

**STORM
WARNING**

*Roger Reville '29
vs. Climate Change*

**SMOKE IN
THE WINE**

*A Sonoma Story of
Fire and Recovery*

**RUNNING
TOWARD THE
VOLCANO**

*Learning from
Kilauea*

**OUTSMARTING
A WILDFIRE**

*Fire-Resistant Tips
for Your Home*

COLLEGE MAGAZINE

Pomona

Winter 2019

FIRE & WATER

RUNNING DRY

You cannot see an aquifer. What you can see, however, is the impact of these underground water systems, as revealed in this artful image of the vast irrigated fields above the Ogallala Aquifer, which underlies 174,000 square miles of the Great Plains. W.M. Keck Professor of Environmental Analysis and History Char Miller—one of the co-authors of the third edition of *Ogallala: Water for a Dry Land* (Nebraska, 2018)—describes monstrous roaring pumps that suck the ancient water stored deep beneath these green-hued circles into an array of pipes to irrigate sorghum, corn, cotton and wheat, or to nourish livestock.

“The massive Ogallala, which runs from Wyoming to Texas, has been one of the world’s most productive aquifers, not least because it has been crucial to the growth of the global food system,” he explains. “Yet it is an open question how long it can continue to sustain its vital role, a question that drove John Opie, Kenna Lang Archer and me to co-author this book.”

“Although the book encompasses half a billion years of the region’s history,” Miller adds, “its next-to-last sentence is perhaps the most unsettling: ‘The clear, fresh waters of the Ogallala are being gulped down at 10 times their trickling pace of replacement.’ That demand is accelerating with the exponential growth in the world’s population. By 2050, the Ogallala may be exhausted.”



NINETY-FIVE PERCENT PERSPIRATION

To describe the process of casting in metal, Professor of Art Michael O'Malley offers a paraphrase of Thomas Edison's famous remark about genius: "It's 5 percent inspiration and 95 percent just hard work." The metal pour itself, he explains, is one of the last in a long series of intricate steps, each involving a great deal of painstaking labor. In fact, he says, "I often think of casting as a finishing process, in the same way I think of painting something made of wood."

The molten aluminum in this photo was to be cast as the legs of a conference table, part of a project intended to engage students in personalizing Pomona's new Studio Art Hall when it opened a few years ago. "We wanted to connect a teaching experience with a lived experience with future objects," O'Malley says. "So the idea was to build as much furniture as possible."

The project grew out of O'Malley's longtime interest in the narratives encapsulated in the built environment. "Why does the world look the way that it does?" he asks. "And what is it that we can do to, perhaps, populate the built environment with objects that have alternative narratives and signal different kinds of values, different kinds of positions in the world?"

SEABIRDS AND ISLAND ECOLOGY

Fresh out of college, Professor of Biology Nina Karnovsky took a job studying seabirds—and she was hooked for life. “Seabirds are sentinels of what’s happening in the ocean,” she says. “There are so many stories about human impacts on bird populations; there’s climate change that is changing the food web, the temperature, the winds. And the birds are responding.”

Over the years, she’s studied penguins in Antarctica, little auks in the Arctic and, closer to home, seabirds on the Channel Islands. “We’ve studied the prey availability and bird distribution around Santa Barbara Island,” she says. “We’ve done cruises with students where we were watching the birds, doing the net-tows, the physics measurements and the chemistry. And I’ve taken students back to the islands for field trips as well, including Anacapa.”

Anacapa Island (pictured) is home to one of the great success stories in conservation. In recent years, the careful elimination of invasive, egg-eating rats on the island has brought the Scripps’s murrelet out of the shadow of extinction. Last year, Karnovsky took her Advanced Animal Ecology class to Anacapa to participate in an accompanying effort to restore native plants. Unfortunately, she says, “there aren’t many success stories like that in island ecology.”



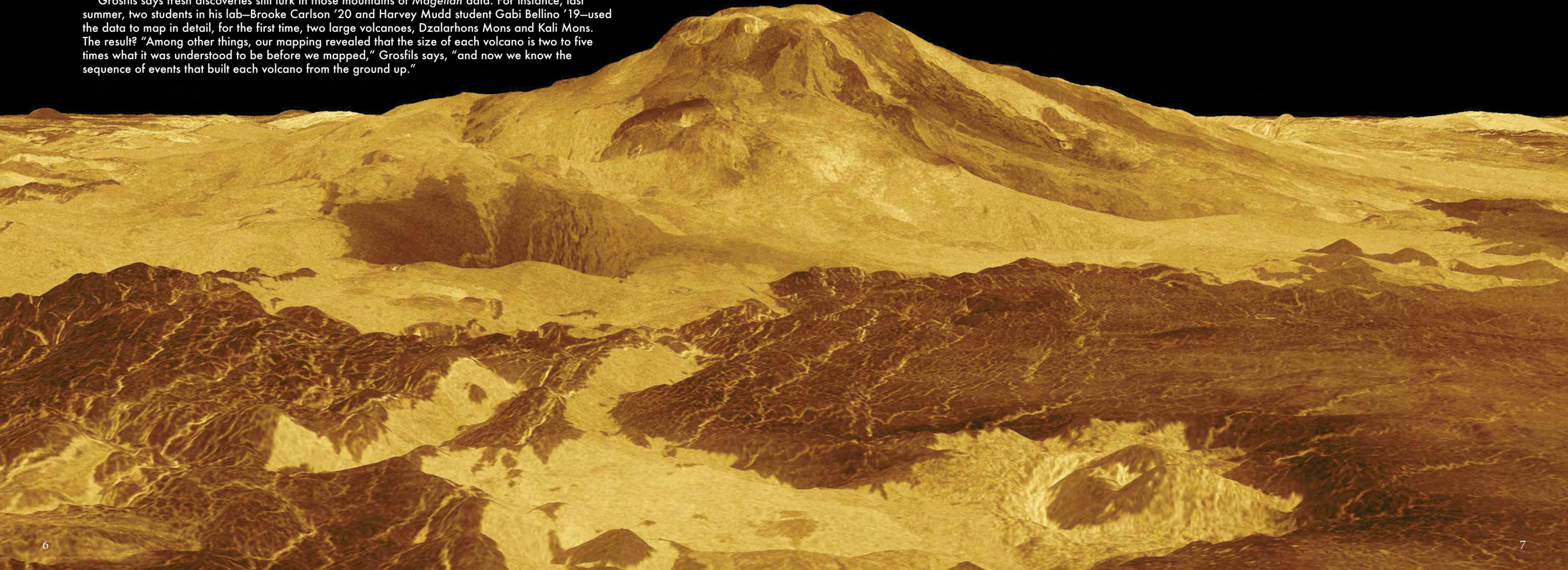
COLD CASE FROM A HOT PLANET

This NASA image of Maat Mons, one of the largest volcanoes on Venus, was created from radar data gathered by the *Magellan* spacecraft as it orbited the seething hot planet. That was a quarter-century ago, but the total amount of data *Magellan* sent back during its four-year life was so vast that scientists like Eric Grosfils, the Minnie B. Cairns Memorial Professor of Geology, are still digging through it to make new discoveries.

“One of the primary things that we’re doing right now is trying to understand how volcanoes grow and evolve,” Grosfils says. “For a long time we’ve been looking at what controls where magma goes beneath the volcano—why it goes straight up and erupts at the summit, for example, or goes out along a rift zone. The eruption that just happened in Hawaii underscores the fact that even at one of the most heavily studied and instrumented volcanoes in the world, we still get surprised all the time.”

Studying volcanoes on another planet, Grosfils says, is a good complement to studying them on the Earth, partly because it offers a glimpse of how volcanoes evolve in different environments, but also because the volcanic record in a place like Venus is so pristine. “Venus is not subjected to lots of erosion,” he explains. “It doesn’t have oceans that obscure the surface. For reasons like these, there is a pretty complete record of their evolution preserved for us to see.”

Grosfils says fresh discoveries still lurk in those mountains of *Magellan* data. For instance, last summer, two students in his lab—Brooke Carlson ’20 and Harvey Mudd student Gabi Bellino ’19—used the data to map in detail, for the first time, two large volcanoes, Dzalarhons Mons and Kali Mons. The result? “Among other things, our mapping revealed that the size of each volcano is two to five times what it was understood to be before we mapped,” Grosfils says, “and now we know the sequence of events that built each volcano from the ground up.”



Beyond Doubt

For years I've wanted to publish a retrospective about Roger Revelle '29, the oceanographer and climate scientist widely credited with pushing climate change into the consciousness of the nation and the world. So I'm delighted, finally, to include Ramin Skibba's beautiful story about the scientist's life and work in this issue. But as I edited the piece, I was troubled to learn that Revelle was also one of the very first targets of climate deniers—and remains a target to this day.

In the last year of his life, between his first heart attack and the one that killed him, a severely ill Revelle was somehow persuaded to lend his name to an article he reportedly had no hand in authoring. The article, published after his death, seemed to indicate that he'd had a last-gasp change of heart about the seriousness of climate change. Not so, say those closest to him—family and colleagues alike. And yet, on a number of websites today, that article is still used to cast doubt upon his body of work.

That's what led me to a remarkable book titled *Merchants of Doubt*, by Harvard Professor of the History of Science Naomi Oreskes and science writer Erik Conway.

It's an eye-opening study of the weaponization of scientific doubt over the past half-century to combat a series of what Al Gore termed "inconvenient truths"—beginning with the fact that smoking causes cancer and continuing, in pretty much a straight line, to the dangers of secondhand smoke and the anthropogenic causes of acid rain, the ozone hole over Antarctica and, finally, global warming.

Perhaps the most troubling part of the book is the common cast of characters that ties all of these separate episodes together—a few prominent scientists, mostly physicists who had made their names working on weapons systems, who cast their lot with the tobacco industry in the '50s and '60s and turned themselves into professional skeptics, generating the illusion of uncertainty and promoting legal and political paralysis on a succession of important environmental issues, in the face of overwhelming scientific consensus.

"Over the course of more than 20 years, these men did almost no original scientific research on any of the issues on which they weighed in," Oreskes and Conway write. "Once they had been prominent researchers, but by the time they turned to the topics in our story, they were mostly attacking the work and the reputations of others."

There's a famous memo written by a tobacco executive in 1969 that pretty much explains it all: "Doubt is our product," it reads, "since it is the best means of competing with the 'body of fact' that exists in the mind of the general public."

Doubt, of course, is normally a good thing. If curiosity is the engine that propels science forward, doubt is the guide rail that keeps it

on the right path. Doubt is the default setting for all scientists worth their salt, right up to the point at which the accumulation of evidence compels their belief. And even then, good scientists remain open to legitimate findings that challenge what they hold to be true.

But when doubt is artificially manufactured as an excuse for inaction, it becomes a problem. As Oreskes and Conway note, "It is easy to take uncertainties out of context and create the impression that *everything* is unresolved. This was the tobacco industry's key insight: that you could use *normal* scientific uncertainty to undermine the status of actual scientific knowledge. As in jujitsu, you could use science against itself."

The techniques of the doubt merchants ranged from character assassination to the funding of research aimed at blurring scientific lines to the creation of think tanks with the mission of high-profile misdirection. Whichever side of the political divide you may be on, if you read this book, I think you'll be disturbed by what you learn.

Here's the good news: In every case—tobacco as carcinogen, the dangers of second-hand smoke, the role of pollution in acid rain, the role of CFCs in the ozone hole—the scientific consensus eventually won out. But here's the bad news: If the doubt merchants' purpose is to delay as long as possible the day of reckoning for the industries and political groups affected, it's clear that doubt mongering works brilliantly. In the end, the tobacco companies had to pay billions in damages, but only after decades of winning every lawsuit.

Which brings us to today. All of those conspiracies of denial, it now seems, were just warm-ups, trial runs for the biggest show of all—the denial of anthropogenic climate change. And with the stakes no less than the future of our planet, the weapons systems from the battle over tobacco have been upgraded—they've gone nuclear.

On the denial side, it's gotten harder and harder to argue that the jury is still out, given the 97 percent of publishing climate scientists who say the matter has been settled. So now climate scientists are routinely villainized—accused of being part of some massive liberal conspiracy. And as the changes in our climate assert themselves in our daily lives and become even harder to deny, we begin to hear yet another argument: OK, climate change may be real, but there's nothing we can do about it, so we'll just have to live with it.

"But there are solutions," Oreskes and Conway argue. "Global warming is a big problem, and to solve it we have to stop listening to disinformation. We have to pay attention to our science and harness the power of our engineering. Rome may not be burning, but Greenland is melting, and we are still fiddling."

—MW



FEATURES

30 Storm Warning

The legacy of Roger Revelle '29 lives on aboard the research vessel that bears his name and in the work of climate scientists around the world who are studying the effects of global warming.

38 Smoke in the Wine

More than a year after their home and vineyard went up in flames during the wine-country wildfires of 2017, Ken '88 and Melissa '87 Moholt-Siebert are busy rebuilding and replanting.

44 How to Outsmart the Next Wildfire

When Sia '65 and Aim '64 Morhardt decided to build a home on the ashes of a previous structure destroyed by fire, they knew they had to do more than hope for a wildfire-free future.

46 Running Toward the Volcano

Jim Kavahikava '73 has been studying Hawai'i's Kīlauea, the most active volcano on earth, for most of his life. And he's still learning.

DEPARTMENTS

Home Page	1
Stray Thoughts Beyond Doubt	8
Letter Box	10
Pomoniana	11
Bookshelf Consider the Feral	14
How To Win the "Heisman of Physics"	20
Artifact The Heart of the Gamelan	22
New Knowledge Fossils on the Cover	23
Teamwork A Brotherly Hat Trick	26
Bulletin Board	52
Class Notes	54
Alumni Voices Mastering Music	55
Obituaries	61
Last Look Through the Gates	64

ON THE COVER

LAVA FROM HAWAII'S KILAUEA VOLCANO POURS INTO THE OCEAN AMID CLOUDS OF STEAM.



magazine.pomona.edu

Fire-Resistant Buildings

In all the tragedy and huge economic loss in the California fires, you should do a story in *PCM* about Sia ('65) and Aim ('64) Morhardt. They built a lovely hilltop home in Santa Barbara on the site of a previous home that was burned. They are both very artistic, and their home doesn't look like you would expect.

There will be a big need to rebuild, so why not have fire-resistant buildings? According to scientific forecasts, fires in California will become stronger and more frequent. We learned in Pomona botany classes that much of the vegetation in SoCal is fire-maintained.

—Priscilla Sherwin Millen '65
Waipahu, Hawaii

EDITOR'S NOTE: Thank you for the timely tip about the Morhardts and their home. Given the theme of this issue, we were very interested and followed up on it immediately. As a result, please check out the story, "How to Outsmart the Next Wildfire," on page 44.

"Korematsu" in Context

The article in the Summer/Fall 2018 *PCM* titled "The Shadow of Korematsu" contains some important truths but lacks important context. I offer the following to better flesh out the discussion.

Let me begin with the Japanese incarceration during World War II. In 1941 the people affected were predominantly U.S. citizens and legally here. There was no due process and the rule of law was greatly stretched, if not broken. The most evident and egregious of those violations was the confiscation of their property. The separation of families was exacerbated by a lack of facilities to house interned families. Later, when facilities such as Manzanar were established, families were interned together. There is no doubt that the internment of these citizens was greatly hurtful to them and their families and was also part of the price of war, as well as prejudice.

The recent separation of families at the border is a different matter. There is no doubt that our immigration system is broken and that the victims of our government's failure to fix it are the

migrants who come across the border illegally and the citizens of the U.S. who pay the costs associated with that failure. However, your article lacks important context. The Mexican cartels run everything on the Mexican side of the border, and nothing crosses without their knowledge and approval. Those who recently came to the border with children to cross illegally knew full well that they could expect to be separated from those children. And yet they chose to do so. You have to ask why. There are many reasons; desperation and the hope at least for a better life for their children have to be at the top of the list. However, one can't ignore the influence of the cartels. It was and is in their interest to disrupt enforcement at the border and the politics within the U.S. involved with it.

The major difference between the situation in 1941 and the situation at our border today is that there is due process and rule of law today whereas there was not in 1941, and the detainees in 1941 were here legally and the migrants crossing illegally are not. It has always been the practice in the U.S. legal community for law enforcement to separate children from the custody of someone being legally detained. This was not a new policy created or implemented in the current border context. There is much in the law that doesn't work well and that one can question. Nevertheless, it is the law, and until Congress changes it, law enforcement agencies are bound to and should enforce it.

Make no mistake that the immigration situation at our southern border is tragic and in crisis. But for your article to conclude that our immigration policies at the Mexican border today are "dictated by racism and violent separation of families" is a gross misstatement. Let's be clear. Migrants crossing illegally into the U.S. are

victims. They are victims of the Mexican government, the Mexican cartels and an ineffective U.S. Congress.

—Robert Maple '69
Green Valley, Arizona

Alumni, parents and friends are invited to email letters to pcm@pomona.edu or "snail-mail" them to Pomona College Magazine, 550 North College Ave., Claremont, CA 91711. Letters may be edited for length, style and clarity.

Pomona

COLLEGE MAGAZINE

WINTER 2019 • VOLUME 55, NO. 1

EDITOR/DESIGNER
Mark Wood (mark.wood@pomona.edu)

BOOK EDITOR
Sneha Abraham (sneha.abraham@pomona.edu)

CLASS NOTES EDITOR
Perdita Sheirich (pcmnotes@pomona.edu)

CONTRIBUTORS
Alissa Greenberg ("Smoke in the Wine") is a writer based in Berkeley, California, who reports at the intersection between science, art, business and culture. Her work has appeared in *The Washington Post*, *The Guardian* and *The Atlantic*, among others.

Ramin Skibba ("Storm Warning") is an astrophysicist turned science writer and freelance journalist based in San Diego. His work has appeared in *Scientific American*, *The Atlantic*, *Wired* and other publications.

CONTRIBUTING STAFF
Craig Arteaga-Johnson '96
Lupe Castaneda

Carla Guerrero '06
Robyn Norwood

Submissions and Changes:

For class notes, address changes, photos and birth or death notices, email: pcmnotes@pomona.edu; phone: (909) 607-8129; or fax: 909-621-8535. For other editorial matters or submissions, phone: 909-621-8158, email pcm@pomona.edu or mail to Pomona College Magazine, 550 N. College Ave., Claremont, CA 91711. Magazine policies are available at: www.pomona.edu/magazine/guidelines.

Pomona College Magazine

is published three times a year. Copyright 2019 by Pomona College, 550 North College Ave., Claremont, CA 91711.

Pomona College

is an independent liberal arts college located in Claremont, Calif. Established in 1887, it is the founding member of The Claremont Colleges.

PRESIDENT
G. Gabrielle Starr

VICE PRESIDENT &
CHIEF COMMUNICATIONS OFFICER
Marylou Ferry

Nondiscrimination Policy

Pomona College complies with all applicable state and federal civil rights laws prohibiting discrimination in education and the workplace. This policy of nondiscrimination covers admission, access and service in Pomona College programs and activities, as well as hiring, promotion, compensation, benefits and all other terms and conditions of employment at Pomona College.



In the midterm elections of 2014, according to a Tufts University survey, only 17 percent of Pomona College students cast a vote. Four years later, a group of concerned Pomona students turned to an online voting support site to give those numbers a boost.

Student leaders Michaela Shelton '21 and Lucas Carmel '19 led the outreach effort, encouraging their fellow students to sign up with TurboVote, an online tool that helps users take the first steps to register to vote or to request an absentee ballot.

"A recent Pew study revealed that about 75 percent of nonvoters are not voting due to logistical concerns, confusion," says Carmel. "Where to get a stamp? How to request an absentee ballot? Where's their polling place? The same thing is true for college kids—but if you're concrete with people and help them with the process, you can eliminate many of those barriers."

President G. Gabrielle Starr joined in encouraging students to get out and vote, not only on our own campus but across the nation. In an op-ed titled "Dear College Students: My grandmother waited 70 years for the right to vote. Don't ignore this chance," published in *The Washington Post* in late October, Starr told the story of her grandmother, Ethel Starr, who was nearly 70 when the Voting Rights Act was passed in 1965. "As a child in the 1970s and '80s, I always knew when it was Election Day," she wrote. "My grandma got dressed in her Sunday best, put on her black shoes, hoisted her hard, black pocketbook, adjusted her hat and waited by the door for my father to drive her to the polls. She never missed an election. ..."

"Do something no one else can do for you," Starr concluded. "The students I've worked with know I love a good dare. And I send one back. I dare you."

The efforts at Pomona seem to have succeeded in stimulating greater interest in voting, as TurboVote reports that about 40 percent of all Pomona students—703 to be exact—signed up for the service prior to Election Day.



From top: students gathering to watch the midterm 2018 election returns; a portrait of President Starr's grandmother, Ethel Starr, whose dedication to voting was featured in an op-ed in the *Washington Post*.

TECH



FOR SLEEPY DRIVERS

Driving back to campus from L.A. late one night, computer science major Eberto Andre Ruiz '19 felt himself drifting off

at the wheel. Worried, he grasped for a solution.

"I'm like, 'Man, this is not safe,' so I told Siri to set a timer for every five minutes," he says. "I woke up the next morning and thought, 'I've got to make an app for this.'"

Enter the 5C Hackathon—a one-night coding competition. In early November, Ruiz joined classmates Peter Nyberg '19, Thomas Kelleher '19 and Brook Solomon '19 to build a prototype called Olert, with the O reminiscent of a steering wheel.

"Basically we were interested in doing something that was 'Tech for Good,' an idea in some way applicable to the real world," Nyberg says. "This is

something that takes lives."

Using a camera and eye-tracking software, they built a system that would vibrate the steering wheel if the program detected signs of drowsiness in the driver's eyes.

One after another, checking out some of the 20 projects submitted after the Hackathon, students from the 5Cs sat down and gripped the makeshift steering wheel the team fashioned with the leather cover from the steering wheel of Ruiz's Nissan Altima. Sure enough, they felt it vibrate when their eyes closed.

As a result, Olert took the Hackathon's top prize for the best "Tech for Good" project.



LESSONS FROM THE MOUSE

AND OTHER NEW COURSES FOR FIRST-YEAR STUDENTS

In a rite of passage, first-year students at Pomona begin their lives on campus with a Critical Inquiry seminar. These seminars focus on developing writing skills as students collaborate with peers, professors and student mentors to refine their drafts. The familiar five-paragraph format and the strict word counts of admissions essays are left behind. Here's a look at a few of the new courses offered last fall:

Lessons from the Mouse

Professor of Art Lisa Auerbach had never been to Disneyland until a birthday celebration a few years ago. She found herself surprised and curious. "Disneyland felt to me like a subject that everyone already has a relationship with, whether you're a local person here who knows someone who works there, or you grew up going there, or you're an international student who has grown up with Disney movies. I don't think there is a place it hasn't touched," she says. "It provides for me the opportunity to make Disneyland into this lens to look at other kinds of things. We can use Disneyland to look at, for example, race and gender and pop culture. Or we can use Disneyland as an example when we talk about labor." Labor issues were in the news this summer as Disneyland workers pressed for a "living wage." Gender issues were at the forefront too, as the Pirates of the Caribbean ride reopened after an update that removed a banner at an auction scene that had read, "Take a wench for a bride." Yet for all the complicated ways in which nostalgia, utopia, commerce and reality converge in Anaheim, "there is a magical 'there' there," Auerbach says. And yes, there is a field trip.

The Politics of Protest

The Women's March. The Arab Spring. The Tea Party protests. Tiananmen Square. And of course, the Civil Rights Movement. "There's always something going on somewhere in the world," says Professor of Politics Erica Dobbs, a new faculty member teaching her first ID1, based on a first-year seminar she taught at Swarthmore College. "Every year, there's been an ideological mix," Dobbs says, noting that many of her previous students had participated in protests. Some of the questions considered include what makes a protest a success or a failure, the role of historical memory and whether social media is a positive. "Social media and the internet have changed the game when it comes to mobilization, but at the end of the day the powers that be are still more concerned about people taking to the streets than taking to their keyboards," Dobbs says.

Math + Art: A Secret Affair

Mathematics Professor Gizem Karaali wants to put to rest the idea that everyone is either a math person or an art person. A sculpture of the symbol for pi sits on her desk. On her whiteboard are two colorful designs that turn out to be geometric art by her husband and 9-year-old daughter. The textbook is a \$49 coffee-table book, *Mathematics and Art: A Cultural History*, by Lynn Gamwell, including work by the artist M.C. Escher, with his stairways and tessellations. "We find his work fascinating because it's visually interesting, but also mathematically, what's happening?" Karaali says. The course also explores concepts such as proportion, infinity and symmetry in

other less-expected artists, in some cases considering their mathematical context for the first time.

Governing Climate Change

Acknowledging climate change is one thing. Figuring out what to do about it is another. Professor of Politics Richard Worthington takes on the complex topic of how local, state, national and international governmental groups are addressing climate change, with a particular focus on climate justice. "Climate justice is really built off the idea of environmental justice, this aspiration that people have basically equal access to environmental benefits and amenities and equal protection against environmental hazards," he says, noting that the countries that have done the most to create the problem, such as the U.S. and China, aren't the ones most affected. Geography makes a big difference, Worthington points out. For example, he says, "small islands, with sea level rise, are going to be hit harder."

Statistics in the Real World

In a playful twist on the old Trident commercial, the full title of Mathematics Professor Jo Hardin's updated ID1 seminar includes the phrase, "9 out of 10 Seniors Recommend This First-Year Seminar." The class focuses on both good and dubious uses of statistics in politics, the media and scientific studies, with particular attention to the 2016 presidential election. "Every year I have a couple of students who take it because they think the seniors recommended it," Hardin says. "I think to myself, 'You're the person who should be in the class.'"

THE GOVERNMENT INSPECTOR

NOVEMBER 15 – 18, 2018



If Banners Are Your Bag...

For each major play produced at the College, the Theatre Department has a promotional banner made to be hoisted above the entrance to Seaver Theatre for a few weeks prior to opening night. But where does that banner go once the play is over? That was what Suzanne Reed, the department's costume shop manager, wondered—so she asked. The answer turned out to be: the trash can. So Reed outlined a recycling idea. What if she transformed each banner into tote bags for some of the play's principals as a parting memento of their performance? And that's just what she's done following the last few plays, the most recent being last fall's production of Nikolai Gogol's *The Government Inspector*. To make the recycling process complete, the chain sewn into the bottom of the banner to give it weight is now returned to the banner company to be used again in a future banner.



Former Pomona College President David W. Oxtoby has been named the new president of the American Academy of Arts and Sciences. A chemist by training, Oxtoby was elected a member of the academy in 2012. Founded in 1780, the academy honors and brings together members from across a wide range of disciplines to pursue nonpartisan research and provide critical insight on issues of importance to the nation and the world. The list of Oxtoby's predecessors at the helm of the academy includes former U.S. presidents John Adams and John Quincy Adams; the first American to receive the Nobel Prize in Chemistry, Theodore William Richards; and the co-founder of the Polaroid Company, Edwin Herbert Land.



Professor of Mathematics Stephan Garcia has been awarded the inaugural Mary P. Dolciani Prize for Excellence in Research from the American Mathematical Society. He was recognized for his outstanding record of research in operator theory, complex analysis, matrix theory and number theory, for high-quality scholarship with a diverse set of undergraduates and for his service to the profession. The award recognizes a mathematician from a department that does not grant a Ph.D. who has an active research program in mathematics and a distinguished record of scholarship.



Alida Schefers '21 and Professor Linda Reinen

ACCESSIBLE GEOLOGY

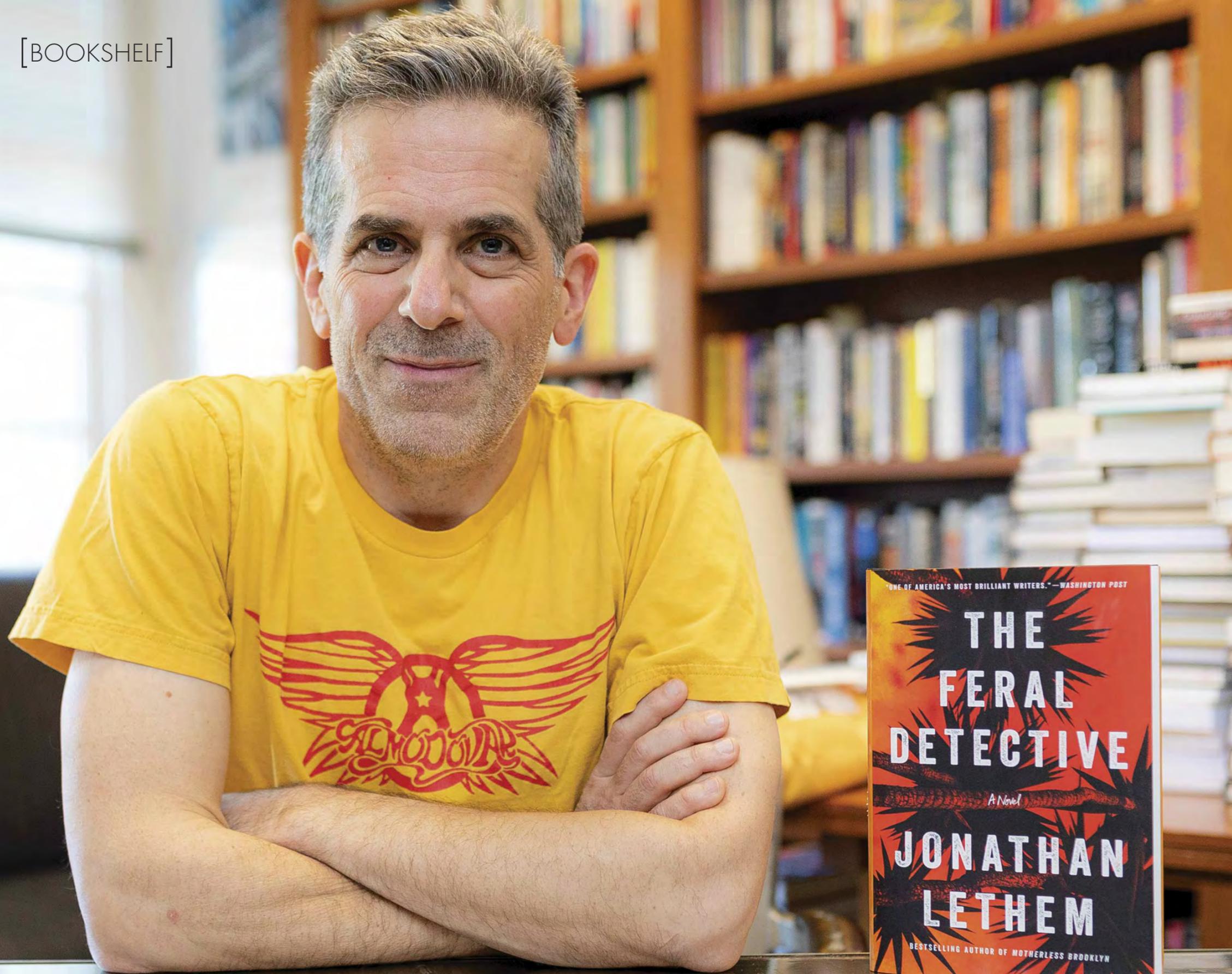
Alida Schefers '21 usually makes the first contact with her professors to let them know she uses a wheelchair and may need accommodations. Last year, however, it was Professor of Geology Linda Reinen who contacted Schefers, inviting her to visit the classroom where Reinen's Intro to Geohazards class would take place and talk over plans for the class field trip. Since then, the bond between Schefers and Reinen has strengthened, and the classroom experience has changed for the better—for all of Reinen's students.

In her revamped classroom, the most important rock samples now sit at the end of narrow tables with spacious and cleared aisles that ensure a wheelchair user can move with ease. A stream table (a tall table that demonstrates stream erosion) has a camera with a bird's-eye view. The video is played

back on a large screen for all students to see the action without having to crowd around.

Reinen's changes may seem minor, but they make the classroom accessible in a major way. It was these changes that the International Association for Geoscience Diversity (IAGD) took note of when the group honored Reinen with the 2018 Inclusive Geoscience Education and Research (IGER) Award, given to instructors who promote or implement inclusive instruction and research that supports active engagement by students with disabilities.

"If everyone were mindful of a missed opportunity for a disabled student and took the time to advocate on their behalf, then the changes would be immense," Schefers says. "One of my favorite sayings is: 'If everyone did a little, no one would have to do a lot.'"



NOVELIST AND PROFESSOR OF CREATIVE WRITING JONATHAN LETHEM DISCUSSES HIS NEW BOOK, SET IN CALIFORNIA'S INLAND EMPIRE.

CONSIDER THE FERAL

The motif of feral children was in critically acclaimed novelist Pomona College Professor Jonathan Lethem's index of writing ideas for many years. There was the concept of urban feral children in New York City. Archetypal fictional characters like Tarzan and Mowgli. Real-life stories of feral children. A Pomona College course he designed on animals in literature had a portion devoted to the idea of the feral. All things feral fascinated him. So, a feral child of a different kind was born: the book *The Feral Detective*. This wild detective-book child was local-born, with the story set in the surrounding Inland Empire, the mountains and the desert region (what Lethem calls "the scruffier east"). He took the feral even farther, exploring desert-dwelling communes and creating two off-the-grid communes, the Rabbits and the Bears, that he writes about in his book.

Pomona College Magazine's Sneha Abraham sat down with Lethem, the College's Roy Edward Disney '51 Professor of Creative Writing and Professor of English, to talk about the conception, birth and growth of the book and more.

PCM: Where did this idea of a feral detective come from?

LETHEM: I'd been sort of creeping around this idea of "the feral," thinking there might be something there for me to write about, but it was hard for me to get a handle on it. Then I had this idea which, like a lot of my best ideas, sounds ridiculous at first. "Oh, a feral detective? What would that ▷

be? What would that consist of?” It was just a phrase at first. But I thought, “I’ve written before about strange figures who occupy the detective’s role in a story. What would it mean if someone who’d grown up as a feral child became a detective?” Even that wasn’t quite a plan yet, more an inkling. It took thinking about the protagonist, Phoebe, a New Yorker who gets involved with this detective and hires him and is the reader’s surrogate for meeting this character—only then did I realize I did have a book that would work. It took coming up with the narrator for it to click into place. As well as my growing interest in this local terrain that I’ve come to live in.

I’ve been in Claremont now not quite a decade, but it feels increasingly vivid to me. I’ve begun traveling east, into the desert areas, and puzzling over the way life occupies that landscape. One day I felt I knew enough; I’d been stirred enough by the local environment to write about it in a way that would be meaningful. I believed I knew how to make the setting click into place with the characters. The final part of the book’s genesis was a strange and in many ways unhappy circumstance, but it became crucial as well. Just as I was planning to start writing—I’d been assembling my materials—Trump was elected. I felt disarranged—a sensation many people felt, I think. For a moment, my work appeared quite useless. Again, I suspect other people might identify with the sensation: “Why do I do the things I do? This is more or less a joke.” And then I realized that this book could be a pretty good vehicle for describing some of those feelings, that Phoebe herself could give voice to that kind of anxiety.

PCM: Do you go to the desert often?

LETHEM: More and more. As a New Yorker the whole West was mysterious to me. California was a fantasy and an image that I knew from the movies, and desert spaces seemed very imaginary. I knew them from looking at Western movies, set in Monument Valley or perhaps Pioneertown. It wasn’t until I was in my early 20s that I even crossed the Mississippi River. At that point I moved to Berkeley, where I lived for 10 years, and began to have a relationship to the actual Western space. It’s not just a fantasy, but the fantasies pervade it. California and the West are places of myth. They’re implicated in the ideology of westward expansion, the frontier. I started traveling sporadically, in my 20s, to Arizona and some of the Utah Canyonlands. I suspect Claremont is a disguised desert. It’s all dressed up with these trees, but all you have to do is cross Claremont Boulevard and look at the Wash, and look at the way Upland is more yellow and scraped, to imagine how Claremont ought to look.

Increasingly, I was curious to get a sense of Rancho Cucamonga and Riverside and places farther east. I became interested in the Mojave and Joshua Tree in the last few years and started to realize that it was speaking to me. I was beginning to peel away my mythic response to the desert spaces—which has to do with the movies and American history—and just the weird planetary intensity of figures in open space and start to see that it was also a social or a cultural space, that in weird scrappy ways people had made lives out there. There were intimate histories that I could perceive. So I started spending time less in the Joshua Tree National Park than in the town of Joshua Tree and the other towns around there, Landers and Yucca Valley. And finding it really compelling for what it did to my head, but also for what I was beginning to observe—the way other people occupy that space. It attracts artists and weirdos—like my-

self—because there are certain automatic libertarian freedoms. Nobody’s going to bother you. People go there to just be whoever they want to be.

PCM: Live their lives on their terms.

LETHEM: Yeah.

PCM: Do you remember your first trip to the desert?

LETHEM: Well, my first real trip to the desert was with my then-wife, in the early ’80’s. Her grandparents lived in Globe, Arizona, an old mining town. We drove with her family—this is a long time ago—and

“FINISHING IS A KIND OF ... WHAT IS IT? ZENO’S PARADOX. YOU’RE ALWAYS HALF-FINISHED. AND THEN YOU HALF-AGAIN FINISH. BUT STILL, THERE’S THAT DAY THAT YOU WRITE

on the way did some Canyonlands, visited Zion and Bryce and Coral Pink Sand Dunes. It was extraordinary for me. All I’d done before was drive Route 80 and drive across Wyoming and Utah, across the salt flats. But that was to get across it. This was to go to it, and that was different. And then staying in Arizona for a week or so and taking walks in the desert, meeting a scorpion on the patio.

PCM: Are these desert-dwelling groups that you describe in the book, the Rabbits and the Bears, real kinds of groups?

LETHEM: The Rabbits and the Bears are kind of a distillation. I’m quite interested in the history of intentional communities and communes in American life, and I think it’s an underappreciated, under-described part of the history of the West. Many people did come and create and make attempts to live in some different kind of configuration. Just under the surface of the history of a lot of localities is some group that came to make a new world, to found a small utopia. And there are some communes that are loosely comparable to the backstory that I gave the Rabbits and Bears. They’re not necessarily in the Mojave Desert. The desert is actually a fairly unlikely place to try and live the way they’re living—in that sense it’s fantastical. More typically, groups set up somewhere where there’s a little more arable land and shade available. The Black Bear Ranch was a point of reference. Its history intrigued me because there were such utopian aspirations, as well as such comically disappointing results. But people did also persist; they kept trying to live that way even when things went disastrously badly.

This circles back to the idea of the feral child. One of the forms of ferality that interests me—and that people are writing about in the form of memoirs and fiction now—is the children of, basically, hippies, or seekers from the Aquarian generation who went into wild

spaces, rural spaces, and tried to live off the grid or to homeschool or non-school their kids. Some of those children from the ’60s and ’70s have begun testifying about the weirdness and wildness of their upbringing. So I was thinking about Detective Heist, one of my main characters, as being a product of that very real legacy. But my specific commune—and where I located it—is my own invention.

PCM: This is a return for you to the detective novel. Why the return and what was it like to come back to it?

LETHEM: Well, it’s a replenishing source for me. When I discovered my appetite for reading and then my ambition to become a writer, I really loved a lot of the hard-boiled writers—that first-person, private-detective style that you associate most strongly with Raymond Chandler and Ross Macdonald and Dashiell Hammett. I read many different things, but this was one of the key sources for me. I recognize now, when I look at my earliest writing, how things began to coalesce for me best when I used that voice as a template. Even if I didn’t have a detective in the story, I used that hard-boiled style. That romantic but also cynical first-person voice was incredibly

THE WORDS ‘THE END,’ WHEN YOU WRITE THE LAST PAGE. BECAUSE I’M SUPERSTITIOUS, I THINK, ‘OH, GOD. OK. I WON’T DIE WITH THIS BOOK AS AN UNFINISHED PROJECT.’”

—JONATHAN LETHEM

versatile for me; it helped me learn to tell stories. I came back to it in the middle of my writing life with *Motherless Brooklyn* very satisfyingly. It became a vehicle for transforming my writing at that point; I used it to write about growing up in Brooklyn for the first time.

So it was a talismanic approach for me. In some ways, as I set out to write about Southern California, a subject that was increasingly rich and meaningful to me, but also overwhelming, and then to try to capitalize on this notion of the feral child—these were intimidating prospects for me. I didn’t know how to handle them. But just as writing about growing up in Brooklyn was intimidating to me, and writing about the neurology of Tourette’s syndrome was intimidating to me—difficult things to get onto the page—the detective story had given me a way to do it. It carved out an approach that was familiar and that I could handle. There’s a formal quality to writing a detective story that’s quite sturdy. It’s almost like you’re a poet reaching for the sonnet form. You always know where you are in this kind of story. So I thought that if I used this sturdy generic apparatus, maybe then I can handle all this crazy material that I’m thinking about and pour it into this nice strong vehicle.

PCM: How does one situate oneself in the perspective of the opposite gender? How does that work? What’s that process like?

LETHEM: If I approached it on the terms that your question suggests, as a kind of categorical task—“I am a man; I’m going to try to write as a woman”—I’d flinch immediately. It would seem forbidding, and impossible. Instead, I don’t think of Phoebe as representative or categorical, I think of her as an individual. My job isn’t to figure out a gender other than my own; my job is to figure out who Phoebe is. She’s my character, particular and distinct, and I need to believe in her before I can write the first word. And I was lucky in this. Phoebe made sense to me relatively quickly. I don’t know how that luck comes to you—certainly sometimes it doesn’t. In this case, when I wondered “Who is this person?” I had answers. I felt her. Obviously she was made up of pieces of myself and of people I know, including women I know, and made up partly also of other people’s fictional characters. There are those recognizable ingredients, but the ingredients coalesced into someone I had unique access to. When that happens, you realize that if you didn’t have the courage to write her down, write her thoughts down, Phoebe wasn’t going to exist. So I was now obliged to make her live on the page. By making this individual connection, you overcome the intimidating prospect of writing across difference.

PCM: Do you ever dream your plots or characters?

LETHEM: Oh, yeah. My dream life is frequently implicated in generating the raw imagery, the baseline ideas for a novel or story. Sometimes I’ll also dream about books as I’m writing them, and that will shape or transform the project. But, in many ways, once the books are in progress, they’ve become lucid dreams. They’re waking dreams. So they don’t need to be in my sleep life anymore. The dreams are most useful before I’ve produced any evidence of the book, and in them I feel the reality of a new book insisting itself upon me.

PCM: What’s your emotion when you know your work is complete?

LETHEM: There’s an initial exultation. But the question’s tricky because the meaning of “complete” is tricky. With each book, there are several finishings. There’s the day you write the words “The End.” And you think, “There it is. It’s done.” And then there’s the day you get over your infatuation with having written the last page, and you go back and you look at the beginning, and you’re like, “Oh, there’s a lot of work to be done here.” So there’s revision. Then there’s another finishing that comes when you’ve revised it to your initial satisfaction. And then you hand it over to early readers and to your editor, and you’re humbled—all sorts of questions are raised. And then you think, “Oh wait. I wasn’t done.” And so there’s yet another finishing. Beyond that, in a kind of diminishing but important way, in the production process first you’re given copyedits, and there you find things you want to change. And then you’re given proofreading, and you panic and you find things that still need correcting.

And so, finishing is a kind of ... what is it? Zeno’s paradox. You’re always half-finished. And then you half-again finish. But still, there’s that day that you write the words ‘The End,’ when you write the last page. Because I’m superstitious, I think, “Oh, God. OK. I won’t die with this book as an unfinished project. It won’t be a Kafka book. It won’t have no ending.” So, no matter how many errors are still in it, at least if someone reads it, they’ll get to an end. I feel like I’ve ▸

[BOOKMARKS]

delivered the goods. And I'm also just excited and, usually, very in love with the book in that initial feeling of finishing, before anyone else's assessment can get between me and the thing.

Invariably there follows, shortly after, a kind of postpartum confusion. It's not really a deep depression, but there's a sort of "lost" feeling of "Oh, wait. I had this organizing principle. Every day I woke up knowing I have to advance this cause." The way soldiers can be nostalgic for war because after they come back, life is no longer simple. They're no longer clear on what they're supposed to do every day. So I'm often surprisingly distressed or unmoored by finishing, and then the only answer to that is to find something else to work on.

PCM: You dedicate the book in part to the late Professor of English Arden Reed? Why Arden?

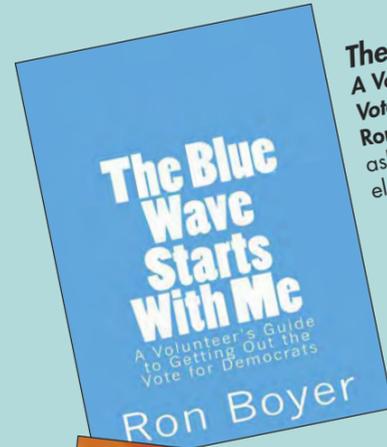
LETHEM: Arden was important to me even before I was hired, on my first visit. He made an impression on me. He reached out. He was such a defining presence in our department. He quickly became one of the people in my life that I wrote to impress. And he also showed me a portion of the desert, because I got to stay with him and his partner in New Mexico, where they had an extraordinary home, their second home, a kind of a desert compound that they had built themselves. And so there was also a material resonance, because his love of that desert space spoke to my interest in it. He passed away as I was writing the book, so the dedication just seemed a natural result.

PCM: What advice would you give to an aspiring writer?

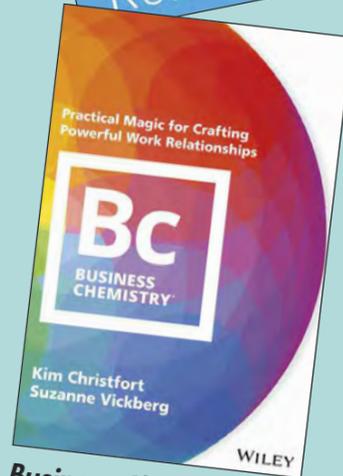
LETHEM: Well, the simplest advice, which everyone gives, is this: You must just read and write inordinate amounts and allow yourself to be consumed by those tasks without being in a rush to publish or to see results. It's typical to write for 10 years before you're getting results that would matter to readers. Being patient with that is very challenging, but it's important. And reading constantly, to fill up the well with different sources and different structural models for how it's done.

But the other thing I advise is to remember to play with different forms. Do different things. Don't lock down into one idea, thinking "Oh, I'm meant to be this sort of writer. I'm going to just bear down on this one style, or premise, or genre of work, until I break through." In the apprentice phase when you're beginning, you have an uncommon freedom. You need to make use of it and try things that don't seem typical to you, or even seem funny or awkward. Just experiment a lot with forms and styles and tones.

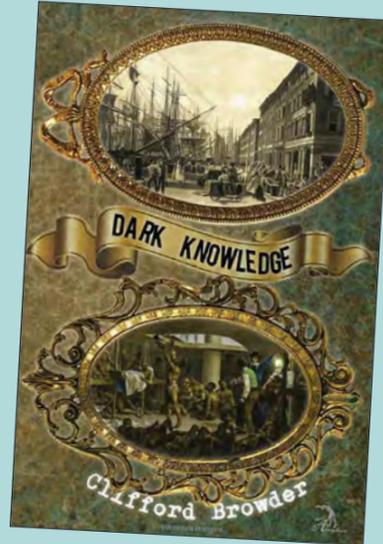
Try to surprise yourself a lot. Diversify. Because you might find what you really want to do in that mode of play. Many people—and this was true for me—don't end up exactly the sort of writer that they first visualized they'd be. Their writing teaches them that they have other strengths or other tendencies or other desires which are shrouded, initially. But it's only by being polymorphous and playing in the realm of writing that you'll uncover these things. **PCM**



The Blue Wave Starts with Me: A Volunteer's Guide to Getting Out the Vote for Democrats
Ron Boyer '76 penned a book for people asking themselves, "What can I do to help elect Democrats?"



Business Chemistry: Practical Magic for Crafting Powerful Work Relationships
Kim Christfort '96 and Suzanne Vickberg offer a guide to putting cognitive diversity to work.



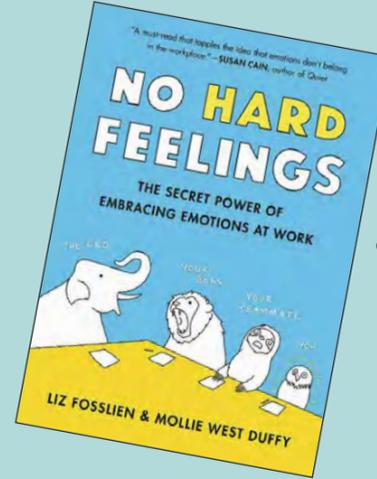
Dark Knowledge
In his historical novel, Clifford Browder '50 writes about a young man in New York in the late 1860s investigating the illegal pre-Civil War slave trade.



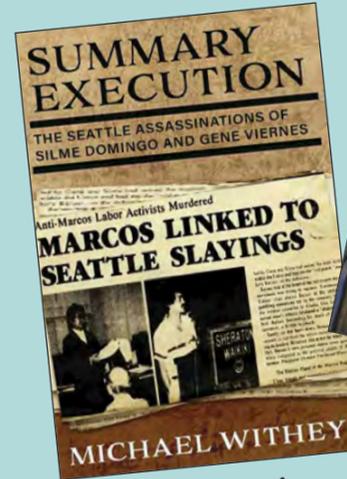
Searching for My Heart: Essays About Love
This book by Dawn Downey '73 contains stories with themes of alienation, shame and the self-awareness that leads to love.



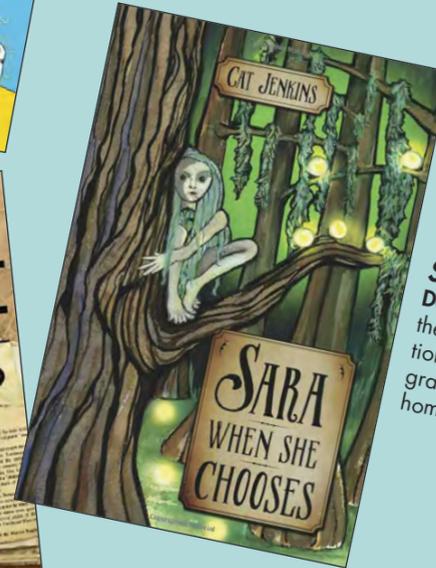
Sea Change: The Unfinished Agenda of the 1960s
Dorothy May Emerson '65 pens personal stories about a young life lived on the edge of hope, change and possibility in California in the 1960s.



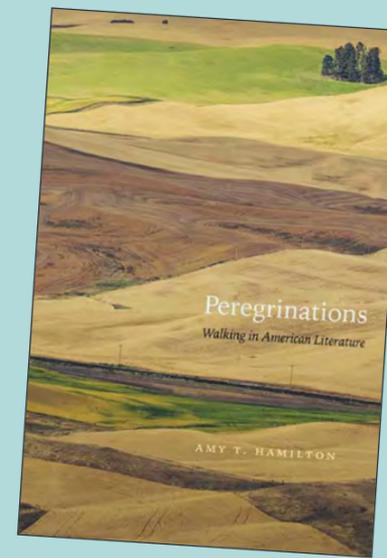
No Hard Feelings: Emotions at Work (and How They Help Us Succeed)
Liz Fosslien '09 and Mollie West Duffy take a look at emotions in the workplace and how to navigate them.



Summary Execution: The Seattle Assassinations of Silme Domingo and Gene Viernes
Michael Withey '68, P'91 tells a true story that could be a crime thriller: a double murder replete with assassins, FBI informants, murdered witnesses and a foreign dictator.

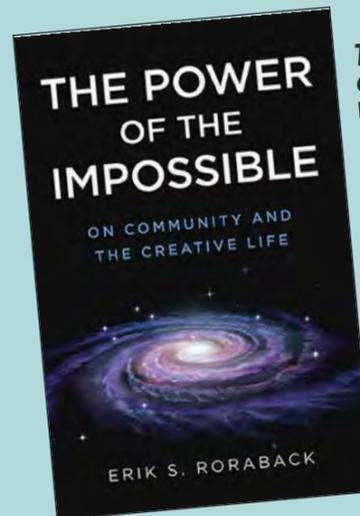
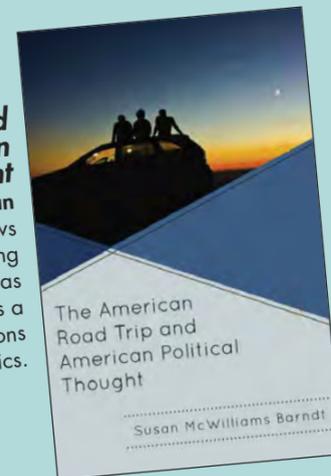


Sara When She Chooses
Deedra Cooper '76, who writes under the name Cat Jenkins, takes the fictional character Sara on a trip to her grandmother's house—a primitive home that she hates to visit.



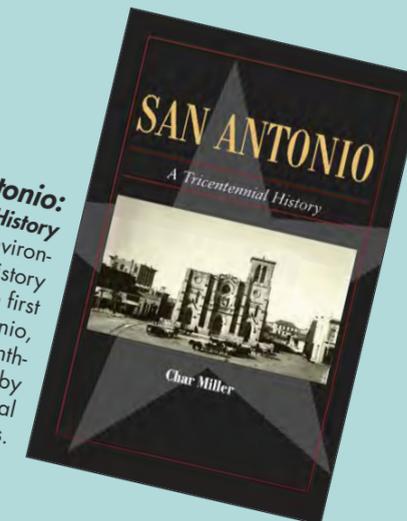
Peregrinations: Walking in American Literature
Amy T. Hamilton '98 explores physical bodies and movement in American stories and history.

The American Road Trip and American Political Thought
Professor of Politics Susan McWilliams Barndt shows how Americans have long used road trips not only as escapism but also as a vehicle to explore questions about American politics.



The Power of the Impossible: On Community and the Creative Life
Erik S. Roraback '89 surveys cultural figures and icons like Spinoza and Ivan Ledi and examines global community formation and creativity.

San Antonio: A Tricentennial History
W.M. Keck Professor of Environmental Analysis and History Char Miller has written the first general history of San Antonio, Texas, the nation's seventh-largest city and one shaped by environmental, social, political and cultural pressures.

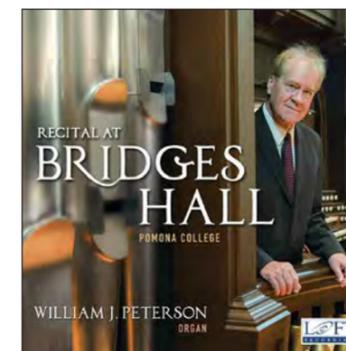


[PLAYLIST]



Megaplex

The band We Are Scientists, featuring bassist Chris Cain '99 and guitarist Keith Murray '00, offers a new collection of indie rock, including such new songs as "One In, One Out" and "Heart Is a Weapon."



Recital at Bridges Hall / Pomona College

Professor Emeritus of Music William J. Peterson offers a collection of organ music performed on Pomona's Hill Memorial Organ in Bridges Hall of Music, including music by J.S. Bach and A. Guilman, as well as compositions by Pomona-related composers.

Eric Cooper '18:

HOW TO WIN THE "HEISMAN OF PHYSICS"

A few months after moving on to graduate school at Stanford University, physics major Eric Cooper '18 learned that he'd won what Associate Professor of Physics and Astronomy Dwight Whitaker describes as "the Heisman Trophy of physics." Cooper won the American Physical Society's LeRoy Apker Award for his work as part of Whitaker's lab team, using high-speed video to measure the extraordinary seed dispersal rotation rates of certain plants. Reaching rates as high as 1,660 rotations per second, they are among the fastest in nature. Mathematical modeling of the seeds' flight showed that rotation rate, vertical orientation, low drag and tight spin combine to launch those seeds at distances of 20 feet and more. The Apker Award—conferred each year upon two undergraduate students, one from a Ph.D.-granting institution and the other from a non-Ph.D.-granting institution—is the highest national collegiate honor a physics student can receive. To understand the path Cooper followed on his way to this achievement, put yourself in his shoes.

1 Grow up in Seattle, Washington, the son of two science professors, and get your first electricity set at the age of 5. Become fascinated with building little robots (including a mini Mars rover) with Lego Mindstorms from the age of 8 on.

2 Start playing the cello at age 10 and keep playing through middle school and high school. Do so in part for the same reason you're attracted to research—because it allows you to work alongside others while pursuing long-term goals and building incremental skills.

3 In middle school, attend a summer program on rockets and robotics, where you become intrigued by the mathematics of energy and momentum. Take a particular interest in air resistance and decide you want to do something about it for your next science project.

4 Join the Frisbee team at school and become fascinated with the physics of flying disks. Teach yourself to use video tracking techniques in order to win the eighth-grade science fair with a project examining the aerodynamics of a spinning Frisbee.

5 In high school, branch out into nonscientific disciplines with classes in philosophy, comparative government and politics. Realize you want to go to a college where you can do science while also exploring other interests.

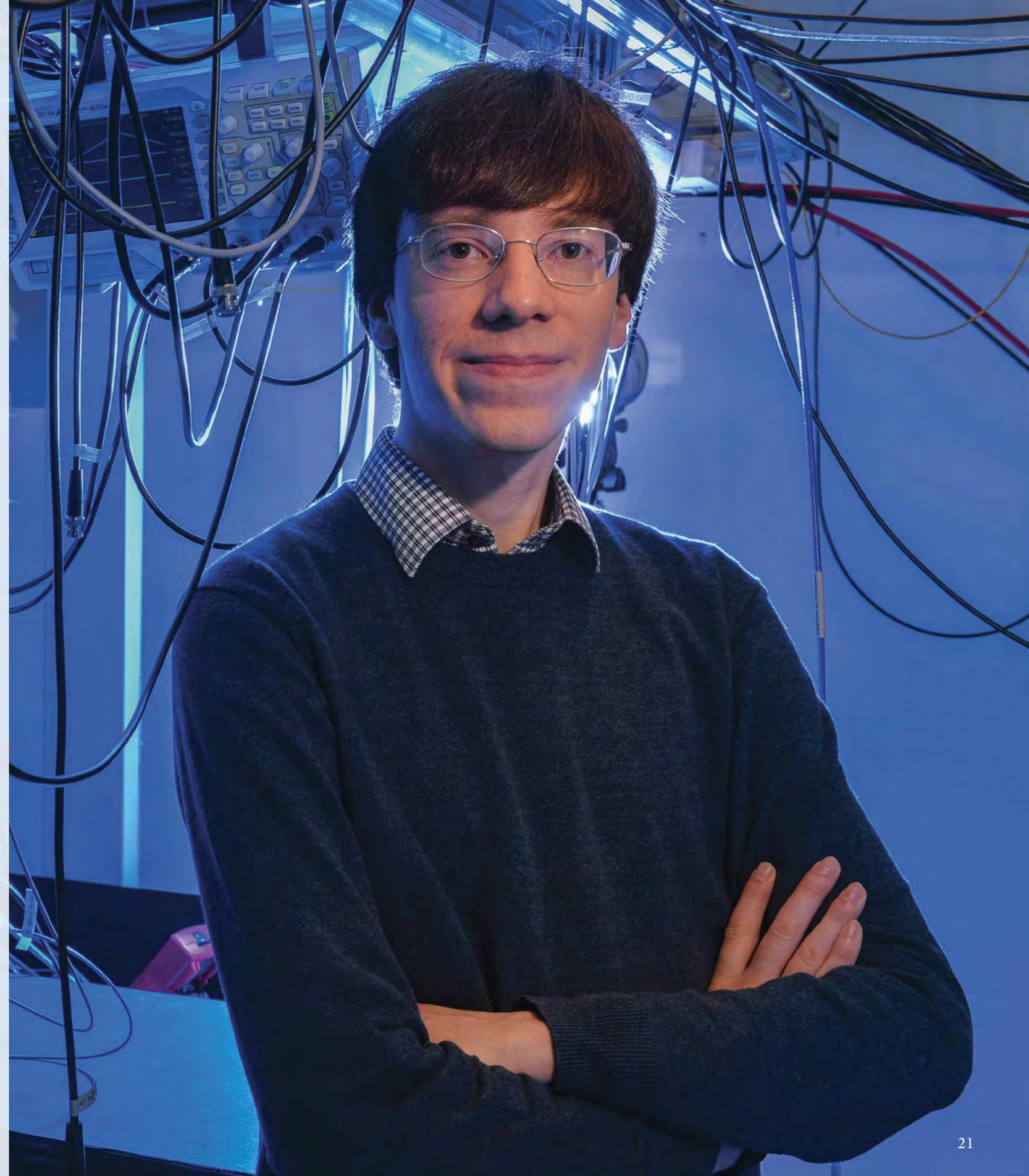
6 Pick Pomona because it checks all your boxes, including a broad curriculum, strong programs in math and physics and the chance to do research. An opening for a cellist in the orchestra and appealing food options seal the deal.

7 As a first-year, get your first taste of college physics in Whitaker's Spacetime, Quanta and Entropy class. Get an invitation to work in Whitaker's lab, in part because of your experience with video tracking and the aerodynamics of rotating bodies from your Frisbee project.

8 After your first year, do a summer research project at the University of Maryland, College Park, in which you use computer code to track the location of sand grains in three dimensions. Bring that code back to Pomona to track flying, spinning seeds.

9 As part of Whitaker's lab team, gather a lot of data during your sophomore year and spend your junior year analyzing it for a paper of which you're listed as an author, published in the *Journal of the Royal Society Interface*. Expand upon this for your senior thesis.

10 Learn that you are one of three finalists in your category for the Apker Award. Give a nerve-racking 30-minute presentation before the selection committee in Washington, D.C. Learn after starting at Stanford that you won.



THE HEART OF THE GAMELAN

In the mid-1990s, the Department of Music ordered a set of approximately 30 instruments that formed the basis for Giri Kusuma, Pomona's Balinese gamelan. Originally organized by the late Professor of Music Katherine Hagedorn, the ensemble has been directed since 1999 by Nyoman and Nanik Wenten, who are traditionally trained artists from Bali and Java and longtime faculty members of the Herb Alpert School of Music at CalArts.

The word "gamelan" means "percussion orchestra" and refers to the many kinds of bronze, iron or bamboo percussion instruments played in Southeast Asia.

The set of instruments used in Pomona's ensemble is called gamelan gong kebyar, named after the central instrument.

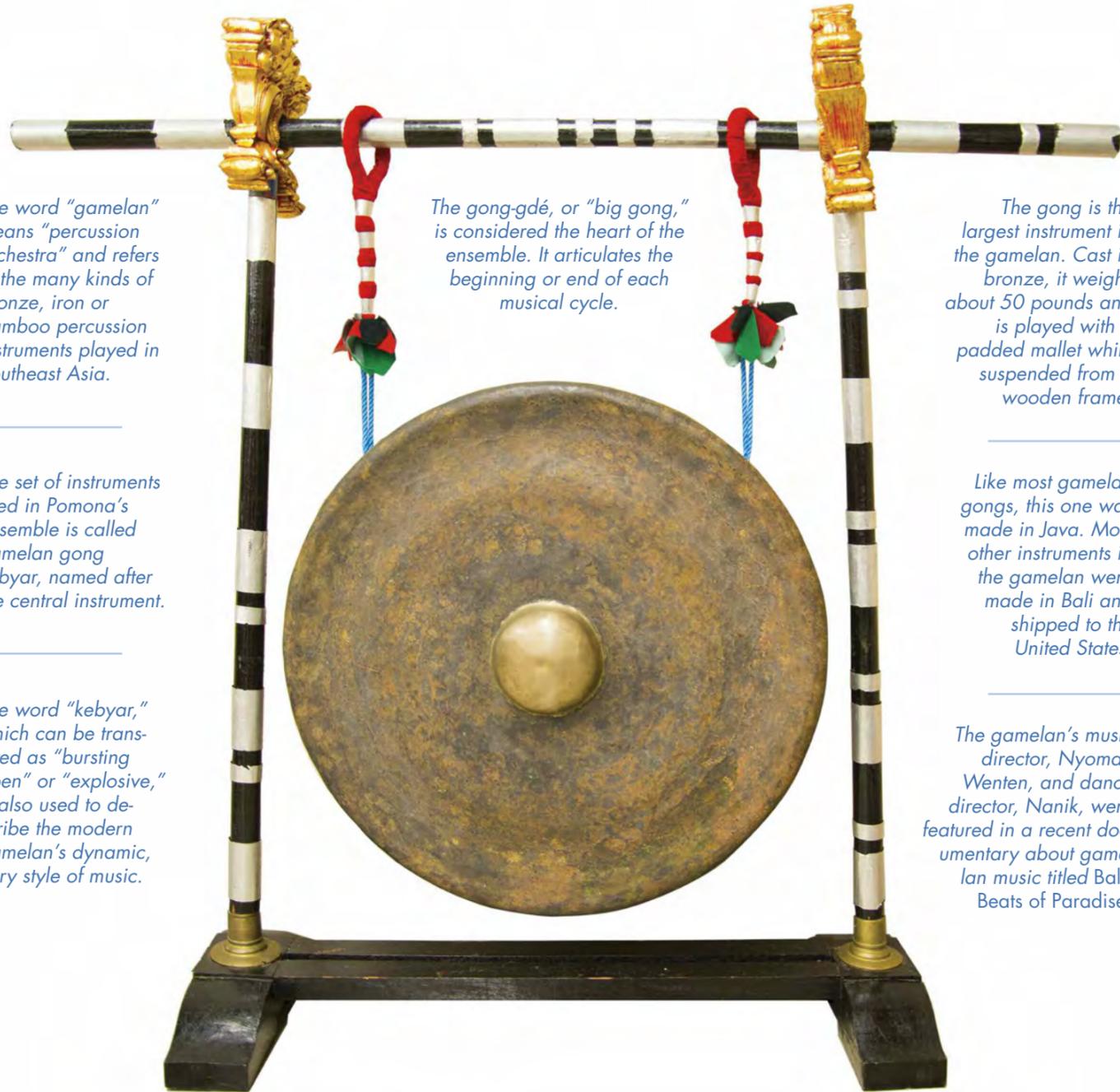
The word "kebyar," which can be translated as "bursting open" or "explosive," is also used to describe the modern gamelan's dynamic, fiery style of music.

The gong-gdé, or "big gong," is considered the heart of the ensemble. It articulates the beginning or end of each musical cycle.

The gong is the largest instrument in the gamelan. Cast in bronze, it weighs about 50 pounds and is played with a padded mallet while suspended from a wooden frame.

Like most gamelan gongs, this one was made in Java. Most other instruments in the gamelan were made in Bali and shipped to the United States.

The gamelan's music director, Nyoman Wenten, and dance director, Nanik, were featured in a recent documentary about gamelan music titled Bali: Beats of Paradise.



Professor Robert Gaines (left) in Kootenay National Park with recent Claremont Colleges graduates Iris Holzer (Scripps '17) and Ellie Ellis (Pitzer '18)

The alien-looking fossils unearthed by a team of scientists co-led by Pomona College Professor of Geology Robert Gaines were the subject of the cover story in the November 2018 issue of *Science*.

The article, "Cracking the Cambrian," takes readers to Kootenay National Park in Canada and the fossil-rich sites that Gaines and the team discovered in 2012. The sites are home to Burgess Shale fossil beds where more than 10,000 specimens, including unfamiliar and new animals, have already been found by the team. The animal fossils are from the Cambrian period, which saw a sudden explosion of animal life, and offer an increased understanding of early animal evolution on Earth.

"More than 80 percent of diversity of life leaves no fossil record, but here we have fossils that offer a remarkably complete picture during this 'pop' in evolutionary history," says Gaines. The fossils, which show soft tissues, including eyes, muscle bands and gills, have been found along a 10-mile swath of what was once sea floor, now located high in the Canadian Rockies.

Among the unique finds this past year were new fossils that the researchers nicknamed "spaceships" because of their sleek shape. The largest of these was dubbed "the mothership" (naturally). "These animals were relatively giant predators of the Cambrian seas, ranging up to one meter," Gaines says. "They were swimmers with giant raptorial claws at the front of the head, just in front of the mouth."



Gaines began working in the area in 2008 and has been back every year since, with the exception of 2011. Though the weather is volatile, the terrain steep and rugged, the grizzly and black bears abundant and the living conditions primitive, he plans to keep going back.

"I'm living my 5-year-old self's dream," he says. "My mother brought me a trilobite from a trip when I was a boy, and immediately my enthusiasm for dinosaurs faded. I was intrigued by the idea of this much deeper past and the early history of complex life on Earth.

"The Burgess Shale is perhaps the most important fossil site in the world and is on every paleontologist's bucket list. I still can't believe that I am actually working here. And the opportunity to make paradigm-shifting contributions through the discovery of this entirely new fossil area in the Rockies, rich with new and unexpected animal forms, is incredibly rewarding."



Pakistani children on their way to school.



Tomás Sandoval Sr. (second from left) in a scene from *Ring of Red: A Barrio Story*.



A copy of the United States Bill of Rights



Cranes above a Los Angeles skyline.

2 Pakistani Schools Reimagined

For more than a decade, Stedman-Sumner Professor of Economics Tahir Andrabi and a team of researchers have been conducting economic surveys on education in Pakistan’s Punjab province. They’ve tested about 35,000 primary schoolchildren in math, language, civics and other subjects and distributed report cards to families. For illiterate parents, they’ve explained the results at village gatherings and town meetings.

The results have echoed throughout the educational system in the region.

“Giving Pakistani families information improved their welfare as consumers of education,” says Andrabi. “It lowered the fees private schools charge and induced lower-quality private schools to improve their test scores. Public schools responded to this information by raising their quality and increasing their enrollment. We are also finding that these effects persist in these villages even after eight years.”

The surveys also exposed some problems, including the difficulty of retaining teachers and the need for better training and better resources.

For Andrabi, education is a “kind of

ecosystem. It has teachers, textbook providers, policymakers, regulators. I can name 20 different actors,” he says. “Our job as researchers is to identify the frictions in all these relationships and to think about the barriers to innovation, so people can think about their solutions to their own problems.”

The initial problem for policymakers, says Andrabi, “had been how to get kids in school, particularly girls and the rural poor. As more children entered schools, construction increased and researchers started to notice that it was not enough. The demand for education, for women, for girls, the aspirations parents have for their children are very high. So the question now is how to respond to that need.”

Andrabi has been part of that response, traveling around the world and collaborating with colleagues in education and economics to “reimagine” a school of education. Invited by Pakistan’s leading philanthropist and a founding trustee of its largest private university to work on the project, Andrabi initially intended to lay the groundwork for the new school.

Instead, he is taking a sabbatical to become the inaugural dean of the Lahore University of Management Sciences School of Education, working with eight faculty members and 40 students in a master of philosophy program on educational leadership.

“Any problem that you can think of in the world,” he says, “improving education is going to help.”

3 Sacrifice & Survival

Stories of patriotism, sacrifice and survival are important themes in the lives of many Chicanos who served in the Vietnam War. And bringing some of those stories to the public through theatre has been a multiyear project for Professor of History and Chicano Studies Tomás Summers Sandoval, who recently staged a new play at the Bootleg Theater in Los Angeles based on the experiences of Chicano veterans.

Adding a personal note to the work was Summers Sandoval’s father, Tomás Sandoval Sr., who joined the production as an actor.

Based on oral histories collected by Summers Sandoval and his students over a period of five years and written as interwoven testimonios—testimonial monologues—*Ring of Red: A Barrio Story* features stories of post-traumatic stress disorder, addiction, family love and friction—and what it has meant for this generation of Chicanos to live with the scars of war.

The play was directed by Pomona College lecturer and alumna Rose Portillo ’75.

“Chicanos are generally misunderstood as a people,” says Summers Sandoval. “The media often portrays us as a threat, but Chicanos have been interwoven into the U.S. story for a long time, and we have given a lot to this country.”

4 History & the Court

For Amanda Hollis-Brusky, the 2008 Supreme Court decision about an individual’s right to own a gun is a story about the lawyers, activists and law students who laid the groundwork for a radical new interpretation of the Second Amendment.

“For 150 years, courts interpreted that first part of the clause, the well-regulated militia, as limiting the scope of the right to keep and bear arms,” says Hollis-Brusky, associate professor of politics and author of *Ideas with Consequences: The Federalist Society and the Conservative Counterrevolution*. “Until the 1970s and 1980s, scholars who were for a robust Second Amendment were lamenting the fact that courts had limited the right and had accepted a lot of regulation because they were putting too much emphasis on the collective, the militia.”

The District of Columbia vs. Heller, a case challenging strict handgun regulations in Washington, D.C., initiated what Hollis-Brusky describes as a two-step process necessary for the court to change a law. “The first thing you need is at least five justices who agree with you. It’s a necessary condition, but it’s not sufficient,” she says. “Those five justices need to have the legitimacy of outside legal scholarship that justifies their opinion.”

The scaffolding for the 2008 case, says Hollis-Brusky, was provided by the Federalist Society, home to conservative and libertarian legal scholars.

“Long before the Supreme Court embraced the individual-rights view of the Second Amendment, the Federalist Society had created a robust academic network to support that idea,” she says. Hollis-Brusky is skeptical that the most recent interpretation of the Second Amendment is the last.

“We talk about constitutional principles, but I think very few on the left or the right adhere so steadfastly to those principles,” says Hollis-Brusky. “The terms of the debate—‘Are you an originalist or are you a living constitutionalist?’—have shifted. You still need to look to history, but how do you use that history and how do you take into account contemporary circumstances? Those are the big driving questions.”

In the classroom and in her work with students on research, Hollis-Brusky says she sees the next generation of activists. “There is less cynicism and more interest in being strategic in how they engage with the system. One of the things I like to tell them in the post-2016 world is that this is a time of great political possibility, for better or for worse. Things we never imagined would happen are now happening. You have to throw out all the rules about what we ought to expect, and that opens up a lot of possibilities for people who want to reimagine the way we are.”

5 The Shape of a City

The drive into Los Angeles reveals a stark contrast. In some areas, towering cranes mark construction sites where office towers, hotels and apartments are being built. Elsewhere, dilapidated buildings, warehouses and parking lots remain, images of urban blight.

Why are some areas redeveloped, while others are not? What roles do zoning and density regulations play? These are some of the questions Associate Professor of Economics Bowman Cutter is trying to answer by combining zoning and property data with Geographic Information System (GIS) technology to create redevelopment maps of parts of Los Angeles County.

“People haven’t linked the property records over time like this before,” says Cutter, an environmental economist and an expert on urban land use. Funded by a Haynes Foundation faculty fellowship, his work will generate a dynamic map to help policymakers and stakeholders visualize redevelopment patterns over time.

“I’d like to look in a much more detailed way than anybody’s done, property by property, on how these density restrictions affect what you build and when you build,” Cutter says. “What I’m trying to say is, if we had different regulations, would the shape of the city be different?”

A BROTHERLY HAT TRICK

Lining up for introductions on the pool deck before Pomona-Pitzer water polo games, the Sasaki brothers fall neatly into place.

No. 9 is Noah Sasaki. Next to him is his younger brother Ben, No. 10. And next to Ben is his twin, Sam, who is No. 11 and the Sagehens' leading scorer.

"We've been asked if we're triplets," says Noah, a sophomore who is two years older than fraternal twins Ben and Sam, both first-years.

In the pool, it seems like they are everywhere. As one frustrated opponent said as he got out of the water after trying to defend against one of the Saskis during a summer tournament, "It's like there are two of him out there."

"Dude," somebody had to tell him, "they're brothers."

The Saskis helped Coach Alex Rodriguez's Sagehens to an undefeated record this season in the Southern California Intercollegiate Athletic Conference and a top-20 place in a ranking led by Stanford, UCLA and USC.

"That's one thing in this sport—there's no separation between Division I, Division II and Division III. We get to be in the pool with all the others," Noah says.

After winning the SCIAC tournament title over Claremont-Mudd-Scripps on Nov. 18, Pomona-Pitzer earned the right to compete in the NCAA postseason with the sport's powerhouse teams, stocked with future Olympians. After losing to Long Beach, 12-5, the Sagehens ended their season with a 24-9 record and shifted their goals to next season.

One of the brothers' goals is to get past the opening round, known as the play-in games, where the Sagehens have lost the last three seasons, and into the final six-team bracket for the NCAA championship. "I know my aspiration is to be in the top 10, regardless of being Division III," Ben says.

Pomona-Pitzer had upset victories this season over No. 10 UC Irvine and No. 17 Princeton, and trailed No. 5 UC Santa Barbara by only one goal in the third quarter of a loss. The leap to competing with the size and strength of the top teams is a big one, however.

It was Noah who led the brothers into water polo, when his mother suggested he try the sport after he took to surfing as a youngster and clearly loved the water. Ben



and Sam followed him from a club team in Irvine to Orange Lutheran High School, where they won a California Interscholastic Federation Division I title in 2016 before Noah led the way to Claremont.

Sam, a left-hander who is prized in water polo the way a lefty pitcher is prized in baseball, had his eye on bigger schools at first, such as UCLA. But Ben didn't hesitate to choose Pomona. "I know I didn't want to



Brothers Sam, Noah and Ben Sasaki have a sixth sense for each other in the pool. —Photos by Lushia Anson '19

be separated—not from both of them. It just would have been weird," Ben says.

Noah recruited Sam hard—and hosted him on his official visit—persuading Sam that the chance to play a key role on the team and get a Pomona College education was worth it. Noah is a media studies major with an interest in sports journalism who has written about Sagehens football for *The Student Life*. Ben is pointed toward

economics and a career in private equity management, and Sam is considering philosophy, politics and economics and perhaps law school.

In the pool, the Sagehens are reaping the benefits of the brothers' close relationship and sixth sense for each other in the water. Noah often looks for his twin brothers on the counterattack.

"Ben and Sam are both very fast. I'd say faster than I am," he says. "I know where they'll be in the pool."

Their Pomona-Pitzer teammates learned that the hard way in early practices and scrimmages.

"It seemed like the twins were up on the counterattack every time," says Rodriguez,

the Sagehens coach. Frustrated, he says he yelled at the defense about Ben and Sam being open. A teammate quickly responded: "He said, 'They are Saskis. They are all fast and they all play hard,'" Rodriguez recalls. "I thought it was a great compliment."

The twins have a special connection, and because they often play on opposite sides of the pool—Sam, the lefty, on the right side and Ben on the left side—it's not uncommon to see one of them find the other with a long pass. "It makes me feel good every time I set up my brother for a goal," says Sam, who led the team with 44 goals and 41 assists during the regular season. Ben scored 26 goals, and Noah, who plays more of a defensive role, scored 11.

Together, they turn Sagehens water polo into a family gathering. Their parents, Russ and Jennifer Sasaki, are part of a large group of parents who turn up at almost every game, and Rodriguez says he "cannot say enough" about them. "Russ helps video games for us when we don't have a student worker available, and both parents help stat our games as well," he says.

With three sons on the team—and daughter Lexi studying in Scripps College's postbaccalaureate premedical program after graduating from UC Santa Barbara—Jennifer and Russ did what only made sense: They packed up their home in Irvine and moved to Claremont.

—Robyn Norwood



SIXTH TIMES TWO

With a V-for-victory sign, President G. Gabrielle Starr (left foreground) joins members of the Pomona-Pitzer football team to celebrate after the Sagehens claimed the Sixth Street Trophy for the second year in a row with a 24–19 win over rival Claremont-Mudd-Scripps at Pomona’s Merritt Field last November. The season-ending win gave the team a 7–3 overall record under second-year Head Coach John Walsh, including a 5–2 record in conference play—the Sagehens’ best finish since 1999.



THE LEGACY OF **ROGER REVELLE '29** LIVES ON ABOARD THE RESEARCH VESSEL THAT BEARS HIS NAME AND IN THE WORK OF CLIMATE SCIENTISTS AROUND THE WORLD WHO ARE STUDYING THE EFFECTS OF GLOBAL WARMING.

STORM WARNING

STORY BY RAMIN SKIBBA

Calm seas and sunny weather greeted the R/V *Roger Revelle*'s maiden voyage in July 1996 as it traveled south from Mississippi, through the Panama Canal and then to San Diego. On board the 273-foot research vessel—the namesake of climate scientist Roger Revelle '29—were his wife, Ellen Clark Revelle, and their daughter Mary Ellen Revelle Paci '57, who shared a cabin and relished the chance to experience firsthand the ship's first passage.

“It was just a remarkable adventure, and we were both very proud of my dad. Really, it was an honor that I was on that ship,” Revelle Paci says. ▸

Revelle died 27 years ago, but his legacy lives on—and not only in the ship that bears his name. A major figure in the early years of climate science and oceanography, he helped establish both fields and elevated them to the international stage. As the director of Scripps Institution of Oceanography (not affiliated with Pomona’s sister institution, Scripps College), he drew attention to growing levels of carbon dioxide in the atmosphere that would produce a global warming trend and encouraged other scientists to join him in studying the problem. He also served as science advisor to President Kennedy’s Department of the Interior, testified before congressional committees and was a professor and mentor for future vice president and Nobel laureate Al Gore.

The R/V *Revelle* today continues to enable the research of climate scientists following in Revelle’s footsteps. The scientists who use it are typically supported by the National Science Foundation, the National Oceanic and Atmospheric Administration, the Office of Naval Research and even NASA. Owned by the Navy and operated by Scripps, the research vessel spends some 300 days per year at sea, facilitating a wide range of physics, chemistry, biology and ecology involving the oceans and atmosphere.

“The less I see my ship at port, the better,” says Bruce Appelgate, director of ship operations at Scripps. “We hopscotch all over the world,” he says, with brief stops as one researcher unloads their gear, equipment and people and another loads theirs, finally getting a chance for some field research they may have waited years for.

Like the Hubble Space Telescope, the R/V *Revelle* is popular with scientists. For example, Scripps oceanographer Andrew Lucas ’98 has been on the *Revelle* many times, and like Revelle himself, he’s a



A STUDY IN MUD: Revelle collects mud from the bottom of the ocean floor for his research as a Ph.D. student at Scripps Institution of Oceanography.

equipment on board—especially the ship’s meteorological instruments and the onboard hydrographic Doppler sonar system, which maps ocean velocities up to 1,000 meters below the ship—while deploying dozens of autonomous vehicles, like drone gliders and floaters that move up and down in the seawater.

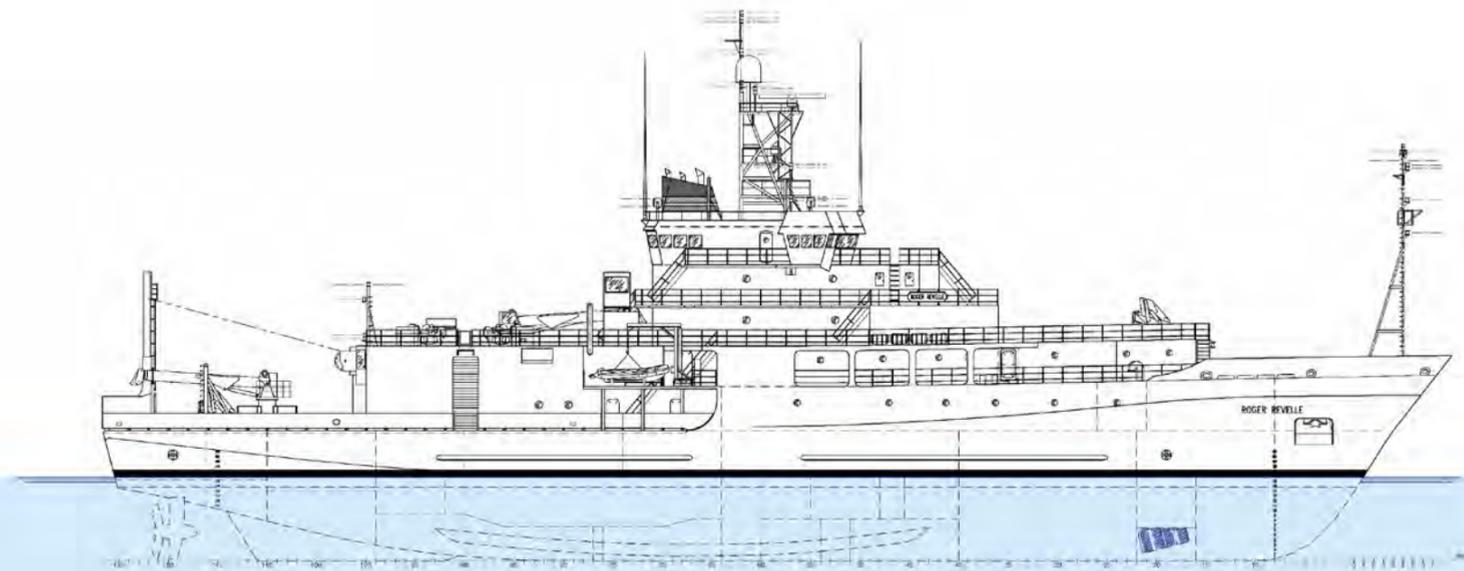
Such technologies weren’t available, however, when Revelle and his fellow researchers were just getting started, trying to probe the subtlest signatures of climate change decades before its effects could be clearly felt.

“He’d probably be amazed at how much we’re able to simulate now compared to what people were trying back in the 1950s. When you don’t have those kinds of tools, you have to be cleverer to find the measurements that are really going to tell you something important,” says Gavin Schmidt, a climate scientist at NASA Goddard Institute for Space Studies and Columbia University in New York. “That generation was exceptional at doing that—pulling things together for relatively simple measurements of a complex system. That’s a real gift.”

Pomona College grad.

“I’ve been studying the southwest monsoon in Southeast Asia,” Lucas says. “Something like 75% of the annual moisture in that region comes from this monsoon weather pattern. It couldn’t get any more important—it allows people to grow food. Failure of the monsoon, such as starting later or not as much rain, means people will starve to death.”

Lucas and his colleagues developed and built technologies to use on the *Revelle* to map the upper ocean and lower atmosphere at high resolution. They drive the ship to a particular location, such as the Bay of Bengal, and then use scientific



R/V Roger Revelle By the Numbers

BUILT:	1996
LENGTH (FEET):	273
TOP SPEED (KNOTS):	15
DRAFT (FEET):	17
TONNAGE:	3,180
FUEL CAPACITY (GALLONS):	227,500
RANGE (NAUTICAL MILES):	15,000
CREW:	21
SCIENCE BERTHS:	37
LAB AREA (SQUARE FEET):	4,000

REVELLE’S SCIENTIFIC TALENTS WEREN’T EVIDENT EARLY ON. “He was not a stellar student at Pomona. He was almost kicked out,” says his son, William Revelle ’65, a psychologist at Northwestern University. He spent lots of time working as editor of the Pomona *Student Life* newspaper at the expense of schoolwork. But then the geologist Alfred “Woody” Woodford saw his potential and encouraged him.

Revelle eventually got through and graduated. He pursued research at the University of California, Berkeley, and at Scripps, analyzing Pacific Ocean deep-sea sediments. Revelle went on to serve during World War II as an oceanographer in the Navy, where he helped establish the Office of Naval Research, and then he continued his leadership at Scripps. He also helped found the University of California, San Diego, served a term as president of the American Association for the Advancement of Science and became the founding chairman of the first Committee on Climate Change and the Ocean.

While at home, he often talked about oceanography, carbon dioxide levels, population-related issues and science in general. “Our dinner table was like a seminar. My father spoke slowly and thoughtfully,” says Carolyn Revelle, his youngest daughter. Revelle and his wife entertained lots of guests, including scientists from around the world and Nobel Prize winners he was recruiting to UC San Diego.

He also sometimes spoke about nuclear war, including the environmental impacts of radiation, which he had learned about from measurements taken during the atomic bomb tests at Bikini Atoll. Revelle and his colleagues were concerned about how contamination from plutonium and its fission would harm fisheries in the region. Then in the 1950s, he wrote a paper about the ecological effects of atomic wastes at sea — which is again a concern with rising sea levels causing erosion near the coastal San Onofre Nuclear Generating Station north of San Diego.

Revelle invited Charles David Keeling to Scripps and supported his work on carefully measuring carbon dioxide levels in the atmosphere with an infrared gas analyzer at Mauna Loa Observatory in Hawaii. At the same time, Revelle helped create the International Geophysical Year to promote East-West collaboration on Earth science research, including Keeling’s program. This research led to ▶



AT SEA: Revelle (right) aboard a research vessel with Harold Sverdrup (center), then director of Scripps Institution of Oceanography.

a record of atmospheric measurements now known as the Keeling Curve (see “Revelle & the Curve” on opposite page), a graph that depicts the relentless rise of carbon dioxide concentrations beyond natural seasonal variation—the “breathing” of the Earth. The measurements showed the concentration to be about 310 parts per million in 1958 and then 320 a few years later; now it’s up to about 410, making the trend a clearly upward curve with teeth.

“Given how important that has become—iconic, even—his role in producing it is really very significant,” Schmidt says. Gore included it in his 2006 documentary, *An Inconvenient Truth*.

In 1957, Revelle and physicist Hans Suess published a seminal study arguing that growing carbon dioxide emissions produced by human activities — namely, burning fossil fuels — could create a greenhouse effect, gradually warming the planet. They also were the first to show that the ocean surface increasingly resists absorbing carbon dioxide from the atmosphere. Revelle and Suess calculated a quantity now referred to as the Revelle factor, which is the change in carbon dioxide in the seawater relative to that of dissolved inorganic carbon. They found it to be about 10, and more recent measurements show that it’s rising, especially at high latitudes such as those in the Southern Ocean, where less carbon can be absorbed and therefore future climate change cannot be so efficiently mitigated.

Revelle’s work on oceans acting as “carbon sinks” also has inspired current debates about geoengineering and climate interventions, including controversial proposals

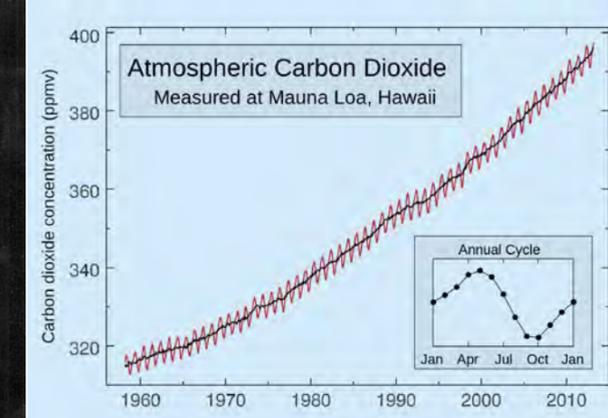
like spraying material into clouds to reflect sunlight into space, or pumping nutrients into oceans to encourage carbon-consuming photosynthesis of marine algae.

Later, while teaching at Harvard, Revelle raised concerns about issues involving what’s called “climate adaptation” today. Poorer countries, such as Pacific island nations with indigenous populations, don’t have the resources to adapt to climate change the way that wealthy countries like the United States do, yet they are feeling the effects first.

IN THE FINAL YEAR OF HIS LIFE, HOWEVER, REVELLE

became perhaps the first high-profile victim of vocal climate deniers. Physicist Fred Singer, already notorious for his skepticism about acid rain and ozone depletion, managed to manipulate the 81-year-old Revelle—his family and colleagues argue—into adding his name to a paper playing up uncertainties in climate change science and arguing against taking “drastic action.”

While talking to the American Association for the Advancement of Science about atmospheric and oceanic warming and efforts to reduce them, Revelle noted the wide range in the possible extent of warming in the next century. Afterward, Singer spoke to him about working on an article together, but then Revelle had a heart attack while returning to San Diego. As chronicled in the 2010 book *Merchants of Doubt*, by historians Naomi Oreskes and Erik Conway, Singer wrote a draft with a similar title to one he had already published, “What to Do About Greenhouse Warming,” but the ailing Revelle was not ▶



REVELLE & THE CURVE

Engraved on the wall of the U.S. National Academy of Sciences, alongside such images as Darwin’s finches and DNA’s double helix, is a steeply curved graph depicting the rising levels of carbon dioxide in our atmosphere. It’s there because the discovery of the rising tide of atmospheric CO₂ is considered one of the most important discoveries of our time.

The numbers that generated that graph were produced at a rate of one per hour by a type of infrared spectrophotometer known as a nondispersive infrared sensor, installed at Mauna Loa Observatory, two miles above sea level on the big island of Hawai’i in 1958. Put in place by a scientist named Charles Keeling, that instrument and others that later replaced it have been cranking out those numbers, hour by hour, right up until today. The graph that they produced is now famous as the Keeling Curve.

As a young chemist at Caltech, Keeling had developed the first reliably precise method of measuring levels of carbon dioxide in atmospheric samples. That brought him to the attention of Roger Revelle ’29, then director of Scripps Institution of Oceanography, who persuaded him to continue his work at Scripps under Revelle’s mentorship.

As one of the founders of the International Geophysical Year (IGY), Revelle also helped arrange for an IGY grant for Keeling to establish a base at Mauna Loa where he could continue his measurements, beginning in 1958. In 1961, Keeling first produced his famous graph.

One of the first to recognize the importance of that curve, Revelle brought it into the classroom when he left Scripps to teach at Harvard. There it first came to the attention of another of his mentees, Al Gore, who would eventually bring the dire significance of that curve to a wider public in his documentary film about climate change, *An Inconvenient Truth*.

“Before scientists would take greenhouse effect warming seriously, they had to get past a counter-argument of long standing. It seemed certain that the immense mass of the oceans would quickly absorb whatever excess carbon dioxide might come from human activities. Roger Revelle discovered that the peculiar chemistry of sea water prevents that from happening. His 1957 paper with Hans Suess is now widely regarded as **THE OPENING SHOT IN THE GLOBAL WARMING DEBATES.**”

—Spencer Weart
Former director of the Center for History of Physics at the American Institute of Physics and author of *The Discovery of Global Warming*

“Through his worldwide industrial civilization, Man is unwittingly conducting a vast geophysical experiment. Within a few generations he is burning the fossil fuels that slowly accumulated in the earth over the past 500 million years. The CO₂ produced by this combustion is being injected into the atmosphere; about half of it remains there. ... By the year 2000 the increase in atmospheric CO₂ will be close to 25 percent. **THIS MAY BE SUFFICIENT TO PRODUCE MEASURABLE AND PERHAPS MARKED CHANGES IN CLIMATE.**”

—From the 1965 report of the Environmental Pollution Panel of the President’s Science Advisory Committee, chaired by Roger Revelle

particularly interested in it. When he read it he crossed out “less than one degree” Celsius of warming, and wrote in the margins “one to three degrees”—clearly beyond natural climate variability—but this was never incorporated in the published paper, which came out with his and Singer’s names on it after Revelle died.

Carolyn Revelle wrote an opinion piece on behalf of the family in *The Washington Post*, saying her father had not changed his views. There were significant uncertainties at the time, and like most scientists, he didn’t want to overstate the threat of global warming. But he clearly considered the warming trend to be a dangerous one.

“He was dying of heart failure, and I feel that he was vulnerable. It was a very unfortunate experience, but I do not think it indicates that he changed his mind on global warming, which was what the climate change deniers were saying,” she says.

Revelle’s secretary Christa Beran, his graduate student and teaching assistant Justin Lancaster and colleagues like oceanographer Walter Munk also sought to defend him.

“You had what was an insidious example of what I would call a lack of ethics in science and the use of scientists as hired guns by the industry,” Lancaster says. “It was very cleverly done; they pulled the wool over Roger’s eyes. I discovered it too late to intercede. I didn’t have the clout to get the right attention to this, and Roger had died. All I could do was make it as public as possible.”

He points out the ways Singer and a handful of other scientists have been supported by the fossil fuel industry, noting that Singer’s Science & Environmental Policy Project, a research and advocacy group, was financed by ExxonMobil and other private sources. Singer had also earlier consulted for ExxonMobil and other major oil companies.

Even decades later, Singer and a few other figures remained “contrarians for hire,” Schmidt says. Documents leaked to *DeSmogBlog* in 2012 showed that Singer and a few others had been receiving monthly funding from the Heartland Institute, a free-market think tank financed by billionaire Charles Koch that has promoted climate skepticism. The Heartland Institute continues to try to influence climate policy through connections to President Trump’s Environmental Protection Agency.

The real purpose of Singer’s paper, Lancaster believes, was to undercut Al Gore while he was running for president in 1992. Revelle had taught Gore at Harvard and had introduced him to the scientific and political challenges of climate change. Gore’s campaign focused

on environmental and climate issues, and Singer’s paper came up in a question at the vice presidential debate.

Singer, now 94, responded in an email, saying that ExxonMobil and the Heartland Institute do not support him and have not influenced the positions he has taken. He also prefers to call himself a climate skeptic, not a denier.

SINCE REVELLE’S DEATH, CLIMATE CHANGE HAS ARGUABLY become even more politicized in the U.S. According to Pew and Gallup polls, over the past decade, the chasm between the views of Republicans and Democrats has widened: There is now at least a 30 percent gap between members of the two parties on whether climate change is occurring, whether it’s driven by human activities and

THE REVELLE CLAN IN 1964: Front row: Christopher Paci, Ellen Clark Revelle, Roger Revelle ‘29, Holly Shumway and Carolyn Shumway. Back row: Stefano Paci in the arms of his father Dr. Piero Paci, Mary Paci ‘57 with young Mark Roger Shumway in front of her, George Shumway, Anne Revelle Shumway, Bill Revelle ‘65, Eleanor McNowen ‘64 (later Revelle), Gary Hufbauer, Carolyn Revelle Hufbauer and Loren Shumway.

whether addressing it should be a top priority of policymakers. That gap has kept growing even as the consensus among climate scientists that global warming is real and anthropogenic has topped 97 percent. And climate change has yet to make another appearance at a presidential (or vice presidential) debate.

The U.S. and the international community have made limited progress in mitigating climate change, and climate deniers remain as vociferous and influential as before. While it’s easy to despair at the thought of possible climate disasters to come if we reach an average warming

of 2 degrees Celsius or more, Revelle likely would emphasize hope about humans’ abilities to adapt. “I know exactly what Roger would say: ‘There’s no future in pessimism.’ This was his whole viewpoint on the climate change problem,” Lancaster says.

In the meantime, scientists continue to collect data and conduct research about climate change and its myriad effects around the world. The *Revelle* just completed a trip to Tahiti and New Zealand, with scientists on board probing ocean chemistry, including spotting trace amounts of metals and isotopes in seawater. It’s due for its mid-life service and maintenance in dry dock this year, after which the research ship will continue its scientific journeys for two decades or more. [PGM](#)



MORE THAN A YEAR AFTER THEIR HOME AND VINEYARD WENT UP IN FLAMES DURING THE WINE-COUNTRY WILDFIRES OF 2017, KEN '88 AND MELISSA '87 MOHOLT-SIEBERT ARE BUSY REBUILDING AND REPLANTING.

SMOKE IN THE WINE

BY ALISSA GREENBERG

THE NIGHT OF OCT. 8, 2017, WAS UNUSUALLY WARM,

so Ken and Melissa Moholt-Siebert left the windows of their home near Santa Rosa, California, open to the breeze much later than they usually would have. Their farmhouse was perched on 31 acres, including pasture for their modest sheep flock and 15 acres of vineyards for their winery, Ancient Oak Cellars. Its red-wood beam ceilings and a stonework fireplace hand-laid by Ken's grandfather made it perfect for cozy late-night movie sessions. Tonight the air was much warmer than the usual cool evenings typical in Sonoma; before bed, they watched a documentary about Leonard Nimoy and enjoyed the breeze.

Around 10:15, the scent of wood smoke started to drift in through the windows, but Ken and Melissa didn't worry, imagining it could have been from some distant neighbor's

barbecue. But when the smell didn't go away, Melissa called the police nonemergency number to ask if she should be thinking about evacuating, but the police could offer no definite advice.

Melissa fell asleep before the movie ended, but Ken stayed up thinking about the Hanley fire, which had rampaged through the area half a century before but missed the property. The wind was starting to kick up in strange, fitful gusts, flinging pine needles against the roof. Ken turned on his computer and, as was sometimes his habit, composed a poem—this one about “vanguards of embers and palls of smoke” and his grandfather wetting down the grass around the house, just in case. “Outside the sheep/Are dead silent—not a clank of the bell—but/The crickets strum and I mark the sound of sirens,” he wrote.

Just after midnight as he was finishing his poem, Ken heard a knock on the door. It was a neighbor, there to tell him ▶

A wildfire burns along a ridge line above a Santa Rosa vineyard a few days after the fire that devastated Ancient Oak Cellars.
—Photo by Paul Kuroda

there was a fire in Fountaingrove, about three-quarters of a mile away. That was when Ken woke Melissa up. “You need to grab some stuff,” he told her. “We might have to run.”

Ken set about doing everything he could think of that might save the property if the worst were to happen. He drove to the other side of the property to turn on his agriculture pump. He grabbed a broom and got on the roof to brush the needles off. He cleaned out the gutters and tried to cut down a limb from a nearby tree that was leaning toward the house.

Meanwhile, Melissa was racing around the house gathering up what few valuables she could and packing the car. She knew, though, that there were some things she couldn’t bring even if she wanted to: not the sheep, scattered in the pasture, or the piano. And not the ancient oak down the hill in front of the house—the one she and Ken couldn’t fit their arms around, the one that was said to have predated Spanish settlement, the one that was the namesake for their winery.

There was no moon. At first, as he worked, Ken eyed the dark red glow beyond the hills to the east. By the time he was done, fire had circled around to the north and towered above the hillside in between; a sudden gust brought embers racing toward the house. One of them landed in the pasture up the hill, and before Ken could quench it, a backdraft from the south blew the flame into a wall of fire. Debris was falling all around; the drip lines in the vineyard had started to burn. Flames had begun to lick the side of the barn by the time Ken and Melissa drove away. The sound of the smoke detector inside their house followed them down the road.

SOME 15 MONTHS LATER, on a December afternoon that’s blustery and dotted with clouds, Ken and Melissa show me around what’s left

of their home. A visitor who doesn’t look too closely might never guess that a fire happened here. The hills, just greening up with winter rains, are speckled with straw that looks charmingly pastoral; a creek runs cheerfully through a little dell above the road. But the stumps of burnt trees and the blackened street sign at the front of the property tell a different story. The straw is there to prevent erosion in the newly tilled soil where the vineyard used to be. What looks like a gravel driveway branching off the little road through the center of the property is actually the spot where the farmhouse once stood.

Ken tells me about his earliest memories visiting his grandfather, back when the vineyard was only a sheep ranch and he’d come up during vacations to help his grandfather run it. “I always looked forward to coming up to the farm,” he says. “I enjoyed the physicality of it.” After the wool was collected in burlap sacks, it was his job to jump up and down on the fleeces to compact them. He would end the day sweaty and covered in lanolin, ready to hop into the back of his grandfather’s truck for a ride to the nearby lake.

Ken and Melissa met not long after those days, at Pomona in 1985 in a Human Sexuality class. People always get a kick out of that, he says wryly. She liked that he was something of a Renaissance man who studied classics, wrote poetry and attended feminist lectures. He admired her intelligence, tenacity and considerate nature. After graduation, they moved to Portland, Oregon, where he became an architect and she worked in a research lab. They had two kids, Austin and Lucy, who grew up tromping through the creek and running in the vineyard; by then the property had been planted with 10,000 grapevines.

When Ken’s grandparents died and the funding for Melissa’s lab began to ebb, they decided to take ownership of the farm, keeping the grapevines and opening Ancient Oak Cellars as a companion

business. With help from farmhand Arnulfo Becerra, who had been working alongside Ken’s grandfather for decades, they learned to coax award-winning wines from the land. They continued steadily gaining experience and momentum until the night of the fire, when the flames destroyed the vineyard and everything around it entirely.

After the fire, Ken was the first to return to the property. Melissa was away on a wine sales trip that was now more critical than ever. Ken found every structure reduced to a thick layer of ash, occasionally interrupted by liquefied evidence of the recent inferno. The cast iron in the piano had split in half, and its glazing had poured out through the bottom. A pallet of wine that was set out for labeling had melted, the bottles transformed into glassy puddles only a few inches high. The steel barn roof had heated red hot and flopped over. Aluminum from Ken’s truck had pooled downhill from its charred hull.

TODAY, KEN POINTS OUT where the barn used to be—here was where the aluminum pooled, here was where the two domesticated geese and the mean rooster lived—and tells me there was little time for grief or anger in the face of such overwhelming destruction. Instead, the natural pragmatism he shares with Melissa helped them get through the first difficult months. They became “professional refugees,” as she puts it, dividing up the enormous labor necessary for rebuilding. “My new full-time job is insurance paperwork; Ken’s is being a contractor,” she says. “Maybe it’s fortunate that that’s the kind of people we are, the kind that just tackle the next project.”

The grieving process has thus been slow, with sorrow arriving in spurts. The first step for Melissa was seeing and accepting the reality of the burnt property; that really hurt. When FEMA and the Army Corps of Engineers came to help with cleanup, removing some 130

truckfuls of debris, that hurt, too. And when it became clear that the vines weren’t going to recover, that was a new, entirely different kind of pain.

Now, she says, the gentle rise of the naked, grassy hills is almost beautiful. That, in a way, feels less difficult than before. “But then,” she says, gesturing at the empty fields, “you start thinking about what isn’t here.”

AFTER OUR TOUR, Ken and Melissa sit at a little table set up by the creek, under a canopy of oaks that has recovered heroically. “The native trees did OK,” Ken notes; that includes the ancient oak, which continues its reign over the vineyard as the land struggles to recover. Finding out the oak had survived was a bright spot in all that destruction. Maybe it meant they could, too.

Ken points out an old redwood grape stake that appears to grow out of the base of one of the oaks—the result, his grandfather always told him, of a crow alighting on the stake and dropping an acorn on the ground. The sounds of the countryside underpin our conversation: the chirp of birds and frogs; the soft baaing from the herd of sheep, diminished after the fire but still here. Nearby, some of the 3,000 modern metal grape stakes and 121 miles of wire Ken, Melissa and Arnulfo removed by hand in the last year sit in piles near a half-constructed building that will one day be a new barn.

Ken is building that barn, although he occasionally hires help; aside from the Corps of Engineers, he’s had to do most of the recovery work himself. The permitting process has been especially difficult. Few vineyards were affected the way theirs was, so no methods of streamlining have been put in place, as they often are in areas of acute destruction. In fact, in the case of most Santa Rosa vineyards, the ▶



FROM LEFT: Ken and Melissa Moholt-Siebert with the new barn they’re building to replace the one that burned; miles of rolled wire, salvaged from the ruined vineyard and awaiting reuse; some of the winery’s 3,000-odd reclaimed stakes in front of vines on a neighboring vineyard; a bottle of 2016 Ancient Oak pinot noir, posed in a burnt tree stump. —Photos by Brian Smale





Melissa and Ken Moholt-Siebert, owners of Ancient Oak Cellars, sit on bundles of straw beneath the eponymous ancient oak tree, which survived the 2017 fire that destroyed their home, vineyard and tasting room.
—Photo by Brian Smale

rows of vines acted as firebreaks, mitigating damage. But the speed and ferocity of the fire, the distance of the vines away from the neighboring houses and the topography combined to make the Ancient Oak vineyard a terrible exception.

Even so, Ken and Melissa's insurance, although extensive, did not cover the vineyards. Instead, Ken stretches the assistance he's received from disaster recovery funds and farm assistance programs as far as he can by doing much of the initial construction work himself and hiring crews directly to help with more-industrial tasks. Along with wine they had stored off-site and some Ancient Oak vintages made with grapes from other vineyards, that strategy has helped Ken and Melissa limp along financially as they reconstruct their lives.

The first step after the last destroyed vine and blackened stake had been removed was to use an enormous tractor with 5-foot claws to tear through the ground of the vineyard and to add nutrients to improve soil fertility—including, Ken notes wryly, wood ash. After that, Ken and Melissa ordered 15,000 new vines, which will arrive next spring; they are taking advantage of a bad situation to increase their crop, using some extra space where the old barn used to be.

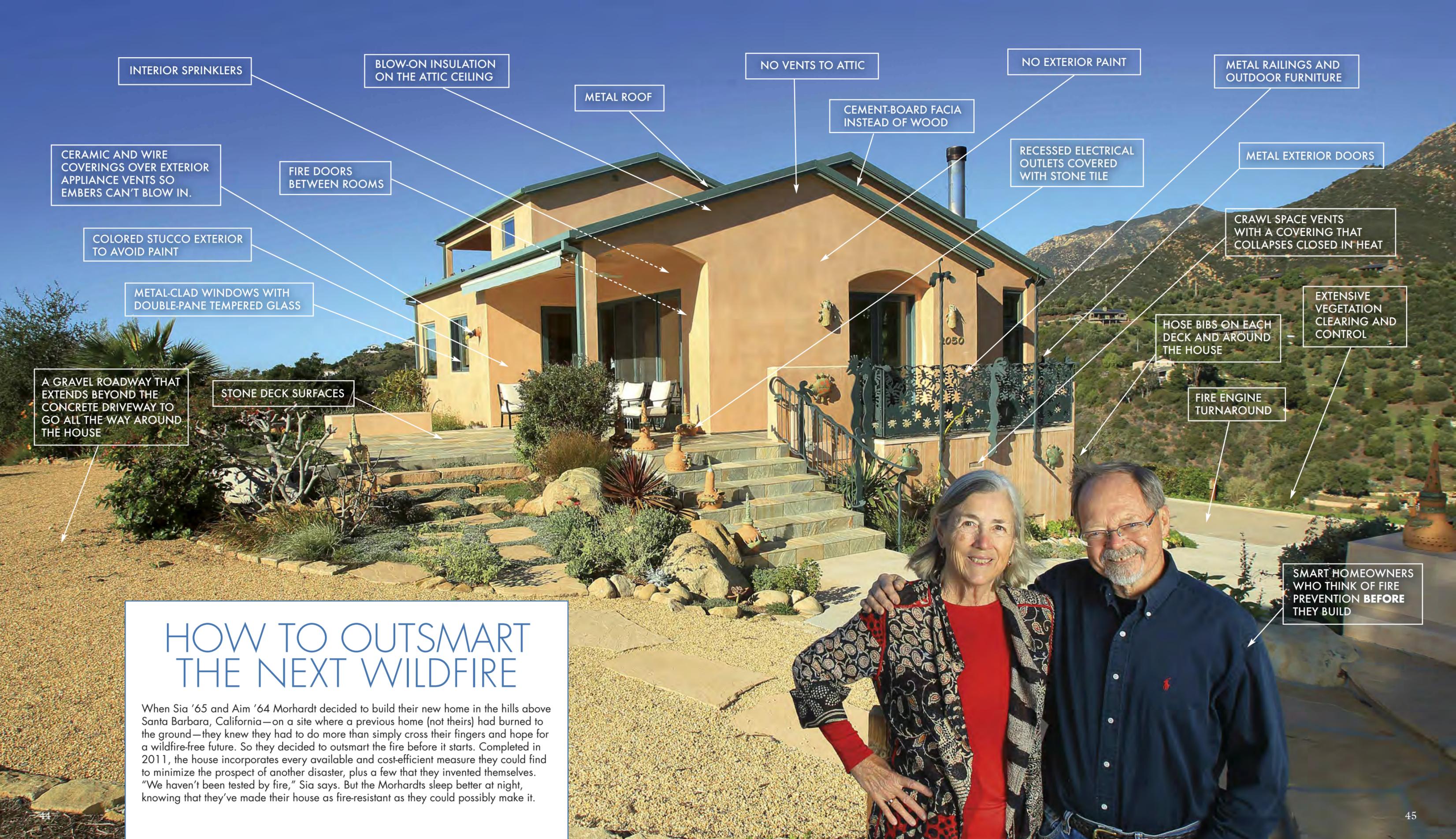
"One thing I think is hard to understand is just how long the recovery period is," Melissa says, looking around the property and counting. Out of some 13 neighbors whose homes were damaged or destroyed, there are only a few houses under construction more than a year later. In 2019, their new vines will be planted and grow waist high; the next year those vines will need trellises. Finally, in 2021, Ken and Melissa will harvest their first small postfire crop.

But the new harvest is part of a silver lining they both recognize here: the chance to remake the farm on their own terms. Ken's grandfather knew and loved the land, but he wasn't a grape grower by trade. And the farmhouse was certainly cozy, but it's not the house they would have designed for themselves. Now they will be able to update the vineyard, bringing to bear all the wine expertise 2019 has to offer. And they'll be able to design a house for themselves. Melissa fantasizes about French doors leading out onto a patio with expansive views.

At a recent wine club dinner in Ohio, someone asked her if she had thought about cashing out: deciding not to replant or rebuild and selling instead. She shakes her head, gesturing to the creek, the oaks, the hills. Yes, the first year back has been emotionally and physically challenging, she says. For a while, they stayed in a friend's house in town. Then another friend loaned them a pop-up camper, allowing them to camp out on their own property, showering in the open. This winter, they're still camping, in a slightly improved structure, showering at the YMCA and eating at restaurants that are struggling to keep going after a catastrophic postfire tourist season. But still: "We came here, leaving perfectly respectable lives in Oregon, because this land is a piece of Ken's heart," she says. "And this hasn't changed that."

In some ways, Ken admits, he has enjoyed this time—even having to sleep exposed to the elements. He's come to love the proximity to nature, the frogs, the owls, the night sounds. "Melissa and I were talking recently, and I said, 'Maybe we just don't build a house,'" he says. He imagines more nights under the Sonoma moon or, in case of rain, in the barn.

Melissa looks at her husband across the table and raises her eyebrows, taking in the half-finished structure. "Maybe this could be our summer house," she replies. **PGM**



INTERIOR SPRINKLERS

BLOW-ON INSULATION ON THE ATTIC CEILING

METAL ROOF

NO VENTS TO ATTIC

NO EXTERIOR PAINT

METAL RAILINGS AND OUTDOOR FURNITURE

CERAMIC AND WIRE COVERINGS OVER EXTERIOR APPLIANCE VENTS SO EMBERS CAN'T BLOW IN.

FIRE DOORS BETWEEN ROOMS

CEMENT-BOARD FACIA INSTEAD OF WOOD

RECESSED ELECTRICAL OUTLETS COVERED WITH STONE TILE

METAL EXTERIOR DOORS

COLOR STUCCO EXTERIOR TO AVOID PAINT

METAL-CLAD WINDOWS WITH DOUBLE-PANE TEMPERED GLASS

CRAWL SPACE VENTS WITH A COVERING THAT COLLAPSES CLOSED IN HEAT

A GRAVEL ROADWAY THAT EXTENDS BEYOND THE CONCRETE DRIVEWAY TO GO ALL THE WAY AROUND THE HOUSE

STONE DECK SURFACES

HOSE BIBS ON EACH DECK AND AROUND THE HOUSE

EXTENSIVE VEGETATION CLEARING AND CONTROL

FIRE ENGINE TURNAROUND

SMART HOMEOWNERS WHO THINK OF FIRE PREVENTION BEFORE THEY BUILD

HOW TO OUTSMART THE NEXT WILDFIRE

When Sia '65 and Aim '64 Morhardt decided to build their new home in the hills above Santa Barbara, California—on a site where a previous home (not theirs) had burned to the ground—they knew they had to do more than simply cross their fingers and hope for a wildfire-free future. So they decided to outsmart the fire before it starts. Completed in 2011, the house incorporates every available and cost-efficient measure they could find to minimize the prospect of another disaster, plus a few that they invented themselves. "We haven't been tested by fire," Sia says. But the Morhardts sleep better at night, knowing that they've made their house as fire-resistant as they could possibly make it.

JIM KAUAHIKAUA '73 HAS BEEN STUDYING THE WORLD'S MOST ACTIVE VOLCANO FOR MOST OF HIS LIFE, AND HE'S STILL LEARNING.

RUNNING TOWARD THE VOLCANO



STORY AND PHOTOS BY MARK WOOD

The eruptions on the island of Hawai'i—better known as “the Big Island”—are a few weeks old, and it's becoming clearer by the day that this time is different. Bigger. Less predictable. More explosive. At a press update at the Civil Defense office in Hilo, a tall man with a tangle of gray-white beard and a baseball cap turned backward steps in front of the cameras and introduces himself in a soft, gravelly voice.

“Jim Kauahikaua, U.S. Geological Survey's Hawaiian Volcano Observatory. I'll do a quick summary of what's happening. Vents eight and 16 have reactivated. Twenty-two and 13 are still the main southbound channels going into the two ocean entries, though those have been quite weak today ...”

His tone is quiet, his words measured—full of unembellished facts. His answers to questions are patient. If his eyes roll just a bit at some of the uninformed queries from mainland reporters, you can't see it through his sun-darkened glasses.

His colleague Tina Neal, who succeeded him four years ago as the observatory's scientist-in-charge, calls this “the voice of the consummate scientist.” And even as repeated explosions rock the volcano's summit in the days ahead, launching vast columns of ash miles into the sky, that imperturbable baritone, explaining each day's events, will remain strangely reassuring.

Born on O'ahu and raised amid the volcanic starkness and splendor of the islands, Jim Kauahikaua '73 has been studying the volcano known as Kilauea for most of his life. The first native Hawaiian to serve as scientist-in-charge at the volcano observatory, he is one of a handful of people who can claim both a deep scientific understanding of the world's most active volcano and a rich and intimate knowledge of its history.

While earning his doctorate at the University of Hawai'i in Mānoa and throughout the early part of his career as a geophysicist, he probed the volcano's subterranean secrets with scientific instruments, studying—among other things—the way lava tubes form. More recently, he has worked on assessing hazards and reconstructing the volcano's past through vintage news accounts, many of them taken from now-defunct Hawaiian-language newspapers that have never before been translated. ▽

As a result, he wasn't completely surprised by the sudden violence of the 2018 eruptions. It simply reminded him of events from long ago. It's the kind of connection he's always on the lookout for as he searches for patterns from the past that can help explain how the volcano is evolving today and predict what it might do tomorrow. "We've known for some time that Kīlauea has had explosive phases," he explains. "The most recent one killed at least 80 Hawaiian warriors at the summit."

What he's referring to is an event that happened in 1790, the final stage of several centuries of explosive summit eruptions that inspired one of the great Hawaiian sagas about the goddess Pele. Many years later, a geologist named Don Swanson connected the folkloric and scientific dots to recreate a vivid picture of what happened near the summit that day.

"Hawaiians had no written language prior to contact with the Western world, so we only know about it through oral traditions," Kauahikaua explains. "We don't know how many explosions there were or how strong they were, but we do know that the explosion cloud for one of them was viewed from the other side of the island, so it was visible above the summit of Mauna Loa. That means it was big—a 20,000- or 30,000-foot-high explosive column."

He even has a good idea about how those 80 warriors may have died. They were probably the victims of what's known today as a base surge.

"In an explosion, a lot of material is thrown up into the air," he explains. "The very fine stuff drifts off in the atmosphere and can travel 100 miles or more. But the larger, coarser stuff will just fall right back down, and it falls down as sort of a superheated, gas-charged mass. So it doesn't just fall and hit the ground. It falls and starts to travel very fast horizontally. That's a base surge, and those warriors were caught in it."

For Kauahikaua, Swanson's work is a model for the kind of pattern-seeking research he's engaged in today. "Our primary way of trying to forecast what is going to happen in the future is by knowing in detail what has happened in the past," he says.

These days he's focusing primarily on the 19th century, a period that he believes still has a lot to offer in understanding the cycles of activity that Kīlauea has passed through.

"I've mostly been concentrating on large lava flow eruptions," he says. "One thing I've found is that they all kind of exhibit the same behavior the last couple of months of their existence, and that is that they start to stall and then pulse forward and then stall again. So it's sort of a pulsating, rather than a steady advance."

He found that pattern in eruptions in the 1881 event, when a lava flow from Mauna Loa was advancing on what is now the city of Hilo. And he found it again in eyewitness accounts of another Mauna Loa eruption that again threatened Hilo in 1935.

And he saw the same thing near the end of the 2018 eruptions at Kīlauea.

During these most recent eruptions, Kauahikaua found himself right in the middle of the action but, at the same time, frustratingly far from the front lines.

As the observatory's liaison with the island's emergency operations center, he saw very little of the historic eruptions with his own eyes. "I was at Civil Defense virtually through the entire thing," he recalls. "I think I did about a half dozen of the overflights out there, and I was only on the ground twice."

And yet, every significant piece of information reported back by the teams of observers who were patrolling the rift zone each day passed through his hands as he updated representatives from all relevant organizations—from ▷



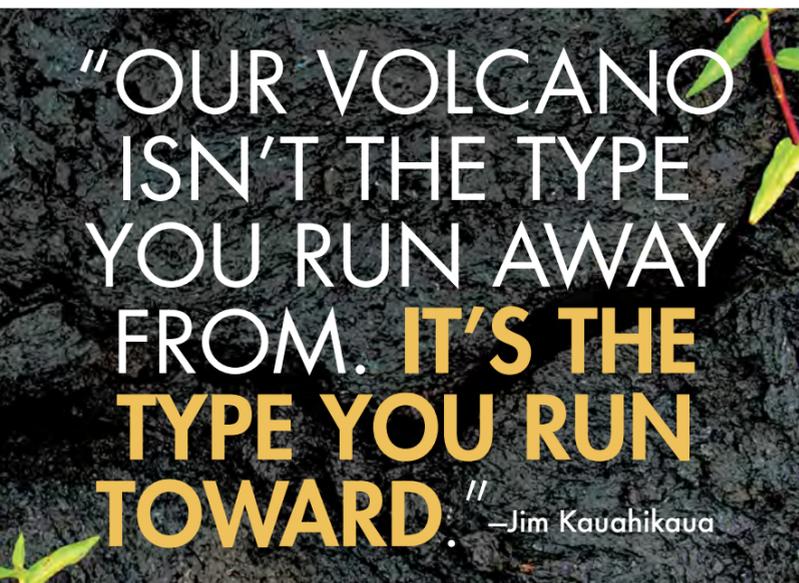
SAGEHENS vs. THE VOLCANO

Jim Kauahikaua '73, who served as scientist-in-charge at the Hawaiian Volcano Observatory from 2004 to 2015, wasn't the first Pomona alumnus to serve in that role. In fact, Sagehen geologists have dominated the post in recent years, holding it for about 20 of the past 44 years. Long before Kauahikaua's term, there was **Bob Tilling** '58, who served from 1975 to 1976. While he was there, Tilling introduced his old geology classmate, **Tom Wright** '57, to the volcano, and a few years later in 1984, Wright was appointed scientist-in-charge, serving until 1991.

Jim Kauahikaua '73 stands on one of a series of lava flows blocking a highway just south of Pāhoa, on the Big Island of Hawaii.

utility companies to the National Guard—keeping them informed about unfolding events and the resulting hazards that might be facing them that day.

From the first, Kauahikaua says, the public demand for information was “crazy.” But just getting reports from the field was often a struggle. Some of the cell towers in the area had burned down, making cell phone reception spotty. And some members of the teams were novices who had to learn on the job how to make a clear report.



Another problem, Kauahikaua says, was the role of social media, which was handled by USGS geologists thousands of miles away on the mainland. “We were prepared for regular media with conference calls and information releases via email and our website,” he explains. “But social media added a whole new set of demands, sometimes seemingly favoring quickness over quality of information. And anything but quality information would defeat our mission.”

But the main thing that Kauahikaua says tried his patience during those long weeks was the bureaucratic conceit of some of the early incident management teams sent in by the Federal Emergency Management Agency (FEMA), which used the emergency as a training exercise. “None of them had Hawai‘i experience or eruption experience, so—for example, safety out in the field. All of a sudden, we had these people from God knows where, Georgia maybe, telling us what was safe and what was not safe. And that rubbed a lot of people the wrong way.”

Another Hilo resident who was quickly drafted to lead one of the teams on the ground, Professor Emeritus of Geology Rick Hazlett, seconds that opinion: “I’ll tell you that they didn’t know volcanic gas from a hole in Kansas. It was disgraceful, I thought.”

However, he believes Kauahikaua was the perfect choice to deal with all of those complicated communication issues. “He’s very exact about the certainty and clarity of detail,” Hazlett says. “So he’s a good filter in terms of making sure that he got good information. The last thing he’d want to do was spread a falsehood. Secondly, he speaks with calm equanimity, irrespective of how he’s feeling inside. And thirdly, he’s a voice that is trusted in this community, because he is Hawaiian, and he’s been here throughout his postgraduate career. He’s not passing through.”

That’s actually an understatement. Hawai‘i is not just Kauahikaua’s home—it’s pretty much the full range and scope of his professional interests and ambitions. “Many of my colleagues are interested in volcanoes, period,” he says. “There is this type, and there is that type. I can honestly say that I am way more interested in our volcanoes than in any other volcanoes.”

Part of that, he admits, is a love of the cultural side of the phenomenon. Native Hawaiians have had a complex and intimate relationship with their volcanoes for centuries and continue to relate to them in ways that outsiders have trouble understanding.

“As a matter of fact,” he says, “you can see this in the most recent event, where lava threatened people’s homes, and native Hawaiians would take the attitude, ‘Pele is related to us. She is in our family tree.’ So they would actually see it as if a relative were visiting, which made me think, ‘That is a very clear understanding of our place on this landscape.’ If you feel that you own a piece of land, it is kind of temporary.”

For Kauahikaua, that sense that everything is temporary isn’t just academic. Indeed, he considers every day that he is able to study the volcano that he loves to be a gift—one he almost lost 15 years ago when he began to have blinding headaches and double vision and was eventually diagnosed with stage-four nasopharyngeal cancer, a tumor just below his brain.

For the better part of a year, he and his wife, Jeri Gertz, moved to Honolulu, where an oncologist put him through more than 40 radiation treatments and five or six chemo treatments. “He said he was going to nearly kill me to cure me, and that’s how it was,” he recalls.

The treatment left him with one deaf ear, significant hearing loss in the other and an enhanced appreciation of his opportunity to keep doing the things he loves. “There are gifts inside the most difficult of challenges,” Gertz says, “and both Jim and I would agree that we found those gifts.”

Asked about retirement, Kauahikaua said he thinks about it often, especially now. The observatory’s offices at Kīlauea were so badly damaged by earthquakes that the organization has had to scatter its personnel among crowded, makeshift office spaces around Hilo—a situation that he finds less than appealing. But he’s not ready to retire just yet.

In any case, Gertz says she doesn’t think retirement would be a change of direction for her husband—just a change of employment. “He will always continue to be this man who studies volcanoes, whether he’s employed with the USGS or not,” she says.



THE 2018 ERUPTIONS BY THE NUMBERS

- ~1 BILLION CUBIC YARDS OF LAVA ERUPTED
- 13.7 SQUARE MILES OF LAND INUNDED BY LAVA
- 875 ACRES OF NEW LAND CREATED BY OCEAN ENTRIES
- 716 DWELLINGS DESTROYED BY LAVA
- ~30 MILES OF ROAD COVERED BY LAVA
- ~60,000 EARTHQUAKES (APRIL 30–AUGUST 4, 2018)
- 6.9 MAGNITUDE OF THE STRONGEST QUAKE

—United States Geological Survey

The latest eruptions started at the end of May and petered out near the end of August. They left behind a changed island—not only in a portion of its topography but also in its expectations. As Kauahikaua likes to say, “Our volcano isn’t the type you run away from. It’s the type you run toward.”

He means that literally—Hawaiian volcanoes have enjoyed such a reputation for tameness over the years that they’ve actually been draws for millions of visitors. In fact, he explains, “the activity at Kīlauea was the initial attraction for tourists in the 19th century and the location of the first hotel in the kingdom.”

Indeed, in this idyllic Hawaiian setting, even something as powerful and potentially dangerous as a thousand-foot-high lava fountain can somehow end up seeming harmless, as happened at Kīlauea in 1959. The fountain was right at the edge of a long crater, he recalls. “And so if the winds were right, the winds would blow the fountain debris away from the viewing areas, and any lava produced would fill up this crater. So it was a perfect thing for viewing. It became known as the ‘drive-in volcano.’”

Today, people still come to Hawai‘i to see lava flows and fountains or to watch glowing streams of molten rock slide into the ocean amid roiling clouds of steam—as if it were all a show put on for their entertainment. “Even during this past summer’s

explosions and collapses at the summit, there were a few that wanted to see the summit area,” he says. “Several were arrested or cited by the National Park Service.”

But all of those years of constant but fairly predictable activity—more effusive than explosive, in a volcanologist’s terms—might at last be coming to an end. Certainly, the 2018 eruptions seemed to break the mold in a big way—or maybe it would be better to say that they turned back the clock. “Basically, it erupted 10 years of Kīlauea lava in three months,” Kauahikaua says. And it did so with a violence that the island hadn’t seen in centuries.

One good thing he thinks might come out of it is a greater acceptance among island officials of the unavoidable dangers of development in a rift zone, something the scientists at the observatory have been preaching about—largely in vain—for decades. The destruction of more than 700 homes over a three-month period, he says, may have finally changed some political hearts and minds. At least he hopes so.

After all, living in close proximity to one of the most powerful and unpredictable forces on earth calls for a certain degree of humility.

As Kauahikaua says, “Volcanoes were here first.”

NOMINATE for the Alumni Association Board

To nominate yourself or another alumnus/a for the Alumni Association Board, use our online nomination form at pomona.edu/alumni/alumni-association-board/alumni-association-board-nomination.

The Alumni Association Board consists of highly-engaged Pomona College alumni who foster connection, action and impact among the 25,000-person strong alumni community. Representing a diverse range of backgrounds, experiences and professions and spanning every decade from the 1960s through the 2010s, members serve three-year terms and are selected from the alumni community based on self-nominations and recommendations from active alumni.

CAREER WEBINARS On-Demand Now

Are you a senior starting to panic because you haven't lined up a job yet? Are you thinking of making a career pivot or taking a career break? Are you trying to climb the leadership ladder at your organization? If any of these questions resonate with you, take advantage of our Career Webinar Series, where we address some common issues students and alumni are facing in their careers. To view the webinars, visit pomona.edu/alumni/career-resources, and if you are prompted for a password, enter: Pomona1887.

One webinar, for example, is titled "Career Strategies for Seniors and Parents" and is presented by Anna Hunter and Elissa Kuykendall Unton, co-founders of the career-coaching firm ArcVida. Other webinar topics include "Are You a High Potential Learner," "Networking Effectively at In-Person Business Events," "Anticipating a Career Path That Includes a Career Break," "Your Personal Brand," and "The Art of the Career Pivot."



Anna Hunter



Elissa Kuykendall Unton

Sponsor Shout-Out ... SUCCESS!

For 47 hours on November 27—Giving Tuesday—and November 28, alumni, parents and students participated in the Sagehen Sponsor Shout-Out to celebrate one of the College's longest standing traditions, the Sponsor Group experience. Sagehens from across the globe gave 588 gifts, many in honor of their sponsors and sponsor groups, to support current students and student-life programming. All gifts made on Giving Tuesday were matched dollar for dollar, and several generous donors contributed an additional \$10,000 once 470 gifts were received. In total, the Sponsor Shout-Out generated more than \$80,000 and included support from alumni in classes representing seven decades of enthusiastic Sagehen spirit!

"Just donated in honor of my sponsor, Jake Smith '69. Jake made us feel welcome, answered a million questions about academic and social life, threw a few parties for us and somehow fostered a real bond among us sponsees. **MY SPONSOR GROUP IN CLARK V COALESCED INTO AN 'INSTANT TRIBE'**

to go to meals with and just hang out with, which helped us weather the uncertainties of that first year and immediately feel at home at Pomona. I'm a huge fan of Pomona's sponsor program. Thanks, Jake!"

—Guy Lohman '71



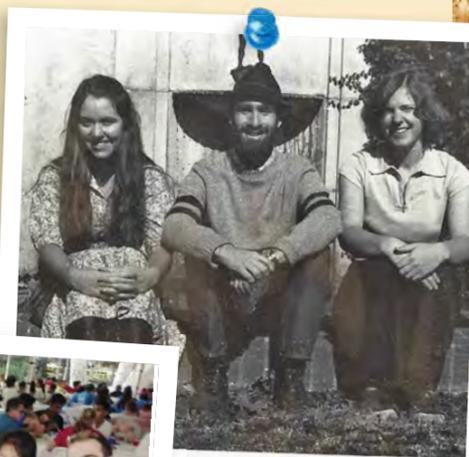
"A chirpy Sagehen shout-out (and donation) in honor of my freshman sponsor, Wig Hall '77: Rex Dietz, Class of '80. For the life, of me I can't recall the name of our co-sponsor—maybe my roomie Kevin Fisher would remember. Rex was very cool and made us all feel at home. **I WILL NEVER FORGET HIS OPENING REMARKS AT OUR FIRST MEETING IN THE DORM**—among other things, he advised us in so many words to avoid growing anything 'exotic' in the windows facing N. College Ave., because the cops would see it. Never looked back!"

—Jeff Anderson '81

"Just gave in honor of one of my amazing sponsors and friends, Karen Hou Chung. **I STILL REMEMBER HER GREETING ME WITH A HUGE SMILE AND A HUG AND MAKING ME FEEL LIKE FAMILY,**

especially during my first year at Pomona. This Giving Day is such a cool way to lift up the Pomona community while continuing to make sure others experience the growth and opportunities we all had during our four years. Go ahead and show some love to Pomona!"

—Jordan Castillo '15



"I found this picture of my fellow head sponsors.... I loved working with you both and Dean Margaret Bates during the 1978–79 school year! **HERE'S TO OUR 40TH REUNION,** Ted Stein and Carolyn Sherwood Call!"

—Lisa Phelps '79

"Kris Skovbrotten Gorman warmly welcomed our sponsor group to campus, instilling in us a warm affection for her Minnesotan hospitality. A fond memory—she gave me my first crash course in electrical work, showing me how to install switches in a floor lamp **(PRETTY SURE THAT WASN'T IN THE SPONSOR TRAINING MANUAL).** Still using that skill 10 years later! Thanks, Kris!"

—Paul Roach '07

The Winter Selection of the Pomona College Book Club is...

This winter, join fellow alumni, parents, students and faculty as we read *Less*, a book that the *Los Angeles Times* called "a hilarious Pulitzer Prize-winning novel full of arresting lyricism and beauty." Named a *Washington Post* Top Ten Book of 2017, Andrew Sean Greer's work follows a struggling novelist who travels the world to avoid an awkward wedding.

In-person Book Club events for the winter selection are taking place January through March in the following cities: St. Paul, MN (January 19); San Francisco, CA (February 9); Seattle, WA (February 21); Austin, TX (February 24); and Denver, CO (March 18). Additional gatherings are also being planned in Chicago, IL, Honolulu, HI and New Haven, CT. Visit the Pomona College Book Club web page to learn more about events near you and to read along with alumni, professors, students, parents and staff around the world.

pomona.edu/alumni/lifelong-learning/pomona-college-book-club



MARK YOUR CALENDAR

Save the dates for these favorite annual events and update your contact information at pomona.edu/alumniupdate to hear about more opportunities to come together with the Sagehen community.

Family Weekend,
February 15–17, 2019. on campus

Payton Distinguished Lectureship:
Anna Deavere Smith and "Notes from the Field,"
February 28, 2019 on campus

4/7 Events
throughout April in many regions

Alumni Weekend
May 2–5, 2019 on campus

SAGEHEN FANS CELEBRATE RIVALRY WEEKEND

On the evening of November 9, more than 200 student athletes, coaches, alumni, parents, family members and dozens of Champions of Sagehen Athletics gathered on the portico of Big Bridges to kick off Rivalry Weekend 2018 and celebrate Sagehen football. The nighttime festivities helped to prepare the team for their biggest game of the season—the Sixth Street Rivalry—against the CMS Stags. Don Swan '15, former captain of the Sagehens football team, served as master of ceremonies, and Head Football Coach John Walsh called the P-P vs. CMS rivalry the most unique rivalry in all of college football. The following day, hundreds of Sagehens came together to cheer on the blue and orange, and Sagehens captured their second-straight Sixth Street Rivalry victory with a 24–19 win over CMS. The victory marked the best season in Sagehen Football since 1999. Of the win, Coach Walsh said, "We have an extraordinary group of student-athletes and assistant coaches in this program. Our players come in every day and work hard and buy into what we are trying to do here. They earned it."



best season in Sagehen Football since 1999. Of the win, Coach Walsh said, "We have an extraordinary group of student-athletes and assistant coaches in this program. Our players come in every day and work hard and buy into what we are trying to do here. They earned it."

Class Notes
only available in
print edition

SHARE YOUR NEWS HERE!

New job? Interesting hobby?
Travel stories? Cool photos? Share
your news with your classmates
through PCM Class Notes.

Email: pcmnotes@pomona.edu

Mail: Class Notes Editor
Pomona College Magazine
550 N. College Ave.
Claremont, CA 91711

MASTERING MUSIC at Pomona and Beyond

Two Sagehens. One professor. Two of the 100 voices in a prestigious big-city chorale. The main road to the acclaimed Los Angeles Master Chorale started at Pomona for baritone Adrien Redford '13 and soprano Hayden Eberhart '07, with Professor of Music Donna Di Grazia as their guide.

Redford had been in middle school choirs and attended a performing arts high school but planned to major in media studies. Then came the Pomona College Choir and Glee Club, which became the hubs of his social life. With those ensembles came a conductor who doubled as a cheerleader. "It felt great to have a place to express myself artistically [and] Donna was—and still is—very focused on encouraging singers to see beyond the ink on the scores and to internalize the music to bring forth an earnest, personal performance," says Redford, who adds that's still very much a part of his practice today.

Eberhart was similarly inspired. Singing with the choir and Glee Club with Di Grazia was the most meaningful part of her time at Pomona, she says, the evidence being that nearly all of her Pomona friends were members of the Glee Club, or "Gleeps." (She married a Gleep as well.) Eberhart points to Di Grazia as the reason she came to Pomona in the first place.

"I met her on Stover Walk during 'prospie' weekend, and she knew who I was. I had sent in a tape with my application, and talking to her made me feel as if I wasn't just another prospective student, but that Pomona was where I belonged," says Eberhart. That sense of belonging at Pomona grew into a sense that she belonged to music. Immediately after Pomona she took her training to USC to get her master's in voice. Following her time there, she auditioned for the Los Angeles Master Chorale in 2009. Eberhart got in.

Di Grazia wasn't just a cheerleader; she was a networker. While they didn't overlap

at Pomona, Redford and Eberhart crossed paths there when the now master chorale member Eberhart was a guest performer with the Pomona College Choir for the choir's Mozart Requiem performance. But Eberhart's appearance turned out to be more than just another guest visit; for Redford, it was an inspiration. "I discovered that



L.A. Master Chorale members Adrien Redford '13 and Hayden Eberhart '07

graduating didn't mean the end of my musical career," says Redford.

Auditioning for the master chorale terrified him, Redford says. But a few years after graduation, Di Grazia urged Redford to reach out to Eberhart. Eberhart, along with current Pomona College music faculty and chorale member Scott Graff, offered Redford guidance as he competed for one of the coveted 100 chorale spots. He auditioned, and the spot became his.

In the following years, Redford and Eberhart not only shared the stage but overlapped in working in the chorale's administrative office. They often chat about their days at Pomona and are "always raving about how awesome Donna is," says Redford. Part of the fun of touring together, says Eberhart, is seizing photo opportunities to send pictures of the two of them back to Di Grazia.

Currently, the chorale is on a two-year global tour performing Orlando di Lasso's *a cappella* masterpiece, *Lagrime di San Pietro*, with stops from Melbourne to Mexico City. The piece is conducted by Grant Gershon and staged by Peter Sellars. The composition is about the seven stages of grief that St. Peter experienced after denying knowledge of Jesus Christ on the day of his arrest, prior to his crucifixion.

"The story is biblically rooted but is actually a very human story. Anyone can remember a time they let someone down, or they disappointed their parents, partner or best friend. This piece is about denying someone you love and seeing the hurt you've caused and living with that forever," says Redford, who calls touring *Lagrime di San Pietro* intense and emotionally and technically demanding.

Working on the piece started with a focus on technique and tuning. But "now it's become a personal story from each of us, and the audience can tell. It's so great to take this very human narrative around the world and for the art to cross the barriers of language and culture. Music truly has no borders," Redford says.

Eberhart is wowed, too. "I honestly feel that this is the coolest thing I have ever done and probably will ever do—at least as a musician—and I don't think I could ever get tired of it."

What makes it hard is what makes it fun for Eberhart. "Everyone in the group is such a strong musician and singer, I feel that I am constantly challenged not to be complacent and to continue to improve not only my singing voice, but my musicianship as well," she says.

Eberhart and Redford frequently talk about how they wouldn't be a part of the master chorale without Di Grazia and the choral program at Pomona College. "The music program is like a hidden wonder of the Southland and is easily one of the best places to get a music education," Redford says. "Hayden and I are very fortunate to be where we are now, but who's to say we can't be joined by more Sagehens in the future?"

—Sneha Abraham

**Class Notes
only available in
print edition**

[LAST LOOK]



THROUGH THE GATES

Fall 2018 is a whole semester ago, and the members of the Class of 2022 aren't newcomers on campus any more—which makes it all the more fun to look back at their arrival at Pomona last August, including their enthusiastic run through the gates, with President G. Gabrielle Starr, Cecil Sagehen and—of course—their families among the crowd that gathered to cheer them on.





Pomona
College

333 North College Way, Claremont, CA 91711

Change Service Requested

Nonprofit Organization

U.S. Postage

PAID

Claremont, CA 91711

Permit No. 17

Receive tax benefits and lifetime
income while you make a difference
for Pomona. Now that's a

“WIN-WIN”



THE
POMONA
PLAN

OF POMONA COLLEGE

**SAMPLE
ANNUITY RATES
FOR INDIVIDUALS**

Age 90	13.0%
Age 85	11.5%
Age 80	10.0%
Age 75	8.6%
Age 70	7.8%

RATES VALID THROUGH
MARCH 31, 2018

Call us: (800) 761-9899

Email: pomonaplan@pomona.edu

Website: www.pomonaplan.pomona.edu

