Spring 2019

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Santa Clara University

Santa Clara Magazine

INNOVATING WITH A MISSION

A Better World

Knees in the water, arms in the air: three kids in full kidness, on the shore in Palawan in the Philippines. Last year **Kaitlin Wheeler '19** was there on a Jean Donovan Fellowship through the Ignatian Center for Jesuit Education at Santa Clara. She worked to educate young people and to help ensure that the beaches where they romp and splash are clean and safe. She lent a hand in conserving mangrove forests—those mighty trees that spend their lives with knees in the water and arms stretched toward heaven, and which help shield from the damage wrought by storms. The Donovan fellowships are one of a host of opportunities open to Santa Clara students to immerse themselves in communities near and far, to learn and teach and make the world a better place. Among them: the Global Fellows program through the Leavey School of Business. And there's the Global Social Benefit Fellows program through Miller Center for Social Entrepreneurship. Classes and special programs take students from Costa Rica to Rwanda to Indonesia, and into communities right here in the Bay Area. Help us open these doors to a new generation of students.

campaign.scu.edu

PHOTOGRAPHY BY ROMAN PILIPEY/EPA-EFE

On a Mission

Welcome to the Campaign Edition of *Santa Clara Magazine*!

IT IS SAID that you cannot know where you are going until you know where you have been ... So, let us consider where we have been.

Santa Clara University sits on the land of the Ohlone people, who for generations inhabited the territory from San Francisco to the lower Salinas Valley.

Jesuits by the names of **John Nobili** and **Michael Accolti** built our campus around the Mission, which today remains our anchor and spiritual center.

We evolved into an institution of higher learning, the first of its kind in California.

We recognized the importance of increasing our academic o erings, adding schools to complement our college—and, in 1961, finally admitting women to the University.

We created centers of distinction, expanded enrollment, and increased our majors, minors, and study abroad opportunities.

We graduated scientists and doctors, politicians and philanthropists, athletes and educators: thoughtful citizens in all areas of study.

And as we have grown, we have built, and built, and built again.

All this progress demonstrates our evolution as an institution over the years, reflecting where we have been. But, I ask, where are we going? How will we influence and inspire change in the world? What will Santa Clara do in the 21st century? Where can Santa Clara's mission reach beyond that?

Consider our Mission: the historic adobe walls, the eight white martyr crosses, and the great wooden doors. These images tell stories of both triumph and toil for humanity—stories that reflect where we have been, and that o er hope for where we are going. As we walk up the steps, pull open the doors, and enter the Mission, we cross a threshold. We blur the boundaries of outside and inside, of past and present. As we bring our personal stories within—our own toils and triumphs—we share in each other's struggles and successes. Our kinship grows. Our humanistic bond strengthens. Our shared vision expands. But, to share Santa Clara's vision with the world, we must start by swinging open the Mission doors and inviting others to join us.

Join us as ethical leaders.

Join us as compassionate problem-solvers.

Join us as sustainable innovators.

As I invite you into our Mission, I welcome you on our mission to share Santa Clara more widely with the world. It is my pleasure to announce the start of our shared journey, our public campaign: Innovating with a Mission: The Campaign for Santa Clara University.

Thank you, and God bless you, and God bless Santa Clara University.

Sincerely,
Michael E. Engh, S.J.
President

No matter where we go or how we grow, Mission Santa Clara de Asís remains the spiritual center of campus—and an anchor for our community.

PHOTO BY MAJED ABOLFAZLI

Silicon Valley's oldest incubator of ideas and ideals.

Santa Clara University. High-tech ingenuity and pioneering vision. Enduring Jesuit values and social consciousness. And a solid grounding in ethics. With your support, we will achieve our $1 billion fundraising goal to advance our treasured University. Help us inspire the next generation of leaders innovating with a mission. **Visit campaign.scu.edu to get started.**

innovating with a MISSION
The Campaign for Santa Clara University

Santa Clara University

Where and what
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Santa Clara Magazine

ON A MISSION

COVER Innovating for the world—and beyond: a satellite launch by SpaceX, home to a number of Broncos. Engineering students have controlled satellites for NASA. SCU grads led the way in satellite repair and helped put craft on Mars. Former SCU faculty even helped develop the rockets that put men on the Moon.

FEATURES

magazine.scu.edu

DIGITAL EXCLUSIVES

For this special Campaign Edition, check out the videos and slideshows and a host of stories of innovation and inspiration: magazine.scu.edu.

NOW IS THE TIME Making a di□erence in the world through discovery and innovation. Inspiring the next generation of leaders like **Tricia Tran '16**. A video that will make you stand up and cheer. campaign.scu.edu

MISSION DIGITAL Explore stories that show why the world needs Santa Clara: campaign.scu.edu

YOU'VE GOT A FRIEND Musician James Taylor serenaded the launch of the Campaign for Santa Clara at the Golden Circle.

OPENING DOORS ILLUSTRATION BY DAVID PLUNKERT. TRICIA TRAN '16 ILLUSTRATION BY KYLE HILTON. JAMES TAYLOR PHOTO BY RODIN ECKENROTH/GETTY IMAGES

PHOTOGRAPHY BY CHAD RILEY

Mission: Wonderful

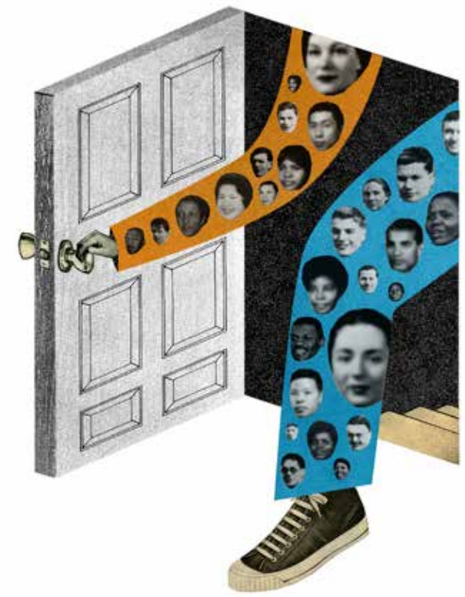
We've got three topics for today, and a few questions. First, the threshold: **Opening Doors**. No doubt you've got a story about one yourself—the portal that was locked, so how was it opened? Did you knock, ring the bell—and who answered? Did you discover that you possessed the key all along? Did it take fiddling with the latch—or an incantation did the trick? Open sesame! What did you discover inside?

A fine metaphor, opening doors: especially of possibility—for our students, for our community, for many millions around the world. For those of us blessed to work on the Mission campus, when we show visitors around, it's a wonderful moment when we walk up the front steps of Mission Santa Clara de Asís and open a door and—behold! That beauty and history, the encounter with the spiritual heart of campus. Tens and hundreds of thousands of Santa Clarans have crossed the threshold before, and how wonderful that so many of those—young and old, through word and deed—have sustained this place and ensured that this door and many others will open for generations to come.

Which gets us to **Educating the Whole Person**. The individuals who walk through that door, what is it that they become, through knowledge and experience? Do they acquire new ways of thinking for the world taking shape—but remain grounded in something solid and true? How can we nurture the habits of being fully present, with strength and beauty, with a sense of self in relation to others: child and parent, spouse and best friend, committed citizen and faithful public servant, outrageous aunt and indulgent grandfather, educator and pastor, counselor and engineering lead. Let them be people of wild generosity of spirit, embodying the virtues of hard work and teamwork, creativity and imagination, on the field or on the stage, in the classroom or the boardroom. Addressing the complexity of our past so we can shape a better future.

Which brings us to: **Innovating for the World**. Sparked by curiosity and a yearning for discovery—looking for new paths and patterns, new doors to open to feed the world and heal the sick. Understanding the ethical ramifications of scientific discovery and advances in engineering, how we square material needs with what nourishes the soul.

In the pages that follow, you'll notice a few things di erent. (Fear not! Bronco News, Class Notes, and Mission Matters return next edition.) In this special edition, you'll see a more than a few people whose minds and hearts are fueled by wonder. The word wonderful itself means "full of wonder." So consider the Campaign for Santa Clara an invitation. Because fundamentally, the campaign is about people—and this wonderful new chapter for all of us, companions on the journey.



THE CAMPAIGN PILLARS

Opening Doors

Whether it is paving the way for new students, faculty, or NCAA Division I championships.

Educating the Whole Person

Let's ensure and enhance the holistic education that Santa Clara University promises to each student.

Innovating for the World

The spirit of Silicon Valley—blended with our Jesuit, Catholic tradition of educating compassionate leaders—thrives at Santa Clara University.

Faces of Innovation

Santa Clara University is home to generations of leaders innovating with a mission. Ethical global citizens who transform lives, shape society, and aspire to make the world a better place.

Our campus is in Silicon Valley, but our impact is felt around the world. We engage with heart and mind to address society's foremost economic, political, and social challenges.

The impact of our community of students, alumni, parents, faculty, staff, and friends is undeniable. Together we forge solutions to help solve the world's most pressing challenges.

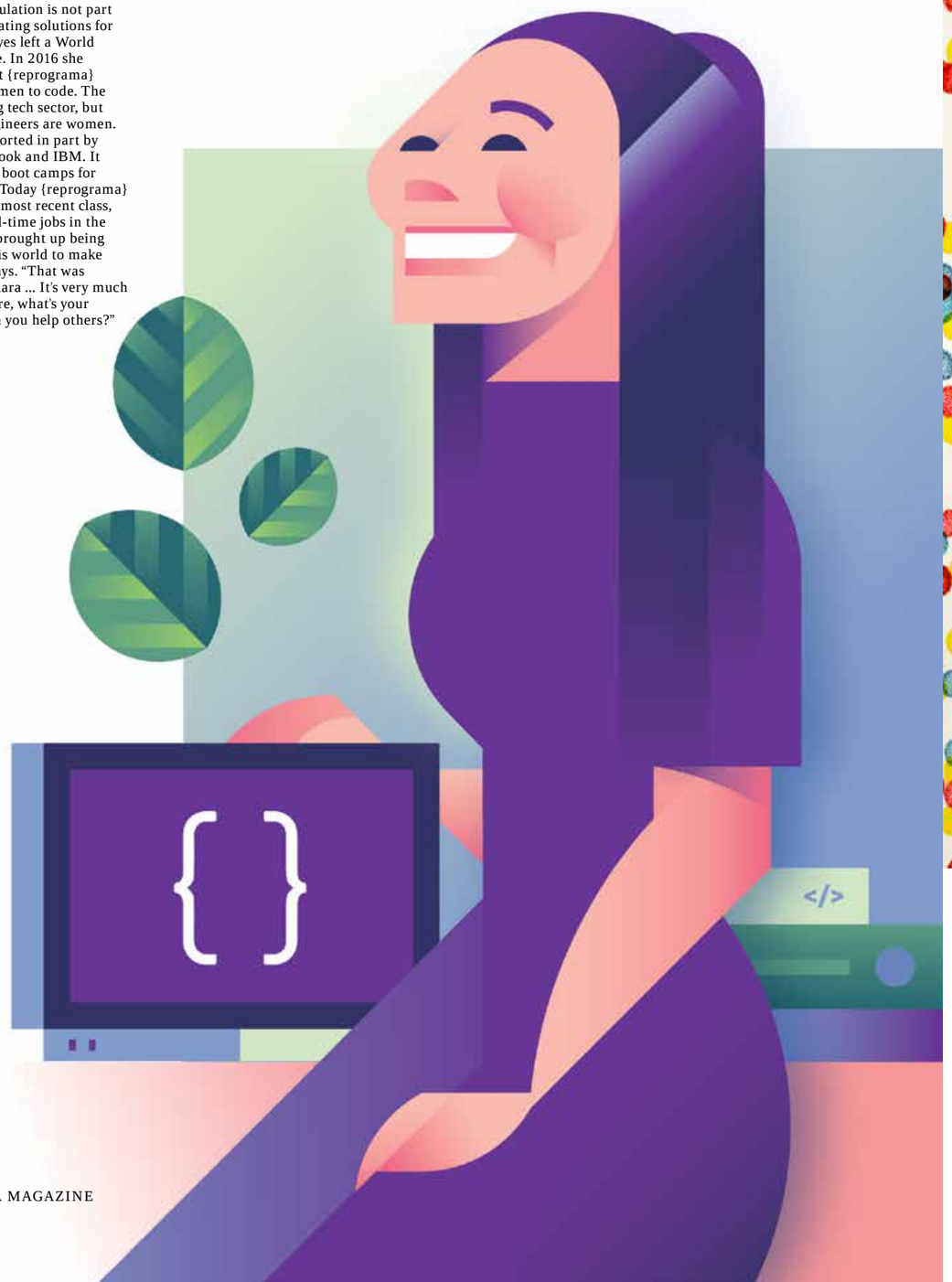
Meet some of our innovators on the following pages. And we invite you to participate in the Campaign for Santa Clara University. Support our mission and inspire the next generation of leaders. **campaign.scu.edu**

PHOTOS OF DOORS AND MICHAEL MEHTA '19 AND YASMIN TORRES '20 BY CHAD RILEY; LEARNING GLASS PHOTO BY MATT MORGAN; ST. CLARE PHOTO BY CHARLES BARRY

Our University namesake: Santa Clara de Asís

Dama
Reprograma

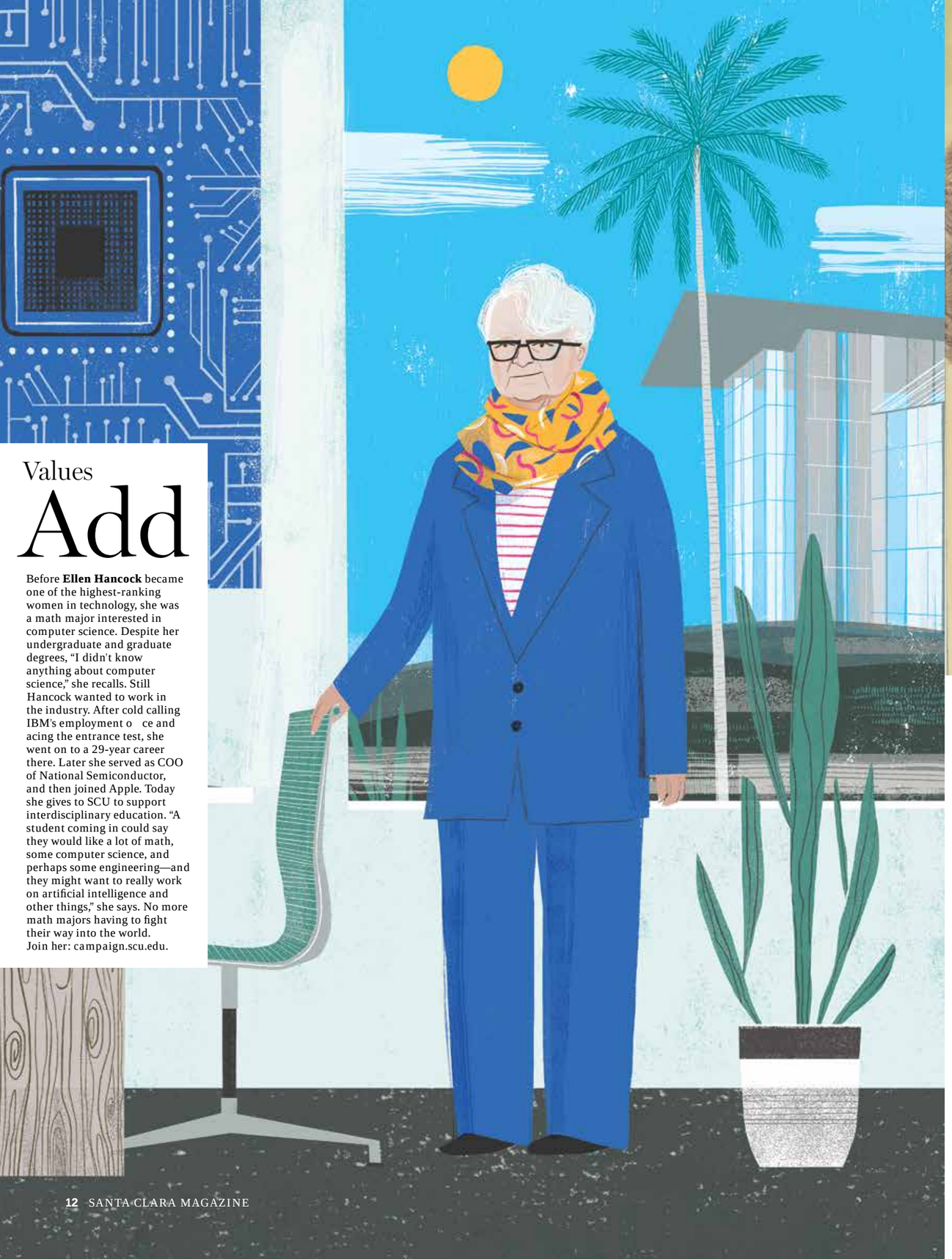
“They say the future is being written in lines of code,” **Mariel Reyes ’02** says. “I do not want to live in a world where 50 percent of the population is not part of the equation in creating solutions for it.” It is a problem Reyes left a World Bank job to help solve. In 2016 she founded the nonprofit {reprograma} to teach Brazilian women to code. The country has a growing tech sector, but only 17 percent of engineers are women. The nonprofit is supported in part by big players like Facebook and IBM. It hosts 18-week coding boot camps for unemployed women. Today {reprograma} has 160 grads. Of the most recent class, 85 percent landed full-time jobs in the tech industry. “I was brought up being told we are here in this world to make a di erence,” Reyes says. “That was reinforced at Santa Clara ... It's very much about why are you here, what's your purpose, and how can you help others?”



MARIEL REYES ’02 ILLUSTRATION BY MARIA PICASSO I PIQUER. WORDS BY LAUREN LOFTUS. KAYLA WILLAMS ’19 ILLUSTRATION BY JON KRAUSE. WORDS BY TRACY SEIPEL

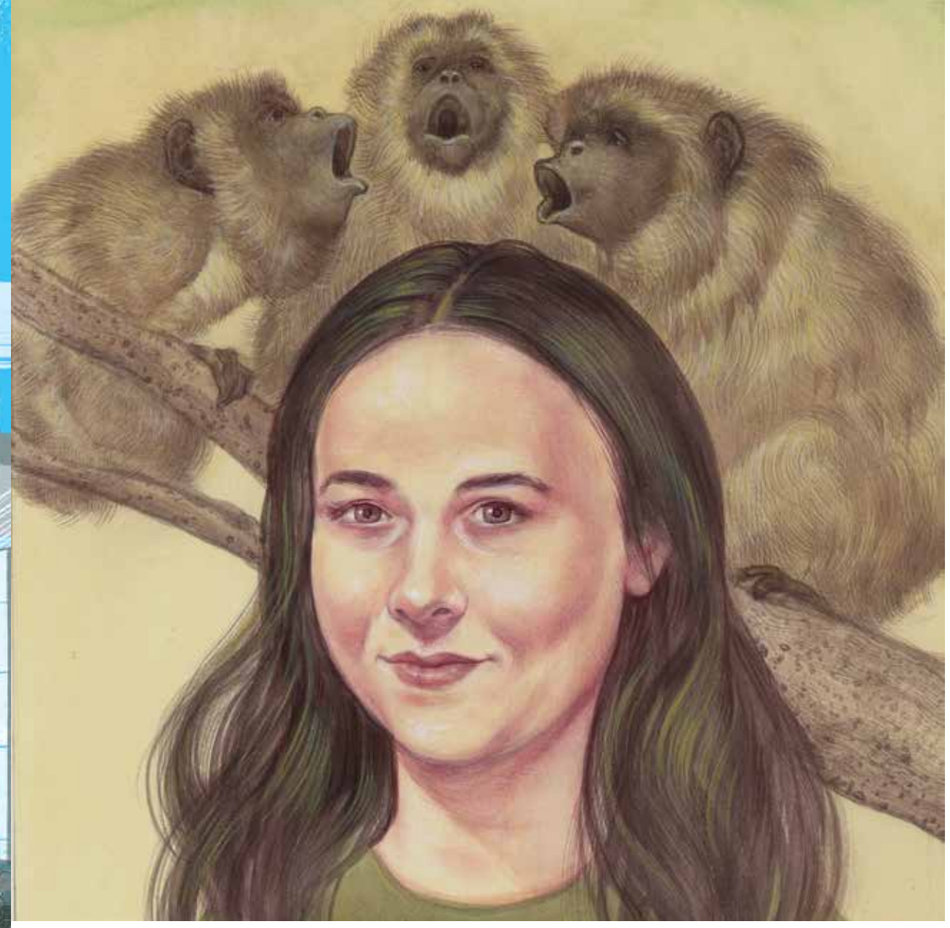
Health Scholars

Kayla Williams ’19 knows her actions have profound impact. It is a lesson she picked up in the Valeriote Goldman Public Health Leadership Program. “It's not just a learning opportunity, but a means for self-discovery—professionally and personally,” says Williams. Funded by Trustee **Susan Valeriote ’77** and her husband, **Ken Goldman**, the program pairs a select group of SCU public health majors with leaders in the field—nonprofit CEOs, public health o cials, and others. In class, the pairs discuss readings that deal with ethical issues they'll face in the field, as well as writings from the likes of Martin Luther King Jr. and Ursula K. Le Guin. Then the students work in paid internships managed by their mentors. Williams worked with Dolores Alvarado, CEO of Community Health Partnership, which manages 39 clinics that are treating 200,000 low-income residents in Santa Clara and San Mateo counties.



Values
Add

Before **Ellen Hancock** became one of the highest-ranking women in technology, she was a math major interested in computer science. Despite her undergraduate and graduate degrees, “I didn't know anything about computer science,” she recalls. Still Hancock wanted to work in the industry. After cold calling IBM's employment o ce and acing the entrance test, she went on to a 29-year career there. Later she served as COO of National Semiconductor, and then joined Apple. Today she gives to SCU to support interdisciplinary education. “A student coming in could say they would like a lot of math, some computer science, and perhaps some engineering—and they might want to really work on artificial intelligence and other things,” she says. No more math majors having to fight their way into the world. Join her: campaign.scu.edu.



Hoots and
Howls

You know the yell: The cacophonous mantled howler monkey holler—hence the primate's name. The widely researched calls are often made by the male monkeys. In Costa Rica's rainforests, **Eleanore Lammers-Lewis ’20** worked with Associate Professor of Anthropology **Michelle Bezanson** and studied the quieter noises made more often by the female howler. Because they don't move very often, “they call out expressions that you or I would express with our body language,” Lammers-Lewis says. The trip wouldn't have been possible without the REAL Program, a $1 million endowment supporting student research. Within ten years, the program aims to provide paid, ten-week opportunities to all College of Arts and Sciences students.

ELLEN HANCOCK ILLUSTRATION BY SAM KALDA. WORDS BY DEBORAH LOHSE. ELEANORE LAMMERS-LEWIS ’20 ILLUSTRATION BY ANITA KUNZ. WORDS BY NOAH SONNENBURG ’21. ALI FAYAZI ILLUSTRATION BY CALUM HEATH. WORDS BY TRACY SEIPEL

Brew a Better
World

Until he arrived in the Bay Area in 2016, **Ali Fayazi** had never heard the word barista. These days, the former refugee from Iran makes killer macchiatos and manages a shop for 1951 Co ee Company. “Before this, I was an immigrant living day-to-day, and you cannot think about a future when you're living like that,” says Fayazi, who learned the art of co ee at 1951 Co ee Company's Oakland training center. Miller Center for Social Entrepreneurship's accelerator program boosted the company with training and mentorship, as it does for other enterprises which support refugees, migrants, and human tra cking survivors. As part of the accelerator, 1951 Co ee founders Rachel Taber and Doug Hewitt trained with Miller Center mentor **Louis Jordan**, a former vice president at Starbucks.

Startup
Center

“There's no better place than the Silicon Valley for a startup,” says **Oscar Jiménez-Castellanos**. Amen! At SCU, he leads a “startup center” with the mission to shape the future of K–12 education. He's co-founder of SCU's Latinx Education Research Center in the School of Education and Counseling Psychology, as well as an associate professor. Already more than half of California students identify as Latinx. So SCU is leading the way—in research and hosting conferences and talks to bring the best minds in education to create solutions that improve graduation and college attendance rates—which makes for a better future for all of us. Join him at campaign.scu.edu.

START UP CENTER ILLUSTRATION BY AGATA NOWICKA. WORDS BY NOAH SONNENBURG '21. MIKE SEXTON ILLUSTRATION BY JASU HU. WORDS BY SARAH KLEARMAN '19. PHOTO OF THE THAPARS BY CHAD RILEY. WORDS BY LESLIE GRIFFY

Make
It Through

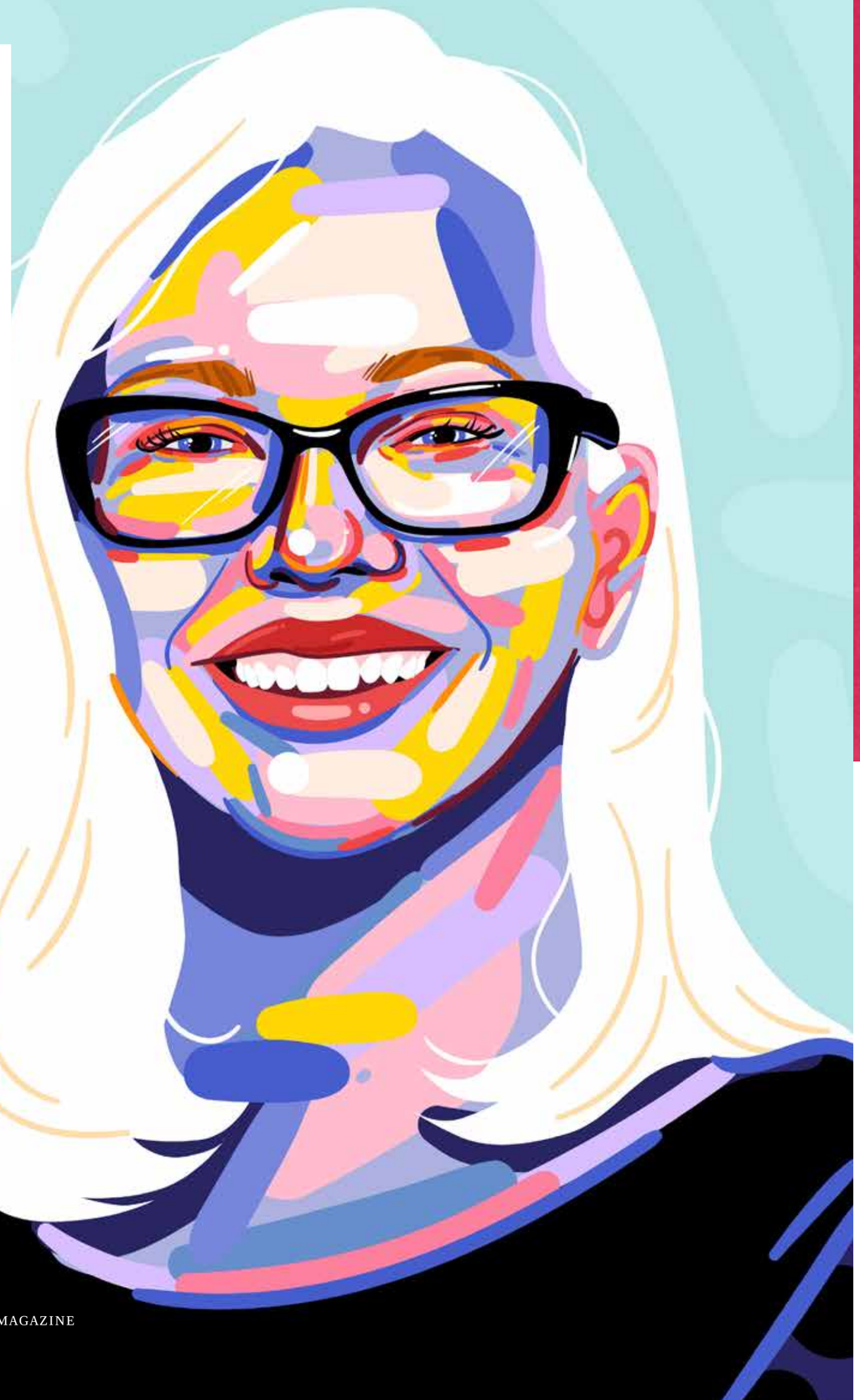
“This isn't just the door in: It's the way through,” says Vice President for Enrollment Management **Mike Sexton**—who works hard to make sure students who enroll can thrive. “We of course want to gauge how well we're serving low-income students by admitting them, but it's about who you graduate.” Part of that e ort is the creation of five full-ride, four-year scholarships for alumni of the Cristo Rey Network—a collection of Jesuit high schools throughout the country that exclusively serve low-income students, giving them experience working alongside CEOs and nonprofit leaders. The scholarships cover tuition, room and board, and other expenses related to higher education. The goal? That money won't be a barrier to graduation. You can help fund scholarships for students in need: campaign.scu.edu.

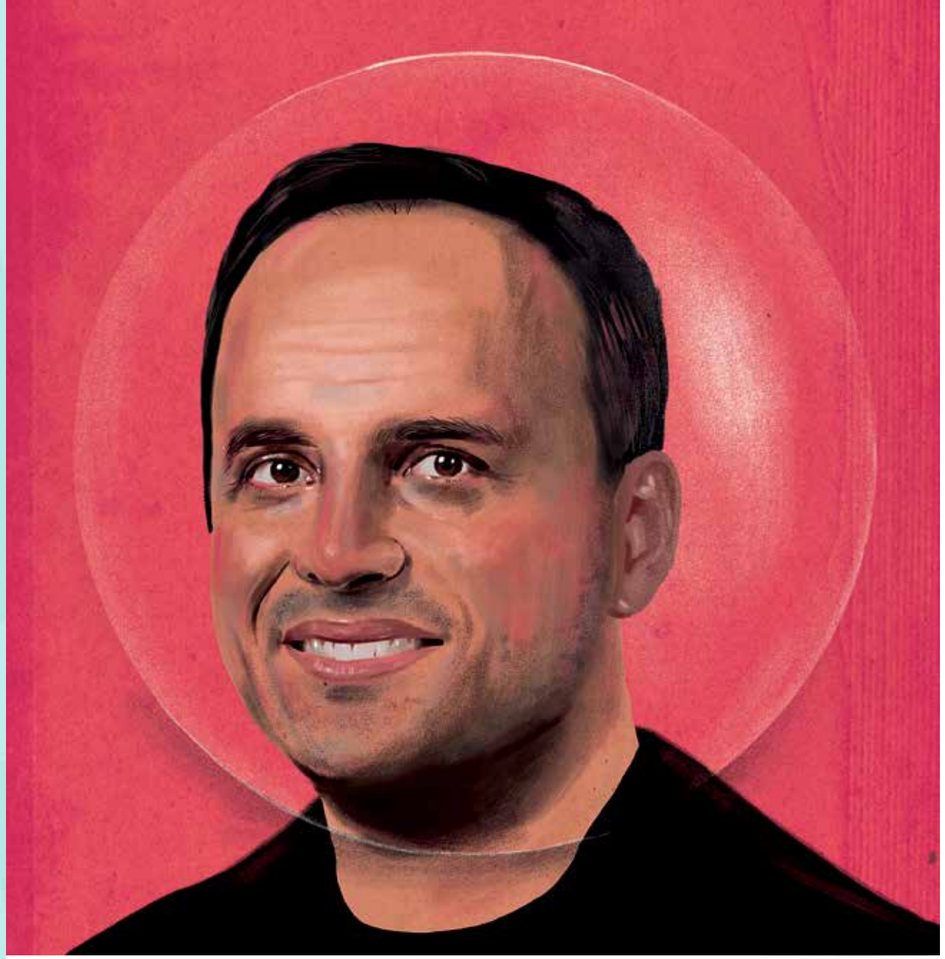
Anchored
in Liberal Arts

“When I talk about Santa Clara, I always say that I got a very good engineering education but equally important to me was the liberal arts education I received,” says **Hemant Thapar ’73, M.S. ’75**. He is also part of the 2019 class elected to the National Academy of Engineering, one of the highest honors in the field. The Academy recognized Thapar's lifelong work making the storage of digital information more e cient and its retrieval more accurate—ideas and technology that accelerated the speed of innovation, creating the ever smaller drives that made the first iPod possible, for example. The ideas and mentors who shaped Thapar's experience at Santa Clara act as an anchor for his career. “You look up to some people who are accomplished, who have a certain discipline. You see how they approach problems and treat people around them.” In engineering, one of his mentors was Professor **Tim Healy**—who saw Thapar return to SCU as a lecturer for more than a decade and join the advisory board for the School of Engineering, and saw Thapar's daughter **Pooja Thapar ’14** graduate. Thapar and his wife, **Suniti Thapar**, have also become supporters of the next generation of students.

Real
Problems

Would it be ethical to pay citizens to vote, or to make voting mandatory? Are plans for 3-D printed guns protected by free speech? These are real-life ethics questions. And Santa Clara's Ethics Bowl team is thoughtful—and quick—in answering them. That focus earned them recognition as the top Ethics Bowl team in the country in 2018. "Their ability to think on the fly and as a team was just incredible," says head coach **Erin Bradfield**, a lecturer in philosophy. "You could also see how much fun they were having, which exemplifies the spirit of the Intercollegiate Ethics Bowl."





We Have
Contact

What if a contact lens could do more than improve your vision? What if it could save your sight, or tell you if medication and lifestyle changes are reducing the impacts of glaucoma? Here at Santa Clara, **Emre Araci**, an assistant professor of bioengineering, has been leading a team to create a contact lens that can spot and help treat the leading cause of blindness in America. "Every step has been done here at SCU," he notes. "In addition to my lab, we use SCU's Center for Nanostructures, and the students have been involved in every step along the way, from development of processes to design and prototyping." Araci and his crew of student researchers created a flexible contact lens from special materials as safe and comfortable as regular contacts—but with a tiny sensor gauging eye pressure, catching changes as small as 4 micrometers. Araci is working to get approval to test the contact in humans, where it could detect glaucoma earlier than traditional methods and help assess the e ectiveness of treatments. Support work like this: campaign.scu.edu

ERIN BRADFIELD ILLUSTRATION BY MALLORY HEYER. WORDS BY ETHAN BEBERNESS '19. EMRE ARACI ILLUSTRATION BY BARRY FALLS. WORDS BY MATT MORGAN. PHOTO OF COLLEEN CHIEN COURTESY SANTA CLARA LAW. WORDS BY LAUREN LOFTUS

Clear the
Record

Can technology make laws more e ective? In some cases, absolutely. Professor of Law **Colleen Chien**, an expert on intellectual property and innovation, discovered better ways to serve innovators by researching who earns patents. Recently she turned her empirical eye and the SCU High Tech Law Institute's resources to the criminal justice system, examining how Second Chance laws work—or don't. She found people don't use the laws designed to reduce convictions or clear records. How big is the problem? It a ects as many as 25 million Americans, making it harder for them find jobs, homes, or vote. Technology can help. "The best legal remedy in the world would have no impact if no one used it," Chien says. Automating how Second Chance law benefits are awarded would reduce that gap between each law's intent and its use, she says.

CLARE BATTY '14 ILLUSTRATION BY KATHERINE STREETER. WORDS BY TRACY SEIPEL. KELCIE HEDGE '19 ILLUSTRATION BY OSCAR CLIMENT. WORDS BY LESLIE GRIFFY. DOMINIC MAGDALUYO ILLUSTRATION BY GERARD DUBOIS. WORDS BY LESLIE GRIFFY

The Chaplain and the Doctor

"I knew my Catholic tradition and spirituality were very important to me and I wanted to explore that, and explore that through the school's campus ministry," says **Clare Batty '14**. As an SCU student, Batty worked as a campus minister, assisting with Sunday evening Mass and as a Eucharistic minister. Today she's both a hospital chaplain and a medical student at University of New Mexico. The combination helps her more fully serve those in need, o ering both spiritual and diagnostic care. Some of her patients even call her "Minister Doctor Batty." Support the work of campus ministry for students now and in the future: campaign.scu.edu.

Goal: Unity

"We are so united as one," says **Kelcie Hedge '19** of the experiences she has had with Santa Clara Women's Soccer. "We want to do the best for each other. I'm excited to see what we can do." And what can they do? Maintain excellence on and o the field. Under the guidance of Coach **Jerry Smith**, Hedge was named West Coast Conference Player of the Year in 2018. She and fellow Bronco **Maria Sanchez '19** have earned spots on women's national teams—part of a Bronco tradition. And season after season, the Broncos earn a berth in the NCAA Tournament.

The Right Tools

"You don't know what someone can do until they have the resources they need," says **Dominic Magdaluyo '19**. "Here, I have those resources." Magdaluyo, 33, attended high school in San Francisco. But when it came time for college, "I was the student who slipped through the cracks." His parents hadn't gone to college—so when he started classes at a community college, they didn't realize how much work it would be. Family needs preempted his studies. He worked retail and as a game tester for Sony. He was skipped for promotions. Higher ed could help. He started back at San Francisco City College and transferred to Santa Clara. As a first-generation student, he was invited to campus early for the LEAD program, meeting other first-generation students, professors, and a mentor. He's in a five-year program to finish his engineering bachelor's and master's. He tutors high schoolers and is a mentor to other first-generation students. He works IT on campus and helps support his family. He's the academic excellence chair for the SCU chapter of the National Society of Black Engineers. "It is about knowing I do belong here," he says.

Cup
Runneth Over

World Cup victory in 2015. And she was with the U.S. Women's National Team when they reached the milestone of 500 wins. Defender **Julie Johnston Ertz '14** is one of a new generation of players carrying the Bronco soccer legacy on the world stage. "That's the coolest thing about being at Santa Clara," she says. "There are all those connections to the people who came before."

Invested
Coaches

Men's basketball player **Josip Vrankic '21** turned down Tulane and Princeton to play at Santa Clara. "For me, it was how invested the coaches were," says Vrankic, who came to SCU having earned props as one of the best prep players in Canada. "Everything else is just a big bonus, like being in Silicon Valley, getting into the business school." That's a pretty good bonus—and it's part of the mission of educating the whole person. Invest in the future of SCU athletics: campaign.scu.edu.

JULIE JOHNSTON ERTZ '14 ILLUSTRATION BY STANLEY CHOW. JOSIP VRANKIC '21 ILLUSTRATION BY RYAN GARCIA. WORDS BY LANDER EICHOLZER '19. ALI AND KURT RAMBIS ILLUSTRATION BY SEAN MCCABE. WORDS BY TRACY SIEPEL

Family
Affair

Hanging in the gym where **Ali Rambis '14** served, bumped, and spiked to victory, the place that was home to 6 a.m. workouts, is Bronco jersey No. 34. Her dad's jersey. While **Kurt Rambis '80** suited up for Bronco basketball, Ali found a home on the volleyball court. And that jersey marked a key sports lesson that's good for the rest of life. "It really did remind me every single day how hard you have to work, and you can't take days o , you can't slack o , because that's what it takes to achieve success," says Ali, who now practices law in Los Angeles. "Going in early, getting the extra time, getting the extra reps, going above and beyond—that's really what I think makes the di erence."

Teach
the Heart

"We had to 'come and see,' " says **Alison Benders**. The associate dean and senior lecturer at SCU's Jesuit School of Theology took a class along the trail of the Freedom Movement of the 1950s and 1960s—touring parts of the South over an eight-day, 15-site journey with **Simon Kim**, director of JST's intercultural initiatives, and eight students. At stops including a memorial to the victims of lynching, students led prayers—and along the route they connected with and built on what they read in class. Says Benders: "I hope to translate this notional knowledge to experiential knowledge—head to heart."

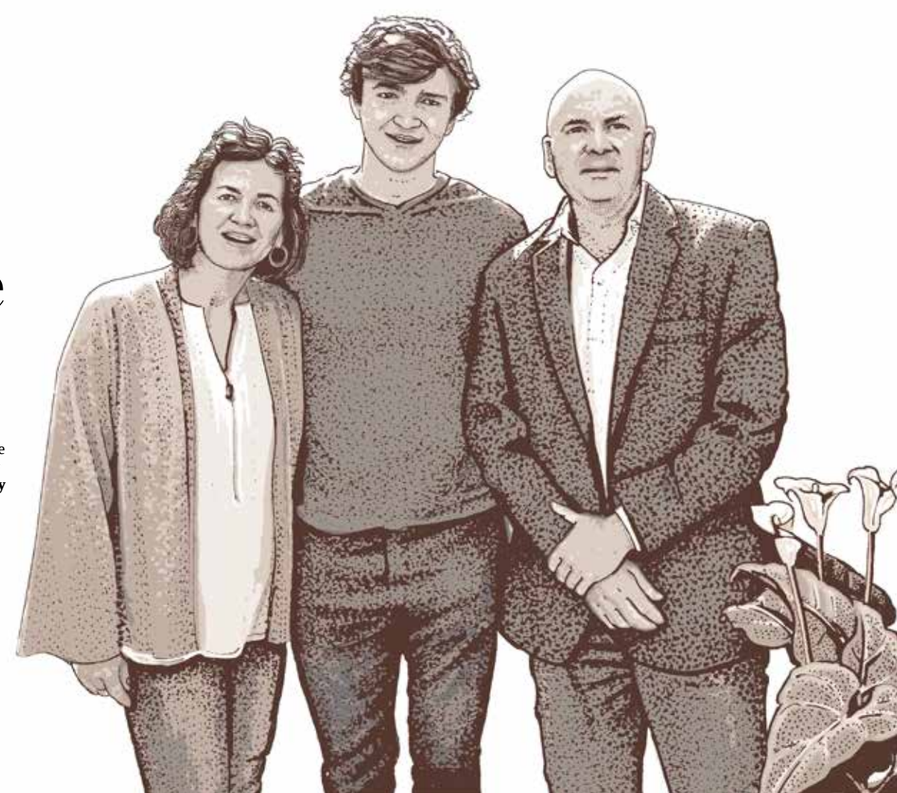
Place
for Entrepreneurs

Rico Mok '15 co-founded Onerent, a residential real estate company, with friends from SCU. As a kid, he was entrepreneurial. A career counselor suggested he look at SCU. Mok fell in love with the place, especially after reading a story about SCU student **Diane Keng '14, M.S. '20**. "She was able to be a student and entrepreneur," he said. "I wanted to be just like her." He told as much to President **Michael Engh, S.J.**, whom Mok emailed one day hoping for help to get to SCU. Engh listened, and became a longtime supporter of Mok. Without SCU, Mok says he wouldn't be living "the ultimate entrepreneurship dream."

ALISON BENDERS: ILLUSTRATION BY CHRISTOPHER BUZELLI. WORDS BY LESLIE GRIFFY. RICO MOK '15: ILLUSTRATION BY JOHN HENDRIX. WORDS BY DEBORAH LOHSE. ILLUSTRATION OF THE SLATTERYS BY EDWARD ROOKS. WORDS BY LESLIE GRIFFY

Formative
Experience

"It really clicked that we are part of something bigger—in addition to our chosen professions—we were put here to make the world better," **Jim Slattery** says of his experience on a Jesuit retreat. As the parents of Bronco **John Michael Slattery '21**, Georgia-based Jim and **Betsy Slattery** support the next generation—by giving to the Ignatian Center for Jesuit Education. They help fund scholarships for immersion trips and to boost the work of the Ignatian Corps—a group of about 50 students attending retreats and meetings to build leadership skills and help fellow students connect with the center.
Join them: campaign.scu.edu.



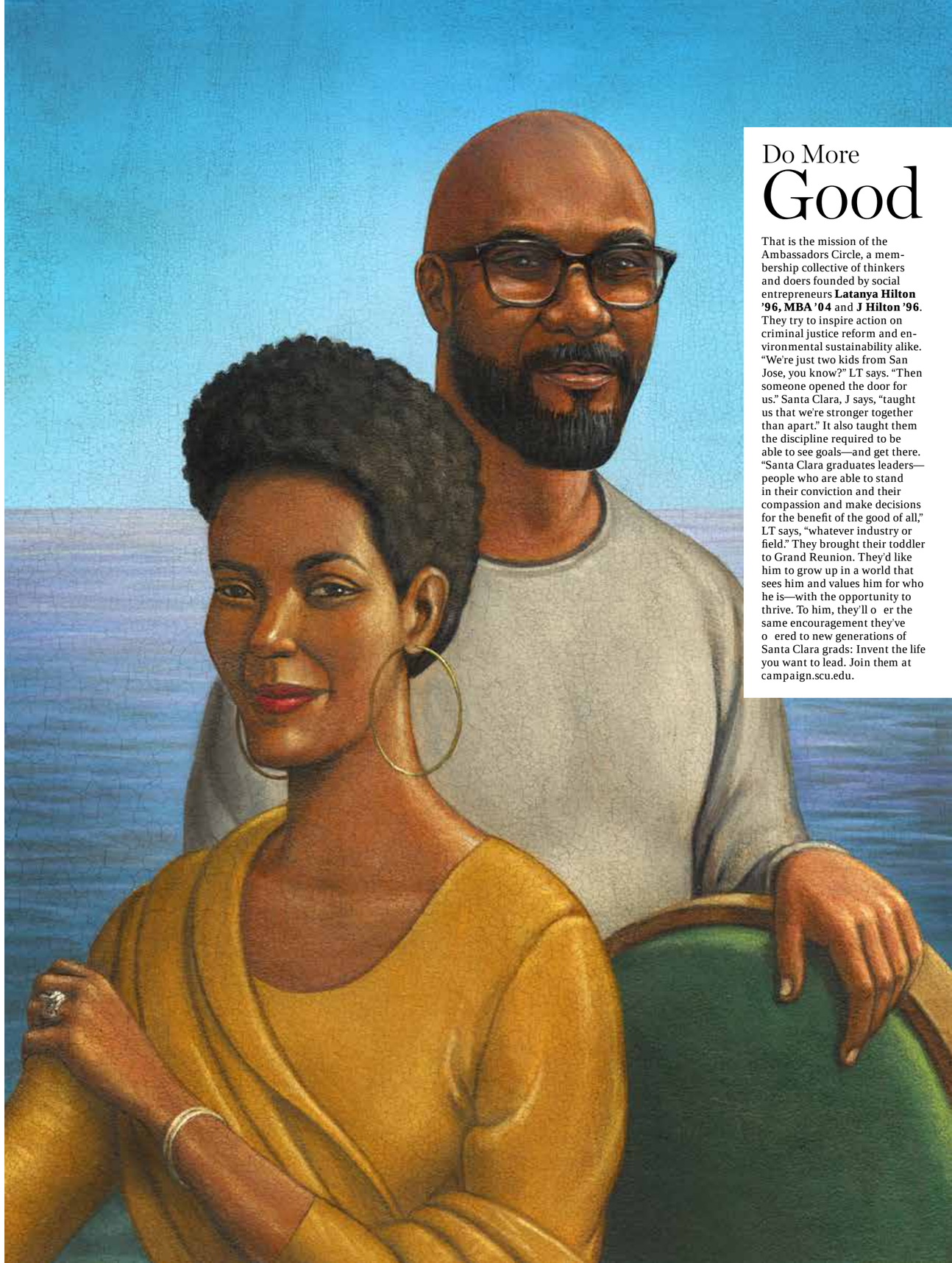
Future
and Past

Mary Atwell '78, J.D. '81 knows what a scholarship means to a student. "I went through on all scholarship aid," she says. Today she helps fund scholarships as president of the Catala Club—an all-female group with 300-plus members who pool donations to help students. What started in the 1930s as a club to care for the vestments of Jesuit priests on campus today manages a $22 million endowed scholarship fund. In 2018 it distributed more than $740,000 to students. It is in those students that Atwell sees the future—and the past. "This all became important to me when I realized that there are tons of kids at Santa Clara just like I was in 1978," Atwell says. You can support scholarships, too: campaign.scu.edu.

MARY ATWELL ILLUSTRATION BY ALESSANDRA DE CRISTOFARO. WORDS BY SARAH KLEARMAN '19. ILLUSTRATION OF DAVID HESS BY ANDY DEARWATER. WORDS BY TRACY SEIPEL. HILTONS ILLUSTRATION BY MARC BURCKHARDT

Germ
Fighter

The longer it takes to trace the source of illnesses, the greater the number of people at risk of becoming sick. So **David Hess**, an associate professor and director of SCU's biotechnology program, is reducing to 48 hours the time it takes to detect bacteria such as E. coli. Using genome sequencing work done by Mark Pandori, director of the Alameda County Public Health Laboratory, software developed by Hess quickly identifies bacteria and—very soon—its antibiotic resistance. This is the future of containing bacteria-related illness outbreaks, Hess says. "We are the first to really have this in place where we are actually reporting medical results—and not just for research."



Do More
Good

That is the mission of the Ambassadors Circle, a membership collective of thinkers and doers founded by social entrepreneurs **Latanya Hilton '96, MBA '04** and **J Hilton '96**. They try to inspire action on criminal justice reform and environmental sustainability alike. "We're just two kids from San Jose, you know?" LT says. "Then someone opened the door for us." Santa Clara, J says, "taught us that we're stronger together than apart." It also taught them the discipline required to be able to see goals—and get there. "Santa Clara graduates leaders—people who are able to stand in their conviction and their compassion and make decisions for the benefit of the good of all," LT says, "whatever industry or field." They brought their toddler to Grand Reunion. They'd like him to grow up in a world that sees him and values him for who he is—with the opportunity to thrive. To him, they'll o er the same encouragement they've o ered to new generations of Santa Clara grads: Invent the life you want to lead. Join them at campaign.scu.edu.

FACES OF INNOVATION

The Path I'm On: "It opened up my worldview," says **Kirsten Peterson '13** of her time drafting technical documents to help people in Uganda maintain solar power systems. "The work had an obvious social impact. I always try to keep that in mind." Peterson is one of 250 student-fellows who have traveled and worked through Miller Center's Global Social Benefit Fellowship since its 2012 launch. She was in the first class of fellows. Meet that whole class here. Today, Peterson is still in energy—developing technology to keep people safe by de-energizing downed wires *before* they hit the ground. Co-fellow **Ashley Armstrong '13** traveled to Paraguay and helped women entrepreneurs with the organization Fundacion Paraguaya. Today she works for Microsoft and runs a firm that uses drones to provide disaster relief. "The fellowship sent me on the path I'm on," Armstrong says. What journeys can you empower? **campaign.scu.edu**

Dani Dhanoa '13
Worked with E Health Point in rural India to expand access to safe drinking water and a ordable health care. Now an entrepreneur.

Amanda Nelson '13
Helped female entrepreneurs combat poverty in Paraguay. Now a senior consultant at Ernst & Young in London.

Nicky Nienow Birch '13
Planned a new clean water distribution model and insurance plans with E Health Point in India. Now a medical student in Oregon.

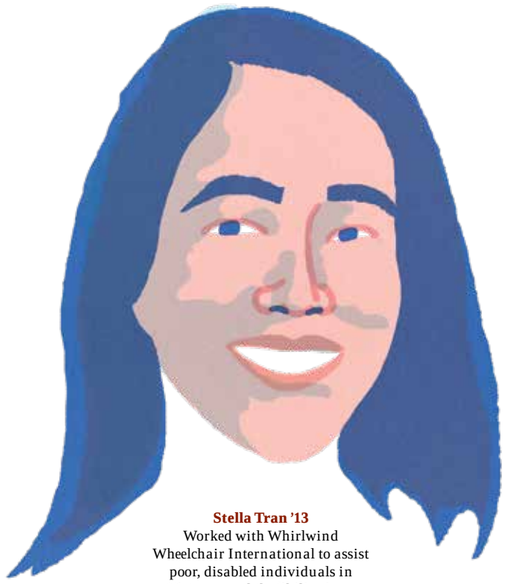
Ashley Armstrong '13
Worked with female entrepreneurs in Paraguay. Goal today: being an entrepreneur in her own right, with social impact.

Kirsten Peterson '13
In Kampala, Uganda, worked with Solar Sister. Now works on safety with San Diego Gas & Electric.

Michelle Maddex '13
Researched how loan processes a ected female entrepreneurs in Paraguay. Now works at San Francisco's Mission Neighborhood Health Center.

Misa Mascovich '13
Learned storytelling skills shooting video with Solar Sister in Uganda. Now with the Anita Borg Institute, helping advance women in tech.

Victoria Yundt '13
Jumped in with both feet at Solar Sister in Uganda. Now an attorney with Lawyers for America.



Stella Tran '13
Worked with Whirlwind Wheelchair International to assist poor, disabled individuals in Vietnam and the Philippines. Now with Acumen Fund.

Nate Funkhouser '13
Through interviews, helped Whirlwind Wheelchair International design a more rugged wheelchair for Vietnam and the Philippines. Now a recruiter at Google.

ILLUSTRATIONS BY LORENZO GRITTI. WORDS BY SARAH KLEARMAN '19

EDUCATING THE WHOLE PERSON

TECHNOLOGY, WONDER & US

We're at the epicenter of the biggest ecosystem of information exchange in the history of humanity. So how do we ensure space for the experience of wonder? Good science and good technology need technical expertise—and also literacy in being authentically human.

BY DORIAN LLYWELYN, S.J.

ILLUSTRATIONS BY DEREK BRAHNEY

REVOLUTION 4.0

On waking, my anxiety to be assured that I am still alive is assuaged by checking my personal and professional emails. In the first two hours of a quiet Sunday morning, I also exchanged greetings with a friend in Jerusalem, bought some vitamins, followed the latest Brexit convolutions (my original home is Wales), checked on the weather forecast in three cities, and registered my weight. Doing that involved an iPhone, two computers, electronic scales and a fitness monitor, and five apps.

As a Jesuit, I know the value of the Examen. This regular "practice of the presence of God" involves forming a conscience based on objective truth; it helps to become mindful of the subtle presence of God in the endless flow of events of daily life. My own examen lets me know that I start most days not in the awareness of God but among a host of voices and images that clamor for my attention, and win it.

We can blame that clamor on technology—but "technology" is a weasel term, and it's worth remembering that technological innovation predates Homo sapiens. Historians of technology have long pointed out that the wheel, the lever, the plough, all transformed civilizations. Shall we talk about disruptive technologies? They are nothing new. The Mongol invention of the metal stirrup disrupted warfare—and therefore political power and social order—by making it possible to ride long distances and fire arrows on horseback. We use the term "the Industrial Revolution," but there have been many revolutions, each of which transformed people's sense of themselves and their place in the world.

Our world will never be as it was before, a truth that ancient philosophers knew but is now impacting us daily.

There may be, however, something di erent going on in what Klaus Schwab calls the "Fourth Industrial Revolution." (Schwab is the founder and executive chairman of the World Economic Forum, best known for convening an annual meeting of global thinkers and leaders in Davos, Switzerland.) What is di erent now is the pace of change—which is stating the obvious. Daily living for people around the globe is now comprised of things inconceivable even ten years ago, all blurring boundaries across geographies and cultures and between work and play. When I arrived at Santa Clara University in 2016 to serve as director of the Ignatian Center for Jesuit Education, I talked about the need to "hit the ground strolling," that is, allowing time and place for deep reflection in order to foster meaningful action, something essential to any endeavor calling itself "Jesuit." But contemporary digital innovation does not allow for that, or hold it as a value. Innovation can easily become an unadorned, self-justified end in itself. Ideas, values, and ideals come from somewhere and somebody. And all actions, even such nervous tics as checking one's email every few minutes, express hopes, convictions, and desires that are all the more potent when they are not surfaced to the level of awareness.

What is sometimes called digital culture—that most important actor on the world stage of the 21st century—was born from a combination of particular history and place: the San Francisco Bay Area of the 1960s, with its optimism about a radically alternative world. The DNA of today's tech industry also includes the 18th century notion of progress, which held that economic development, science, and technology are the keys to improving the human condition. This inheritance is visible in business models that emphasize disruption and in the "can do" problem-solving mentality that underlies the development of technology. In short, today's global technology is created and disseminated by individuals who carry out their work under the influence of their particular class, education, political allegiance, geography, and intellectual history.

REALITY ISN'T WHAT IT USED TO BE

Each of us knows firsthand how information and communication technologies have a ected almost all areas of our lives—for better, for worse, and ambiguously. Our world will never be as it was before, a truth that ancient philosophers knew and taught but which now is impacting us daily. The understanding of what it is to be human is undergoing a radical change, shifting reality away from what we experience with our bodies. Instead, information that can be stored and reproduced endlessly has become the measure of what matters. The promise of downloading individuality into information systems holds the hope of eternal—if disembodied—life. Advances in technologically lengthened life expectancy, bioenhancement, synthetic biology, and sentient AI—among new technologies—blur the boundaries between artificial and natural life, begging the question of what human life really consists of.

Questions of what ultimately matters and why are not absent from technological innovation and scientific discovery—but they are frequently latent. Engineers and scientists are rarely specialized in philosophy, but they are nonetheless shaped by it. Universities have important roles in disseminating a wide range of information and ideas. There is nothing unique about Santa Clara's championing of innovation and discovery. What is unique is how and why we do this. The deep intellectual and spiritual heritage of Jesuit education shapes our take on STEM and its relationship to other fields of learning. That heritage also helps us think about technology and integral human development.

In 1975 the Jesuit Order articulated its mission as "the service of faith and the promotion of justice." SCU was an early adopter of this approach, and we look back with pride at our many justice-oriented endeavors. But humility demands acknowledging two lacunae in Catholic higher education: We do not have a commonly agreed understanding of "justice," and Jesuit institutions in many countries have laid greater emphasis on justice, in some cases substituting it for faith, or making the "faith that does justice" an optional extra. If we can't agree on religion, the argument goes, we can at least find shared territory around ethics. Yet there is an almost universal emphasis on ethics in U.S. higher education, and the words "social justice" appear in the mission statements of many schools. We can and must promote justice, which embraces the ethical standpoint and informs ethical action. Since the tech industry seems to stumble ethically pretty consistently, Santa Clara's promotion of ethical technology is needed.

We should not congratulate ourselves for seeking justice: It is the minimal requirement for a truly human society. However—and here we are getting to the heart of the Jesuit

distinctive—there is more to a life fully lived than ethics, and a flourishing society is based on more than justice. One of the most characteristic and distinctive notes of Jesuit education is not so much the ethical—what we do or should do—but its emphasis on the person as the measure of everything. The more we understand and share a vision of who and what we are and what it means to live well, as a global society as well as individuals, the better our decisions about what to do next will be.

Attention to all dimensions of the human person is the most defining characteristic of Jesuit education. In that lie the reasons STEM is a Jesuit value.

DEEP DNA

Humans need a sense of place in the world and a feeling of belonging to a community in order to flourish. Connectivity can engender that. But if Marshall McLuhan's dictum "the medium is the message" is true, then when technology mediates our messages, do they necessarily become media-shaped?

Technology innovation disrupts in ways which are good: My 95-year-old tech-savvy mother in Wales now messages four generations of her family daily, alleviating the limitations of her physical existence. But we are more aware now of the limitations of "virtual communities." Endless and knee-jerk "reply-all" emails do not correlate to quality communication. Serious thought requires rather more characters (as well as more character) than a tweet. Decrying the influence of communications technology stretches back to the invention of the moveable-type printing press. Yet a neo-Luddism that rejects digital culture is definitively not a Jesuit value: If we propose seeking and finding God's will in all things, then God is to be found and justice promoted in STEM just as much as any other academic endeavor.

Core curricula exist in Jesuit higher education to make "educating the whole person" more than words. They are there to help STEM majors answer questions: What kind of world do you want to help build? Where are you going to find meaning in your life and resources for the times of crisis and change you will inevitably experience? Liberal arts students need to study science and technology to become literate citizens of an emerging world. Good core curricula are relevant and tailored, and include the history of math and science, and studying the philosophy of technology that includes ethical concerns but goes beyond that.

The estrangement between religion and science was a long, slow process, in which many voices, currents of thought, and historical experiences coincided. In contemporary university terms, it manifests itself structurally as well as personally. I graduated from high school fluent in four modern languages, but I fled mathematics at age 16 after an unhappy encounter with calculus, and most American high schoolers could best me in physics. My elder brother trained as a chemical engineer, and you would not be finding him visiting an art exhibition or reading poetry. The Renaissance pioneers of Jesuit education, Santa Clara's deep DNA, would have abhorred this family split.

Historians of science, technology, mathematics, and engineering note that all these endeavors are rooted in the search for ultimate meaning. Pythagorean math is a mystical quest and Pythagoras' children, today's mathematicians, often continue to approach their craft with reverence and awe. Mathematics was central to the curriculum of the medieval Catholic universities of Europe. Newton, although hardly conventionally religious, carried out his research and made his discoveries in classical mechanics within a religious framework. What we now refer to as "science" was once called "natural philosophy."

Jesuits, for much of our existence, have been itchily inquisitive about all things. The almost 500-year-old roll call of Jesuit mathematicians and scientists of all stripes is impressive, and none of these, I am guessing, found any intrinsic contradiction between the humanities and science, or faith and reason. Philosophy, according to Socrates, begins in wonder; and that sense of wonder is common to all of us who love our art—engineers and social scientists, venture capitalists and poets.

And for the Catholic mind, that wonder is at some mysterious level an experience of the divine.

ATMOSPHERIC CONDITIONS

Formal religion is not relevant to the internal considerations of wide sectors of the tech industry. The Bay Area is among the least religious areas of the United States, with only 42 percent of the population expressing a firm conviction in God's existence. Religious "nones" are the largest single category in the geographical area of Silicon Valley. Certainly, the industry includes many people of faith. They work side by side with people who are engaged in a search of meaning in their own lives, but for whom communal creed and worship have no currency. It is, however, hard to avoid the impression that for many tech workers, faith, religion, or spirituality are all matters for silent privacy.

As a society, the global north imagines reality in a firmly secular way; that's also increasing among the influential sectors of the global south that have benefited from higher education. Charles Taylor in A Secular Age argues that we live in an age—the first-ever for humanity—in which it is not only possible but, in many influential sectors, normal to imagine that a human life can be completely lived without any need for the divine or the transcendent to supply meaning, joy, and hope. God is missing, goes the saying, but not missed, leaving in his trail a religion-shaped vacuum. There are many applicants for that position, among them utopianist technology, ready to step in and tackle human flourishing as a series of problems waiting to be solved.

It is better because it places a fuller understanding of the human person at its heart. It fosters deeper literacy in being human.

Part of the reason why God appears to be homeless in important parts of our neighborhood is the split in Western thought between faith and rationality, which has produced in its train a certain kind of STEM education—one with an implicit view of the human person that leaves no room for more its subtle and numinous aspects.

If a certain attitude toward education has historically undervalued technical expertise, on the other bank of the river, not a few engineers and scientists are also missing something fundamental: the necessary expertise in thinking about what it is to be human to integrate human well-being of all into their designs. This is not a matter of apportioning blame, nor of pitting the value of the humanities, the traditional focus of Jesuit education, against the

di erent kind of knowing that technical education champions. Engineers need to be good at what they do, and mastering that requires extensive dedication of time and energy. But, in the same way that an understanding of STEM subjects enriches those of us who do not specialize in those fields, a good grounding in humanities produces experts who produce better science, technology, engineering, and mathematics. It is better because it places a fuller understanding of the human person at its heart. It fosters deeper literacy in being human.

Santa Clara University's Ignatian Center has launched a new endeavor, Tech and the Human Spirit, exploring technology's impact on human flourishing. Planning and executing the project has involved many conversations with Silicon Valley leaders—engineers and financiers among them. I have come to understand the width and depth of the gap between, on the one hand, the humanities and spiritual approaches, and technological and scientific mindsets on the other. That gap shows itself in di erent psychologies and vocabularies, diverse ideas about what really counts in life. But the gap is not a chasm. In fact, its very existence is beneficial because when that gap is appropriately spaced—and the atmospheric conditions are correct—a spark can connect both sides, and current can flow.

This is where Santa Clara University comes in.

A LITTLE RESPECT

The Latin word universus gives us "universe" as well as "university," and both words express the idea of a fundamental unity that is expressed in and which underlies a rich diversity of forms. Today, we champion interdisciplinarity—repeating in contemporary dialect the age-old instinct that the search for the truth underlying and holding together reality requires intrepid conversation and a collection of diverse minds. The medieval University of Paris, where Ignatius Loyola undertook his studies—took as axiomatic the idea that all truth reflected the ultimate Truth, God, and that therefore all knowledge was, at the most intimate level, united. In other words, there are di erent kinds of knowledge, but not knowledges. The medieval mind drew on an ancient instinct, found in many religious traditions, that the search for truths is deeply and explicitly connected with the search for the divine. Every single field of human learning therefore, without exception, revealed something about the transcendent God.

Notably, in the medieval course of studies the gradual continental drift that eventually saw reason pitted against faith was still several centuries o . Fields such as science and engineering had yet to receive names or enter the university curriculum.

Ignatius was born at the waning of the Middle Ages but died in the full flowering of the Renaissance. Jesuit higher education owes something to the medieval university. It owes more to the character and experiences of Ignatius and the Spiritual Exercises. Its most important strand of DNA—one which is not as widely recognized and named as often as it should be—is Renaissance humanism, with its restless curiosity about the human person, a current that the early Jesuits plunged into with gusto. To deliver the new learning, the early Jesuits made use of a new educational institution: the college. Innovations that included textbooks and syllabi were deployed in service of a new model of education that emphasized the moral and spiritual development of students, as well as their ability to think, speculate, imagine, and reflect. Why did the Jesuits embrace educational innovation? Because of their deep respect for the sacredness of the human person as the most important place where God chooses to live and be discovered. Understanding that truth, goodness, and beauty were spread throughout the cosmos and across cultures and religions, they made their own the maxim of the late first-century poet Juvenal: maxima debetur puero reverentia. Students deserve the greatest respect. This meant Jesuit education was intentionally personal. Echoing the convictions of teachers who preceded him by over 400 years, Fr. Peter Hans Kolvenbach, then the Superior General of the Society of Jesus, pointed out in his famous 2000 Santa Clara address, that "the real measure of our Jesuit universities lies in who our students become."

It was the humanistic education that early Jesuits had received that sent them out on fire, with a relentless curiosity, into the Age of Discovery. The well-known stars of that movement include polymaths like Matteo Ricci—mathematician, cartographer, and astronomer to the Chinese imperial court—and Athanasius Kircher, skilled geologist and one of the first people to use a microscope to look at microbes. A whole host of Jesuits ventured across the globe into exploration of all types, including all branches of mathematics and science.

Deep, perennial values derive from that early period in the life of the Society of Jesus, and they are incorporated, consciously or not, into the life of the modern Jesuit university. Humanistic education sought to unite learning with cultivating virtue. It required more than acquiring useful skills and learning facts, using an integral approach that today's educational experts have rediscovered and dubbed "engaged learning"—one that integrates the practical and the a ective domains with the intellect. Santa Clara University and its Jesuit peers across the world aim at graduating students who are not only competent in their specialist disciplines. Equally as important are compassion and conscience. (To those qualities I would add consciousness and conscientiousness.)

Jesuit education has always encouraged students to escape from the confines of their own experience and expand their awareness beyond safely comfortable zones of thinking. This means teaching students not what to think—which would be indoctrination—but how to think, and to ask the largest question that can be asked about life itself. Integral humanistic education stimulates the imagination necessary for building a house at the frontiers of knowledge. "Expanding horizons" is another way of saying "discovery and innovation."

We locate ourselves as individuals and a society better from a mindset of world citizenship. More than a century and a half after its founding, Santa Clara now shares a zip code with an industry of unparalleled global reach. We do well to keep in mind that what happens here a ects Abidjan as well as Abilene. In the tech industry's family tree is the Enlightenment confidence that the future is necessarily an improvement on the past. Yet although we can do things undreamed of in previous ages through technological advances, our society has not necessarily advanced in wisdom and responsibility—as the way in which important tech firms have played fast and loose with privacy and identity on a global scale illustrates. Appreciating that the past has in fact much to teach us, and learning that new things are not automatically better things, demands the rare virtue of intellectual humility. We need to know history to save us from the myopia of the present and from believing our own more grandiose claims.

Fr. Pedro Arrupe called for a Jesuit education that graduated "men for others"—a call now expanded to be people for and with others. The spirit of applying our knowledge in service of a better world is deep in our roots. Jesuit education at its best is personal but not privatized, and individual but never individualistic. It humbly accepts the adage that the results of scientific investigation, when carried out well, are totally true. But equally it insists that they are not the totality of the truth.

When we talk of whole-person education at SCU, we mean that it should be aimed at ensuring human flourishing for all, and that flourishing is larger by far than material well-being. Jesuit education also teaches that human life has depths that are not susceptible to analysis and metric mapping. It is an education into which is embedded a vision of the human person that has a place for mystery and imagination, beauty and meaning.

The concept of human flourishing has deep roots in classical learning and is sympathetic to many religious traditions. It connotes ideas of free will, self-consciousness, and the search for meaning; the Christian version includes openness to transcendence. Human flourishing is the home of the entrepreneurial drive to create, innovate, and discover, as well as the hope of improving the lives of others. Questions of identity, dignity, and purpose—and of our capacity for making meaningful connections with others—are certainly not beyond the influence of technology. But is the kind of technology we have open-minded and big-hearted enough to consider all that we need in order to have abundant lives?

QUESTIONS OTHERS AVOID

We are citizens of a new and unknown world that both invites exploration and calls for careful discernment. The horizons of humanity have shifted, never to return. The technology-shaped world, says Klaus Schwab, "will change not only what we do but also who we are. It will a ect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships." Ubiquitous internet penetration and its influence on human communication and relationships, artificial intelligence, and bioengineering have already changed us, and will continue to shape our individual lives, our communities, our planet, and our future. How can we steward technology's advance to benefit humanity to the fullest, supporting human endeavor and contributing to human flourishing in all dimensions?

Recent popes have reminded Jesuits that our proper place continues to be at the frontiers—where humanity meets STEM, and faith comes together with rationality. Authentically Jesuit education involves intelligent, sensitive encounter between cultures and courageous conversation. It asks the questions that others ignore or avoid.

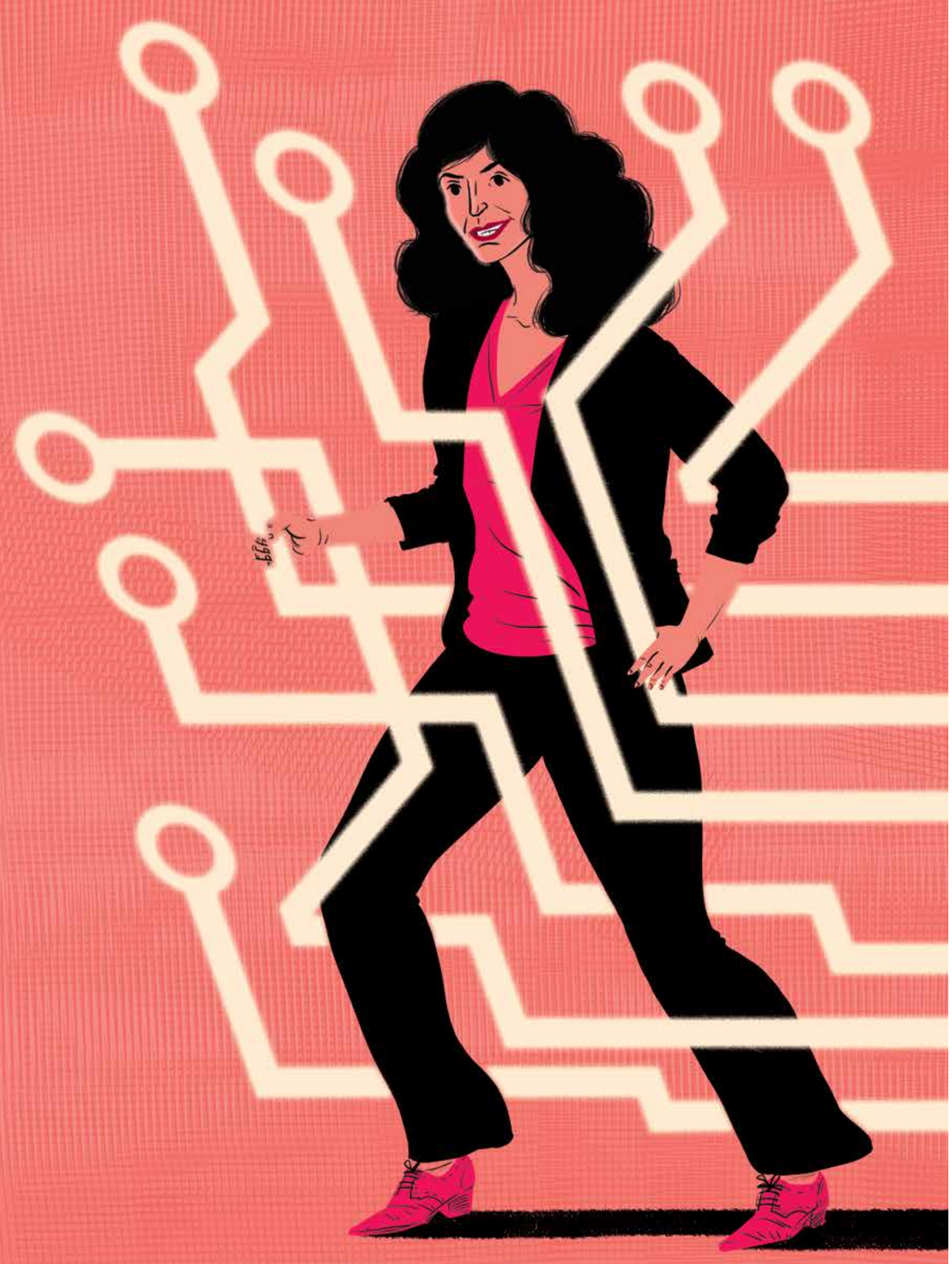
Is the kind of technology we have open-minded and big-hearted enough to consider all that we need in order to have abundant lives?

Santa Clara University finds itself at a privileged time of opportunity and challenge. Technology's potential for good is immense. So is its potential for darker impacts. As the Jesuit university in the epicenter of the biggest ecosystem of information exchange in the history of humanity, we have a unique perspective—as well as a unique responsibility—to promote conversation and action on technology's impacts, implications, and opportunities. There are no easy, quick fixes. But thoughtful, wide-ranging conversation with many di erent partners—and persistent, smart reflection—is part of what this University can do. Our efforts must be comprehensive, integrating perspectives from education, entrepreneurship, ethics, engineering, social justice, psychology, anthropology, philosophy, and faith. The more that mindful action grows from an inclusive understanding of what it is to be human, the more impactful it will be.

This is an axial time in the history of our natural world and global society, and here is the location. This campus is the arena in which to foster education that scientists, technologists, engineers, and mathematicians will incorporate to build technology for the whole person and for the benefit of all.

And we are the people to do this.

DORIAN LLYWELYN, S.J., is the executive director of the Ignatian Center for Jesuit Education at Santa Clara University. He is the first Welsh Jesuit since the 17th century. His work has taken him from London to Los Angeles, Egypt to Indonesia.



Query Results

What questions should we be asking about ethics and artificial intelligence? Here are six.

BY IRINA RAICU J.D. '09

ILLUSTRATIONS BY PAUL BLOW

Make a list of brilliant thinkers and doers when it comes to ethics and artificial intelligence—as consulting group Lighthouse3 did—and you'll find some Santa Clara people in the mix: **Irina Raicu J.D.'09**, who directs the internet ethics program for the Markkula Center for Applied Ethics; and **Shannon Vallor**, the Regis and Dianne McKenna Professor in the Department of Philosophy. For a series of conversations about AI, we sat down with Raicu to ask what we should be asking.

1 What's fair? And what's human?

Some of the questions that have become more obvious—and that a lot of people are dealing with now—revolve around fairness and AI. A few years ago, only a handful of academic papers focused on AI and fairness. Now that's grown exponentially. One of the questions that will come up for the foreseeable future is: What is it that makes us human? What do we mean by "artificial intelligence"? What is human intelligence? How is it di erent?

There's something about real humans that's messy and complicated. And most situations are more complex and nuanced than we would like them to be. That's part of what's interesting about the di erence between humans and AI. Humans understand context and translate among concepts; AI is a long way from doing that.

2 Should there be AI-free zones?

One of the questions about artificial intelligence that I've been writing and talking and thinking about recently is: Should there be some AI-free zones? Are there areas in which AI would actually not do a better job than human decision-making? If we can delineate those, we can help prevent some harm and also increase trust in AI in the areas where it does do a better job.

Right now, part of the problem is that people are presenting AI as an improvement on everything. There are areas in which there are changing social norms and in which implementing AI/machine learning as we know it would actually be embedding the current or prior social norms—rather than allowing things to develop.

For example, there is a claim by one writer that I've been rebutting. He argues that, eventually, algorithms will make "better" decisions about whom we should marry. That's exactly the kind of area in which there's so much complexity, so much variety, so much personal preference, and so many changing societal norms that no, I don't see how an algorithm is going to do a better job of deciding that for us. That's true with other relationships, too. We need to allow society to continue to grow—morally as well.

I spoke about this recently at a meeting for the Partnership on AI, a consortium of businesses, civil society groups, and academic centers working on a global e ort to share best practices, advance public understanding, and make sure we're developing AI for good. The bottom line is that we can't allow algorithms to decide societal norms.

3 How do we keep humans accountable?

We want to make sure that it's still humans who are held accountable for what the AI does. Some developers have talked about "bias laundering": the notion that you have all this potentially bias-embedding data, and then you have the biases of the people who are designing the algorithms, but somehow we would run the data through the algorithm and the outcome would be objective. How do we make sure that people understand that it's humans all the way down, and that the accountability then stays with the humans?

In a lot of areas, I don't think we ever want to live in a society where we say AI has gone through so many iterations that it's no longer really the humans who are in charge. (But AI also plays very di erently in di erent contexts, so broad generalizations are not really helpful.) The accountability has to be placed somewhere, and we can't let go of it by just allowing the neural networks to do their thing.

4 What happens with AI discoveries that are too dangerous to release?

The research institute OpenAI came up with an artificial intelligence text generator that had the researchers worried enough about its capability that they decided not to release it to the general public. Like with the "deepfake" video clips, this tool could generate plausible-sounding fake news. Some have argued that holding back the code is an empty gesture. I don't think it is. A lot of people would not have the resources to generate that kind of knowledge, so, by not sharing it, the researchers slow down significantly the deployment of such tools. Then maybe we have time to build some guardrails or countermeasures.

Their decision also sparked a loud conversation, which is, overall, a good thing.

This is a really interesting case, because what concerned the researchers is that they found themselves being able to generate misinformation at scale very quickly. It's a problem that we're struggling with already, with just the amplification of content via bots.

Part of the rapid development and deployment of technology means that the societal responses don't keep up. Maybe technologists will have to be very explicit in assessing situations so that, whenever they see something that has the potential like this does—say, to help upend democratic governments—maybe they will have to sit on the research and try to create the antibodies to the virus.

5 Whose norms define AI?

Recently, Foreign A airs magazine asked a number of folks, including me, whether technological change today is strengthening authoritarianism relative to democracy. As I noted, the key part of the question is today. The trend for technology to strengthen either authoritarianism or democracy is not a given. Democratic entities need to move more quickly to understand new technology, consider its long-term consequences, and regulate its deployment.

The development of the internet was very U.S.-centric, to such an extent that, for a while, when the internet was spreading, we didn't even realize that it was carrying with it American values. In contrast, AI is being developed very quickly in a number of places. It may be that we will have di erent flavors, di erent languages, di erent norms embedded in di erent AI tools. AI in China might reflect di erent norms than AI in the United States or AI in Europe.

Recently I spoke to a reporter about an app developed by the Saudi government, which allows men to track the women in their household. It has a wide variety of functions. One function is to track the women's travel, because in Saudi Arabia you have to get the man's permission for that. For example, the app will send the man a text if a passport is about to be used at a border. The app is hosted on the app stores run by both Google and Apple—and there's been an outcry here against that, because it goes against values that we hold in the United States. But will the companies decide it goes against their values—or policies?

We want ethics to go along with the development of AI more closely than it has with the development of other technologies. We don't want it to have to catch up.

6 What are some of the things being done at Santa Clara to address these questions?

We want ethics to go along with the development of AI more closely than it has with the development of other technologies. We don't want it to have to catch up.

There are multiple e orts to address AI ethics—from the School of Law and the Leavey School of Business, and of course in philosophy and engineering. Along with that, how we're approaching AI at the Markkula Center for Applied Ethics is really on three levels. On an international level, the Center is part of the Partnership on AI. We were one of the first two ethics centers to join, and we've been working closely with the other members of the organization. Four of the Center's sta are now serving on four di erent working groups in the partnership, which means that we're part of the ethical conversations around the development and deployment of AI with all of these big companies and civil society groups.

To address the local concerns in Silicon Valley, we released a set of materials on ethics and technology practice that are intended for use in ethics training workshops and programs in tech companies. They're free for anybody to use. We see them very much as a starting point—and it does look like a number of local companies are interested in customizing those materials and incorporating them into their processes. And here on campus, we're working to infuse ethics into all of the technology-related courses, whether it's data analytics, computer science, software engineering, or engineering more broadly.

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A CURIOUS CASE

If you want to innovate for the world, you need the room to do it. And what else? Sanjiv Das and a tale of machine learning, mortgages, and mistaken identity.

BY DEBORAH LOHSE
ILLUSTRATIONS BY ELLEN WEINSTEIN

When **Sanjiv Das** was a young child in Bombay, India, and wanted to learn about a subject—Bengal tigers, chess, the history of India's partition—his mother's father, Abbas Basrai, would send him to a hallway cabinet. It was filled with row upon row of files: news and research clippings on hundreds of topics. Das' grandfather's ravenous curiosity and love for writing—including book-length biographies of his two wives and three daughters—made quite the impression on the boy. "He was definitely one of the most curious people I knew," says Das, whose family lived with his grandfather until Basrai died when Das was six.

Now the William and Janice Terry Professor of Finance and Business Analytics at SCU, Das has spent his life chasing intellectual pursuits along a distinctly winding and varied path. His desire to get into the innards of problems that interest him led to an ill-advised stint in accounting school in Bombay ... to a fascination with using algorithmic models to set prices and decrease risk in complex financial instruments ... to a bank job selling models, and then a Ph.D. so he could create such models ... to a tenure-track position at Harvard Business School ... to a post-Ph.D. master's in computer science. All that has led to years-long explorations of natural language, data analytics, neural networks, machine learning, artificial intelligence, and financial technology.

He has also been pursued for tenured positions at UC Berkeley, New York University, and others. But he values Santa Clara—to which he was recruited in part by SCU behavioral finance pioneer **Meir Statman**—for the intellectual freedom it a ords scholars. That in turn means SCU attracts smart, collaborative colleagues, Das says, and encourages the kind of interdisciplinary exploration he loves.

"My colleagues are pretty incredible," he says. "Because we are a small University, I've been really fortunate to meet and collaborate with all these other people across campus, which doesn't happen in many schools. I don't think I'd do better work elsewhere."

PERIPATETIC MIND

Students also reap the benefits of his peripatetic mind. How so? Das has created new classes (or entire majors) to share his newfound knowledge with students, many of whom revere him for the way he shares his curiosity, thinking, and problem-solving techniques. "He's very good at explaining the how and the why of what he teaches," says **Je Glupker M.S. '18**, who studied machine learning and time series modeling and forecasting with Das—and worked on a practicum at Credit Suisse with him. "Where I get the most value from him is just hearing him and his thought process: 'Here's a problem and here's how I'm thinking about it.'" That, Glupker says, is "training your brain to think."

> There's a value in sharing one's thought processes: "Here's a problem and here's how I'm thinking about it."

The fields in which Das operates are often complex: interest rate derivatives, randomized algorithms, machine learning. But Das conveys a calm and a "lean in" approach that greets virtually every suggestion a student might o er with a pleased smile and a nod and "Yes, and what else?"

Das credits his grandfather with fueling not only kinetic curiosity but a groundedness. The time and home in which he was raised taught him the value of principles, too—and their cost. He grew up in Bombay (now Mumbai) during the late 1960s and 1970s. In the wake of India gaining independence from Britain in 1947, ideas about change were in the air. Economic socialism attracted political attention in large swaths of the country; Indira Gandhi, daughter of independence leader Jawaharlal Nehru, was elected prime minister, but imposed a violent two-year state of emergency when challengers sought to oust her. India entered the age of space exploration and nuclear power.

Das grew up in the home of his grandfather with his brother, Romith, and their parents, who had defied their respective faith traditions by intermarrying. His mother, Zubeida, was Shia Muslim; his father, Sujit, was Bengali Hindu. Das' mother was excommunicated from the local Muslim community over the union; her family—reform-minded like the Hindu Das side of the family—stuck by her.

His grandfather Basrai occasionally ran afoul of certain hard-line Muslim leaders as well—for trying to get what he saw as fairer treatment for poor worshipers. That sort of religious acrimony turned Das into an atheist by his teens, so much so that he tried to avoid enrolling in the Jesuit high school he would later attend—St. Mary's School in Bombay—by refusing to meet one-on-one with the principal as required for every incoming student. The principal admitted him anyway, based on the strength of his test scores.

The Jesuit ethos he learned at St. Mary's helped shape him into a person who cares about social justice. (He's now a Buddhist.) So did his parents' insistence on ethical living—which gave him a di erent side of the role of religion.

"My mother was always pointing out verses in the Quran that spoke to ethics, and saying, 'Here are some interesting principles, you should keep them in mind.' " His mother earned a master's in sociology. Her first work was in the home. But she also educated herself to successfully invest her inheritance in the stock market as a way to supplement household income. Though his father never attended college, he was the breadwinner—a corporate salesman for the likes of Dunlop Tires and British Paints—and valued the intellectual and cultural leaders helping shape the country's identity.

The Das family home was a hub for reform-minded people of Muslim and Hindu faiths, who would drop by for informal salons. They might delve into the work of Rabindranath Tagore, the Nobel Prize–winning Bengali writer who was friends with Mahatma Gandhi. Das and his brother were taught to listen and not talk during these sessions—but they soaked them up.

'OH WOW, SOMETHING USEFUL.'

After high school Das thought an accounting "commerce college" degree would solve a persistent boredom he had felt in elementary and high school. "Oh wow, something useful," he remembers thinking. But by the time he realized he found accounting tedious, it was too late to leave under India's rigid educational system. So he soldiered on—and played a lot of cricket, earning a spot on the school's competitive cricket team. Still, he decided he had a better shot at success in academics than sport.

Armed with an accounting degree, he promptly enrolled in the Indian Institute of Management business school in Ahmedabad, modeled closely on Harvard. (That included not only case studies but room layout, he would later learn.) He didn't find business school itself especially exciting. But he did find a group of faculty pursuing what fired their imaginations—sparked by work at Stanford and MIT, where they were schooled—in operations research, mathematics, computer science, and programming "compilers"—decidedly un-business-school fare. Together they formed a half-dozen strong crew of faculty and students, including Das and another young renegade named Raghu Sundaram, who has remained one of Das' closest lifelong friends, and who now is dean of NYU's Stern School of Business. The group found ways to create classes and conduct research—into operations research, multi-criteria decision-making, graphical programming, and simulation methods—while the students finished their MBAs.

Das' first job was helping Citibank trading rooms set up and implement interest rate derivatives pricing models in India, Australia, Japan, Hong Kong, and Singapore. He didn't like not being able to create the models, which required a knowledge of advanced physics-based mathematics and finance. He was supposed to explain the end result to customers. He wanted to understand how they worked, and maybe find ways to make them work better. So he got a Ph.D. at NYU.

A few years later, after six years on a tenure track at Harvard Business School, he took a sabbatical in Berkeley and got a master's from Cal in computer science. That field has continued to open up more discoveries—such as his observation that everyone from Google advertising customers to large lending banks were using machine learning to unearth optimal prices for their products. So he decided to teach such topics, often at the same time he himself was learning them.

His colleagues at SCU's Leavey School of Business credit him with co-launching the school's graduate business analytics program—which currently enrolls 70 students. He put the curriculum together so students would have marketable skills, and he put the board together. "There were a lot of administrative hurdles," says **Seoyoung Kim**, a finance professor who frequently collaborates with Das. "Without him, it wouldn't have happened."

THE IMF, THE CRASH, AND THE OTHER SANJIV

Once Sanjiv Das gains mastery in a subject, he'll also lend his expertise to corporations, regulators, and others—connections he often makes at conferences where he has been asked to speak. In return, he'll gain access to real-world laboratories in which he can test out and advance his work, bring in students, and see his conclusions take flight.

He has lent his expertise to the International Monetary Fund, teaching fintech, quantitative models for banking, and machine learning for macroeconomics. At the San Francisco District Attorney's o ce, he helped flag misrepresentations by banking o cials testifying about failed loans. At the Federal Deposit Insurance Corp., where he serves as an academic fellow, he helped analyze loan-restructuring models. Recently he teamed up with SCU Professor of Mathematics **Dan Ostrov** to conduct research with global investment firm Franklin Templeton, helping find complex new formulas to increase the likelihood that wealthy clients' existing portfolios will actually achieve their financial goals. Their first of three published papers won the prestigious Harry Markowitz Award for best paper published by the Journal of Investment Management.

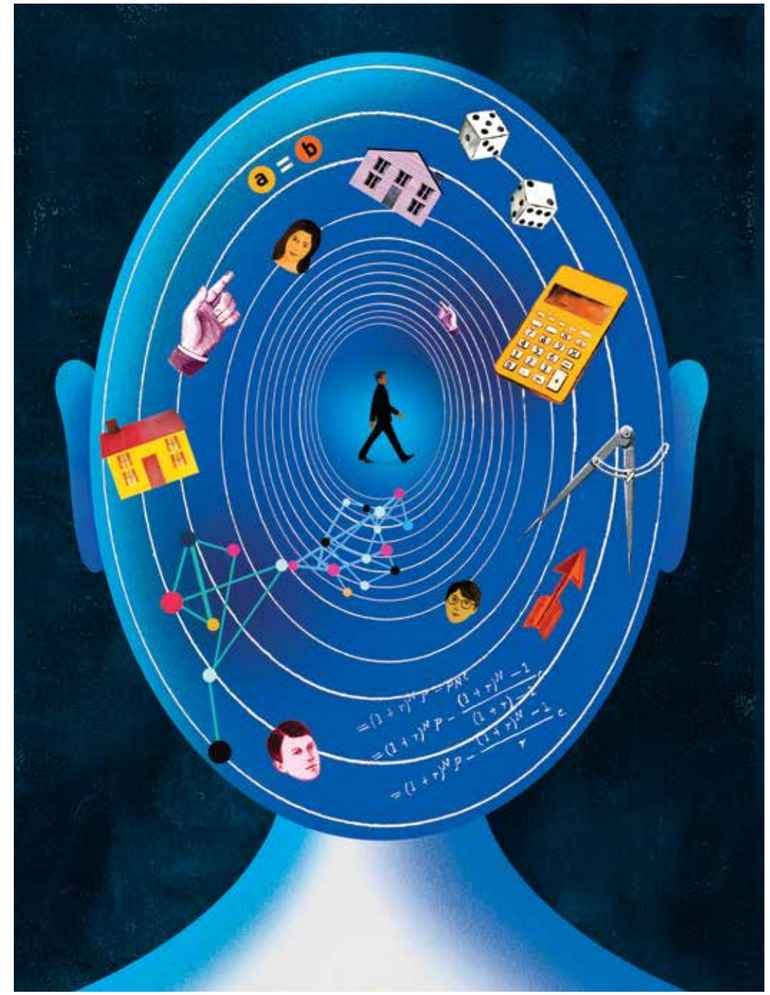
His analysis of the home mortgage crisis, "The Principal Principle," helped find new solutions for banks and borrowers alike.

His curiosity can be sparked by random encounters. Take his focus, from 2010 to 2012, on how to restructure mortgages after the 2008 financial crash. This was a hugely problematic area, but not one that Das—then focused on options-pricing models and measuring market liquidity—would normally have undertaken. But in 2009, he began getting dozens of angry emails and calls from Citibank clients complaining about the financial institution's failure to provide mortgage relief after the housing crisis. Das was puzzled. Why him?

It turns out that Sanjiv Das is also the name of the then-CEO of CitiMortgage. The barrage of emails were meant for that Das. SCU's Das found the situation humorous. He also became fascinated with the problem the bank was trying—and apparently failing—to solve: Which loan terms should banks relax—and by how much—to avoid foreclosures while maintaining profitability in the loans? He reached out to his Citibank namesake, who invited him to his New York o ce and gave him access to loan data and to his own o ce to work. Das set to work using the kind of modeling he previously had used on options and other financial securities, this time for mortgages.

"I realized that the choice to walk out and not pay your mortgage is an option I can value," Das explains. "I could mathematically see what features of that option I could tweak to prevent somebody from exercising it to default on their mortgage."

The result: a 2012 paper, "The Principal Principle," that argued the most economically feasible tactic for banks was to forgive outright a portion of underwater home loans—rather than shortening or lengthening the loan term or reducing interest rates. The idea caught on. Das presented it at eight conferences globally. When the U.S. Department of the Treasury updated in 2012 the Home A ordable Mortgage Program, Das' idea was incorporated as a "principal reduction alternative." Numerous hedge funds that bought distressed mortgages have also downloaded Das' paper to help them restructure loans.



'WHAT IF WE TRIED THIS?'

In 2018, in a speech to Santa Clara colleagues after they had named him Faculty Senate Professor of the Year, Sanjiv Das remarked that they were all "fortunate to be in a position of making a living from being curious." He talked about adoring the freedoms the University a ords: freedom to be bored, because it unleashes curiosity; freedom to take risks and to set one's own standards for success; and freedom to work across disciplines.

His colleagues say they enjoy his collaborative and adaptable "What if we tried this?" approach to co-teaching and to the papers they write together. He has a habit of inviting colleagues to join him in person for marathon paper-writing sessions—rather than each scholar retreating to their own o ce to tackle discrete sections.

"Sanjiv doesn't stay still for too long," says his finance colleague Kim. Far from being averse to changing paths, "As the world changes, he's happy to learn new things and adapt."

His mathematics colleague Ostrov notes that Das has twice completely revamped a math-finance class they've co-taught; it was originally created to be taught in the Octave computer programming language. Das reengineered the course to teach it in the programming language R; when he discovered Python, he revamped it again—to make it a better experience for students.

Where will Das' curiosity take him next? Currently it's fintech—the application of cutting-edge technology to make financial products more e cient, less costly, or more valuable to banks or consumers. He has worked on modeling to use natural language queries to help consumers set individualized financial portfolios—cutting out the advisor middle man. He's doing that in part with a company called Betterment.com. He's also helping a Bay Area company called PayActiv with a banking service for low-income workers to access their paychecks before payday for a flat $5 fee. The company currently has processed more than $1 billion for users, with machines in Walmart and other locations.

Once a week, you can find him at the year-old "moonshot" lab at Credit Suisse. There, he and four data analytics graduate students work with Credit Suisse researchers on advanced projects, such as using virtual reality to illustrate the interrelatedness of banks or venture capital relationships. The goal? Provide a new way to help people understand the importance and scope of such relationships.

He also has been working with a group of sta and faculty including **Colleen Chien** in law, **Irina Raicu J.D. '09** in the Markkula Center for Applied Ethics, and **Shannon Vallor** in philosophy to tackle the complex ethical issues involved with machine learning and AI. Das is already working with students to craft algorithmic models to help quantify the impact of bias in a number of data-heavy applications, such as hiring or bank lending, and to find ways to "de-bias" the data.

"Here's a person who is incredibly curious, and he's at a university that's allowed him to pursue that curiosity without bounds," says Ostrov. "The payo for that has been tremendous—for him, his students, and the University."

DEBORAH LOHSE is associate director of media and internal communications at SCU. She was previously a sta journalist at the *Mercury News*, *Wall Street Journal*, and *Money Magazine*.

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Each Story I Hear

Personal tales and hard truths: conversations with writer **Khaled Hosseini '88**

BY STEVEN BOYD SAUM AND RILEY O'CONNELL '19

In March 2001, while practicing medicine, Dr. **Khaled Hosseini '88** began writing his first novel, The Kite Runner. Six months and two-thirds into his first draft, though, terrorists attacked the World Trade Center and the Pentagon. Overnight, Afghanistan, a country that many Americans could not place on a map, was the lead story around the globe. Hosseini worried that his book would be seen as opportunistic; his wife, Roya, convinced him not to second-guess the story he was writing. It needed to be told. ¶ The novel became a bestseller and has been assigned for all incoming first-year students at Santa Clara. Hosseini went on to write the bestsellers And the Mountains Echoed and A Thousand Splendid Suns. Altogether his books have sold more than 40 million copies. He has also served as a goodwill ambassador for the UN High Commissioner on Refugees, meeting with people displaced from their homes in Darfur, Afghanistan, and Syria. ¶ He has given us tales of redemption and grace and crafted the stories of characters who are morally compromised by the situations in which they find themselves. "Stories are the best antidote to the dehumanization caused by numbers," Hosseini wrote recently for The Guardian. "They restore our empathy. Each story I hear from a refugee helps me feel, bone-deep, my immutable connection to its teller as a fellow human. I see myself, the people I would give my life for, in every tale

I was a scholarship kid. To hear him highlight the contribution of immigrants gave me a sense of pride. It was meaningful and restorative.

I am told." ¶ Hosseini was born in Kabul, Afghanistan, in 1965. He and his family came to the United States as refugees after the Soviet invasion in 1980. He was recently on campus to discuss Sea Prayer, a brief and haunting elegy for our time. We two editors sat down with him (actually, we stood for part of it) for a couple conversations. **Steven Boyd Saum** is the editor of Santa Clara Magazine. **Riley O'Connell '19** is the editor of The Santa Clara Review, SCU's literary journal founded in 1869. Excerpts.

SANTA CLARA MAGAZINE AND REVIEW: You've written stories that try to connect people with one another—stories that capture both aspirations and su ering around the world. If we're trying to open doors for people, what are some of the ways you would like to see that happen?

KHALED HOSSEINI: I would address this to young people, to students who are now attending Santa Clara University, and say, basically, that you should think about expanding your sense of community. Your community can be your home or your street. It could be Santa Clara University. It could be Northern California. But it could be a lot more. Because a community is more than just a bunch of people who have a language and culture in common. The cliché is that we live in this big interconnected global community—but we really do. We are irrevocably connected now—and it's a complicated organism, that wider global community. I would encourage students to embrace being an organic member of that bigger community and embrace the challenges of the world that they're about to inherit—be it refugees or climate change or poverty. And work toward solutions with a critical eye and a clear heart.

SCM & SCR: One of the qualities that's always at play in your fiction is courage—people who need to show courage in tough situations. How do you define courage?

HOSSEINI: Well, it's not fearlessness, that's for sure. In the absence of fear, no position or action can actually be said to require courage to begin with. The root of the word is from Latin—cor. It means "heart," which was the organ where the sense of truth and justice and strength were believed to reside. I've thought about this quite a bit, because I've come across people in my travels who have really displayed enormous courage. What I've found is what the courageous person always does is weigh the convictions in his or her heart against uncertainty, which is the root of all fear, and then deliberately chooses to stand with their convictions—even at the risk of personal loss. So courage for me is, for that reason, always tied up to selflessness, because it may ask you—require you—to prioritize a place or a person or a people above and over what your reptilian brain says is in your best interest. It's infinitely bound to selflessness, and you can't talk about courage therefore without talking about compassion and respect for others.

SCM & SCR: You chose to come to Santa Clara. But your family didn't choose to emigrate. Talk about that experience—being an unwilling migrant.

HOSSEINI: My family and I were living in France in the late '70s. My father was a diplomat, and he'd been posted to the Afghan Embassy in Paris. It was a four-year assignment, so we left everything in Afghanistan in 1976, believing that we were coming back in 1980.

I remember the moment at which our life flipped: December 1979. We were home in our little apartment watching TV. There was a break in the program and this update came out. We saw on that little black and white screen Russian tanks rolling into this country that nobody had heard of—our homeland, Afghanistan. When that happened, I remember an exchange of looks between my parents. I realized in that moment, in a kind of a visceral way, Our life has just been turned upside down. Suddenly everything that we had owned, known, experienced before that became a part of the past, in a way. And the future looked open and uncertain and scary. We were resettled in the United States. We arrived in the fall of 1980, a couple of months before the election of Ronald Reagan.

SCM & SCR: We were just walking through campus—a very di erent place from when you first came here. Coming to California must have brought a real sense of dislocation for your family. How did you wind up here?

HOSSEINI: Like a lot of students, a variety of factors landed me in Santa Clara. I had done my research. I knew it was an outstanding school and that I would get a top-notch, broad-based education. From an academic standpoint it made a lot of sense. I'd already had some experience with Jesuits in Afghanistan; Jesuits taught at my elementary school when I was in sixth grade. What really clinched it for me is that I had set roots by then in the Bay Area. I love being with my family here, I love Northern California, and I really wanted to stay here.

I enrolled at Santa Clara in 1984. It was around the time that I was finding my sea legs living here. My time in college coincided with a protracted period of financial struggle for my family. So I worked outside of school hours—I was a security guard to help put myself through school. I learned the value of work, and how to work and go to school at the same time. I learned about independence, personal growth. It was a time when I began learning how to be an adult—so it was a formative time.

SCM & SCR: Any moment that defined it for you?

HOSSEINI: There's one moment that really stands out. I don't know if it's a defining moment, but it's certainly one I think back on. It was in chemistry class—I think my freshman year. My professor was Dr. **Atom Yee**, and we were getting back a test on which, it turned out, the class had done poorly. I was shocked when he called my name and asked me to come down to the front of the lecture hall. It was a big class—like 100 people. I walked down and he told me I had gotten the top grade in the class. Then he took me to the board and asked me to solve one problem that I think a lot of students had struggled with.

So I solved it on the chalkboard, and I thought that would be the end of that. But then he kind of put his arm around me and turned me around and we faced the class, and he started talking to the class. He talked a little bit about his own background of having arrived in this country as an immigrant. And then he began to talk about the makeup of the country, and he said, "Just don't forget, so much of what this country has built has been on the shoulders of immigrants."

It was something that I didn't realize I needed to hear at that point, but it meant a lot to me. Because I always felt di erent from a lot of the students on campus. I was a Pell Grant, Cal Grant, scholarship kid. There were nine of us living in a small house near East San Jose. I didn't have all the means and resources that a lot of kids at school did; that brought, for me, a sense of shame about the deprivation and about the limited means at my disposal. But to hear him say that—to highlight the contribution of immigrants—gave me a sense of pride. It was meaningful and restorative. I always appreciated that.

SCM & SCR: Given your experience here, what do you think the world needs to know about Santa Clara?

HOSSEINI: I got a fantastic education. Coming here I knew would encourage me to expand my sense of community and horizon. Especially the climate that we're living in now—a school where the values of tolerance and understanding and respect and being a global citizen are reinforced, I think it's a very valuable thing.

Let me answer that with a story, too. When I was a student here, I was a bio major, and I was applying to medical school. When I applied, I literally couldn't a ord the fares to fly all the way to Boston and go to Nebraska or Saint Louis and do interviews for the medical school. I really didn't know how I was going to actually apply.

So I came and spoke to my biology professor, Dr.

Refugees on a cold and moonlit beach: a scene from Khaled Hosseini's book Sea Prayer, illustrated by Dan Williams

OPENING IMAGE BY BRIAN SOKOL VIA PANOS PICTURES/REDUX

ILLUSTRATION: DAN WILLIAMS, TAKEN FROM SEA PRAYER BY KHALED HOSSEINI. BLOOMSBURY UK

William Eisinger, after class. He sat with me, and I told him about my dilemma. He was so kind, and he listened and he said, "I'll see what I can do." A few days later he pulled me aside and gave me a check that the school had cut for me to cover my travel expenses. That was very meaningful to me, and I'll never forget that.

Not saying everybody is going to get their fares paid for by Santa Clara! But what I'm saying is that you are an individual here. It's a small campus. You are a person here and your voice will be heard, and you will be seen as an individual in specific circumstances.

SCM & SCR: One thing we've talked about before is the fact that most refugees don't migrate hoping to move to a new country forever. They want to go home someday. Was that a hope that your parents had, or that you had?

HOSSEINI: I was talking to a Syrian refugee in Lebanon this past June. A report had come out that nine out of every ten refugees in Lebanon wanted to go home. But they couldn't go because of security issues. And he said to me, "Look, even Heaven is not home." Over and over again, this is something that I've seen.

I think for my parents, not going home was a tectonic disaster for them, because they had established identities. They had homes. They had careers. They had property. They had roots and an entire community they belonged to. For them to have all of that wiped o the map in one fell swoop was a real blow.

But I think we understood that for us, going back home would be very di cult. We had a number of family members who were shot. People who were put in prison. My uncle was tortured. I have cousins who were shot. Colleagues of my father who did go back who were killed. So the idea of going home ... we were in the same predicament as so many refugees are in the world today.

Memories of summer: The father in Sea Prayer recalls his son walking with the boy's mother—killed in the war.

ILLUSTRATION: DAN WILLIAMS. TAKEN FROM SEA PRAYER BY KHALED HOSSEINI. BLOOMSBURY UK

SCM & SCR: A decade ago, after returning from a trip to Afghanistan, you talked about how we just cannot a ord to give up on these people. Why not?

HOSSEINI: There's a couple of di erent ways of looking at it. One is, politically Afghanistan is still a very important nation. Its location has always been strategic, and it's always placed at the center of power struggles between great powers. So if 9/11 taught us anything, it's that what happens halfway across the world does a ect us.

If you ask Afghans why we shouldn't give up on Afghanistan, they will say that there's no people on the planet that deserve peace and a chance of rebuilding their country more than they do. Many Afghans, rightly or wrongly, see the end of the old Cold War as having been written with Afghan blood: the defeat of the Soviet Union, which took ten years and cost over a million Afghan lives, and how Afghanistan was abandoned afterward and allowed to fall into extremism and oppression and violent regimes. For a lot of Afghans, they feel like they've paid a very high price, and that the result of the Afghan War benefited the West greatly. They feel, again rightly or wrongly, that the world shouldn't give up on them—but should give them a chance to rebuild their country. And what I said ten years ago in some ways is still true today.

Sea Prayer

SCM & SCR: The book Sea Prayer is very di erent from your three novels. This monologue of father to son is inspired by a tale tragically true: Alan Kurdi, a 3-year-old boy from Syria who drowned in the Mediterranean trying to reach safety in Europe. The photograph of his tiny body washed up on the beach crystallized for many the depth of a tragedy still unfolding. So how did the book come to be?

HOSSEINI: Sea Prayer was originally conceived as a talk that I gave at a fundraiser for UNHCR, the refugee agency. I was asked to come and speak for about five minutes along with a whole host of other people, and I decided to use my five minutes not reading from my most recent book, as I had been asked, but to actually say something about the current refugee crisis. Specifically, I had been thinking about that photograph of the drowned Syrian boy, so I wanted to tell a story. Not about him, per se, but about all the families that have taken that desperate journey across the sea. So I sat down and, over the course of a couple of afternoons, this little monologue came out from the viewpoint of a father talking to his son, who is sleeping—talking about this frightening journey that awaits them and the uncertain future. Then, in collaboration with Google and the Guardian and UNHCR, it became a small virtual reality film. The Kronos Quartet composed the track for it, and so it was really lovely. My UK publisher reached out to me and said, "Hey, I think this would make a really beautiful picture book." So it became this gorgeous little book. Dan Williams, the artist, did unbelievable work on this book. All the proceeds will go to to help refugees, through the Khaled Hosseini Foundation and the UNHCR. There's been an aura of grace around the project.

SCM & SCR: How di erent was it for you in writing a book that has that very clear focus—parent to child?

HOSSEINI: I feel very much in my element writing about parents and children and families, being an Afghan, and family being such an important and central part of our identity. When I saw that photograph of the young boy, part of what gives that photograph power is that he's lying face down. You can't quite see his features, so it's very easy to project the face of someone you love onto that little body. Like your own children. For me the entry point into this story was always going to be as a dad. I kept trying to imagine what his father must have been going through, watching his son's body being picked up from the water by a Turkish soldier. Somebody who didn't know Alan's name or the sound of his voice, or his favorite toy ... As a dad, those are the things that immediately rush into me when I see something like that. I wanted to pay tribute to that family, but also to the thousands of others, both before and after him, who tried that journey, and so may have perished.

SCM & SCR: The father says, "All I can do is pray." We're no strangers to that at a Jesuit university. I'm curious, when you're inhabiting the head of this father, what prayer means to you.

HOSSEINI: I should be up front. I'm not a particularly religious person. I don't pray daily in any conventional sense, but I do remember that prayer has had a presence in my life regardless. When I was younger, in boyhood, I used to think of prayer as holding enormous magic power, almost like a magic coin you toss into a divine vending machine, and then you select the result you want to see. Some version of that stayed with me even as I grew a little bit older; I lived with the idea of prayer as this mechanism to compel God's actions, including in my own personal life. Over the last couple of years, I've gotten more involved in some mindfulness and meditation. It has a very prayer-like quality for me, because it allows me to be quiet and to be still, and to feel my presence in the physical world, and to feel a connection to the infinite. It helps me feel my own smallness, and my own fallibility. But also the fact that I am a unique expression of creation like everyone is here. And that I'm kind of a small miracle that has never been seen before and never will be seen again, as every person and every living thing on the planet really is.

A Storytelling Species

SCM & SCR: You've spoken of the importance of stories as teachers of empathy. On the flip side, sometimes stories can be used to encourage hate. How do we combat that?

HOSSEINI: You know, we're a species wired for metaphor. Storytelling is at the heart of all human endeavor. We build economies and start wars with stories. Stories end wars, too. They liberate oppressed people. They justify genocides. So they're powerful things. And I think one of the fundamental questions facing us today is how do we separate those stories that heal and enrich us from those that divide and destroy, that create mistrust?

To be e ective, stories don't have to be factually true. They just have to resonate as emotionally truthful. Which makes them very powerful, but also potentially dangerous. Because stories can fool you into overlooking subtext and nuance and shade and important information that doesn't necessarily fall in with the prevailing narrative. Or they can be used deliberately to mislead you, by changing facts, or denying facts, or positing outright falsehoods that prey on our vulnerabilities and our fears.

We're a species wired for metaphor. Storytelling is at the heart of all human endeavor. We build economies and start wars with stories. They liberate oppressed people. They're powerful things.

You see that play out every day in the world today. So, it behooves us to tell each other the right kind of story, especially our young people. Stories that communicate human values, in a way that permits them to see its relevance to their lives. Stories that enrich us, that connect us, that tap into our shared humanity, give us wisdom, and foster positive change. We don't have a choice, we do have to tell each other those stories.

SCM & SCR: Sometimes folks here at Santa Clara like to say, "I'm on a mission to..." So if you were to say you're on a mission—what would it be?

HOSSEINI: I'm on a mission these days to use my position as a storyteller and as a writer to highlight the core experiences that unite us as people. I think we're living in a time of great division and stress and skepticism. But the fact is that the things that we all share, the things that unite us, by degrees dwarf the things that separate and divide us—and that's something that we lose track of. So whether it be through my writing of novels, or whether through my work with UNHCR and highlighting the plight of refugees, I try to always bring the human element—and those core experiences that we share in common as a species—into the story.

SEE MORE: The 360-degree film *Sea Prayer*. Our extended recent conversations with Khaled Hosseini, as well as archive of features and interviews: magazine.scu.edu/hosseini

Stories open doors to new worlds. Will you join us in opening doors for future generations?

HEADWINDS

The adult world underappreciates delight. It goes hand in hand with discovery—and gratitude. Field notes from the Sea of Cortez.

BY JOHN SEIBERT FARNSWORTH

We struggled with headwinds today, kayaking into a northerly breeze, slogging windward one cove at a time. The group wasn't staying together as well as I'd hoped. Headwinds are where physical aptitude counts, and a few of my duckies have yet to develop windward muscle. Those out front would have to stop and wait in the lee of every successive point, hiding from El Norte behind another outcropping of wind-sculpted basalt. The lead students noticed that every time they pulled into a lee, there would be a great blue heron foraging, tall and stately, inevitably fleeing as we encroached.

Herons make an impression. These intense birds have never been happy about sharing a planet with humans, and they articulate a series of resonant hrawnks whenever they curse our species, swearing expertly with a Pleistocene accent. When we talked about the herons later, finally encamped on a friendly beach, the pattern of finding one in the lee of each point made sense, given this organism's style of stalk-hunting. During windy days they would logically be more successful on the side of an outcropping where the water was less disturbed, than on the windward side, where wind chop and spume would diminish visibility.

These are the things you can't learn from field guides.

Each student has been assigned five organisms on which they must become experts. A fish, a bird, a variety of cactus, a lizard perhaps, maybe even a marine mammal. They are to study these organisms before the trip, teaching each other about them, and then they're to find them once we get to Baja. When my budding naturalists observe their designated amigos for the first time in the field, they're to watch for the sort of things that didn't show up in field guides.

Natural history is one part patience, augmented by equal parts attentiveness and stubbornness. We have to tune up the senses.

One of the students, a junior anthropology major on the verge of becoming a type-A naturalist, had found four of her five assigned organisms prior to our current encampment, and it seemed that she wanted to be the first to befriend all five. In the part of my brain I keep to myself, I call this "Amigo Bingo." There is always someone, or perhaps some two, who wants to win the undeclared competition. This student has been frustrated, however, in her pursuit of the blue-gray gnatcatcher. So, after paddling twelve kilometers into a moderate headwind, and then setting up camp, she prevailed on me and two classmates to accompany her back into the buttonwood mangroves to search for the missing bird.

A small perching songbird that seems to move incessantly, the blue-gray gnatcatcher flits from branch to branch in thick underbrush, making it a tough bird for the uninitiated to identify. In the shadows of the foliage, it can be di cult to distinguish a blue so pale, at least for my color-blind eyes, if you've only seen this bird in field guides where the blue-gray plumage is so easy to see.

Our mission becomes all the more complex when we discover, the moment we leave the coarse sand at the back of the beach, Crotalus enyo, the Baja California rattlesnake.

Thicker than my thumb but slightly less stout than my big toe, it was not a particularly large snake, maybe 75 centimeters long. For this species, that's a full-grown specimen. Perfectly coiled on a knee-high rock, perched there like the scitalis from a medieval bestiary, it blocked our path without paying us the courtesy of a warning rattle. When we shooed it away into the brush I counted eight rattles, neatly stacked one on top of the other, but my count may have been hasty.

It would be di cult enough to pursue a blue-gray gnatcatcher were your eyes not constantly downcast, sweeping the trail for snakes—not that there's much of a trail here in the first place, just a few narrow paths where you can squeeze between the thorns if you're careful. I search for our quarry with ears only. The field guide claims that it makes a thin, wheezy zeewt. Our lead student had played a recording of this vocalization to the class a month ago, and I remind her now to hunt with her ears.

We listen, duly, and nature plays with us. Instead of a gnatcatcher, we hear the evenly spaced toots of the northern pgymy owl. It sounds like a toy, something you may have played with in the bathtub as a kid. We didn't study this bird in class, so with a low voice I tell my companions that the pgymy owl is the only diurnal strigiform commonly found in this neighborhood. It's likely to fly o if we come close, so watch for false eyespots in its nape as it flies away.

I want them to see this—a tiny daytime owl with eyes in the back of its head.

We cannot find the owl even though we are close. The terrain is too steep, our path is too brambly, and memories of the rattlesnake are too fresh. When the call for vegetable choppers goes out, my companion, a member of tonight's dinner crew, turns back to camp compliantly, accompanied by her classmates.

I remain on station, summoning the patience required to attend to a landscape where things proceed at south-of-the-border gait. I've long understood that natural history is only one part patience, augmented by equal parts attentiveness and stubbornness. This is where the casual observer need not apply.

A friend of mine, a colleague, insists that natural history is a verb. He may be right, but language somehow fails us in this endeavor. Where botanists can botanize, naturalists cannot ... naturalize. Naturecate? Instead, we have to tune up the senses, consciously, one by one, in a process that parallels mindfulness.

I smell the creosote, and the sand on the beach upwind of me. I taste low tide, even this far from the water. I watch how light distorts in the heat, especially near the canyon walls above me. I see how it reflects o the mantle of a perched raven. I hear how wind resonates di erently through cactus spines as it does through the mouse-ear leaves of a green-barked palo verde. I feel the sun on my shoulders, feeling it through my shirt, knowing that the owl feels this same energy through its feathers.

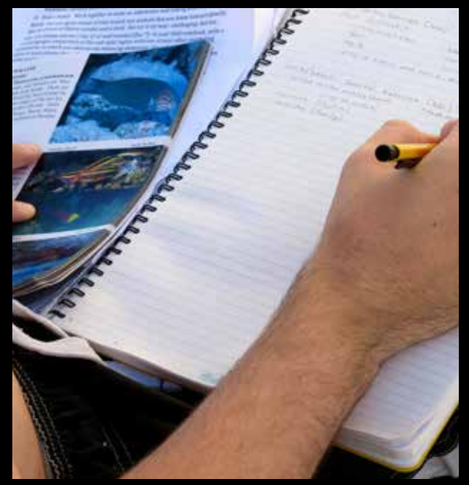
There's a conscious decision to attend to this landscape in ways that force it to give up its secrets. Where is that owl?

The owl has vanished, the desert replies.

I continue to listen anyway.

Finally, I hear the gnatcatcher's wheezy zeewt.

I do not look for the bird itself, searching instead for movement of any sort. This is what I should have done from the beginning. I pick up the movement almost instantly. Indeed, I know it to be a gnatcatcher just from



Observances: Images of the discoveries made by students traveling by kayak in the Sea of Cortez with lecturer emeritus John Farnsworth as their guide to the wild and wonderful.

PHOTOGRAPHY BY CHARLES BARRY

OPENING PHOTOGRAPH BY FRANCO BANFI

Deep search: sunset o the coast of Baja, California. Explore more of the land and water and sky in the book from which this essay is excerpted—John Seibert Farnsworth's Coves of Departure: Field Notes from the Sea of Cortez.

this movement, and I realized that I'd found it even before I was able to discriminate the blue-gray coloration, or the bird's erect tail, or such field marks as the black forehead that tells me it's an adult male in breeding plumage.

I call down to the camp that I've got one and then I use my binoculars to track it from tree to tree until the student returns. The gnatcatcher never stays on any one branch for more than a few seconds, a behavior typical of small insectivores.

When my type-A naturalist finally arrives, I point out the appropriate tree, a tall, slender, white-trunked palo blanco up a steep side canyon, and instruct her to look for movement rather than for the bird itself. Using this technique, she finds it almost as quickly as I had, although with considerably more delight in the discovery.

The adult world underappreciates delight. Lacking the celebratory religiosity of joy, it tends to be a more fleeting phenomenon, somehow less trustworthy. In defense of delight I argue that it goes hand-in-hand with discovery, and I observe it often folds appreciation and gratitude into the discovery process. I've searched my thesaurus for a better word for discovery-delight, something less sentimental, perhaps less twee, but I don't think the word I want exists in English. Spanish lets me down almost equally, adding little more than a syllable: deleite.

I came up short of delight when discovering the gnatcatcher. What appreciation I experienced almost entirely derived from being able to apply my knowledge of this organism's voice and foraging behavior to the practical task of locating it. Actually observing the bird, however, was not as delightful as it should have been, it being a widespread bird I have identified numerous times in the past, both in its summer and winter ranges. For my part, I was less invested in observing the gnatcatcher, and more concerned about not losing it before the student returned on site. The student's discovery of this bird rated much higher on the discovery-delight scale, not only because locating this particular organism completed an assigned task, but also because it was the first time she'd ever been introduced formally to Polioptila caerulea.

I am enough of a romantic that I don't want my world to be one where familiarity breeds contempt, mollifies delight, or for that matter curtails appreciation.

A few days ago we identified our first black-headed grosbeak. To the best of my recollection, this was the first member of its tribe that I've seen in Baja. I cracked open a field guide to check its winter range, and the first word in the range section was "common."

Should we allow our discoveries to be spoiled by such words? If a bird is common, should we be any less appreciative of its bicolored bill, its orange rump and breast, or the white patches glowing on its wings?

I observe the transitory nature of delight with my students. They are clearly elated when spotting their first magnificent frigatebird when adding Fregata magnificens to their species list, and they take appropriate pride in being able to di erentiate between adult and juvenile plumage, as well as being able to describe the sexual dimorphism of adults. After a few days on the island, however, the magnificent frigatebird is no longer magnificent, it's just another frigging bird that they can no longer add to their frigging field notes. Rapture takes a hit when the magnificent becomes mundane.

This is not just about birds, of course. The first time my students witness a mobula ray leaping clear of the water they hurrah as with a single voice. For the next few days they sing out each time they observe the aerobatic spectacle. After the better part of a week, however, they just keep paddling, unwilling to interrupt the progress of the voyage for a single mobula. Unless a dozen are jumping at once, as they so often do, why bother attending to a single?

This morning, while I was writing about a hermit crab one of the students had befriended, two large falcons, Falco mexicanus, came screeching over the ridge, the pursuer making its staccato chi-chi-chi-chi-chi threat, the pursued screaming bloody murder, wings beating furiously. Almost directly overhead they locked talons, each falcon shrieking at this point as they plummeted toward our beach, no longer flying, but falling instead.

Spiraling clumsily around each other, feathers askew, the combatants fell from the harsh sunlight above the ridge into the canyon's early-morning shade, losing about two-thirds of their altitude before releasing each other. The chi-chi-chi-chi-chi threat resumed immediately, each bird laboring to regain altitude and speed, the pursuer never more than a meter behind. When they disappeared over the ridge, it appeared the chase would continue for miles.

Two paragraphs ago, I made the conscious decision to reference these falcons by the scientific name, Falco mexicanus, rather than by their common name, "prairie falcon." Is it possible that enjoyment of this narrative has been augmented for some readers by supposing that these were exotic creatures? Would critical appreciation have been diminished by knowing that these were the common falcons that spend the summer months escaping the Baja heat by perching on the telephone lines that border Kansas wheat fields?

How do we preserve our delight if we presume that the common is less appreciable than the exotic?

That question seemed to answer itself a few hours after I penned it, when we went diving at the sea lion colony at Los Islotes, a site too famous for its own good. I've snorkeled here at least a dozen times, and was therefore not expecting the momentary bliss that accompanies a novel experience. This was fine, of course, since teachers experience bliss vicariously whenever their students make discoveries. This holds true even when anthropology majors are involved.

Even though it was Tuesday, Los Islotes was crowded. Spring break in Baja. I led our group to an end of the rocky islets less frequented by the tour boats, but before we could get there I spotted a shiny-new snorkel that had been dropped in ten meters of water, a depth beyond the range of most novice snorkelers. Intent on the snorkel's rescue, I took a breath, jackknifed, and had nearly reached it when a juvenile sea lion zoomed past, beating me to the snorkel and grasping it in its mouth the way a dog grasps a bone. The pup swam away a few meters, just beyond my reach, spat the snorkel out, and then regripped it by the end—in other words it now held the snorkel's mouthpiece in its mouth. Mimicking me thus, it swam o .

I suppose I will never know for certain whether the sea lion was consciously trying to mimic human practice or was just haphazardly playing "Snatch the Snorkel." I prefer believing the first alternative, perhaps because it appeals to my sense of whimsy, a sense that would have been all the more delighted had I been resting at the surface the moment a sea lion popped its head out of the water with a snorkel held properly in its mouth. Regardless, the novelty of the experience added to my pleasure, this having been the first time I'd seen a sea lion snorkel.

I trace my recent travels thus: perturbed herons >>> nonrattling rattlesnake >>> elusive gnatcatcher >>> fierce falcon fight >>> snorkeling sea lion. But for every organism/event to which I pay attention, there are many others I fail to note. One of my favorite writing exercises, back in the classroom, is to ask students to spend five minutes writing about the things they failed to observe on their way to class that morning. I probably get more detail from this question than had I asked them to take notes while they walked toward our seminar room.

It is possible, I suppose, that my students and I would enjoy these trips immensely were we simply to paddle our way around this archipelago rather than attempting to study our way around it as well. What would su er, I fear, is the quality of attention we pay to the various elements of natural history we encounter. Had the blue-gray gnatcatcher not been assigned, it would most likely not have been seen. We would still notice the charismatic megafauna, like the humpbacks that sometimes breach directly in front of our kayaks, and we would delight in that, but how deep would such appreciation run?

I don't like the word "seaweed" because "weed" seems judgmental, and because college professors are allowed to be snippy about such things. A better term would be "macroalgae," were it not so pretentious. The locals here in the Sea of Cortez call their free-floating macroalgae "sargasso," as do I, my organismal vocabulary in Spanish far exceeding my mastery of Spanish verbs. My students prefer to use the genus name, Sargassum, intentionally mispronouncing it so that it rhymes with "orgasm." The student who has been assigned to study sargassum can undoubtedly tell you that it's holopelagic, which means that it can reproduce without ever needing to attach to the sea floor. In the past, I've had an entire class claim to be holopelagic.

For some naturalists, understanding the physiology of vegetative holopelagic reproduction might be the cool thing. For me, however, the cool thing about sargasso is that patches of it, floating on the surface, often hide juvenile Pacific seahorses, Hippocampus ingens, with their horse-like heads, their monkey-like prehensile tails, and their kangaroo-like pouches. You'll never find them, however, unless you're actively looking for them. Masters of camouflage, they are able to match their color perfectly with the sargasso's greenish brown. They blend in so well that thousands of sea kayakers have paddled through sargasso down here in Baja without ever spotting one. For most of these people, sargassum is just a seaweed, a weed floating in saltwater, something that wraps around your paddle when you're not paying attention.

What my students and I are trying to learn is to pay attention in an ecosystem where heightened attention becomes its own reward.

I suppose I will never know for certain whether the sea lion was trying to mimic human practice or was just haphazardly playing 'Snatch the Snorkel.'

JOHN SEIBERT FARNSWORTH is senior lecturer in environmental studies and sciences emeritus at Santa Clara University and the author of *Coves of Departure: Field Notes from the Sea of Cortez*. For more than a decade, he taught a course that included expeditions to Baja, California Sur, a program that continues at SCU. His current research concerns long-term ecological projects, with a book forthcoming from Cornell University Press in 2020.

PHOTO BY SAWYER CORES VIA UNSPLASH

Santa Clara University

A Campus Transformed

Here are some of the literal doors that we've opened on campus in recent years—and three we'll be opening in months to come. They're all part of the Campaign for Santa Clara.

1. **SOBRATO CAMPUS FOR DISCOVERY AND INNOVATION**
   A landmark complex to foster collaboration in the sciences, mathematics, technology, and engineering. Construction underway.

2. **STEPHEN C. AND PATRICIA A. SCHOTT ATHLETIC EXCELLENCE CENTER**
   A 50,000-square-foot, state-of-the-art training facility for student athletes of all stripes. Groundbreaking in 2019.

3. **STEPHEN A. FINN RESIDENCE HALL**
   Mini-suite style rooms for first- and second-year students. Opening Fall 2019.

4. **HOWARD S. AND ALIDA S. CHARNEY HALL OF LAW**
   A new home for the School of Law.

5. **EDWARD M. DOWD ART & ART HISTORY BUILDING**
   A place to make art, study its history, and design experiences through virtual-reality technology.

6. **HEAFEY AND BERGIN HALLS—REMODEL**
   For STEM, 20-plus classroom/laboratory spaces and a large two-story collaborative space.

7. **ROBERT F. BENSON MEMORIAL CENTER—REMODEL**
   Major rejuvenation of the central dining hub for students—plus a glassed-in atrium.

8. **FRANKLIN STREET PEDESTRIAN MALL**
   Connecting the arts community and the Jesuit Residence to campus with an inviting paved walkway.

9. **OUTDOOR VOLLEYBALL COURTS**
   A place for the women's beach volleyball team to practice and play—and open to everyone.

10. **OUTDOOR WORKOUT AREA**
    Space for training and exercise—perfect for the California sunshine.

These aren't new—but we wouldn't be Santa Clara without them!

A. **MISSION SANTA CLARA**
   The spiritual heart of Santa Clara. In 2019 the interior is receiving a historically-accurate restoration.

B. **BANNAN ALUMNI HOUSE**
   A new name for the home for all Broncos. Dedicated in honor of Fr. Lou Bannan and the entire Bannan family in March 2019.

C. **THE BRONCO STATUE**
   Made possible by Bronco alumni—a symbol of pride in academic and athletic excellence.

D. **FOUNTAIN AND ABBY SOBRATO MALL**
   At the gateway to the pedestrian-friendly center of campus. Even as SCU has grown, the campus has become more united.

FOUNDATIONS

IT'S NO SECRET that we're building something wonderful at Santa Clara. We have new homes for the arts and for law. We're building a new complex for the sciences and engineering—to foster collaboration and discovery across disciplines. We're building a first-rate training facility for our student athletes. And to open Santa Clara's doors to more students, we're building a new residence hall as well.

These structures are beautiful—and built to educate leaders of tomorrow. They're also grounded in a sense of community and tradition, and an understanding that learning doesn't just happen in the classroom.

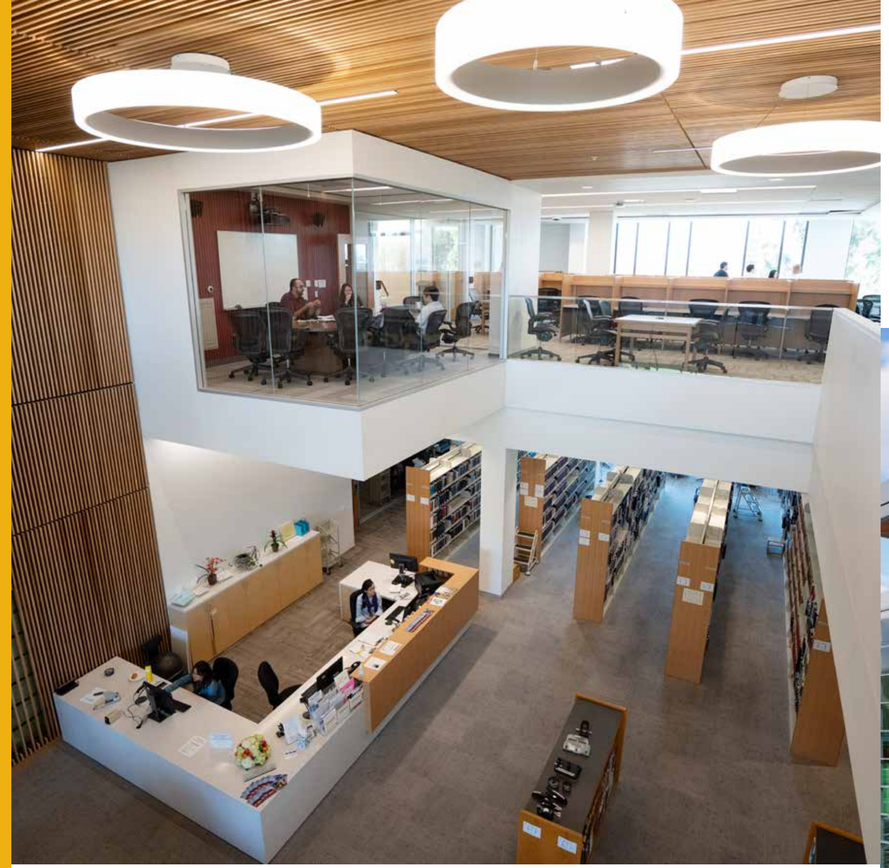
What's really important is what these places mean for people: the possibilities they create for our students and the dedicated faculty who teach them, and who guide them in research that makes the world a better place.

When we open these new buildings, we're also opening doors of opportunity—where we educate the whole person and where we innovate for the world. And when we construct something that we want to last, we know the foundation is important—especially when it comes to values.

So take a look at what we're building—and the transformation taking place at Santa Clara. The students we're educating are going to do incredible things, in no small part thanks to support from people like you. We're creating vital new opportunities for Santa Clara students now—and for generations to come. We hope you'll join us.

Jim Lyons
Vice President for University Relations

A peek into the future Sobrato Campus for Discovery and Innovation, designed to foster interdisciplinary learning and research. Help us innovate for the world: **campaign.scu.edu**



Charney Hall is a Silicon Valley home for law—a place for six clinics and centers, from the Entrepreneurs' Law Clinic and High Tech Law Institute to the Northern California Innocence Project.

HALLS OF JUSTICE

THE NEXT GENERATION of lawyers who lead has a new home, designed to support the vital role that lawyers play in advising Silicon Valley clients, shaping the justice system, and serving the greater community. The Howard S. and Alida S. Charney Hall of Law was dedicated in fall 2018 and incorporates flexible learning spaces, sophisticated classroom technology, collaborative and clinical spaces, and outdoor gathering areas. The new building brings almost all of the law school's programs under one roof for the first time in 40 years, including intellectual property law, international law, public interest and social justice law, and privacy law. That's crucial as we're forming leaders operating at the intersection of law, technology, business, justice, and ethics.

PHOTO BY KEITH HOFFTER

BUILDING GREATNESS

WE'LL BE OPENING doors to a new era in Bronco athletics soon—literally. The Stephen C. and Patricia A. Schott Athletic Excellence Center will enhance and elevate the prominence of athletics at SCU. How so? The planned 50,000-square-foot building near Leavey Center will give Division I student athletes room to train, practice, and study as a team, while increasing space for students in club and intramural sports. Call it a deepened dedication to greatness. And credit in no small part gifts of $15 million from **Stephen C. Schott '60** and **Patricia A. Schott**, and $10 million from **Mary Stevens '84** and **Mark Stevens**. Steve Schott's education was made possible by an athletics scholarship, and he knows his gift not only helps student athletes but also means there will be more room for all students to achieve their health and fitness goals. "It's going to serve not just the athletes, but the entire student body," he says.

ILLUSTRATION COURTESY SCUATHLETICS

Future Bronco hall of famers will train here. You can support them and student athletes of all stripes. Visit campaign.scu.edu.

&

Pillars and People. Speak of the Campaign for Santa Clara and we should note the pillars on which we build: the notions of Opening Doors, Educating the Whole Person, and Innovating for the World. This $1 billion undertaking for the University is something tremendous. But what is truly marvelous: the people who animate and sustain this place, and the programs that touch lives near and far.

So who are the people who make the campaign a success? Of course it's you—whether you're one of 100,000+ Bronco alumni or a proud parent, a friend and benefactor, a student or a sta member, or one of the teaching scholars so central to this whole educational endeavor.

Helping lead the way on the Campaign for Santa Clara are four members of the Santa Clara family who want to build on the great accomplishments of years past and shape new opportunities for generations to come.

Je rey A. Miller '73, MBA '76 and **Karen Miller** know it's important to ask big questions when you're asking folks to join you in a mission like this. Je , who is president of business consulting firm JAMM Ventures, asks, "Who could combine the cornerstones of Silicon Valley—innovation and entrepreneurship—with the Jesuit values of service to humanity to help alleviate poverty and fight climate change? Only Santa Clara."

John A. Sobrato '60 and **Susan Sobrato** have been wed for more than 58 years. John is a real estate executive, the founder and principal of the Sobrato Organization, and he and Sue have been partners in the family's philanthropic endeavors. They have also been a part of Santa Clara for more than half a century. "The Jesuits believe in educating the whole person," John says. "It is crystal clear that the world needs these unique Santa Clara–educated alumni more than ever."

Campaign Chairs: On the left, **Je rey A. Miller '73, MBA '76** and **Karen Miller**. On the right, **John A. Sobrato '60** and **Susan Sobrato.**

PHOTOGRAPHY BY CHAD RILEY

Campaign Cabinet

This dedicated group of SCU alumni, parents, friends, and supporters will guide the four-year fundraising campaign in partnership with University staff. Through twice-yearly meetings and regular contact the campaign cabinet assists in fundraising and marketing, as well as acting as advocates for Santa Clara University. Join them in supporting your University and get involved.

campaign.scu.edu

University Leadership

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28th President of Santa Clara University

Kevin F. O'Brien, S.J.
29th President of Santa Clara University

Jim Lyons
Vice President for University Relations

innovating with a MISSION
The Campaign for Santa Clara University

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Julia J. Vari

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& Claudine Young '89, P'17

LAST PAGE IN BLOOM

Stop and Smell the Roses. From the Mission Gardens to flower-lined paths to the wall of climbing roses encircling campus, they help define Santa Clara. Appreciate what is meaningful; these flowers thrive with attention and care—good reminders, both. The perfume they exhale in the cool morning—is that scent redolent of romance? The iridescent colors as afternoon light turns golden in the magic hours—did you ask for a hand in marriage with these flowers looking on? Stem and hip, cup and thorn, hundred-petaled heart—and symbol of the Virgin Mary: They're resonant of the essential connection between truth and beauty, body and soul. Their fragrant history on campus goes back many decades—and includes a black-petaled rose, plus a dark crimson beauty called Santa Clara. There are tales of rosy mystery here. As for the future: What flowers and hopes do you want to nurture?

PADRE OF THE ROSES In 1939 renowned rosarian Fr. **George M. A. Schoener** arrived on campus. Pittsburgh-born, Swiss-raised, he cultivated some 5,000 rose plants. Santa Clara's rose collection truly took root. He bred one 20 feet tall; another was almost black; one bloomed with multiple colors on a single flower—petals yellow on top, red beneath.

Meet me at the gate of the Rose Garden: the original Mission cemetery—then for years site of the student chapel. It was planted with roses after the Mission burned in 1926.

What's in a name? Roses on campus include Schoener's Nutkana, Madame Butterfly, Rio Samba, Crimson Rambler, and Evangeline.

ROSA MOSCHATA ABYSSINICA Adjacent to Ricard Observatory, the Ethiopian Rose scales a towering trellis and shades those seated on benches below. The rose's blossoms are small, its legend large: Rumor is it was a gift from Emperor Haile Selassie—or an Ethiopian princess.

DRAWN FROM HISTORY
Sketched in 1889, this rose lives the University Archives, tucked in Pedrina Pellerano's autograph book. Her brother **Nicholas Pellerano** graduated in 1891.

ROSE PAGEANT A scene from Portland, Oregon, where Fr. George Schoener began his rose hybridizations and, for festivals, shared his floral bounty by covering carriages—horsed and horseless alike—with flowers.

POLLINATOR AND EDUCATOR "We use the rose garden as a living lab for students to investigate evolution," notes Associate Professor of Biology **Justen Whittall.**

Wall of Roses: Walk the edge of campus and thank **Marianne Sugg** for finding a home for hundreds of climbing roses there beginning in the 1990s.

SWEET PERFUME
In 1895, as part of a planned perfume plant, seven acres of roses were planted along Saratoga Avenue in Santa Clara. Perfume production never took o□, but the Santa Clara County Rose Society did—the second rose society in the West.

THE SANTA CLARA ROSE
Botanist and horticulturalist **George A. Gilbert, S.J.**, came to Santa Clara in 1930. He sought new and rare plants for the gardens—from paint brush to sea pink—and bred a Santa Clara Rose. Its color: dark crimson. Its fate: unknown. Rose detectives take note.

Tending more than 1,000 roses on campus takes time—and the work of many hands by gardeners who approach this work with reverence. They're supervised by **Chris Young**, assistant director of building and grounds, at SCU for 30+ years.

IMAGES OF FR. SCHOENER AND DRAWINGS COURTESY SCU ARCHIVES. LARGE IMAGES OF THE ROSES IN THE SUN BY JOANNE LEE. PERFUME BOTTLE COURTESY ADOBESTOCK. WORDS BY NOAH SONNENBURG '21

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