which gives guidance and opportunities to middle-class men and women.

Economics alumni have visited the class to offer students insight into how to con- vert their academic knowledge into professional capital.

Another initiative is a series of alumni mentorship luncheons, where students speak informally with those who have been in their positions and deftly navigated the tough post-graduation career search.

Ryan Barnett, who earned her bachelor’s in economics in June, said she benefited immensely from her interactions with alumni.

“These programs show that the department cares about how we do after graduation,” Barnett said. "Having strong alumni connections offers me a sense of reassurance — a safety net. The informal lunches have been great because you can ask more personal questions about things like how to balance your career with family life. These are important things that are not often taught in class.” — L.L.H.

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Politics Comes to Life

Former senior adviser to the U.S. Department of Defense, alumnus Jeffrey Fields joins the USC School of International Relations and directs a new semester-long program in Washington, D.C., by Susan Bell

Joining USC Dornsife as assistant professor of the practice of international relations, alumnus Jeffrey Fields will direct a new program in Washington, D.C., to be launched in Spring 2015.

As a former senior adviser to the U.S. Department of Defense (DOD), Fields’ experience at the highest levels of power has given him unique insight into the inner workings of government — insights he will be sharing with USC students as he leads them to the nation’s capital for a new, semester-long program focusing on national security and intelligence.

At the DOD, Fields, who earned his Ph.D. in international relations from USC Dornsife in 2007, worked at the Defense Threat Reduction Agency, where he was an analyst specializing in thwarting unconventional threats such as biological weapons. In his prior post as a political-military analyst at the Pentagon, Fields was the lead social scientist, responsible for long-term planning and analysis of international security threats. Fields also brings experience from his time in the U.S. Department of State, where he served as a foreign affairs officer in what is now the Office of Strategic Communications and Outreach. He was also an adviser to the special representative of the president for nuclear nonproliferation.

“Jeff was a star as a graduate student, and won a prestigious Presidential Management Fellowship to begin his Washington career in the Department of Defense,” said Robert English, associate professor and director of the USC School of International Relations. “He has had broad experience on proliferation and other key national security issues, and has continued his academic research. This combination — and, of course, the fact that he is a Trojan — make him ideal to direct this exciting new program in Washington.”

Developed by Dean Steve Kay and Steven Lamy, professor of international relations and vice dean for academic programs, the program will enable USC students to take three international relations courses and work part time as an intern in a study-related area. Students will also benefit from Fields’ government connections as he brings in guest speakers from Washington’s political elite.

The interdisciplinary program will eventually have three dimensions: international relations, economics and practical politics. During the program’s second year, courses in economics will be added, followed by courses in practical politics in the third year.

“Since this will be a D.C. experience, the idea is to work with real-world issues, so courses are less theory-based and have more policy relevance,” Fields said. “This is a wonderful opportunity to use my experience in Washington to inspire students by making politics come to life.”

Students from any USC major may apply.

FROM THE HEART OF USC

Numbers

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 survey voter attitudes on a range of political, policy, social and cultural issues. Conducted throughout the year, the widely cited polls help to inform the public and encourage discourse on key political and policy issues.

57%

Half of California voters favor the Affordable Care Act, including 43 percent who strongly favor it. Despite overall support for the law, Californians are concerned about how the legislation will affect the economy and their own healthcare access.

37-29

Percentage of Californians who say the Affordable Care Act would have no effect on their personal healthcare versus the percentage who say it would have a positive effect. Twenty-four percent of voters say they believe the effect would be harmful.

49%

of Californians say undocumented immigrants should be allowed to obtain special driver’s licenses, versus 4 percent who oppose granting such licenses.

donems.usc.edu/poll
Cheeseburger Blues

Heat and cheese may be as bad as smoking, according to a new study led by biologist Valter Longo of biological sciences.

In other words, what's good for you at one age may be damaging at another. The study shows that while high-protein intake during middle age is very harmful, it is protective for older adults: those over 65 who ate a moderate-high protein diet were less susceptible to disease. —S.B.

So L.A.

High school students in the Los Angeles Service Academy cultivate an appreciation of their city.

Kiara Cuevas and her high school classmates in the Los Angeles Service Academy (LASA) were tasked with making their way from Los Angeles' Central Library downtown to the Union Station, located in the northeastern corner of downtown, using public transportation. After studying the system map — and with some guidance from their teacher — they figured out which subway to take.

"It was a lot easier than I thought it would be," Cuevas said.

LASA, administered by the Huntington-USC Institute on California and the West (ICW), housed in USC Dornsife, takes high school juniors on a journey through their city to meet the movers and shakers that make L.A. function.

"Students spend a year thinking about the question, 'How does a large metropolitan region like Los Angeles work?'" said LASA Executive Director Douglas Smith.

Over eight Saturdays, students learn about transit, public safety, food, housing, business, and culture in L.A. The program kicks off each summer with a four-day seminar led by Smith and William Dorsen, chair and professor of history at USC Dornsife.

"Our goal is to pull the sinews of the city together so it's not so anonymous and huge," said Dorsen, ICW director. "We also aim to instill in the students the notion that public service and public awareness are closely related. We really hope to inspire them." —M.S.B.

Stop! That cheeseburger you’re about to bite into could be as deadly as a cigarette. In a new study tracking a large sample of adults for nearly two decades, researchers found that eating a diet rich in animal proteins during middle age makes you four times more likely to die of cancer than someone with a low-protein diet — a mortality risk factor comparable to smoking.

"There is no misconception that because we all eat, understanding nutrition is simple. But the question is not whether a certain diet allows you to do well for three days, but can it help you survive to be 100%," asked corresponding author Valter Longo, Edna M. Jones Professor of Gerontology at the USC Davis School of Gerontology, professor of biological sciences at USC Dornsife, and director of the USC Longevity Institute.

Not only is excessive protein consumption linked to a dramatic rise in cancer mortality, but middle-aged people who eat lots of proteins from animal sources — including meat, milk and cheese — are also more susceptible to deadly cancer in general, revealed a March study published in Cell Metabolism.

Researchers at the University of California, San Diego, conducted the study. They looked at data from a large, ongoing National Cancer Institute study that followed 40,814 US adults for 20 years. The researchers divided their participants into five groups, based on total protein intake and how much it came from animal protein. The groups were then followed for their risk of death.

Exploring the protein links to mortality, the researchers found that cancer deaths increased along with protein intake. The group with the highest protein intake — the lowest relative risk for cancer mortality was seen in the group with no or low protein intake.

The researchers also found that the risk of cancer mortality was highly dependent on the type of protein consumed. People who ate the most animal protein were twice as likely to develop cancer than those who ate the least. The risk of cancer mortality was also highest for people who ate the most processed meat, which increased the risk of cancer by 35%.

"The findings suggest that diet may play an important role in preventing cancer mortality," said the study’s lead author, Zheyun Nie, a research associate at UCSD.

So, what’s the bottom line? The researchers found that the entire American diet is linked to cancer mortality, with a particular focus on animal protein. The researchers also found that consuming protein from plants, such as legumes and nuts, was associated with a lower risk of cancer mortality.

"We need to focus on how to make it easier for people to reduce their protein intake from animal sources," said the study’s senior author, Eric Rimm, professor of nutrition at Harvard University.

The study was funded by the National Institutes of Health and the American Cancer Society.

Spotlight

A Racing Legend Revisited

Archaeology students and faculty help recover the remains of famed racehorse Native Diver at Hollywood Park racetrack.

By Michelle Salaman\n
Black gelding Native Diver, a member of Thornthwaite Racing’s Hall of Fame, was the first horse bred in California to win more than $1 million in the 1960s. In his illustrious racing career, he won three consecutive Hollywood Gold Cups and 34 stakes, the highest level of horse races. Jett black with a white blaze, Native Diver was an amazing animal to look at, said alumnus Richard Shapiro.

Shapiro, grandson of Louis K. Shapiro, who bred and raised Native Diver, grew up watching the thoroughbred race. When Native Diver died in 1967, he was laid to rest in a memorial at his hometown racetrack, Hollywood Park in Inglewood, California. Hollywood Park ceased operations in December 2013.

Shapiro, who earned his bachelor’s in political science from USC Dornsife in 1974, reached out to USC Dornsife’s Archaeology Research Center to help recover the horse’s remains. Shapiro’s brother Thomas, sister Peggy and father, Marvin, also attended USC.

Archaeologist Lynn Dodd, associate professor of the practice of religion, and Thomas Garrison, assistant professor (teaching) of anthropology, and a team of USC Dornsife students excavated Native Diver’s burial site in March.

The horse’s remains will be laid to rest at the racetrack in Del Mar, California.

Senior Alex Williams, who majors in archaeology and cultural history at USC Dornsife for broadening his education,

"Now, USC is part of Native Diver’s history as well."
KNOT A PROBLEM
For two practical, aesthetic and symbolic importance, knots have fascinated humans since prehistory. Hundreds of thousands of knots have been drawn to study the knots since the 19th century. First developed in 1771, becoming a discipline in the 19th century, knot theory is simply the study of mathematical knots.

“Knot theory is a field of mathematics concerned with studying properties of knots and distinguishing them from each other,” said Aaron Lauda, professor of mathematics. “If you take a piece of rope and tie an arbitrary knot and then cut the ends together, how can we tell if any two knots are the same? Knot theory provides a series of tools and techniques we can use to determine that.”

Lauda uses knot theory to teach students how mathematical knowledge is acquired and processed. He demonstrates by laying a knotted rope flat on a table so all of the crossing points are clearly visible. As any knot can be drawn in many ways using a knot diagram, knots are often distinguished by using a knot invariant. This is an assignment of algebraic data to a knot, such as a number or a polynomial. For example, the minimum number of crossings of any diagram of a knot is an invariant called “the crossing number.”

By looking at the diagram of this knot, I can calculate a polynomial unique to this knot,” Lauda said. “By tying another knot around it, we notice the two knots are not the same, but if their polynomials are not equal then we know the knots are not identical.”

1771
The first mathematical theory of knots was developed by French mathematician Alexandre-Théophile Vandermonde.

1860
Tabulating knots and distinguishing knots becomes a problem of interest when Scottish mathematician and physicist William Thomson, Baron Kelvin of Largs, theorizes that an atom is a vortex in the “ether.” Although ether’s existence was later disproved by Albert Einstein’s theory of relativity, a more recent investigation into the problem of distinguishing knots led to Peter Guthrie Tait’s creation of the first knot tables. While Thomson’s proposal did not ultimately lead to a theory of the atom, knot theory has found its way back into modern theoretical physics in various aspects of string theory.

SIX BILLION KNOTS AND LINKS
More than six billion knots and links have been tabulated since knot theory began. However, knot theory is not about drawing up huge knot tables. Research into knot theory has many aims, including applications to theoretical physics — notably string theory — as well as applications to chemistry and biology. Knot theory is used in understanding of DNA. Knot theory can also be crucial in modern theoretical physics in the study of quantum computers, through the so-called “topological quantum computation.”

MATH WITH A TWIST
At a May 6 event, Lauda used undergraduate students enrolled in “Foundations of Principals of Mathematics and Acquisitions of Mathematical Knowledge,” a new course taught by David Crombie and devised with Coryn Hankell, both of mathematics. The event brought 20 students from Augustus Hawkins High School in South Los Angeles to USC for a day of math-based games, thanks to funding from Lauda’s National Science Foundation CAREER Award.

High-school junior Jalype Oliver’s braid was almost as knotty as a rope in front of her as she attempted to match a complex knot with one shown on a chart.

“Our knot-matching games introduces mathematical tools to knot theory provides for solving a math problem,” Lauda said. “We strive to teach high school students that math goes beyond algebra or memorizing multiplication tables.”

The number of crossings in a trefoil knot, the simplest example of a nontrivial knot — a knot impossible to untie.

The number of prime knots with a maximum eight crossings is 21, but the number of prime knots with a maximum of 16 crossings is 1,388,705. It’s obvious that sophisticated techniques are needed in order to distinguish knots with a high crossing number. Fortunately, knot theory provides a wealth of tools for efficiently solving this problem.

The number of crossings in a trefoil knot, the simplest example of a nontrivial knot — a knot impossible to untie.

6,000,000,000 +

The number of knots and links that have been tabulated since the beginning of knot theory.

Diabetes Detectives
Two papers in the leading journal Diabetes contain research that may greatly help those suffering from hypoglycemia.

The researchers also confirmed that information from the portal vein travels to the hindbrain via the spinal cord, not the vagus nerve as previously thought.

A second study lead by USC Dornsife’s Anne Jokiaho found that a major neural circuit between the hindbrain and the hypothalamus is unlinked during a fast drop in glucose, but is essential in slow onset hypoglycemia.

“We can probably have far-reaching consequences for the way treatments are developed, particularly for treat-ment-induced hypoglycemia,” Donovan said. — S.B.

H2O Robo Kids
Fourth and fifth graders at Foshay Learning Center get a hands-on lesson in robotics and ocean science.

At his playground, fourth grader Leonel Aquino ditched the jungle gym to construct from polyvinyl chloride pipe an underwater, remotely operated vehicle, or ROV.

“’This is like making Legos but bigger,’” said Aquino, who followed a schematic illustration showing how the parts should fit together. “It’s scientific and fun.”

Aquino was participating in a studio field by the Joint Educational Project’s Young Scientist Program (YSP), based at USC Dornsife.

That day in April, James A. Fishbey Learning Center’s Elementary Village near USC was transformed into a scient-ific laboratory. Stations were called “ROV Building,” “Plank- ton Racers,” “Marshmallow Mash” and “Cartesian Divers,” to name a few, invited Foshay’s fourth and fifth graders to learn about underwater scientific concepts such as pressure, volume and buoyancy.

“Our goal with this studio is to introduce the idea of un-derwater robotics in an engaging way, and allow the students to explore a new STEM field,” said Drucarri. “IJ,” YSP director. “Students get to see how fun disciplines like engineering can be and their real-life applications.” — M.S.B.
Spotlight

A Case for Balancing Your Checkbook

Jacob Soll’s new book names financial accountability as the reason for the rise and fall of nations.

As the United States was spiraling into one of its worst financial collapses in history, Jacob Soll found an interesting parallel in France’s “Sun King.”

The history learned that Louis XIV, better known for his wigs, mistresses and the Palace of Versailles, has also taken a keen interest in accounting and carried golden notebooks in his pockets that detailed the royal budget. Eventually, the monarch destroyed the budget books, which only reminded him of the rising debt accrued through costly wars and his spending on Versailles. By the time the king was on his deathbed, France was bankrupt.

“That blows me away because here you have remarkable innovation and then wilful destruction of the innovation as soon as accountability comes around. That’s one of the lessons for today,” said Soll, who holds a joint appointment at the USC Leventhal School of Accounting. Winner of a 2011 MacArthur “Genius” grant, Soll has led the way in rethinking the process by which our body converts what we eat and drink into energy, and fall when leaders abandoned those practices. His book, “The Reckoning: Financial Accountability and the Rise and Fall of Nations” (Basic Books), is out this month.

He hopes his book, and the 700 years of history it brings to bear on today’s financial woes, will help bring debates about accountability back into the public sphere. — M.B.

Move, Move, Move

Once you reach middle age, the mantra is move more, eat less. That’s because your energy homostasis may have shifted.

Lorraine Tuscott has rigged her desk to electronically move up and down when she pushes a button. Every 30 minutes, she stands up. Her desk moves with her so she can continue working on her computer.

After researching metabolism for 35 years, she knows the human body must move to stay healthy. She studies the best ways to keep energy homostasis, that’s the ability to maintain body weight by having equal amounts of energy intake and output (eating and exercising).

“The problem is when we get older and we’re not running to class every day, we get a job and we sit from 8 to 5,” said Tuscott, professor of biological sciences at USC Dornsife.

“There is a disquieting and the homostasis is broken.”

As we get older, we must decrease our intake of calories, she said. By the time you reach middle age, you’re maintaining the same energy in and out, but suddenly it doesn’t work anymore and you’re gaining weight.

“That’s because your metabolic rate is plummeting, so you have to cut out even more food,” she said referring to the process by which our body converts what we eat and drink into energy. “That’s what I tell women in their 50s and 60s. You’re not going to like this. Are you ready to be hungry?”

This is where behavior modification comes in. Burn those calories by taking the stairs instead of the elevator, she said. Keep a pair of tennis shoes at the office and walk around the building at lunchtime.

“If you have dogs walk them more. Garden. Move, move, move,” she said.

Eat the amount of calories right for your age, height and gender.

“Once you eat, there is no magic trick in what those calories should be,” she added. “A certain percentage of your calories should be from carbohydrates, protein and fat, every day.” — P.P.

Numbers

California: 10% to 12%

Agriculture emissions per calorie produced are caused by agriculture globally.

10% to 12%

May be the actual impact of the effects of land use changes, such as deforesta- tion for cattle, are taken into account.

32%

California’s greenhouse gas emissions caused by agriculture sector.

6/100

The ratio of California’s greenhouse gas emissions caused by the agricultural sector.

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Twin Pathologies

Twin brains afflicted with Alzheimer’s show similar patterns of neuropathologic changes — pointing to genetics as the culprit, by Susanne Wu

Despite widespread use of a single term, Alzheimer’s disease is actually a diverse collection of diseases, symptoms and pathological changes. What’s happening in the brain often varies widely from patient to patient, and a trigger for one person may be harmless in another.

In a unique study, an international team of researchers led by USC Dornsife psychologist Margaret Gatz compared the brains of twins in which one or both died of Alzheimer’s disease. They found that many of the twins’ patterns not only had similar progressions of Alzheimer’s disease and dementia prior to death, they also had similar combinations of pathologies — two or more unconnected areas of damage to the brain.

The researchers had the rare opportunity to directly autopsy the brains of seven pairs of twins who both died after receiving diagnostic evaluations over many years. They studied a pair of identical twins who were both diagnosed with Alzheimer’s and died at age 98 within a year of one another.

“Across the whole array of neuropathological changes,” Gatz said, “the identical twins appeared to have more similar pathologies.”

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6/100

the ratio of California’s greenhouse gas emissions caused by the agricultural sector.

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Our World

Welcome to the Jungle

Human and evolutionary biology Ph.D. candidate James Askew follows the calls of the wild to Southeast Asia to study orangutans.

In April, a USC Dornsife graduate student embarked on an 18-month expedition to study orangutans in Southeast Asia, inviting colleagues and classmates to follow along via an 18-month expedition to study orangutans.

James Askew, Ph.D. candidate in human and evolutionary biology, is spending nine months each at Gunung Leuser National Park in Northern Sumatra and Kuiji National Park in East Borneo, Indonesia.

Askew’s work ranges from high-tech — using wireless microphone networks and drones to record male calls — to low-tech — standing under trees with plastic tarps to catch orangutan urine for sampling.

“Orangutans are hugely understudied and easily the most endangered of the great apes,” Askew said. “By conducting research in Indonesia, I can help publicize their plight, and I get to live in Indonesia.”

Askew’s research investigates reproductive strategies and social structures and is spending nine months each at Gunung Leuser National Park in Northern Sumatra and Kuiji National Park in East Borneo, Indonesia.

“On the first day, we sat in a room meditating for four and a half hours. With my eyes closed, it could have easily been seven hours — or two. It felt timeless.”

This is how sociology major Sarah Newell described her arrival at a spiritual healing center in central Brazil. She had traveled there as part of a Problems Without Passports course.

Taught by Erin Moore, associate professor (teaching) of anthropology, “The Global Performance of Healing” allows students to learn about cultural anthropology firsthand by examining the practices of healing in cultural contexts outside the United States.

As a case study, they focused on spirituality, a healing modality in which mediums are said to channel spirits from otherworldly realms to deliver messages or instructions.

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In June, Moore and her students traveled to Brazil for two and a half weeks of fieldwork after two weeks of classroom instruction at USC.

“We were not in Brazil to heal ourselves or to improve anything,” Moore said. “We were there to expose a culture. … The most important thing is that students learn open-mindedness and understand that how they see the world is only one way, based on their education, gender, cultural background and ethnicity. Others are experiencing their world based on their own backgrounds.”

Most Valuable Trait

Economics alumnus Malcolm Smith’s fierce sense of determination earns him the title of Super Bowl XLVIII MVP.

After defeating Penn State in the 2009 Rose Bowl and joining his teammates for a celebratory dinner, Malcolm Smith ’11 faced his most challenging adversary.

“These guys were crushing the prime rib and I could barely swallow one bite,” Smith, a backup linebacker for the Trojans at the time, recalled in an NFL Network Podcast.

“It just got progressively worse over time and I couldn’t even swallow water for a little bit. I started losing weight and I was like, ‘I think there’s something wrong with me.’”

After tests, doctors diagnosed Smith with a rare disorder of the esophagus known as achalasia, which affects about 1 in 100,000 people.

The disease makes it nearly impossible to eat and maintain a nutritious diet; each bite is difficult to swallow and is often followed by regurgitation. The 19 year old’s weight dropped from 240 to 210 pounds.

Smith feared his football career was over. During the 2009 off-season, he underwent a surgical procedure called a myotomy. After recovery, he trained relentlessly.

Now a 24-year old Seattle Seahawks linebacker, Smith was named Super Bowl XLVIII MVP, accepting his trophy on Feb. 2.

“It’s not how you start, it’s how you finish,” Smith told Sports Illustrated. “Let it humble you, and let it give you fire.”
With a farmer’s knife in hand, Richard Martinez knelt by a line of bright green heads of lettuce and cut off one. He snapped off the crispy leaves from the spine. Blanketed by a brilliant blue sky over Oxnard, California, tidy rows of romaine lettuce, kale, Swiss chard and bok choy stretched to the horizon.

“There’s a little dirt, but the dirt’s good for you,” Martinez joked as he dispensed the freshly picked leaves for everyone to sample. “It’s organic.”

A third-generation farmer, Martinez is a manager at Dardoff Family Farms, which launched its organic operation five years ago on 130 acres of prime Southern California soil.

Gathered at Dardoff’s organic fields, USC Dornsife students in the Maymester course “Food Culture and Food Politics in the Land of Plenty” were touring farms and produce-processing facilities in Ventura County, 60 miles north of Los Angeles. As they munched on just-picked lettuce leaves, Martinez described the business of organics — and the inherent politics involved.

Organically grown food adheres to rigorous production and processing standards overseen by the National Organic Program (NOP), administered by the U.S. Department of Agriculture (USDA). NOP certifies food — strawberries, broccoli and other fruits and vegetables — as organic in the United States, designating it with a small green and white “USDA Organic” seal.

Products bearing the label must be grown and processed without the use of toxic and synthetic pesticides and fertilizers, genetic engineering, antibiotics, synthetic growth hormones, artificial flavors, colors, preservatives, sewage sludge or irradiation, Martinez pointed out.

In addition to explaining organic food policies and regulations, the course looked at food through the lens of politics, class, race and gender.

Karen Tongson, associate professor of English and gender studies, asked her students to consider how farmers follow regulations to get their product to markets in order to get meals on tables. They examined the cultural origins of dishes, from sushi made by a Japanese grandmother to Korean-Mexican fusion tacos from a food truck. They studied who cooks our food — from mom to predominantly male chefs.

“We all assume we come to food as people — with no labels, no gender, no race, no ethnicity,” Tongson said. “After all, eating is a universal process. But food is so incredibly personal. It’s rooted through our cultural histories and the way we move through the world as gendered people.”

Starting from a gender studies framework, the class investigated how gender roles factor into food.

“Women are traditionally seen as homemakers, cooking for the family,” said Avalon Igawa, a sophomore with an undecided major. “While that standard has been changing, it has been a tradition in our society for a long time. We can’t seem to break away from it.”

Television personalities still mimic that paradigm, Igawa pointed out. In kitchens, Rachel Ray and Martha Stewart regularly coach viewers on how to create family meals, while chefs like Anthony Bourdain and Andrew Zimmern traipse the globe experiencing foods from various countries.

Back in Oxnard, Martinez noted that starting an organic farm can be costly. It takes three consecutive years of organic farming on a parcel of land to become certified. During that period, all produce grown on the land must be sold as conventional and at the less profitable conventional rate.

ON THE ROAD

The Maymester course “Food Culture and Food Politics in the Land of Plenty” takes students from the lettuce fields of Ventura County to ethnic food stalls in the Pacific Northwest, and restaurants and markets in between.
When Deardorff started its organic division, it had to adapt pest and weed management practices that were more costly and labor intensive than conventional practices. The farm pays regular certification fees, among other expenses. "It's not inexpensive," Martinez said. 

However, the conversion made sense, considering consumer demand. Organics is a $28.6 billion industry in the U.S.

"We saw the writing on the wall," Martinez said. "There is a future there."

Students also visited famers markets, ethnic groceries, food stalls and restaurants in L.A., the Bay Area and the Pacific Northwest. Maymester courses are experimental, hands-on learning opportunities for students to study a topic in-depth, usually in the field, in the month of May.

In Berkeley, California, the class visited Alice Waters' restaurant Chez Panisse, which is credited with advancing the local, sustainable food movement now referred to as the local, sustainable food movement now referred to as the local institution of food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than food pods, a stretch of more than

TO MARKET

JAPAN'S CONSUMER DEMAND

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Organics is a $28.6 billion industry in the U.S.

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THE SEARCH FOR A WILD WEED

Oyster mushrooms (Pleurotus ostreatus)

By Ava Chin ’06
A native New Yorker from Flushing, Queens, Ava Chin forages throughout the five boroughs and the Tri-State Area, writing about her finds for publications such as The New York Times and Saveur magazine.

Her memoir Eating Wildly: Foraging for Life, Love, and the Perfect Meal (Simon & Schuster, 2014), about being raised by a single mother and loving Chinese grandparents, reveals how foraging and the do-it-yourself food movement helped Chin to heal from the wound of an absent father and once, a summer camp group of 8 year olds doing a lesson on wilderness survival.

I forage for myself nearly every week, even in winter when the landscape is icy and an untrained eye appears that nothing is growing, but today’s walk is special: I’m gathering ingredients for a pie that I’m going to enter in my first food competition. I’m on the hunt for survey lambquarters, that free-range weed that gardeners hate but food lovers consider a culinary and nutritional treasure. Related to spinach, beets and quinoa, Michael Pollan called lambquarters “one of the most nutritious weeds in the world” (In Defense of Food). The first time I ate it raw, it fell flat on my palate — I really couldn’t distinguish the edible weed from any other leafy greens — but once I’d sautéed some in extra virgin olive oil with a little salt and pepper, I realized how very much it tasted like spinach.

In fact, lambquarters out-spinach-spinach in terms of pure greeny flavor. Lambquarters grows in backyards, on college campuses, and even around parking meters on the busiest avenues in my Park Slope neighborhood, but the best place to get it is in the park, away from traffic and pollution. It’s a much-desired vegetable in Bangladeshi and Persian cuisine, but here it’s considered a weed — even otherwise open-minded urban farmers I’ve met tend to treat it with disdain.

Since lambquarters thrive in full sunlight, I am heading toward a clearing on top of one of the highest points in Brooklyn, where Chenopodium album grows on a slope unchecked, producing one of the best-tasting crops in the city.

Once on the hill, I pass a variety of familiar flora. I see the arching canes of blackberry bushes, with their smaller-than-stone-bought fruit that are a lot juicier in the mouth; last month I’d picked a small container full but now the bushes are empty. Mugasor, or wild chrysanthemum, which were one inch sprigs in spring, now brush my shoulders. In Flushing, Queens, where I was born and raised, I’ve encountered Chinese grandmothers collecting bundles of it for medicinal purposes — called moza — where they burn the dried stalks to stop aches and pains.

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I bypass patches of violets with their heart-shaped leaves, so pretty in spring salads, and the insatiable stalls of Asian daylilyflower, with an astringent bloom that rivals the bluntness of the sky, and which is as transient as your last thought.

In the seasons that I've spent searching for wild edibles, long enough to know that what you're looking for is often elusive, and what you do find can be completely unexpected. You can train your eye, research the telltale clues and signs, but nature has a way of surprising you, especially here in the city. Even if you return to the same place, at the same time year after year, charting the weather patterns — noting the ratio of sunshine and temperature to rain — it's no guarantee that you'll get what you're looking for, no matter how well prepared you might be. Foraging for food is a little like a mythic quest. You may think you know what you want, and expend a lot of energy and dogged determination making lists and plans for obtaining it — losing a lot of sleep and garnering no small amount of heartache along the way — only to find it shimmering elsewhere, like a golden chalice, just out of reach.

But this morning, I make my way down the hill empty handed. Lambsquarters are one of the most sustainable, abundant foods available here, and without a big bagful, I feel the familiar lunge of disappointment in my gut. Out of my own home-pressed golden oil, I've been foraging for local breads and upstate cheeses; and my own homegrown orange; freshly picked Asiatic dayflower and violet leaves; and stinging nettles; Asian ladies collecting ginkgoes, those stinky fruit that litter sidewalks every fall; expert and amateur mycologists, who've taught me how to make mushroom spore prints that resemble honeycombs and starbursts, and how to cook up my fungal finds into fragrant culinary wonders; burly beekeepers who've shown me the art of relocating honeybees safely in the city and given me tastes of the sweetest wild honey. It's the unexpected bounty and regenerative powers of nature that have deepened my connection with my hometown, my family, and even myself, transforming old feelings of being “not good enough” or “unnworthy” into new ways of seeing and being, like fresh wild arugula or violets erupting from the earth every spring. During the high, humid days of summer, I'd led a small tree-climbing party up to the tree only blocks away from my apartment. I climb aboard the log, which wobbles under my weight, and I'm on my tiptoes trying to reach the mushrooms, but all of my tugging and kicking, I discover that I can roll it with both hands on the path away, and I discover that I can roll it with both hands. It's too heavy for me to carry, but after a few moments of pushing, tugging, and kicking, I discover that I can roll it with both hands, and it's not coming just from those turkey tails.

But here I stand now, looking down at thin, paltry leaves. It's a zero on my tongue — with a tougher consistency than its young summertime form, and rather tasteless. It doesn't help that we are in between seasons: all the summer berries have disappeared — even the elderberry peaked early, so that only a few clusters remain on the trees — and it's too soon for the new dandelion and garlic mustard rosettes to appear. I'm on my tiptoes trying to reach the mushrooms, but all of my tugging and kicking, I discover that I can roll it with both hands, and it's not coming just from those turkey tails.

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At this point, I sometimes encounter bothwatchers, or the occasional parks department worker wrestling weeds — the very things I like to eat — but today the peak is mine alone. Out in the distance, I can see the shape of the Verrazano, that elegant suspension bridge, which I take to my job as a professor at a local college; the giant crane on the shoreline of Bayonne, New Jersey; and nearly everywhere I look, apartment rooftops and the verdant leafy tops of trees.

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The fungus among us

Ava Chin holds dryad’s saddle mushrooms, sometimes called phaenostachys back or hacky’s wing. Brown with scales that look like a bit like feathers, they grow on various dead hardwoods, especially elm.

Precious ginkgo leaves, lying horizontally alongside the path. This is where the reiki mushrooms grow — a medicinal fungus that boosts immunity and is prized in Chinese medicine. Even though Gastrodia elata cannot help me with my dish, out of habit, I reach for one of the blades, which I clip and bring home to stir-fry under the weight of my fingers.

But there is only the ribbonskein of a few turkey tail mushrooms to the base of the tree. I straighten up, disappointed, where there it is that smell of mushrooms in the air again, that is as abundant as those turkey tails. Usually, I can search for ground fungi hidden in the decaying wood or growing on piles of mulch or dead leaves, but this time my eye goes up an old tree — a tree with dark, grooved bark that’s nestled so closely among its neighbors that it’s grown its branches up high in order to reach the sun. It’s impressive: stoutly tall, higher than my fourth-floor walkup apartment. I cannot make out what kind of tree it is from its fuzzy faraway leaves. But then right where the trunk ends and the first of many central branches begin, I see it: a wide, creamy-white cluster of oyster mushrooms spreading out from the tree like Chinese fans.

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These USC Dornsife researchers step up to the plate to combat food insecurity.

By Pamela J. Johnson

Walking into the supermarket, knowing the seemingly endless rows of fresh produce and canned goods, it’s hard to fathom a food shortage. But with the current world population of 7.2 billion expected to explode to 9.6 billion by 2050, the United Nations warns food scarcity is in the wind.

Although urbanization will have gobbled up most arable land, more food will be needed. To cope with rising food insecurity, China is purchasing agricultural land throughout the world, in countries that include Russia, Mexico, Cuba and Australia.

“Food insecurity will occur in developing countries, with more than half of the growth in Africa. By 2050, the U.N. reported, Nigeria’s population will exceed that of the United States, which is expected to balloon by 31 percent from 305 million in 2008 to 400 million in 2050.”

“Here’s a perfect storm on the horizon,” USC Dornsife Dean Steve Kay said. “We also have climate change that will stress our water resources. As we move from 2030 to 2050, it will be a challenging time for food security.”

It’s happening now in Central America, where drought conditions are wreaking havoc on crops. By early 2015, food security in four Central American countries is expected to rapidly deteriorate, according to an August alert sent out by the United States Agency for International Development’s (USAID) Famine Early Warning Systems Network.

To meet the food demand, agriculture production must at least double by 2050, the U.N. asserts, and “innovative strategies are needed to help combat hunger, which already affects more than 1 billion people in the world.”

Answering the call, researchers at USC Dornsife are finding innovative ways to feed the world. Some have built the foundation that may lead to the design of more robust crops. Others are tapping into aquaculture to bolster food from the ocean. Still others are homing in on palm oil and the small but mighty chickpea to help avert the world’s looming food crisis.

THE GOOD SEED

The key word in the food security challenge is yield.

“How can we keep crop yields rising if traditional plant breeding isn’t working anymore?” Kay said. “We can now use genome sequencing or molecular markers to build more efficient plant breeding programs. Technology gives us a boost, but there’s absolutely no doubt in the minds of almost every expert that we will need agricultural biotechnology as well — or genetically modified foods.”

Kay, professor of biological sciences, and his research team have made giant strides toward constructing hardier crop plants — onions, beets, soybeans and the like.

In one major step, Kay and his team have created the first comprehensive library of genetic switches in plants, available for scientists to use around the globe. The collection contains about 2,000 clones of plant transcription factors, nature’s genetic on-off switches. Conducted over eight years, the research making the library possible was published in July in Cell Reports.

“They’re like smart missiles that go into the nucleus and bind to specific sequences of DNA,” Kay, the study’s lead author, said. “In a single day, you can knock out a particular gene. They’re really powerful ways to transform crops.”

MORE YIELD-POTENTIAL

Generating higher crop yields, genetically modified foods may be an answer to easing world hunger.
provide more seafood. are finding ways the U.S. can outsource aquaculture, the U.S. ranks percent of its seafood, half

OUTSOURCED ECONOMY

the United States imports 35 percent of its seafood, half of which comes from farms. While many countries are investing heavily in sustainable aquaculture, the U.S. ranks last in aquaculture production. USC Dornsife scientists are finding ways the U.S. can provide more seafood.

corresponding author, said of transcription factors. “They will regulate genes, switching them on or off, according to how that cell needs to respond to its environment.”

Genetic switches are like turning on a light bulb so you can see in the dark. A switch will go on to allow a plant to withstand cold, for example, then go off when it’s hot.

In Kay’s library, clones of these “master switches” are conserved in the “wells” of microtiter plates. The library will be sent to stock centers — or collections of living organisms — which will distribute the plates to scientists.

“It was a new mode of doing things. We used to make gold-standard collections of transcription factors that’s going to serve the plant community all over the world,” said Kay, who researches circadian rhythms, or the biological clock, in plants.

The clones were taken from Arabidopsis, a flowering plant related to cabbage and mustard. The plant is used as a genetic model because it shares most of the same genes as many plants and crops.

“You can think of Arabidopsis as the mouse of the botanical world,” Kay said.

The availability of these clones has great implications for scientists such as Kay, whose research sets the stage to design a more robust plant for future food security.

“Ultimately, this collection will help us understand at the molecular level the mechanisms of how plants work,” said Jose Pruneda-Paz, co-first author on the paper. Pruneda-Paz helped to create the library as a postdoctoral researcher, first in Kay’s laboratory at The Scripps Research Institute in La Jolla, California, then at the University of California, San Diego (UCSD), where he is now a faculty member.

“By manipulating those transcription factors, we will be able to ultimately improve plant traits such as stress resistance or seed quantity and quality,” Pruneda-Paz said.

“This is the larger goal,” Kay elaborated. “Along the way we are going to understand the wiring — the instruction manual — for how plants grow and develop. From that knowledge base comes all the translational opportunities.”

The collection will help in the underfunded field of plant research. Of all biomedical research, the federal government spends approximately 1 percent on plant research.

“Given how important food is to human health, that’s rather concerning,” Kay said, adding that the goal is to build the foundation for any number of plant biology projects.

One study made possible by the library was published in Current Biology in July. In the research, Kay’s team investigated how plants regulate their gene expression in the cold.

Using the library, they conducted tests isolating an interaction between two key genes — LUX and CBF1 — now known to be responsible for freezing tolerance in plants.

The research showed how plants adapt to temperature changes during the annual course of the day-night cycle, and to extreme change such as frost.

“We knew very little about how cold interacts with the clock and this really reinforced the idea that transcriptional regulation is key,” said Brenda Chow, referring to when a gene is triggered to respond to an environment. The first author on the Current Biology study, Chow recently started a position at GenBank, a genomic sequence database in Bethesda, Maryland.

“The library has been very useful across the plant community. For my project, it was a unique way to identify the interaction between CBF1 and LUX. It would have been very difficult to identify this any other way.”

Research on grasses, too, is paramount. Most human calories come from grasses — wheat, maize and corn. Kay’s team was the first to thoroughly characterize the impact of the circadian clock on grass growth.

In a study published in PLoS ONE in June, researchers from Kay’s laboratory revealed that internal cues generated by the circadian clock do not cause grasses to grow. Regardless of the presence or absence of light, grasses grow in warm temperatures.

“It’s known that things grow faster when they’re warm and enzymes work faster when they’re warmer, temperature is a catalyst,” said the study’s first author, Samuel Hazen, now a faculty member at the University of Massachusetts, Amherst. “But the complete absence of the involvement of light/dark cues in grass growth is what we discovered in the study.”

This breakthrough is highly relevant to researchers who, as Kay said, can use the knowledge as the base for translational research. For example, it becomes the foundation for scientists to modify genes in grasses to withstand drought and other adverse weather conditions.

In two more recent studies, published in the Proceedings of the National Academy of Sciences (PNAS), Kay and his collaborators identified genes and pathways crucial for plant growth under stressful conditions, such as heat and lack of nutrients.

In one study, Kay’s team discovered a key molecular cog in a plant’s biological clock — one that modulates the speed of circadian (daily) rhythms based on temperature. Postdoctoral scholar Dawn Nagel identified transcription factor FHB1, revealing a novel role for this switch in the plant’s ability to respond and grow in warm temperatures.

This discovery provides clues to managing crops under high-temperature stress.

And in collaboration with professor Nigel Crawford of UCSD, Kay’s lab identified another genetic switch, TCP20, important for how roots forage and sense nutrient availability. Understanding root growth under limited nutrient availability, particularly nitrogen, is vital for developing crops that lack this important nutrient source.

Kay also noted that while some claim genetically modified organisms (GMOs) may be unsafe for human consumption, he believes this stance is based on suspicion rather than evidence.

“It comes from a lack of understanding,” he said. “With more transparency and facts, the public will come to see GMOs as a solution.”

ANGLING FOR ANSWERS

Moving from land to sea, aquaculture is also a way to help feed the world.

As oceans are reaching their maximum potential of wild, captured seafood, fish farming has become the world’s main way of producing species such as trout and salmon, according to the U.N.’s Food and Agriculture Organization.

Over the past 20 years, the world’s wild fish catch has flattened, with the depletion and threatened extinction of some species. Meanwhile, fish farming continues to rise at a sharp rate.

Fish farming — the breeding, rearing and harvesting of plants and animals in ponds, rivers, lakes and the oceans — is now providing more than half of the world’s 44 pounds per capita of fish consumed annually. (In the U.S., annual consumption is 15 pounds per capita, compared to 120 pounds per capita of red meat).

Fish farming — the breeding, rearing and harvesting of plants and animals in ponds, rivers, lakes and the oceans — is now providing more than half of the world’s 44 pounds per capita of fish consumed annually.
In 2012, the amount of farmed fish produced globally was at an all-time high of 90.4 million tons. But the U.S. ranks last in aquaculture production. China tops the list, producing 59.7 percent of all farmed seafood. Indonesia comes in second with 10.6 percent, followed by India with 4.7 percent. The U.S., responsible for 9.5 percent of farmed production, just below North Korea.

**“Why don’t we learn this process ourselves and be leaders instead of followers?”**

Currently, the U.S. imports 91 percent of its seafood. Looking to our own coastlines to provide seafood is economically and socially imperative, said Dennis Hedgecock, Paxson H. Ofield Professor in Fisheries Ecology and professor of biological sciences at USC Dornsife. Along with Daniel Manahan, professor of biological sciences and vice dean for students, Hedgecock is working on establishing a one-of-a-kind facility for complete life-cycle culture of model marine organisms at the USC Philip K. Wrigley Marine Science Center on Catalina Island.

The culture facility would become a national stock center for pedigreed lines of Pacific oysters and purple sea urchins. This research is unlocking many of the genes involved in heterosis—soil fertility naturally, even under saline conditions. Heterosis is practice contributes to variation in results among laboratories and, moreover, prevents a subjective partitioning of genetic and environmental causes of variation in complex phenotypes, he said.

“Earth’s largest habitat, the ocean, is undergoing rapid anthropogenic change,” Hedgecock said. “The ocean is warming, becoming more acidic as a result of anthropogenic carbon dioxide, toxic, plastic particles and other wastes; and heavy exploitation for mineral resources and food for human consumption.

Understanding and predicting biological stability and change amid rapid anthropogenic modifications of ecosystems is a grand challenge for modern biologists and scientists, he said. “In the short term, organisms withstand environmental stress, including disease,” he said. “In the long term, across generations, populations evolve using primarily genetic variation in traits that increase fitness. Separating nature and nurture is key to understanding the potential for adaptation to future environmental change.”

Helping to make the hybrid vigor research possible are donors including Sum King, a member of the USC Wrigley Institute Advisory Board, the USC Dornsife Board of Controllers, and chief executive officer of King’s Seafood Company. King, Hedgecock and others give talks throughout the institute’s aquaculture research.

“I think our attitudes are starting to change,” King said. “As long as we have great scientists and great science, then hopefully the minds of American people will change. Like people in other countries, they’ll learn to embrace aquaculture.”

But, Hedgecock said that while the genomes of a growing number of marine species have been sequenced, few have the well-developed genetic resources and models of method of approaches to study and manipulate the clastic range in which the chickpea can be cultivated. By creating more and higher yielding varieties of chickpea, the production of chickpea can be increased by more than 2,500 percent. As a result, the practice of farming, many Ethiopians have a high dependence on the chickpea as a source of protein. Unleashing the genetic potential of chickpea plants will be tested in the U.S., Canada, Australia, India, Ethiopia and Turkey.

Nuzhdin and his team will study the chickpea as a genetic model for crop legumes such as soybean, alfalfa, pea, bean and peanut. The principal investigator for the cross-cultural study, Nuzhdin collaborates with the U.S., Canada, Australia, India, Ethiopia and Turkey.

**EAT YOUR PEAS**

USDA’s five-year, $4 million genetic research program — with researchers at USC Dornsife and NASA Ames — aims to push the climatic range in which the chickpea can be cultivated. By creating more and higher yielding varieties of chickpea, the production of chickpea can be increased by more than 2,500 percent. As a result, the practice of farming, many Ethiopians have a high dependence on the chickpea as a source of protein. Unleashing the genetic potential of chickpea plants will be tested in the U.S., Canada, Australia, India, Ethiopia and Turkey.

In 2013, Nuzhdin and his colleagues conducted research worldwide; some 10,000 years ago people turned wild plants into crops — the advent of agriculture. Also called the garbanzo bean, the chickpea is extremely drought-tolerant and is also resistant to disease. It is capable of resisting heat, drought, frost and disease, and encourage increased nutrition. Ethiopia, the largest chickpea producer in Africa, is socioeconomically and socially imperative, said Dennis Hedgecock, Paxson H. Ofield Professor in Fisheries Ecology and professor of biological sciences at USC Dornsife, is working with Hedgecock on some of the institute’s aquaculture research. Nuzhdin’s laboratory has long been interested in tackling food insecurity.

In 2008, Nuzhdin received a $3.2-million National Science Foundation grant to conduct a study on the legume Medicago truncatula, a plant that can improve soil fertility naturally, even under saline conditions. Nuzhdin and his team are using modern genomics tools to study the tree’s genetic makeup to predict its agronomy and traits.

**BARE CUPBOARDS**

**Oil palms produce an edible vegetable oil derived from the fruit of Elaeis oleifera, a species of palm native to South and Central America, and compare it to E. guineensis, an African oil palm. In view of**

While the debate continues, Nuzhdin’s research will boost breeding efficiency and help make the production of palm oil more sustainable.

“Since many economies, like Malaysia’s, completely depend on oil palm production, they are not about to stop producing the trees,” Nuzhdin said. “The only way of reducing the impact is to intensify the production on already existing fields, instead of extending to new land. Biodiversity the trees that are cultivated, the more reliably will mitigate any damage to the environment.”

Applying the research to the real world is essential, he said. “We have a set of deliverables,” Nuzhdin said. “Those deliverables are cultivars that will get into the hands of small farmers in developing countries.”

Senior writer Susan Ball contributed to this report.
When people eat a hot dog just after gobbling down a slice of pizza, it may not be due to lack of willpower. Rather, the brain’s signaling has been hijacked. It’s the "vicious circle" of our Western diet, said Scott Kanoski, assistant professor of biological sciences.

Kanoski has published research describing how consistent consumption of saturated fatty acids and refined carbohydrates (i.e., sugars) disrupts the blood-brain barrier, which leads to dysfunction in the hippocampus, a seahorse-shaped region of the brain, located in the medial temporal lobe.

Contemplating devouring that doughnut? Biologist Scott Kanoski’s research shows that eating junk food tricks the brain into wanting to reach for that sugary or fatty treat.

By Lizzie Hedrick

THE FEEDING CYCLE
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HUNGER AND SATIETY CUES
Kanoski’s research shows that the hippocampus controls feeding behavior through detection and processing of circulating hormonal signals. The hormones include ghrelin, which signals hunger, and leptin, which signals satiety. His lab’s most recent paper published in Neuropsychopharmacology identifies the hormone glucagon-like peptide-1 (GLP-1) as a key signal that acts in the hippocampus to limit how much food is consumed during a meal and to reduce motivation to eat unhealthy yet tasty food.

COMPROMISED HIPPOCAMPUS
Once the hippocampus is affected by excess consumption of foods high in saturated fat and sugar, its ability to detect and utilize these hormonal signals becomes compromised, Kanoski said. Once this happens, people tend to turn to external cues to determine what, how much and when to eat. But the external cues in our environment contribute to unhealthy and excessive eating. For instance, you may become tempted by vending machines at work and fast food restaurants you see on the way home.

FATS, SUGARS OR BOTH?
The next step in Kanoski’s research is to determine which foods exactly — fats, sugars or both — are guilty of damaging the hippocampus, how early in life this cycle begins, and whether or not changing eating habits can reverse this cycle on a neurochemical level. His research also unravels how the hippocampus communicates with other regions in the brain to curb excessive overeating.

Kanoski hopes that his research will help send the message that restaurants and companies that produce processed foods must alter their ingredients and people must change their eating habits. “Increased public awareness of the neurological changes caused by the foods we eat, and so our children, will hopefully help people make different food choices and ultimately transform our eating culture.”

Illustration by Peter Hoejy for USC Dornsife Magazine
An English major becomes a grilled cheese goddess. A creative writing major finds her calling as a butcher. An international relations and German major is now assistant vice president of retail operations, overseeing the dining experience at USC. Guided by their love of food, these alumni took unconventional career paths and tasted success. They remember what Julia Child always said, "If you’re afraid of butter, use cream."
HEATHER APRAKU: NOSTALGIC NOSH
What do grilled cheese and cereal have in common? For starters, both are comfort foods steeped in nostalgia.

"Grilled cheese is probably the first sandwich you eat as a kid," said Heather Apraku, co-owner of Mix n' Munch Cereal Bar and Grilled Cheese Cafe in South Pasadena, California. "And you're eating Cheerios in your high chair as soon as you get a few teeth."

Many of us have memories of mom's grilled cheese made with Kraft singles and digging for the prize in a box of Cap'n Crunch.

Only the creative mind of an English major could dream up this twist for a café. Combining Apraku's obsession with cheese and her older sister Kim's adoring love of cereal, the pair opened the café in 2010.

In addition to a menu of specialty sandwiches, patrons can customize their own, selecting from a wide assortment of breads, cheeses and toppings. American cheese. White bread. Spam!

"That sandwich is delicious," insisted Apraku, who earned her bachelor's from USC Dornsife in 2005. "But people love it or hate it; there's no middle ground."

Maybe the Betsy Ross sounds more appetizing, with cheddar cheese, glazed apples and caramel sauce. Or Carol's ChiOP made with Chinese barbecue pork, pickled red onions and pomegranate.

"We even have some creative customers who make cereal sandwiches. When we first opened, a local elementary school kids created his American cheese and Cocoa Puff on white grilled sandwich. He would come in frequently for it."

Apraku never imagined opening a restaurant, let alone one that specializes in the infinite permutations of grilled cheese and sweetened kids' cereals.

But while writing her thesis for her master's degree at USC Annenberg, the idea blossomed. For her thesis, she wrote a business plan and did more and more research, it started to seem increasingly viable.

"So often I meet fellow Trojans at the restaurant and we immediately click," she said. "If I had not been an undergraduate, I would not have applied to graduate school at USC, and there would likely be no Mix n' Munch!"

"I'd love to open one or, or around, USC," she said. "We could hire USC students, and maybe they could even open their own franchises."

Expert Advice
HEATHER APRAKU ON THE PERFECT GRILLED CHEESE
First of all: butter! Butter is very important. And stay away from pasty processed — I'm a big proponent of not using anything sandwich. I'd rather just be patient and let them do their thing on a flat-top griddle or a frying pan if you're at home.

Butter both sides of your bread and use medium heat to get cheese really gooey. Grill the sandwich to a deep golden-brown, so that it's crispy on the outside and melty on the inside. Do about three minutes on each side. As I tell my employees, there needs to be a perfect balance of melted cheese and golden-brown bread — you don't want to burn the bread to get the cheese melted and gooey, but if it's pretty on the outside and not going on the inside, you've failed!

I'm actually fine with using only cheese — give me cheddar on butter bread and that's just perfect. But I've never had a bad grilled cheese. You can get crazy with gouda, brie, cheddar and Swiss and it will taste delicious. Grilled onions and mushrooms are great, and you can't go wrong adding meats or veggies. Just heat the meat and veggies before adding them to the sandwich for the final minutes of grilling — unless it's asparagus, tomatoes or appli of course.

Cheese Wise
After majoring in English, Heather Apraku cooked up the idea of a café that sells an unusual but compelling combination: grilled cheese and sweetened cereals.
SARA BIGELOW: STEAKING HER CLAIM
For many, an average workday begins by checking e-mail over a mug of hot coffee. Sara Bigelow’s day often starts with a 100-pound slab of meat.

On delivery mornings, Bigelow pulls large cuts of raw meat, one by one, from big delivery bins and loads them onto a helper’s shoulders to haul into the butcher shop where she works.

“Butchering is definitely hard work,” she said. “It’s physically exhausting and your arms, legs and back all get sore. But I really like the delivery days. That physical reaction is what reminds you that you’re a butcher.”

As a woman butcher, “I’m still in the minority in this field,” Bigelow said, noting that The Meat Hook has hired at least four full-time women staffers and plenty of female interns.

“The guys at my job find my being female a nonissue. To them, I’m just Sara who helps them to get their stuff done on time and yells at them for messing around.”

A vegetarian in high school, Bigelow later began to miss meat — and for reasons beyond enjoying a good steak.

“Food is a really big part of my family, something we talk about and do together a lot, whether eating or cooking.” she said. “By not eating meat I would have lost out on things like cooking with my grandmother and learning the recipes that have been passed down in my family.”

Studying creative writing, Bigelow got the chance to experience the food world unless you go digging for information. You can go to pastry school, but I couldn’t find anything like that for butchering. At the time I was looking, it was still untrodden ground.”

Bigelow was willing to learn the ropes unpaid, but shops turned her away, maintaining that men were butchers and women were cashiers. Finally, at The Meat Hook, co-owner Tom Mylan allowed her to come in and observe, which got her foot in the door.

After graduating from USC Dornsife in 2007 with a bachelor’s in creative writing, Bigelow moved to New York City and took a job in culinary public relations that drew on her interest in writing. But when she found herself taking a charcuterie class, she immediately felt in her element.

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These days, schools charging thousands in tuition train students to become butchers, and many artisan shops have unpaid apprenticeship programs. But the field is still disproportionately male.

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KRIS KLINGER: MR. HOSPITALITY

“Hey, Mr. Klinger!”

A hostess, busser and waiters flash Kris Klinger smiles as he enters the restaurant and heads to a table on the patio.

He’s at Moreton Fig, a stylish eatery nestled beneath a twisting mass of branches belonging to the fig trees in the center of University Park campus. Opened four years ago, the restaurant features a menu of seasonal, farm-to-table cuisine. “I don’t think most other campuses have anything like it, and we’re proud of that,” said Klinger, adding that most of the produce comes from local farmers. “The food really is amazing and we have a fantastic chef and crew.”

As assistant vice president of retail operations at USC, Klinger develops strategy and customer service programs, continually revitalizing the university’s dining program under the banner of USC Hospitality. This also extends to the 42 residential dining halls, cafés, food stories, bars and restaurants at the University Park and Health Sciences campuses, as well as the Figueroa corridor.

The former U.S. Marine and food industry veteran, who joined USC in 2009, also oversees the Radisson Hotel Los Angeles Midtown at USC’s team and property. His group includes 166 managers, 700 hourly associates and 400 to 500 students, depending on the time of year.

Now his jurisdiction includes the hospitality portion of USC Village, an expansion project bringing in all-new student housing, academic space and retail shops just north of campus. It will include a bar and grill, cafés, a Starbucks and fast food options. Klinger is directly involved with the campus. It will include a bar and grill, cafés, a Starbucks and fast food options. Klinger is directly involved with the residential and retail planning and programming.

“On my job, my basic goal is to remove obstacles from everyone’s way,” he said between bites of the day’s special, a Greek gyro sandwich with tzatziki yogurt sauce and fries.

“Just put a really good team together and give them the tools and direction they need, then I just let them go do what they have to do.”

Most broadly, USC Hospitality is committed to creating the best USC dining experience for all customers — professors, students, parents, alumni and staff as well as potential faculty and students visiting campus.

When Klinger first arrived, he removed communication barriers — maybe culinary wasn’t talking with operations — so that now everyone reports to the same person and shares the same vision and goals.

One of those goals is to try new things, and to be cutting edge and creative.

“We implemented Tapasgo this year, which has been a huge success,” he said. “It’s app-based ordering, so students can order food on their smartphones and go pick it up after class.”

Klinger also reduced the number of food vendors at USC from 300 to 70, creating efficiency and strengthening existing relationships.

His team solicits feedback from students via surveys and focus groups. The recent creation of a marketing department has greatly expanded USC Hospitality’s social media presence.

“We provide food that students are familiar with, but wouldn’t probably expect in a residential hall,” he said, pointing out on-campus restaurants such as The Hahne, California Pizza Kitchen, Lemonade and Nekter.

Klinger also plans to add more international food options while continuing to offer healthy choices, which have become increasingly in demand. Outside the office, Klinger is a food lover and self-proclaimed cork dork.

“That’s another thing that attracted me to hospitality. In my first job as a waiter while in the Marines, there was a wine tasting component, and I was blown away by how you could get all these flavors out of a simple grape. It was amazing to discover how wine can really complement and enhance food.”

Klinger earned his bachelor’s in international relations and German at USC Dornsife in 1994, thinking he’d “work at an embassy or something cool like that.” His majors appear unrelated to his career choice, but Klinger draws from his undergraduate degree.

“At Dornsife, I learned to look at things differently, to consider all of the different angles and perspectives to understand how and why decisions were made in the past, and the impact of those decisions,” he said.

“In the hospitality business you deal with so many tastes, cultures and people. Connecting with people in this manner has helped me to navigate many of the challenges we face and overcome them.”

KRIS KLINGER ON THE QUINTESSENTIAL MULTI-COURSE WEST COAST MEAL

I love California’s fresh produce, local cheeses, seafood and wine. My favorite cuisines is farm-to-table: straight from the farm to the table. Just get a great olive oil, some salt and pepper, and that’s all you need to make California produce taste great! I like a glass of wine while I cook, maybe a 2012 Gainey Vineyard Chardonnay. For a cheese board, try manchego (Spanish hard cheese made of sheep’s milk), blue and a good aged cheddar along with a pour of 15-year-old Blandy’s Madeira. Bon appétit!

I like a baby kale salad with strawberries, sliced almonds and fresh-ground pepper with a light, flavorful honey-balsamic vinaigrette.

“To go with the lamb, in the summer I like sweet corn and snap peas. Grin the corn a quick grill, slice off the kernels and add to a sauté pan with snap peas, garlic, salt, pepper and olive oil. Pair the lamb with a great Zinfandel like Ridge Geyserville or Turley Hayne Vineyard. For dessert, serve fresh berries with mint and a drizzle of honey along with a pour of 10-year-old MÂcon’s patience. Bon appétit!”

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Despite its handsome, embossed, brown-calfskin cover and imposing size, the unpublished 18th-century manuscript had been overlooked by academics until Juliette Parsons, a doctoral student in history at USC Dornsife, discovered it while researching early American food culture.

“Although the cover is impressive, the manuscript is in poor condition,” Parsons said. “The paper is yellowing and torn, some pages are missing altogether and the ink on those that remain has faded to such a light brown that the text is sometimes impossible to read.”

Rising to the challenge, Parsons is focusing her doctoral dissertation on this rare document, *The Recipe Book of Bettee Saffin and Ann Ellis*, housed in Philadelphia, at the University of Pennsylvania Kislak Center for Special Collections, Rare Books and Manuscripts. Her efforts show this previously ignored manuscript to be a treasure trove of information.

First composed by a well-to-do gentlewoman living in Somerset, Southwest England, and continued by her daughter, who immigrated to the United States and settled in Pennsylvania, the cookbook demonstrates how traditional English recipes were adapted to meet the challenges of the New World, evolving into the basis of modern American cooking. Closer reading also revealed the compelling story of a family’s descent into poverty.

“When researching American food history prior to 1800, historians have concentrated on unpublished cookbooks written by wealthy Southern women,” Parsons said. “This is one of the first times that anyone has seriously studied as a historical document an unpublished 18th-century recipe book written by a Northern woman from a less privileged background.

“Ann’s early education as a member of the wealthy English elite meant she was more literate than her peers, and her...
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“Our home is in a pretty lonesome place. But I have 45 pounds of sugar waiting and this is pretty fine.”

“Bettee’s recipes were not much different from those of the eighth century,” Parsons said. “Although Ann wrote her recipes only a few decades later, she breaks with food ways that existed in Europe for 1,000 years, using ingredients in ways familiar to a modern cook.

“At first, 18th-century Anglo-American women like Ann clung to English food culture, but they quickly added indigenous ingredients and adapted recipes from other colonial women, natties and slaves,” Parsons noted. “They elevated the importance of dessert, made sugar a defining taste in American cuisine and contributed new foods of their own invention. These recipes became more than just practical adaptations to local conditions — they became American food.”

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Ellis adapted her mother’s recipes in accordance with local ingredients. From Quakers, Ellis learned to use cream cheese to make cheesecake, from Dutch neighbors she learned to preserve meat as well as make cookies. From Indians, she borrowed the practice of frying in lard.

“It was a very rich and fatty diet. It contained vastly more sugar and food fried in animal fat than was usual in England,” Parsons said.

This is vividly illustrated by a 1789 letter Parsons cites from Pennsylvanian Ruthie Wood, who wrote to her mother back home in her native England: “Our home is in a pretty lonesome place. But I have 45 pounds of sugar waiting and this is pretty fine.”

In the cookbook, Saffin and Ellis’s recipes appear as stream-of-consciousness paragraphs.

“She authors’ focus frequently wandered,” Parsons said. “The recipes read like conversations, like a cook casually explaining to dinner guests how she made a dish.”

Although Saffin and Ellis were educated women, misspelled and wrongly uppercased words, and grammatical errors abound.

Also, “The cookbook isn’t chronological and most recipes aren’t even dated,” Parsons said.

It was also sometimes used by other family members, notably to practice reading and writing. On page 11, where Ellis recorded recipes for gooseberry pie, dried fruit and boiled mushrooms, her younger brother, John, copied out a 1704 account of naval battles, no doubt as a writing exercise.

Saffin’s condiment recipe “To Make Catchup [sic]” that will keep Good 20 Years” contains “a Gallon of Strong stale rum, one pound of Anchovies washed and cleaned from the guts half an ounce of cloves three large pieces of ginger one Pound of shallots one quart of flap mushrooms [sic].” Bearing no resemblance to modern-day ketchup, Saffin’s condiment shares more similarities — bere apart — with garum, a fermented fish sauce popular during the Roman Empire. The ingredients of Ellis’s recipe for “Sauce for Fried [sic] Fish”— chives, a shallot, butter and lemon — are simpler, evoking more closely what one would find in a modern American cookbook.

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Also, “The cookbook isn’t chronological and most recipes aren’t even dated,” Parsons said.

It was also sometimes used by other family members, notably to practice reading and writing. On page 11, where Ellis recorded recipes for gooseberry pie, dried fruit and boiled mushrooms, her younger brother, John, copied out a 1704 account of naval battles, no doubt as a writing exercise.

Saffin’s condiment recipe “To Make Catchup [sic]” that will keep Good 20 Years” contains “a Gallon of Strong stale rum, one pound of Anchovies washed and cleaned from the guts half an ounce of cloves three large pieces of ginger one Pound of shallots one quart of flap mushrooms [sic].” Bearing no resemblance to modern-day ketchup, Saffin’s condiment shares more similarities — bere apart — with garum, a fermented fish sauce popular during the Roman Empire. The ingredients of Ellis’s recipe for “Sauce for Fried [sic] Fish”— chives, a shallot, butter and lemon — are simpler, evoking more closely what one would find in a modern American cookbook.

“Bettee’s recipes were not much different from those of the eighth century,” Parsons said. “Although Ann wrote her recipes only a few decades later, she breaks with food ways that existed in Europe for 1,000 years, using ingredients in ways familiar to a modern cook.

“At first, 18th-century Anglo-American women like Ann clung to English food culture, but they quickly added indigenous ingredients and adapted recipes from other colonial women, natties and slaves,” Parsons noted. “They elevated the importance of dessert, made sugar a defining taste in American cuisine and contributed new foods of their own invention. These recipes became more than just practical adaptations to local conditions — they became American food.”
When Irene McCulloch joined USC in 1942 as a professor of zoology, the marine research department consisted of a single 14-foot staff, as well as a decades-old laboratory and lecture room. She quickly began efforts to update and expand the department.

Fewer than two decades later in 1952, McCulloch ultimately persuaded Capt. G. Allan Hancock, oilman, banker, ocean explorer and president of the USC Board of Trustees, to bring the Allan Hancock Foundation forScientific Research to USC.

Dedicated in January 1954, the Allan Hancock Foundation Building, where the Hancock Institute for Marine Studies is still housed, contained modern laboratories, a library, a museum, a radio station, a campus television studio, an auditorium and an observatory.

The foundation profoundly elevated oceanographic research at USC.

A few years later, when the Boston Society of Natural History was forced to sell its collection of research materials for financial reasons, Hancock purchased it. His one proviso: McCulloch and her students would travel to Boston to personally inspect, wrap and pack each of the 8,000 items, some of which are valued in the millions of dollars today.

She retired from teaching in 1959, but McCulloch — for whom a mantis shrimp species, Tetrasquilla mccullochae, is named — continued to do research at USC.

“Mrs. McCulloch still came to her office on the first floor of the Hancock Building when I was a graduate student,” recalled Mary Wicksten. “She was a moving force and an inspiration.”

McCulloch spent 25 years in her role of University Distinguished Professor Emerita of Zoology, the marine science research community's highest honor, and to conduct research at USC until a few months before her death in 1992 at age 91. Thanks in large part to McCulloch’s persistence and determination, more than 70 years after Hancock’s initial donation, marine science research continues to thrive at USC with its state-of-the-art laboratories and impressive research library, as well as numerous marine specimens. —D.K.

Honors

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Religion and Modern Science

In his award-winning new book, David Albertson examines theologians Nicholas of Cusa and Thierry of Chartres.

David Albertson traveled to Germany to study the archives of Nicholas of Cusa’s 500-year-old library for his award-winning monograph Mathematical Theology: Nicholas of Cusa and the Legacy of “Thirteenth Century.”

The book focuses on numbers and arithmetic in European religious thought, from antiquity through the Renaissance. Albertson sought to examine Thierry and Nicholas as medieval Christian authors, who translated their beliefs about God and the cosmos into a mathematical language.

“I was curious to see how their ideas might answer some of the questions we’re still thinking about in the 21st century,” Albertson said. “What is the essence of modernity, why does religion have anything to do with it and why does religion keep hanging around if it was supposedly filtered out by the mathematical science of Galileo and Descartes?”


“The Book of Life: A Novel” by Young-Ji Kang, professor of History, provides an intriguing look at how philosophical and religious ideas shape the human spirit.


“Importing Science: Knowledge and American Society,” by Youngmin Choe, associate professor of Science, examines the impact of science on American society.


“Diplomacy’s Value: Creating Security in 1920s Europe and the Contemporary Middle East” by Brian C. Rathbun, associate professor of International Relations, delves into the complexities of diplomacy in shaping global security.

“Nonlinear Mixture Models: A Bayesian Approach” by Tobias Tenbrink, assistant professor of Statistics, presents a new approach to analyzing complex data.

“New Thinking about Propositional Sentences” by Scott Smales, director of the USC School of Philosophy, explores the nature of propositions and their role in shaping our understanding of the world.

“Neuroanatomical Terminology: A Lexicon of Classical Origins and Historical Foundations” by Oxford University Press, presents a comprehensive guide to the terminology used in the field of neuroscience.


“Koreans in 21st Century South Korea” by George Sanchez, professor of American studies and history, and vice dean for diversity and strategic initiatives, was honored with a variety of awards, including the American Historical Association’s Pacific Coast Branch for the 2014–15 term. Sanchez also received a Diversity Victory Award from the USC’s Office of Alumni Relations.

David ST. JOHN, professor and chair of English and professor of comparative literature, received the Phi Kappa Phi Faculty Recognition Award at USC’s 25th annual Academic Honors Convocation.

MARC THOMPSON, professor of chemistry and materials science, received the Richard C. Tolman Medal from the Southern California Section of the American Chemical Society (ACS) for his outstanding contributions to chemistry. Thompson was also named an ACS Award in the Chemistry of Materials.

JOHN WILLSON, professor of civil and environmental engineering, computer science and architecture, and director of the USC Spatial Sciences Institute, was selected as a 2014 University Concurrent for Geographic Information System (UCGIS) Fellow.

JOSH LUNDBERG, assistant professor of psychology, won the National Science Foundation CAREER award for his research into how experience shapes the development of neural circuits in the newborn brain.
Kicks for Kids
A program providing a healthy, active lifestyle for special needs children is the brainchild of alumnus Zade Shakir.

Volunteering at Spirits in Action — USC’s annual version of the Special Olympics — volunteers and 300 players. During sessions held at the heart of the USC University in September 2013 with 30 children and 50 volunteers. Dedicated to promoting a healthy, brainchild of alumnus Zade Shakir.

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LAURIE MEYER, (B.A., history, ’67) at age 87; taught at Pomona College from 1970 until retiring in 2005. She served as a chemist in the U.S. Army during World War II, earning the Bronze Star and the Army Achievement medals; lived in the Fullerton Cardiovascular Center, a senior living community in Fullerton, CA, for 14 years before moving to Avant Oaks, a senior living community in Los Angeles, CA, where she lived for 13 years until her death.

JACOB HENNER FERGUSON, (M.D., ’57) at age 87; president of Central California Haiku Study Group at the USC Pacific Asia Museum. For alumna Deborah P. Kolodji, who leads the Southern California Haiku Study Group at the USC Pacific Asia Museum, art, literature and nature are devoted to studying, writing and sharing haiku. Kolodji has published four chapbooks of poetry and articles in the World Haiku Review, the Journal of Japanese Studies, the Stone Garden and the California Haiku Study Group at the USC Pacific Asia Museum. Kolodji’s poem in published in World Haiku Review embodies those principles, juxtaposing the vibrant blossoms of spring with grandmother’s craft.

ALBERTO LOPEZ, (B.A., religion/social ethics, ’93) at age 43; lives in Glendale, CA, and was a product manager at Netflix, Inc. A playwright, he also teaches at the University of California, Los Angeles, and at the California Institute of the Arts.

ROBERT R. JOURNELL, (B.S., education, ’51) at age 80; taught Spanish at Fairmont High School in Los Angeles for 43 years and was a Spanish tutor while serving principally as a homemaker and mother; she also taught Spanish at California State University, Los Angeles for 12 years; and served as a volunteer at the Los Angeles County Museum of Art.

JOHN EDWIN TRUSS, (B.S., natural sciences and mathematics, ’64) at age 79; taught biology at Santa Barbara City College. For the Record: A “Trojanality” for alumni Deborah P. Kolodji, who leads the Southern California Haiku Study Group at the USC Pacific Asia Museum in Pasadena, haiku is a powerful form of poetry.

For alumna Deborah P. Kolodji, who leads the Southern California Haiku Study Group at the USC Pacific Asia Museum in Pasadena, haiku is a powerful form of poetry.
Berton continued his involvement in the early 2000s until his death, when it was learned he had Alzheimer’s disease. In 2013, Robert and his wife Lois Berton received the Doris Duke Medal for exemplary leadership. A founding member of the USC Doris Duke Office of Community Affairs, he endowed the Robert E. Berton Chair in Ethics, Globalization and Development, which was held by Abe Lowenthal of the Keck School of Medicine of USC for 40 years, has died. He was 90.

A week before his passing, Berton died peacefully on Aug. 17 at the Beachside Nursing Center near his home in Kenting- ton Beach, California. Berton published many research and review articles, including in Science and Nature. He authored several books, including Coral Reef Ecosystems (Cambridge, 2015); Quantitative Analysis of Chemical Processes, 3rd ed. (McGraw-Hill, 2011); and books on the natural history of California, Oregon, Nevada and California Island. He was a member of the American Association for the Advancement of Science.

Arnold Dunn

Robert F. Erbuni

Edward Blum

Norman Levian

Darrell Judge

Carlhung

Anke Bilton

Higginbotham arrived at USC in 1994 and served as director of the Center for Multiethnic and Transnational Studies. He had served as a member of the German-speaking exile community in Southern California, practicing medicine at Kaiser Permanente and teaching German at California State University, Long Beach. After the war, he returned to California and earned a master’s degree in education at USC. In 1961, he joined the faculty of the American Jewish University, where he taught German literature and served as chair of the Department of German. His legacy is filled with teaching, service and mentoring. His students remember his generosity and his ability to engage them in meaningful discussion.

Michael B. Preston, former USC vice provost for strategic initiatives, professor emeritus and former chair of political science, has died. He was 80.

An expert on racial and ethnic politics, Preston died July 27 in Los Angeles, three weeks after being diagnosed with pancreatic cancer, his family said. At the time of his death, Preston was finishing a co-authored book titled California Democracy in State Politics. His legacy is filled with teaching, service and mentoring. His students remember his generosity and his ability to engage them in meaningful discussion.

Rogers Eubanks

Louis Zamperini

CORNELIUS SCHNAUBER

granted professor of history. In the late 2000s, Preston started USC’s first course on black politics and later led a key initiative shared by USC Dornsife and the Office of the Provost to recruit minority and female scholars. From 1989-95, Preston served as chair of the Department of Political Science and had served as director of the Center for Multicultural and Transnational Studies at USC Dornsife.


To honor Preston, a scholarship has been established to help fund undergraduates in political science studying urban politics or civil rights. For more information, contact Maurer McNulty at mcnultyw@usc.edu or (213) 740-4994.
IN MY OPINION

All Grown Up

The Trojan Guardian Scholars program helps Lucero Noyola connect with her true inner power.

During my adolescence, my dad was never around; my mom was really dedicated to us, working full time at a school cafeteria to provide for our family. Consequently, entering middle school, my siblings and I had a lot of autonomy. My brother began having his older friends over to our house and they introduced us to drugs, ditching and fighting, which influenced our behavior in school. I was on probation for having been involved in a fight and had regular court dates. I was in the honors program and had a high GPA, but never considered transferring to a private university. Consequently, entering high school, my identical twin and I were perceived as trouble. At one point, I was accused of something I did not do and was suspended. I entered the juvenile justice system at age 13. After juvenile detention, I felt the world was unjust. I saw authority figures as corrupt and stopped caring about any kind of academic success. I entered a group home at age 16.

I was pregnant with my beautiful daughter Aurora when I began working at El Pollo Loco. I knew I could not support my baby and myself on a minimum wage job. Despite having a newborn, at 18, I entered college. I attended East Los Angeles College full time and worked part time. I was in the honors program and had a high GPA, but never considered transferring to a private university. Consequently, entering high school, my identical twin and I were perceived as trouble. At one point, I was accused of something I did not do and was suspended. I entered the juvenile justice system at age 13. After juvenile detention, I felt the world was unjust. I saw authority figures as corrupt and stopped caring about any kind of academic success. I entered a group home at age 16.

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Life Moment

CALEB FARRO ’11 (SEE PAGE 15)