SUMMER 2017

LEHIGH

BULLETIN

A BRIDGE TO SILICON VALLEY

LEHIGH EMBARKS ON AN EXCITING NEW ERA WITH A SERIES OF WEST COAST INITIATIVES.

OFF ROAD RIDING
Harry Ambler '17, a member of Lehigh's revived Baja SAE (Society of Automotive Engineers) team, maneuvers through a Rock Crawl event that was part of the Baja SAE Illinois competition in June. The team, which is composed of engineering and non-engineering students, designed and built its own car. Despite competing against teams from around the world with more experience and larger budgets, Lehigh Baja placed seventh in the Rock Crawl and 31st overall out of 99 teams in the competition, which was held at the Caterpillar Edwards Demonstration and Learning Center in Illinois. The team also competed in an event in Kansas, placing fifth overall out of 107 teams. ***Photo by Stephanie Veto***

To watch the team in action, visit ***go.lehigh.edu/baja***

Forever Pushing Forward

CHRISTA NEU

Tom Gillis '15P '17P '19P

GREAT UNIVERSITIES don't stand still. They can't stand still. And the reason, of course, is that the world doesn't stand still.

Lehigh is not standing still.

Our bright, ambitious students are excelling both inside the classroom and out. The work of our dynamic faculty bolsters our reputation as a leading research university. Our alumni continue to serve as our proud brand ambassadors, making impacts in the worlds of business, the arts, higher education, sports and so many other fields as well. Meanwhile, our leadership is encouraging us all to think more boldly about the potential of this great university, laying out exciting plans for growth that could prove to be transformative.

There's no question, these are exciting times at Lehigh, which means it's a great time to be editor of this magazine. There are simply so many amazing stories to tell; the only challenge, it seems, is trying to make space for all of them. In this, our latest issue, we tried our best to do just that. Some highlights:

• In our feature package in this issue (Pg. 22), we explore the many important initiatives Lehigh is currently pursuing on the West Coast, and also tell the story of Lehigh parent Tom Gillis '15P '17P '19P, a successful Silicon Valley entrepreneur who is leading the way in helping young women break into the tech world. His generous contributions to talented Lehigh students are already making a major impact.

• Early this year, Lehigh welcomed Khanjan Mehta as the university's first vice provost for creative inquiry. Mehta is looking to build on the successes of the Mountaintop initiative and integrate the ethos of creative inquiry into every aspect of the Lehigh academic infrastructure. In an in-depth Q&A (Pg. 10), he explains how to intends to do so.

• Lehigh prides itself on supporting research that aims to answer some of the greatest questions of our time, and Sera Cremonini is looking to answer perhaps the biggest of them all (Pg. 28). Cremonini, an assistant professor of physics, is a leading thinker in the field of string theory, which proposes that all the mysteries of the universe can be explained by the existence of, and behaviors of, almost impossibly tiny vibrating "strings."

You will also read about junior Darian Cruz's remarkable triumph at the NCAA wrestling championships, the selfless efforts of Vince Volpe '80 to revive one of France's most historic sporting institutions and the rising star who is mural artist Denton Burrows '11.

We hope you enjoy this issue of the *Bulletin*, and we welcome you to share your thoughts by writing us at tih313@lehigh.edu. Thank you again for reading.

Sincerely,
Tim Hyland, *Editor*

*Share your thoughts—your kudos, your criticisms, your questions—by sending your Letters to the Editor. They can be sent via snail mail to the address at right, or via email to **tih313@lehigh.edu**.*

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LEHIGH ALUMNI BULLETIN
Vol. 103, No. 2, Summer 2017

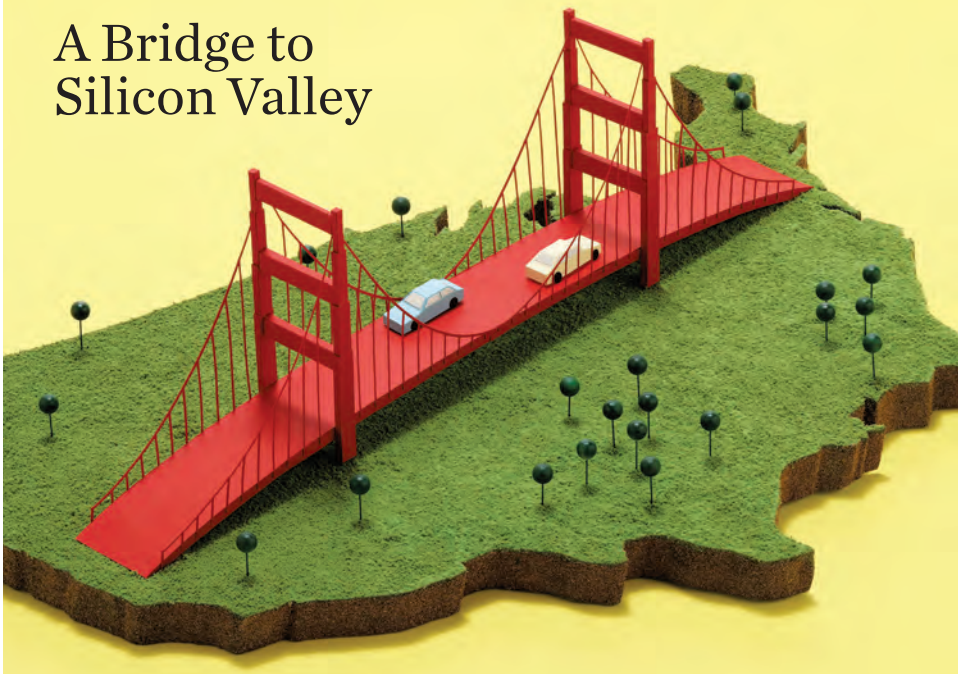
Published three times a year by the Lehigh University Communications and Public Affairs Office, in cooperation with the Lehigh University Alumni Association Inc.

Volume 103, Number 2, Summer 2017

LEHIGH

SPECIAL REPORT

A Bridge to Silicon Valley



22 Lehigh embarks on an exciting new era with a series of West Coast initiatives. *By Bulletin staff*

25 PROFILE: A Lehigh Advocate Sees the Big Picture Entrepreneur Tom Gillis '15P '17P '19P is working to strengthen ties between the university and Silicon Valley, and to nurture the next generation of tech leaders. *By Dawn Thren*

28 What Holds Our Universe Together?

String theory, says Sera Cremonini, connects Einstein and quantum mechanics, and the Big Bang with black holes. *By Kurt Pfitzer*

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CHRISTA NEU

A SPECIAL PLACE

Loved the spring 2017 *Bulletin*. The lead article [*When Lehigh Beat Duke*] was fantastic—hearing the different perspectives over the course of time was a fantastic way to bring the story to life. I loved reading it. Really well done.

I also appreciated the article on the preceding page, *A Surprising Star in the Making*. While I'm excited that Maura Henderson '19 has truly found her athletic passion, I greatly respect that the school was able to support her move from lacrosse to track. It's stories like this that reinforce for alumni that Lehigh remains a place small enough to support individuals in meaningful ways but large enough for opportunities and experiences.

Lori Norian '93

A NOTE OF THANKS

Many people have decided to "write my story" and tell what's happened to me, but yours really moved me. I appreciate greatly how you captured my transition of sports and for deciding to focus on me as an athlete for this piece. Great appreciations.

Maura Henderson '19

THE PEACE PROCESS

I am happy to have received the *Lehigh Bulletin* for spring 2017. I thank you most sincerely for keeping me connected with Lehigh in this manner.

I am writing to you after having read the article on page 34 titled *A Prescription for Peace*. In it, the author, Kurt Pfitzer, states that according to Norrin Ripsman, peace between, for example, the traditional archenemies France and Germany could be achieved only because of a top-down approach. Mr. Ripsman continues with the situation between Israel and Egypt and notes that the Camp David peace accord between the two countries and signed by Menachem Begin for Israel and Anwar Sadat for Egypt did not work, precisely because the "bottom" did not cooperate as expected by the leaders. The basis of the European peace process was provided exactly because of the slowly developing working and later also personal relationship of partners in these originally strained relations between the two populations!

I have two daughters who both work for the International Committee of the Red Cross (ICRC) and have worked for the ICRC in many parts and countries in the world. I believe that they are fully aware of the difficulties in achieving peace in these particular situations. They are also aware that first of all the population in the concerned areas must try to change their attitudes toward their perceived enemies, which unfortunately is not an easy task.

Sebastian W. Bauer '70

WHEN LEHIGH BEAT DUKE: READERS RESPOND

One thing that was not mentioned in the Lehigh basketball article (*Act Like You've Been Here Before*, spring *Lehigh Bulletin*) was the post-game interview with C.J. [McCollum] and Coach [Brett] Reed with the mayhem on the court behind them. They acted like you were having a cup of coffee with them. They were classy, articulate using no cliches, and referring to the team as family. Evidently toward the end of the game C.J. had cautioned the bench to "act like you've been here before," giving Duke respect.

Lehigh proud!

Dick Bell '68

A contingent of avid Lehigh wrestling fans, including Trustee Joe Perella and myself, was watching the Lehigh wrestling team at the NCAA championships in St. Louis. In our suite nestled in the corner of the Scottrade Complex, we had put the Lehigh-Duke game on television. We had the pleasure of watching our wrestlers live and the basketball game simultaneously.

My most vivid memory is that every time Lehigh made a basket or took the lead, our group of about 20 cheered with increasing resonance. We actually were so loud toward the end of the game that others in the arena kept looking up at our skybox, wondering what we were consistently cheering about, especially at times when no Lehigh wrestlers were on the mats.

That night our group had the ecstasy of witnessing Zach Rey beat number one seed [Ryan] Flores ... to earn an appearance in the finals plus Lehigh basketball

arguably having its finest win in history. What a lifetime memory of a special night!
Mike Caruso '67

Best sports article I've ever read! Thanks to you, Mary Ellen, Justin and Danny, for bringing back the memories. However, you missed one important item. We had to "endure" a half-hour of accolades for Duke's 25th appearance in the NCAA Basketball Tournament prior to the game. It just made the win that much sweeter!
Rich Bradley '61

REMEMBERING THE ENGINEERS

With regard to the article *Rivalry Earns a Historical Marker* in the Spring 2017 edition of the *Lehigh Bulletin*, I have to point out your most significant factual mistake with the claim "Taylor Stadium, where Mountain Hawks played from 1914 to 1987." The Mountain Hawks never set foot in Taylor Stadium! The Engineers played there. Neither have the Mountain Hawks played the Pards 152 times. Well, at least the marker is correct.
Dave Nyffenegger '95G

EDITOR'S NOTE: Yes, indeed! Lehigh's athletic teams were known as the Engineers until the 1995-1996 academic year, after which the name change to Mountain Hawks occurred.

CORRECTION: The last name of Emily Flanagan '12 was misspelled in Chapter 8 of our 2017 Spring cover story,* When Lehigh Beat Duke. *Flanagan was among those who watched the win and celebrated back at campus. We regret the error.

First Steps Down the Path

I HAVE SPENT THE MAJORITY of my professional life working in the world of higher education, which means I have of course seen more than my fair share of graduation ceremonies. But even after all of these years, I still walk away from each Commencement Day feeling as though I just witnessed something truly special—and truly powerful, too.

Such was the case again in late May, as our university community gathered to celebrate the achievements of the Lehigh Class of 2017. Despite the less-than-ideal weather, the day was nothing short of what a college graduation ought to be: a celebration of what our young graduates had achieved and an opportunity to look hopefully to the future.

The Class of 2017 is a group of truly wonderful young people—bold, creative, ambitious individuals who have made us proud during their time on South Mountain, and will most assuredly continue to make us proud in the years to come. In this group I see future scholars and business leaders, artists and educators, innovators and entrepreneurs. In other words, I look at that group, and I see almost limitless potential.

But of course, exactly what becomes of these new graduates' careers—what becomes of their lives—is entirely up to them. Their futures lie in their own hands, to be shaped only by their ambition, their intellect and their willingness to put in the hard work that is inevitably tied to all greatness. This enormous sense of possibility—this exhilarating idea that all things are possible—is something I take away from every graduation I attend, and now that I serve as Lehigh's president, the graduations also serve as annual reminders of our shared obligation to continue fashioning a brighter future for this great university. Just as our new graduates have the opportunity to build any life they wish, so too do we have the chance every day to build a better Lehigh.

A few months back we unveiled our "Path to Prominence," which lays out a bold vision for a new Lehigh—one that will include a larger student body, an expanded faculty, a new college of health and crucially important building projects. It is a plan that will make our university larger, yes. But this initiative is not about growth alone; rather, it is about recognizing our current strengths and building on them in order to make a greater impact on the world.

We aim to craft an even more powerful undergraduate and graduate/professional student experience. We endeavor to support research that changes lives for the better. We will expand our commitment to support our hometown of Bethlehem, and we will strive to make Lehigh a truly global university. The Path to Prominence is our roadmap to achieve all of these things—and we actually believe it could spur us to achieve even more. I invite you to learn more about Lehigh's future by visiting the Path to Prominence site, which you can see at lehigh.edu/path. There, you can read in closer detail our vision for this university, as well as learn how you can do your part to help us achieve it.

As always, I thank you for your loyalty to Lehigh. And I know that everyone in the campus community does as well.

Sincerely,
John D. Simon, *President*

Follow President Simon on Instagram ***@lehighpressimon***

ON CAMPUS

NEWS FROM LEHIGH

A Focus on Health

FIGURE 1

The Bureau of Labor Statistics projected healthcare jobs will grow 19 percent from 2014 to 2024, faster than the average for all occupations. About 2.3 million new jobs are expected to be added.

The committee charged with generating ideas for Lehigh's proposed college of health gave the campus community an update on its progress at two forums in April and sought input on six themes under consideration.

The committee began its work in the fall, after President John D. Simon presented a bold academic vision for Lehigh to the Board of Trustees. The plan outlined a series of sweeping steps to enable Lehigh to build on its legacy and stand among the best in higher education.

The themes include:

• **Biomedicine and Biotechnology**, which would build on Lehigh's existing strengths in such areas as data science, biochemistry and neuroscience while allowing for new opportunities in biomarkers, nanotechnology and other areas.

• **Environmental Health**, which would center on preventing or controlling disease, injury and disability related to interactions between people and their environment.

• **Resilient Communities**, which would explore why some individuals and communities are able to recover from chronic and acute adversity.

• **Mind-Body Connections**, which would focus on the connections between mind and body in promoting health. The goal would be to promote research on the intersection of mental and physical health at all levels, including policy and system levels.

• **Science of Healthcare Delivery**, which would focus on scientific methodologies that improve quality, efficiency, effectiveness and outcomes.

• **Healthy at Home**, which would focus on maximizing and maintaining the wellness of individuals and families outside of the healthcare setting.

"This is a work in progress," said Ray Pearson, director of the Center for Polymer Science and Engineering at Lehigh, at one of the forums. Pearson, and Debbie Laible, professor of psychology, are committee co-chairs.

Several criteria are being used to evaluate proposed themes for the health college: innovation, enhancement of Lehigh's visibility and reputation, funding potential, demand for degree programs, leverage of Lehigh's existing strengths and the need for new strategic partnerships.—*Mary Ellen Alu*

‘All the Single Ladies’

Rebecca Traister discusses bestselling book in talk at Lehigh

Author and self-described feminist journalist Rebecca Traister discussed her bestselling book, *All the Single Ladies: Unmarried Women and the Rise of an Independent Nation,* in a March 30 talk sponsored by the Friends of the Lehigh University Libraries and the Lehigh University Department of English.

In describing the book’s genesis, Traister said, “I had to educate myself on American history from a totally different perspective.” Part of her inspiration in writing the book came from knowing that the rate of singlehood for women was increasing to the point that single women outnumber married women in the country.

“I knew that there was a tremendous shift in mass numbers in terms of how people and women were behaving around marriage,” she said.

Traister strongly identified as a single woman in her 20s—up until she met her now husband. She remembers being taken aback by the way people reacted to her marrying at age 35.

> “I KNEW THAT THERE WAS A TREMENDOUS SHIFT IN MASS NUMBERS IN TERMS OF HOW PEOPLE AND WOMEN WERE BEHAVING AROUND MARRIAGE.”
>
> –REBECCA TRAISTER

“We both had full adult lives,” she said. “Marriage wasn’t going to define us, kick off our lives together or shape us. We became adults separately. We just so happened to fall in love, and we were getting married.”

Throughout history, Traister explained, unmarried women gravitated to jobs that brought them together, such as teaching and nursing, and led to movements such as women’s suffrage. She said the government and current political climate have a large impact on singlehood.

“The ability to live independently is predicated on a government that acknowledges women and supports their independence,” she said.

Lehigh has “a particular place” in Traister’s heart. Her mother is emerita professor of English Barbara Traister, who taught at Lehigh for about 40 years.

Traister’s first book, *Big Girls Don’t Cry,* about women and the 2008 presidential election, was a *New York Times* Notable Book of 2010 and winner of the Ernesta Drinker Ballard Book Prize.—*Alex DiBrigida ’17*

CHRISTA NEU

CLAYTON NAMED CHAIR

Kevin L. Clayton ’84 ’13P, who served as Lehigh’s interim president for the 2014-15 academic year, is the new chair of the Lehigh University Board of Trustees. His selection by the board’s executive committee was officially ratified by the full 35-member board in May.

Selected as vice chairs were Robert L. Brown III ’78, partner in the PricewaterhouseCoopers Philadelphia office, and Philip B. Sheibley ’81 ’19P, a venture capital investor with a primary focus on the alternative energy and life sciences industries and chair of Fiberight LLC, an advanced biofuel company.

“I’ve had the privilege of being involved with Lehigh virtually my entire life, and I am humbled and honored to assume this new role to serve the university,” Clayton said.

Clayton served on the Board of Trustees from 1993 to 1999 and again since 2005. In honor of his parents, he and his wife Lisa established the William L. and Carol L. Clayton Endowed Scholarship Fund in 2003. They also established the Kevin L. Clayton ’84 and Lisa A. Clayton Endowed Scholarship Fund in 2008 to support students in the South Mountain College residential academic program. More recently, they established and funded the Kevin L. Clayton ’84 ’13P and Lisa A. Clayton ’13P Deanship for the College of Business and Economics.

Clayton succeeds Brad Eric Scheler ’74 ’05P ’08P ’09PG, senior law partner of the Manhattan-based law firm of Fried, Frank, Harris, Shriver & Jacobson LLP.

A CARNIVAL COMES TO LEHIGH

More than 750 students attended a carnival-style event, run by Lehigh After Dark, that was part of Lehigh's efforts to provide alcohol-free social options for students. Summerset was held from 8 p.m. to midnight on May 4 on the front lawn of the STEPS building, as students were winding down the academic year. The festivities included stilt walkers, jugglers, contortionists—and President John D. Simon in a dunk tank.

CHRISTA NEU

NEW BUSINESS BLOG

The e-commerce explosion, the right to "disconnect" and the risky business of fantasy sports games are among the weighty topics explored on ilLUminate, the new blog of Lehigh's College of Business and Economics.

Launched earlier this year, the blog offers thoughtful perspectives from the college's faculty, alumni and students on complex issues related to business.

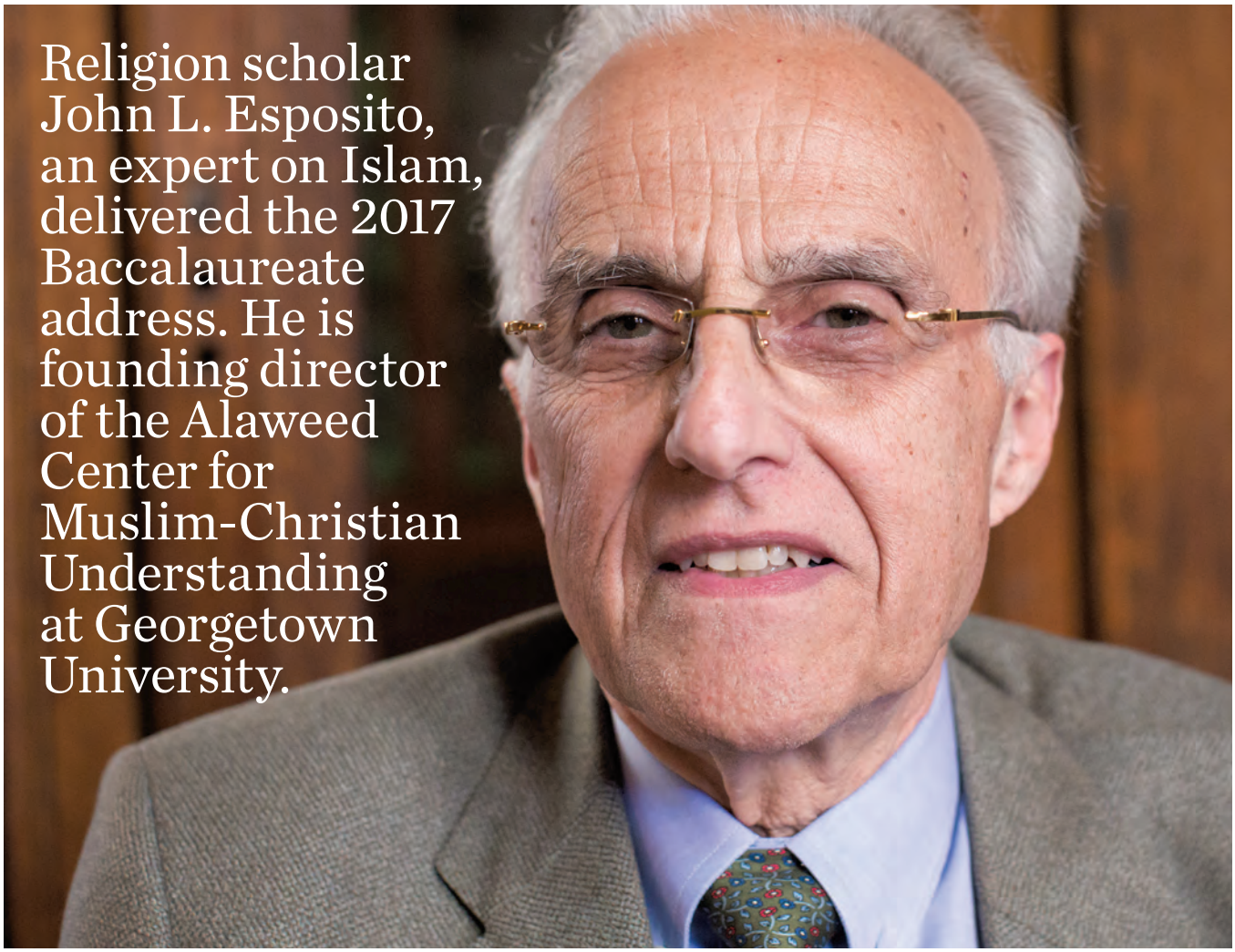
"Lehigh's College of Business and Economics is home to some of the smartest and most creative thinkers it has ever been my pleasure to encounter," said Dean Georgette Chapman Phillips in announcing the launch of the blog. "I believe that the perspectives our faculty, alumni and students offer will challenge, stimulate and illuminate."

The blog is updated continually. Posts have examined tax cuts, the new energy economy, health insurance markets, whether robots are stealing jobs and the physical internet. Among the contributors are faculty and alumni, including Cathy Engelbert '86, CEO of Deloitte LLP.

"We believe our mission is to educate people of all stages and phases of their lives," Phillips wrote. "There is always the opportunity to learn, to view something from a different perspective."

To sign up for blog updates, go to cbe.lehigh.edu/blog/signup.

FOUR QUESTIONS WITH John Esposito



Religion scholar John L. Esposito, an expert on Islam, delivered the 2017 Baccalaureate address. He is founding director of the Alaweed Center for Muslim-Christian Understanding at Georgetown University.

CHRISTA NEU

1 You were raised Catholic and considered becoming a priest. Why your interest in Islam?

I was teaching at Rosemont College and needed a doctorate. There was a new program at Temple University; you could major in one religion and minor in two others. The chair said, "We're hiring a Muslim scholar. I think you ought to study with him." I decided, reluctantly, I would. The professor was very dynamic, and he made Islam and Islamic history come alive. It just grabbed me.

Back in those days, Judaism and Christianity would be seen as linked on one side, and then Islam was always put with Hinduism and Buddhism and everything else. And it actually didn't belong there. It belonged in the Judeo-Christian-Islamic side of things because Muslims see, as Christians see, Jesus as a revelation that came as a further step beyond Judaism.

We talked about Islamic history, and one saw not only the extent to which Islam spread as a faith rapidly but also that it generated a civilization that made enormous contributions in everything from mathematics and geometry to architecture and astronomy. A whole world was opened up for me, and I found it absolutely fascinating.

2 In the aftermath of a contentious presidential election, how would you characterize American attitudes toward Muslims?

A significant number of Americans sees Islam as a religion with all its diversity. But on the other side, a very significant number ... has a very skewed understanding of Islam; that is, that they take the very small but very dangerous acts of religious extremists and brushstroke the entire religion and the vast majority of Muslims.

3 Are we moving toward greater understanding of Islam?

What we do have is a crystallizing of the problem. ... There's a bias toward Islam and Muslims, what we call Islamophobia. ... It's existed. You just weren't aware of it. There wasn't significant media coverage.

What we have now is an opportunity to be able to point to the problem and say, you can see some very bold examples of the problem. Let's try to deal with that.

We have to protect America's values. ... The danger here, from my point of view, is this notion of American democracy, human rights, civil liberties can easily be eroded when we demonize another religion and a vast majority of its followers rather than demonize simply the extremists and the terrorists.

4 A question you raise in *The Future of Islam* is whether Islam is compatible with modern notions of democracy, gender equality and human rights. Can you speak to that?

The process of change in Islam has been retarded by two things. One, so much of the Muslim world went through a period of European colonialism ... and things don't develop when they've been colonized. Secondly, so many modern Muslim countries, after independence, are ruled by authoritarian regimes. ... But in that process for the last 100 years, you've had within Islam reformers who have said ... if we look at our faith and our practice, much is good, but much also developed in a different period of history, in a different kind of social context, and therefore we need to reinterpret our religion.

Down from the Mountain

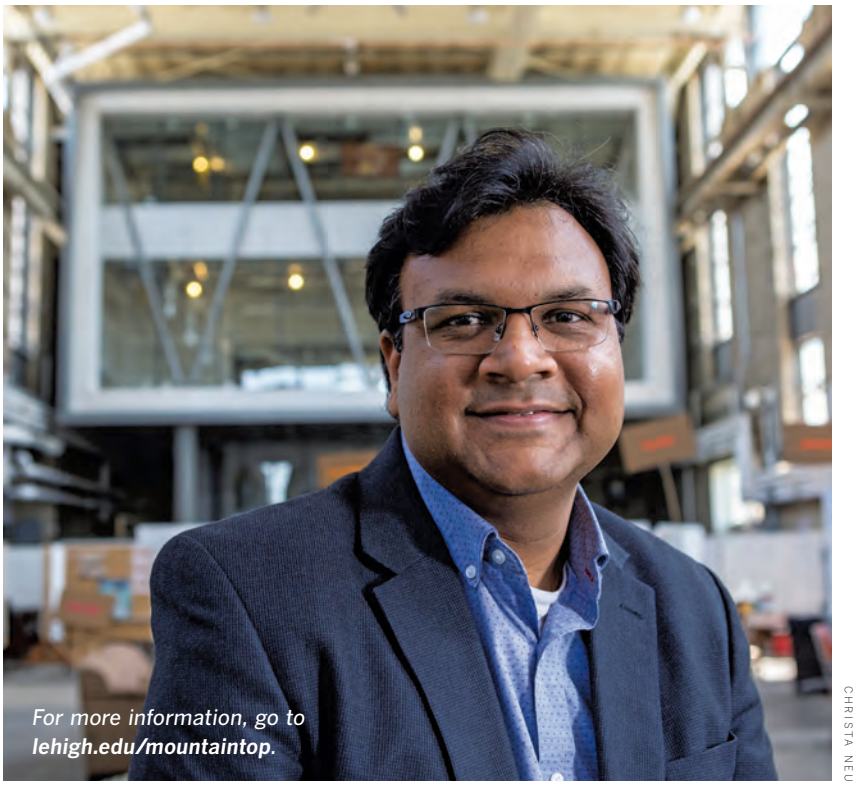
Khanjan Mehta believes Mountaintop-style experiences are too valuable to be limited to Mountaintop alone

In the summer of 2013, inside the former Bethlehem Steel research complex atop South Mountain, Lehigh launched a unique experiment in higher education. It was called Mountaintop.

Four summers of intellectual exploration have since passed, and with a fifth under way, Khanjan Mehta doesn't hesitate for a moment to call Mountaintop a success—so much of a success, in fact, that he believes the time has come to take the lessons learned there and embed them into the fabric of the entire Lehigh experience.

Formerly the founding director of the Humanitarian Engineering and Social Entrepreneurship Program at Penn State University, Mehta arrived as Lehigh's first vice provost for creative inquiry in January. Over the past few months, he's been working to develop an innovative new array of programs that will build on the success of Mountaintop, with the ultimate goal of allowing more students than ever before to take part in experiences that will challenge them intellectually, while pushing them to solve real problems and make the world a better place.

Mehta recently spoke with the *Bulletin* about his early impressions of Lehigh, his views on the university's unique strengths, and most importantly, how he intends to expand Mountaintop far beyond the Mountaintop campus.



For more information, go to ***lehigh.edu/mountaintop.***

CHRISTA NEU

WHAT ATTRACTED YOU TO LEHIGH, AND TO THIS NEW POSITION?

I was captivated by the platform here, and my first meetings with senior administration and board members showed me that they had a real commitment to their thinking and planning. With the idea of creative inquiry already in place at Mountaintop, I felt we had an existing platform on which to build something that could have a larger impact. I've always been driven by the idea of 'impact,' and I think we can leverage our students and faculty and our academic infrastructure to have a real influence on the world.

YOU'VE BEEN HERE SIX MONTHS. WHAT STANDS OUT TO YOU SO FAR ABOUT LEHIGH?

I love our students. They have so much potential and so much passion, and seeing that, I feel more compelled than ever to craft something that will be truly unique and impactful. I also like the varied interests among the faculty and their deep commitment to undergraduate education. There's remarkable faculty interest in what we're trying to do, and that is pivotal to our long-term success. On a very different note, I think our campus is exceptionally beautiful. Every time I walk past Leadership Plaza and look around at the trees and up at the spire of the Alumni Memorial building, I am filled with this deep sense of place, privilege and history.

HOW DO YOU BUILD ON THE ACADEMIC STRENGTHS LEHIGH ALREADY HAS, AND WHAT IS YOUR VISION FOR HOW THOSE STRENGTHS CAN BE LEVERAGED TO CREATE MAXIMUM VALUE FOR OUR STUDENTS?

I believe that a university is where you find your place in the universe. Learning doesn't only happen in a classroom. We want students to step out of the classrooms and their comfort zones. We want them to blur the boundaries between academic and non-academic activities—to find themselves, to learn, to grow personally and professionally.

The World Economic Forum recently identified the top 10 skills that will be needed in the 2020 workforce. They include complex problem-solving, cognitive flexibility, critical thinking and emotional intelligence, among others. These skills are for everyone. We need engineers, doctors, lawyers, social scientists, humanists, artists, business people, educators, basically everyone to have these skills. Think about negotiating. Negotiating encompasses a set of skills but also a mindset—a way of thinking, empathizing, working, being, engaging, making meaning,

playing by strengths and getting things done. Humans rarely solve complex problems alone. We need to prepare students to work in teams—teams across concepts, disciplines, and epistemologies; across cultures and countries; across linguistic, political, geographical and temporal boundaries. And we want these teams to work on very real projects—new ideas, new questions, new opportunities, new intellectual paths that might (or might not) lead us to better understandings and better solutions. What we're trying to do, broadly speaking, is pivot from a GPA-focused mindset to a skillset-focused mindset.

IS MOUNTAINTOP FOCUSED MORE ON STUDENTS OR FACULTY?

Mountaintop is about the journey from creative inquiry to sustainable impact. It is about standing on the shoulders of giants and envisioning what could be. It's about big ideas and big impacts. Mountaintop is for everyone that dares to dream and envision a new reality. And yet, what has been happening at Mountaintop, and particularly Building C, in the summer is just one snapshot of what creative inquiry and value creation looks like and how it might work at Lehigh. The ethos of Mountaintop is much more important to me than the physical space in Building C. We want to take this ethos of Mountaintop, or what I have been calling Mountain Dust, and sprinkle it across campus.

HOW DO YOU GO ABOUT ACCOMPLISHING ALL OF THESE AMBITIONS?

It's all about finding like-minded partners, people who can champion your vision and help others drink the Kool-Aid, so to speak. We already know that we have the support of senior leadership and the board of trustees, whose vision it was in the first place to create the Mountaintop program and elevate creative inquiry as a foundational principle of the Lehigh experience. If you look at Mountaintop, that's something that everybody wants to see happening year-round, and we are going to do that. But to make that happen, we need to really get into the weeds and figure out a strong academic model that will work for all colleges. We are striving to find the right frameworks and champions to achieve that.

YOU HAVE MANY DIFFERENT IDEAS AND LOTS OF EXCITING PLANS IN PLACE FOR LEHIGH. BUT IF SOMEONE WERE TO ASK WHAT YOUR SINGULAR GOAL IS, WHAT WOULD YOU SAY?

An overarching goal, I would say, is to optimize the Lehigh experience, from the time students decide to come to Lehigh to the time they graduate. We want to get students started on all kinds of exciting projects early. We don't want them waiting until they are juniors or seniors before they start doing a Mountaintop project. We really want to integrate the ethos of creative inquiry into our culture, so that even before they arrive for orientation the summer before their first year, or before they begin a graduate program, they know that Lehigh is a place where creative inquiry is not only possible but encouraged, and where they can try, fail, and try again.

We're trying to create a hundred other snapshots of programs that can advance the idea of creative inquiry at Lehigh, too. We are supporting larger dreams and aspirations, and by extension, want to support teams that are committed to those types of projects, with one team passing the baton on to the next team until they reach the end zone or they have a spectacular failure. What's important is that every step of the way they share the new knowledge they have created and lessons they have learned so as to inspire and inform other innovators. That's how the world's problems are solved, and we want Lehigh to be the place where small inquiries lead to big impacts.—*Tim Hyland*

> "AN OVERARCHING GOAL, I WOULD SAY, IS TO OPTIMIZE THE LEHIGH EXPERIENCE, FROM THE TIME STUDENTS DECIDE TO COME TO LEHIGH TO THE TIME THEY GRADUATE."
>
> –KHANJAN MEHTA, VICE PROVOST FOR CREATIVE INQUIRY

STEPHANIE VETO

COMMENCEMENT BY THE NUMBERS

1,002
Number of bachelor's degrees awarded

93
Number of majors represented

354
Number of master's degrees awarded

41
Number of doctoral degrees awarded

98
Number of interdisciplinary program bachelor's degrees awarded

Graduates represent **42** states and **36** countries

116
Number of graduates whose parents are also alums

CHRISTA NEU

Timothy F. Ryan

Lehigh Hosts Summit on Inclusive Excellence

GROWING UP IN A WORKING-CLASS FAMILY in the Boston area in the early 1970s during the forced integration of Boston schools, Timothy F. Ryan, now U.S. chairman and senior partner at PricewaterhouseCoopers (PwC), learned valuable lessons in diversity and inclusion.

In those turbulent times, marked by violence and protests, Ryan saw his mother in tears after talking to some former neighbors. A second-grader at the time, he asked what was wrong.

"And what my mother told me is, what was wrong was that people all didn't have the same opportunity to go to the best schools," said Ryan, keynote speaker at Lehigh's Summit for Inclusive Excellence. "What my mother told me is, what was sad was the violence that was happening, because people were trying to do the right thing and give everybody a fair chance. It was at that point in my life that I understood the first reason why inclusiveness was so important. As my mother said, it was just simply the right thing to do."

The Summit, held on March 31, was designed to bring together the campus community—along with industry and healthcare executives and educational leaders—to discuss strides being made in the space of diversity and inclusion at Lehigh. The event in Packard Laboratory also familiarized attendees with Lehigh's work in developing a Certificate Program for Inclusive Excellence for undergraduate and graduate students.

In addition to Ryan's keynote, a panel discussion included Latoria J. Farmer of KPMG, LLP; Bernard L. Lopez of Thomas Jefferson University; Darlene MacKinnon of Air Products; and Hussein K. Mecklai of the Intel Corporation. James Peterson, director of Africana Studies at Lehigh and associate professor of English, moderated.

Ryan told attendees he learned another lesson in diversity and inclusiveness while attending Babson College and working at a family-owned grocery store. He said he was making fun of another boy who was working at a slower pace. Hearing him, the store manager stopped in his tracks. "And he pointed at me, and he said, 'Hey, knock it off. He's giving you 100 percent of what he can give you. What more do you want?'

"I learned more in that moment than I ever learned at Babson," Ryan said. "And what I learned is that every single human being is different, and all we can ask of people is that they give the very best they can."

Ryan commended Lehigh for pursuing its Certificate Program, saying more programs are needed across the country around inclusivity. He said companies also need to create more opportunities for all employees so that people don't feel excluded from advancement.

Donald A. Outing, vice president for equity and community, said Lehigh continues to explore strategic ways to enhance the campus climate and better prepare its graduates for careers in an increasingly diverse world. *—Mary Ellen Alu*

FIGURE 2

More than 150 CEOs worldwide, including Lehigh President John D. Simon, have signed the CEO Action for Diversity & Inclusion to cultivate workplaces where diverse perspectives are welcomed.

SCHEMATIC The Effects of Pollution from a Coal-Fired Power Plant

BRATISLAV MILENKOVIC

1 Petitions
New Jersey filed two with the EPA in 2010 when studies found that PGS was emitting 30,000 tons of sulfur dioxide a year.

2 Drifting SO_2
Using atmospheric dispersal and wind trajectory modeling, the state showed that SO_2 from PGS was reaching four relatively affluent New Jersey counties—Warren, Morris, Hunterdon and Sussex—that lie 20 to 30 miles downwind of the power plant.

3 Birth data
The researchers examined a database of all live single births in New Jersey since 1990—five years before PGS SO_2 emissions were first recorded.

4 Conclusion
The group determined that from 1990-2006, women in the four counties were at greater risk than women in areas with similar average incomes of having babies with low birth weights.

Economics professors Muzhe Yang and Shin-Yi Chou teamed with a University of Pennsylvania data analyst and a National Taiwan University engineer to study the effects of sulfur dioxide emissions from a coal-fired power plant on baby birth weights.

They found that infants born in New Jersey, 20 to 30 miles downwind from the Portland Generating Station in Pennsylvania, were 6.5 percent likelier to have a low birth weight (below 2,500 grams) and 17.12 percent likelier to have a very low birth weight (below 1,500 grams).

Yang said the findings show that the U.S. Environmental Protection Agency should play a larger role in settling interstate pollution disputes. PGS stopped burning coal in 2014.

A Journey to the Depths of the Pacific

Santiago Herrera is lead biologist aboard 2017 American Samoa Expedition

A SPECIES OF CORAL—called bubblegum for its pinkish appearance—has provided a peek into ancient migration paths for marine species as far back as 10 million years. That discovery, and others like it, could only have happened through exploration of the deep sea—200 meters (about 656 feet) below the surface and down to the ocean's floor.

Despite the importance of ocean health to humankind's well-being, more than 95 percent of the world's oceans has yet to be explored using advanced technologies.

"By far, the largest habitable space on our planet is the deep ocean, yet we know very little about it," said Santiago Herrera, a visiting assistant professor in the department of biological sciences. "We have observed far less than 1 percent of all the seafloor. Scientists have a better knowledge of the surface of Mars or the moon than we do of the surface of the Earth."

He is working to change that through underwater exploration at the ocean's deepest layers.

"Every time we dive," he said, "we gain a better understanding of the ocean and its importance to ensure our own survival."

Herrera joined a team aboard the Okeanos Explorer as the Biology Science Lead for the 2017 American Samoa Expedition. The Explorer, built and operated by the U.S. National Oceanic and Atmospheric Administration (NOAA), is the only federally funded U.S. ship assigned to systematically explore the unknown parts of the ocean.

The goal of the expedition was to collect critical baseline information of unknown and poorly known deep-water areas off American Samoa, Samoa and the Cook Islands. The voyages, which were equipped for telepresence and streamed live, took place in February and April.

Sea- and shore-based science teams worked to map the seafloor and make some of the first scientific observations in those areas. Remotely operated vehicle dives explored depths of 6,000 meters and included high-resolution visual surveys and the collection of samples.

"We expect to find new biological communities, several new species and associations between species, as well as patterns that will help us test our biogeographic and geological hypotheses," Herrera said.

The expedition was part of NOAA's Campaign to Address Pacific monument Science, Technology and Ocean Needs (CAPSTONE). The areas explored contain some of the last relatively pristine marine ecosystems on the planet and harbor numerous protected species, undiscovered shipwrecks and cultural landscapes. *—Lori Friedman*

COURTESY OF THE NOAA OFFICE OF OCEAN EXPLORATION AND RESEARCH, 2017 AMERICAN SAMOA

EXPLORATION
At far right, the striking pink hue of the fringing reef at Rose Atoll Marine National Monument. At right, Santiago Herrera places a coral sample in a bucket of chilled water for transfer to a wetlab.

CHRISTA NEU

A Most Versatile Chemist

Tesia Chciuk '17 Ph.D. receives a singular national honor

Tesia Chciuk took an early interest in science. When she was 4 years old, she says, her mother found her in the yard attempting to measure the speed at which a blade of grass grows.

In high school, her father taught her how to make fireworks. "I won the student of the month award for doing an explosives demonstration in my chemistry class," she says.

Chciuk studied chemistry at Cedar Crest College in Allentown, and then spent three years in industry developing sustainable technologies.

This spring, Chciuk completed a Ph.D. in chemistry and became the first Lehigh student to receive the Anna Louise Hoffman Award for Outstanding Achievement in Graduate Research from Iota Sigma Pi, the National Honor Society for Women in Chemistry. The award is given annually to one graduate student in the United States.

Robert A. Flowers, professor of chemistry and Chciuk's adviser at Lehigh, attributes her success to her innate ability, work ethic and maturity.

"Tesia has good natural intuition, and she works very well without supervision," Flowers says. "What I like most about Tesia, though, is that I would sometimes suggest an experiment for her to do, only to find out that she had already thought of it herself and carried it out."

Chciuk made a name for herself long before receiving the Hoffman Award. From 2009 to 2012, she helped Eos Energy Storage improve the performance and storage capacity of its zinc-air batteries, which use no toxic materials and can back up power grids. She was awarded a U.S. patent, and she has several patent applications pending.

From January until September 2012, Chciuk was scientific research director for Bethlehem Apparatus Co. Inc. She supervised the recovery and safe disposal of liquid mercury and oversaw quality control.

When she left Bethlehem Apparatus to enroll at Lehigh, the company offered to hold her position open until she completed her Ph.D.

At Lehigh, Chciuk conducted research into samarium (Sm), a rare earth element. She and Flowers were the first to explain how samarium achieves an unexpectedly high degree of reactivity when combined with water. Chciuk published six papers in high-impact journals such as the *Journal of the American Chemical Society* and *Angewandte-Chemie*, and has several papers in review.

Scientists had already discovered the high degree of reactivity of Sm-water, says Chciuk. She and Flowers showed that the reactivity is achieved when the Sm-water combination undergoes a proton-coupled electron transfer, bypassing high-energy intermediates that occur during a simple electron transfer.

By bypassing these intermediates, says Chciuk, Sm-water "is able to react with things that are more recalcitrant, more difficult."

The consequences of Chciuk's research could be felt soon.

"Now that we have a fundamental understanding of how this chemistry operates, the goal is to design a catalytic conversion so that we can use much smaller amounts of samarium, or even develop a more efficient version of its reactivity. That's the value of fundamental research: In order to make something work better, you have to know first how it works.

"If you understand how a reaction happens, you can optimize all of your conditions for that reaction." *—Kurt Pfitzer*

"IN ORDER TO MAKE SOMETHING WORK BETTER, YOU HAVE TO KNOW FIRST HOW IT WORKS."

–TESIA CHCIUK '17 PH.D.

A Mural Rises

Denton Burrows '11 takes to the road with his art

RIDING A MECHANICAL LIFT up three stories, in a lot that's a short walk from Lehigh's main campus, Denton Burrows '11 gets to work in creating a 34-foot-high mural that pays homage to Bethlehem's steel-making history while giving a nod to the physical changes that reflect the section's revitalization.

Onlookers gather as Burrows—spray paint can in hand—helps give shape to the mural that, over five days in April, transforms the stucco wall of a Third Street building. The commission is part of the SouthSide Arts & Music Festival, and Burrows and fellow artists who are part of the unique Dripped on the Road traveling artist residency program are a main attraction.

Traffic eases past, and the sounds of nearby construction add to the street's vibrancy. Burrows pulls back the lift to get a better view of his work, then resumes painting, forming the steelworker's face. Other artists work below him and to the right, rolling strips of color onto the wall and adding other characters and pop-art features.

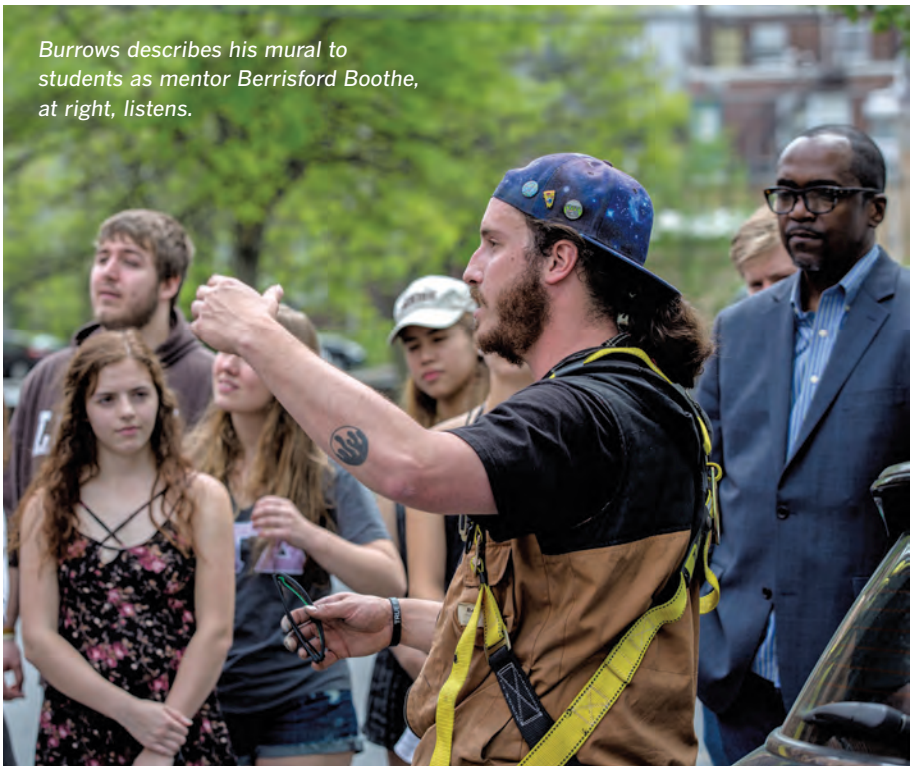
Burrows, co-founder of the art production company Dripped On Productions, understands the draw of street art. He has created countless murals as visual social commentary.

"Public art, in general, is very powerful because it's not locked in a room in a gallery that some people can't access or can't afford," says Burrows, who graduated with a degree in fine arts. "It's for everybody, no matter how old or how much money you have or what race you are, and it has a lot of power to brighten up and inspire neighborhoods."

Burrows was named one of the top street artists to watch by *Network A* and *Paper Magazine*, and he was featured in *Creative Quarterly's* Top 100 Artists, Designers and Photographers of 2014. He won the National Can Art competition for Pabst Blue Ribbon Beer, with his winning design appearing on 35 million cans. He's also assistant curator and project manager of the Centre-Fuge Public Art Project in New York City.

"PUBLIC ART, IN GENERAL, IS VERY POWERFUL BECAUSE IT'S NOT LOCKED IN A ROOM IN A GALLERY THAT SOME PEOPLE CAN'T ACCESS OR CAN'T AFFORD."

–DENTON BURROWS '11



Burrows describes his mural to students as mentor Berrisford Boothe, at right, listens.

CHRISTA NEU

Burrows first took to the road with Dripped on the Road in 2016. Traveling in two RVs over 40 days, the artists created murals and gave talks in East Coast communities. Their first stop was the Banana Factory in Bethlehem, where they created a 10-foot-by-9-foot banner that now hangs outside the arts center's doors. The steelworkers mural capped a second, monthlong traveling residency.

"There's a freedom to this life that's intoxicating," he says about the traveling artistry work. "I don't think about the day that it ends."

Though Burrows has been doodling since he was a kid—and getting in trouble for drawing in school—he initially considered a degree in psychology or anthropology at Lehigh. Viewing art as more of a hobby, he took an elective Drawing I class taught by Berrisford Boothe, associate professor of art. The pairing of student and teacher proved serendipitous.

"I actually wasn't doing that well, because it wasn't the kind of things I love to draw," Burrows says. "At a review at the end of the semester, I had to meet one-on-one with Berris, and I brought my still lifes, which I wasn't that proud of. But I also brought my personal sketchbook that I really had never shown anybody, and he was quite enamored by it. And then over many, many conversations with him and meetings, we started to explore the possibility that this might be something to pursue, if I wanted to."

To watch Denton Burrows create his South Side mural and to hear his story, visit ***go.lehigh.edu/burrows***

Burrows has always been fascinated with the study of people and with why things happen, and that's reflected in his art. By his own description, his work is complicated and connected and has a surreal quality. Each piece, he says, however, is an open-ended narrative. "It's rarely so obvious what it's about that somebody guesses it right off the bat. It's just kind of supposed to be an inviting, colorful, visual puzzle for people to explore and get what they want out of it."

Burrows says he doesn't start a piece knowing exactly what it will be about. (The exception was the Bethlehem mural.) "I just kind of say, 'Oh, I have enough stuff here that I can start.' But I never plan it out fully. I decide how big it is, and I just let it organically grow as I, myself, sort of organically contemplate the topics or the influences at that moment."

With each mural, Burrows says, community members eventually show up. They are initially skeptical, he says, then express thanks that the artists brightened a wall and gave them something to look at. "It just makes people happy. That's how humans work," he says. "I'm happy to be a part of that."—*Mary Ellen Alu*

A Recasting of 'The Great Gatsby'

In early 2014, as Stephanie Powell Watts received accolades for her first book, a collection of short stories titled *We Are Taking Only What We Need*, she expressed being "a little bit nervous" about the novel she was writing, her first.

"Obviously no matter what you write, you want it to be good," she told the *Bulletin* at the time, "but I have to say, I really, really want this to be good."

Watts need not have worried.

The novel, *No One Is Coming to Save Us*, released earlier this year, was featured on the covers of both *Kirkus Review* and *Bookpage*. It has received high praise from *Vanity Fair*, *Time*, *The Washington Post*, *O, The Oprah Magazine*, *The New York Times Book Review* and *Publishers Weekly*. And it was one of 16 *New York Times* Summer Reads, among many other accolades. Most recently, actress Sarah Jessica Parker, honorary chair of the American Library Association's Book Club Central, announced the novel as the club's inaugural fiction selection. It recasts *The Great Gatsby* in a contemporary North Carolina town in decline and tells the story of an extended African-American family whose members struggle to reconcile their realities with the lives they hoped to have.

Watts, an associate professor of English, says she's thrilled with the novel's success but doesn't dwell much on it. She's already turned her attention to her next novel. She hopes, however, that her success inspires writers who might "not come from a certain pedigree and have had struggles along the way," as she did.

Watt's first book earned her several prestigious awards, including a Whiting Award, a Pushcart Prize, the Ernest J. Gaines Award for Literary Excellence, the Southern Women's Writers Award for Emerging Writer of the Year, and a spot as a finalist for the PEN/Hemingway Award.

"Writing is one of those kinds of things that feel rarified, and one can feel as if it's for somebody else," Watts says. "I don't have a background of privilege or money, but everyone has incredible stories, and we need a multitude of voices in the American conversation."—*Kelly Hochbein*

CHRISTA NEU

JOHN KISH IV

VIVID COLORS CAPTURE JEWISH HISTORY

Through the generosity of Amy and Joseph Perella '64 '06H (left), a set of prints from the *All That Has Come Upon Us* portfolio has become part of Lehigh's permanent collection. Created by artist and physician Mark Podwal (right), the 42 original works represent historical incidents of anti-Semitism.

Five prints were premiered in Williams Hall on April 27. The remaining pieces will be rotated through the exhibit to enhance the student and community experience. Each print recounts one or more instances of heinous treatment and shows the deep history of the Jews.

"We are proud to have the Podwal Portfolio find a home at Lehigh," said Patrick V. Farrell, provost and vice president for academic affairs, during the exhibit opening. He also expressed appreciation for Perella's support of Lehigh's efforts to teach inclusion at all levels and to celebrate diversity.

Perella, founding partner of Perella Weinberg Partners, is a longtime benefactor of the university and Board of Trustee member. He explained why Podwal's work is so important and what deeper purpose prompted him to bring the prints to Lehigh. It helps us, Perella said, fulfill what he called the "11th Commandment": "Thou shalt not remain indifferent."

Podwal's art resides worldwide in venues including the Vatican, the Metropolitan Museum, and the U.S. Holocaust Museum.


ROB LOMBARDO

Back on Top

Cruz's title puts Lehigh wrestling back in the national spotlight

IT WOULD PROBABLY BE more than a little unfair to say that Lehigh wrestling over the past six years had fallen off the national map.

After all, the Mountain Hawks over the past half-decade only continued their long legacy of success in the sport, fielding teams that consistently ranked among the nation's best. Heading into the 2016-2017 season, the Mountain Hawks since Pat Santoro's arrival in 2009 had won four league titles, finished as runners-up three times, and saw 18 wrestlers earn All-American honors.

But for a program accustomed to enormous success, there had been of late one area where the Mountain Hawks seemed to be falling short: Since 285-pounder Zach Rey claimed the national title in 2011, no other Mountain Hawk could do the same.

Thanks to Darian Cruz, that's no longer the case.

In one of the great stories in the entire sport this year, Cruz, a junior 125-pound dynamo from nearby Allentown, stunned the wrestling world by upsetting top-seeded Thomas Gilman of Iowa in the national semifinals in St. Louis this March. Then, just a day later, he capped his remarkable season by beating longtime rival Ethan Lizak of Minnesota, 6-3, in the final. The victory added Cruz's name to Lehigh's impressive list of 28 total national champions and served notice to the wrestling world that Mountain Hawk wrestling is very much alive and well.

"It's a big deal," Santoro says of Cruz's achievement. "He accomplished something that is really hard to do, which is great. It can change your life forever, not just in wrestling but what you do [outside the sport]. ... He has just done everything right. He's done all the little things, and when you do the little things right, big things happen."

Big things, indeed.

Along with his national title, Cruz was honored this spring as EIWA Wrestler of the Year—making him just the fourth Lehigh wrestler to win that award—while the City of Bethlehem officially declared April 4, 2017, as "Darian Cruz Day." It's heady stuff, but Cruz seemed to be taking it in stride.

"I'm happy and so blessed to be here," Cruz says. "I've worked my tail off, day in and day out, and it feels so good to have it pay off."


STEVE BOYLE

AVERY EARNS ALL-AMERICA HONORS ...

One year after high-jumper Courtney Avery made big news by qualifying for the NCAA Track & Field Championships in Eugene, Ore., Lehigh's track program doubled its representation out West.

Coming off a season that saw her earn Second Team All-American honors, Avery again punched her ticket to collegiate track's marquee event by clearing the bar at 1.82 meters during the East Regional Championship meet in Lexington, Ky. She replicated that same jump at nationals to finish sixth—and become the first female athlete in Lehigh history to earn First Team All-America honors.

... AND WARNING JOINS HER

Joining Avery in Eugene was senior shot-putter Lucas Warning, who earned his spot with an outstanding throw of 18.82 meters in Lexington.

The throw was the second-best in the history of Lehigh track and field at the time, but Warning topped himself at nationals with a school-record throw of 18.94 meters. He earned 10th place and Second Team All America honors.

Back from the Brink

Vince Volpe '80 is on a mission to revitalize a historic soccer club—and in the process bolster his beloved, adopted hometown, too.

By his own admission, Vince Volpe is not a lifelong soccer fan.

He played American football in his younger days, and his two daughters never took a liking to "the beautiful game," either.

But Volpe has always loved the competitive nature of sports, and after spending more than a quarter-century living in the Normandy region of France, he grew to love his adopted hometown of Le Havre, too. So when an opportunity came up to help save the most beloved sporting institution the city has ever known, Volpe was only too happy to step up and salvage it from possible collapse.

> "WHAT WE'RE TRYING TO DO IS SAVE THE OLDEST CLUB IN THE COUNTRY."
>
> —VINCE VOLPE '80

That's precisely what he did nearly three years ago, when it became clear that Le Havre AC (HAC)—the oldest soccer club in all of France, founded in 1872—was in dire financial straits. Facing struggles on the field and enormous challenges off it, the club found itself in need of solid financial backing—not to mention some business-savvy leadership. Widely known in Le Havre's social circles because of his longtime ties to the area through his work as an executive with Dresser-Rand Group Inc., Volpe was soon approached about doing what he could to help.

And while owning a soccer club was never in his plans, Volpe knew what the club meant to his local friends—and to the city, too. So he took a leap of faith, decided to brave the wild that is European club soccer, and became chairman of the club known locally as "les ciel et marine" (*the sky and navy blues*) in 2015.

"What we're trying to do is save the oldest club in the country," he says. "This is very important to people in this region. It's important to the local economy to have a strong soccer club—having this is an important tourist attraction. So it was really those reasons why I stepped in, and I have to say, it's been a very rewarding experience."

It's been that, he says, even though he's yet to achieve the breakthrough that represents his ultimate goal—promotion to League 1, the top division in France.

It is there, Volpe says, that he is confident his club will ultimately rise, but the challenges of fielding a top team in French soccer—and, more broadly speaking, European soccer—are real. Competition among clubs both domestically and across the continent is fierce, and the competition is perhaps even more intense among those clubs that, like HAC, are striving to escape League 2, the French second division, and secure the riches that come along with a place in League 1.

With promotion to the top echelon would come a massive boost in income and, just as important, greater prestige on the world stage. Both would help the club attract better players, better managers and better back-room staff,

which would in turn create a better on-the-field product and bolster interest in the club, both locally and nationally.

It is nothing less than the essential step forward for the club—a goal that must be achieved, Volpe says. And he's been bold in its pursuit.

Shortly after taking over as chairman, Volpe pushed forward on a near-complete overhaul of the club's infrastructure. The club's board of directors was re-evaluated, with several members ultimately being replaced. A new general manager was hired, and in perhaps his most savvy early move, Volpe hired former U.S. Men's National Team coach Bob Bradley to take over as his club's new manager. The hiring of Bradley did more than just give HAC one of the most highly regarded managers in the game; it also gave the club huge visibility back home in the States, as Bradley became the first American manager of a top-tier English club. The hiring garnered headlines in mainstream sports publications and gave HAC more publicity than it had seen in years.

And if some in European soccer circles were skeptical of the move, wondering if Volpe brought on Bradley precisely because of their shared American ties, Volpe says he never once questioned it. He believed in Bradley, and he knew his friends in Normandy believed in him.

"Because I know so many people here, and I've been here such a long time, I think people look at me and say, 'Well, he's got an American passport, but he's been here since 1990, so he's basically one of us.' I've had zero pushback as an 'American owner,'" Volpe says. "The response to Bob was positive, too. He had a good pedigree and a good reputation. Honestly, I think it's just about winning."

Bradley quickly proved to be a wise investment. In his first and only full season with the club—he would leave for Swansea City of the English Premier League in the fall of 2016—Bradley guided HAC to a strong third-place finish in League 2. In most circumstances, that would have been good enough to earn the League 1 promotion that Volpe desired. But in a particularly heartbreaking turn of events, HAC finished tied for third with FC Metz. By way of the goals-scored tiebreaker, Metz earned the trip to League 1, while Le Havre was forced to remain.

That is where the club continues to reside today, but Volpe, as ever, is confident that the breakthrough will eventually come. He continues to be focused on rebuilding the business side of the club, and he's confident that with the club's grand history, its strong academy program and its stunningly beautiful stadium (The Stade Oceane, opened in 2012, is widely considered one of the best in France), all of the pieces are in place to return the club to its rightful place among the best in Europe.

Volpe has done his work. He'll continue doing his work.

It's just up to the players now, Volpe says, to make the dream happen.

"The players are obviously a critical part of what is required of us to succeed," Volpe says. "Very much like employees in a typical business, if your players are motivated, they are more likely to succeed. It's about matching the right skills to the right requirements. You need the right people on the bus, but also need them in the right seats."—*Tim Hyland*

Vince Volpe is doing his part to support Lehigh men's and women's soccer programs. Watch a video about the teams' recent trip to visit with—and compete against—Le Havre at ***go.lehigh.edu/volpe***

BASEBALL FIELD NAMED

Lehigh's baseball field has a new name—the J. David Walker Field at Legacy Park, named in honor of the highly respected professor of mechanical engineering who earned a reputation as an accomplished researcher and devoted teacher during his 25 years at the university. Walker died in 2004.

Walker Field also will undergo expansions, including a new outfield fence, scoreboard and upgrades to the batter's eye in center field. Upgrades will be made to the surrounding area, including entranceway signage, improvements to the entrance walkway, a donor recognition plaza and a covered pavilion for alumni and fans to gather.

The naming and improvements are made possible by the significant contributions of Walker's sons, Dr. Neal Walker '92 and Dr. Jim Walker, childhood friends of Lehigh's current baseball head coach Sean Leary.

"We felt compelled to contribute the funds to this important project to honor our father's commitment to teaching in the classroom and on the field. He had a true passion for teaching and was always selfless when it came to coaching both of us in baseball," the sons said. "He taught us both an unending love of learning both in the classroom and in our sports endeavors. We felt that naming the field in his honor was the perfect reflection of his passion for teaching and enables others to do what they love."

A BRIDGE TO SILICON VALLEY

Lehigh embarks on an exciting new era with a series of West Coast initiatives.

With a series of exciting moves over the past year, Lehigh has established a new and important presence on the West Coast, with the aim of creating new opportunities for current and prospective students, greater connections with industry, and long-lasting benefits for the university for years and decades to come. Lehigh has 5,000 alumni in California, Oregon and Washington.

Lehigh's recently opened Western Regional Office in San Mateo, Calif., extends educational and career opportunities for students and allows for more corporate and industry partnerships, while the acclaimed LehighSiliconValley program immerses students in the fast-paced, ever-dynamic world of startups and entrepreneurships. Meanwhile, the newly launched Lehigh@NasdaqCenter, created in partnership with the nonprofit Nasdaq Entrepreneurial Center, gives Lehigh a crucial new platform in San Francisco and a key opportunity to extend its unique brand of higher education to more students than ever before.

"A West Coast presence is important for Lehigh, because we are a national university," said Provost Patrick V. Farrell, "and we want to make sure that the entire nation is

BY **Lehigh *Bulletin* staff**

ILLUSTRATIONS BY **Kyle Bean**

A BRIDGE TO SILICON VALLEY

aware of that and has access and opportunity to participate in what Lehigh does.

"So we are looking at this as a way of connecting better with prospective students, with connecting with our alumni who are out here on the West Coast, with connecting with prospective employers and others who would want to take advantage of the kinds of graduates we produce."

Importantly, Lehigh's push out West garnered support not only from its West Coast alumni, but industry partners and, in the case of Tom Gillis '15P '17P '19P, at least one very proud—and very accomplished—Lehigh parent.

> "A WEST COAST PRESENCE IS IMPORTANT FOR LEHIGH, BECAUSE WE ARE A NATIONAL UNIVERSITY."
>
> –PROVOST PATRICK V. FARRELL

Gillis, founder and CEO of Bracket Computing, has been a longtime supporter of Lehigh on the West Coast and, most recently, was a key driving force behind the launch of Lehigh's new *Women in Tech* class in March. Gillis was also instrumental in the creation of LehighSiliconValley, and has been actively working to build greater connections between Lehigh and the nation's tech capital.

For his efforts, he was honored with the Farrington Award for Outstanding Commitment to Entrepreneurship at Lehigh in April at the Innovate! Celebrate! awards dinner hosted by Lehigh's Baker Institute for Entrepreneurship, Creativity & Innovation.

"If I didn't know better, I'd say Tom was an alum of Lehigh," says Lehigh President John D. Simon. "He's incredibly passionate about what we do at this institution. He has boundless energy. He devotes a lot of time toward advancing our interests in San Francisco and in engineering. He's a model parent in his engagement with our institution."

Gillis' *Women in Tech* course serves as just the latest new development for Lehigh on the West Coast. Earlier this year, more than 170 people attended a launch party at the Lehigh@NasdaqCenter to celebrate the groundbreaking partnership between the university and its Baker Institute and the Nasdaq Center. The unique collaboration provides Lehigh with a year-round presence in the hub of San Francisco and nearby Silicon Valley, providing students with the opportunity to immerse themselves in the region's vibrant startup community.

Simon, Baker Institute Executive Director Lisa Getzler, Nasdaq Vice Chairman Bruce Aust and Nicola Corzine, executive director of the Nasdaq Entrepreneurial Center, were among those attending the launch party, as well as university students, faculty and alumni.

During the event, Simon addressed the importance of the Center and unveiled the program's new logo and signage. Getzler moderated a panel discussion with students Shannon McHugh '17G, Jacob Nelson '17, Allie Starer '17 and Chris Byam '17 on "Innovative Thinking: A Lehigh Tradition."

Also, 56 students from the LehighSiliconValley program attended. The students have been working with 10 of the Nasdaq Center's Milestone Makers—startup founders whose goal is to achieve specific milestones to help grow and mature their nascent businesses.

"This is a special terrain," said John Welty, vice provost of the Western Regional Office. "I've spent most of my life in the western United States, and it offers a whole new set of experiences and availabilities."

For more information, go to **westcoast.lehigh.edu**.

Learn more about Tom Gillis at **go.lehigh.edu/gillis**

CHRISTA NEU

PROFILE

A LEHIGH ADVOCATE SEES THE BIG PICTURE

TOM GILLIS, **BRACKET COMPUTING**

The entrepreneur is working to strengthen the ties between Lehigh and Silicon Valley, and to nurture the next generation of tech leaders. BY **Dawn Thren**

A BRIDGE TO SILICON VALLEY

If Tom Gillis '15P '17P '19P could physically move Lehigh to Silicon Valley, he might consider the possibility. Instead, the tech entrepreneur is bringing the two together any chance he can through his vision, involvement, expertise and personal and technical connections.

Gillis, co-founder and CEO of Bracket Computing, was the catalyst for the successful LehighSiliconValley (LSV) entrepreneurship program in the startup hub of California, while his son was a first-year student at Lehigh in 2012.

"I look at it as a bridge between the talent pool in Bethlehem and this vibrant cauldron of opportunity at Silicon Valley," said Gillis, who connected many of the founders and funders from Silicon Valley to participate in the pilot 2012 LSV immersion program.

LSV, a flagship program of Lehigh's Baker Institute for Entrepreneurship, Creativity & Innovation, just celebrated its sixth anniversary with 56 students participating. Since sparking the idea for the initial program and helping to get it off the ground in partnership with Dale Falcinelli, director of LSV, Gillis remains involved and has presented at all but one of the January-held courses.

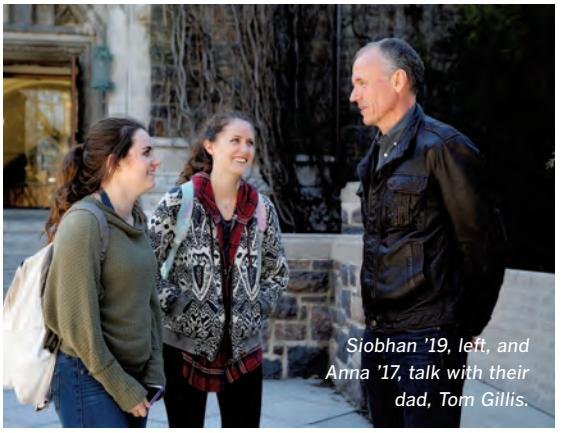
"We spend lots of time and energy trying to cultivate, attract and retain the best possible talent," said Gillis. "Our observation was that Lehigh produces very good talent, but was very East Coast-oriented. The kids at Lehigh didn't know about the opportunities at Silicon Valley ... didn't even know where to start."

"Offering students innovative programs is at the core of what we do," said President John D. Simon '19P. "We are fortunate to have Tom Gillis involved in designing educational opportunities for our students."

As a member of the Parents' Council and the Dean's Advisory Council in the P.C. Rossin College of Engineering and Applied Science, Gillis is realizing opportunity at the university and connecting the vision with the talent

A BRIDGE TO SILICON VALLEY

PROFILE / TOM GILLIS



Siobhan '19, left, and Anna '17, talk with their dad, Tom Gillis.

and technology to make it happen. Eager to help students interested in software-engineering careers or starting their own companies, he was instrumental in assisting with the additional two-day pilot "technical track" program of LSV in 2017.

Called LSV++, students met with top executives from high-tech and startup businesses Bracket Computing, OSISoft, Cisco and Vectra Networks. At Bracket, students met with Gillis and Chief Technology Officer Jason Lango to examine tech details and hot topics of the company's secure cloud environment.

Isaac Wellish '17, a dual computer engineering and music major, described the LSV++ experience as "getting down and dirty in the technical realm of several software companies."

On visiting Bracket, he said, "Tom Gillis, a huge Lehigh supporter, opened the doors to his startup for our team to pick his brain and speak with Jason Lango. Being that all members of this new team had some background in computer science, we were finally able to traverse deeper into a technical space unhindered."

Daniel Lopresti, chair of Lehigh's computer science and engineering department, and Lisa Getzler, executive director of the Baker Institute, co-developed the LSV++ program to provide invaluable hands-on experiences to students.

"Advanced technology in the field of computing constantly changes. It is important for Lehigh faculty and students to gain knowledge from companies that are pushing the boundaries every day and are on the cutting edge of technology," said Lopresti. "Lehigh graduates will be prepared to work in the real world because of these experiences."

Eager to learn more about cloud computing security, several LSV++ students received permission to take an independent special topics course during the spring 2017 semester. Gillis provided them access to Bracket's cyber computing environment to learn elements of the system on their own with guidance from staff.

As a high school student, Gillis considered Lehigh, but chose Tufts University for his undergraduate engineering degree and Northwestern and Harvard for his advanced degrees. It was the enthusiasm for Lehigh shared by his friend and bicycling partner, Bill Kirsch '76, co-founder and managing director of venture debt firm Costella Kirsch, that caused Gillis' son, Patrick '15, to consider Lehigh.

"We looked at a broad array of schools, and I think what was interesting about Lehigh is my son was looking to do some sort of a combination of engineering and liberal arts. Lehigh really embraces that philosophy," said Gillis, whose daughter, Anna '17 (art and design) recently graduated and daughter Siobhan '19 (psychology), still attends.

Patrick graduated with a bachelor's degree in marketing with a minor in engineering and works in marketing at a Silicon Valley engineering software company.

"It's really difficult to work at a tech company if you don't understand the basics of the technology. I think Lehigh's engineering minor is perfect for someone who's not going to be an engineer ... who wants to do a non-engineering job option at a technology company. It allows you to understand a language, understand a product and understand a problem to solve for customers. It's been very successful for him."

Although his daughters chose not to pursue engineering, Gillis is committed to advancing women in tech positions and worked with Lopresti and Samantha Kahoe, adjunct professor, to develop the *Women in Tech* eight-week Lehigh course that started in March 2017. Offered via real-time, interactive video conferencing between guest presenters at the Lehigh@NasdaqCenter in San Francisco and students on the Lehigh campus, the course features female leaders in technology who shared the challenges and opportunities for women in the industry.

During the initial presentation, guest speaker Kathleen Egan '90, vice president of client success and analytics, Quri, spoke about gender biases, breaking barriers and the importance of a mentor, among other things. She encouraged the 15 female engineering students taking the class, saying "you can do it all."

Gillis helped to coordinate weekly presenters and moderated the sessions either from San Francisco or Lehigh. As part of the course, students were matched with a female expert in the tech industry who served as a

STEPHANIE VETO

A BRIDGE TO SILICON VALLEY

PROFILE / TOM GILLIS

Tom Gillis addresses a Women in Tech *class.*

mentor in examining professional opportunities.

"It is hard to be an engineering student. I think it's even harder to be a female engineering student because there are just a lot of aspects of engineering culture that are dominated by men. How can women assert themselves in that world?" said Gillis. "This class is designed to allow students to get to know female leaders in the technology industry on a personal level who could act as role models and mentors."

Video conferencing from the Lehigh@NasdaqCenter—a new initiative spearheaded by the Baker Institute—is part of the tremendous potential that Gillis sees for the West Coast "campus" of the university. Gillis is working with President Simon and others to develop the programmatic growth of the center, which was established in September 2016 between the university and the Nasdaq Entrepreneurial Center. Gillis sees opportunities for teaching classes, guest lecturers, or alumni and industry leaders participating in classes.

"There are interesting people based out here who can engage closely with students back in Bethlehem via a telepresence link," said Gillis, who is impressed that Simon's vision for the university included establishing a footprint in Silicon Valley.

> "I THINK IT'S EVEN HARDER TO BE A FEMALE ENGINEERING STUDENT BECAUSE THERE ARE JUST A LOT OF ASPECTS OF ENGINEERING CULTURE THAT ARE DOMINATED BY MEN."
>
> –TOM GILLIS '15P '17P '19P

Gillis continues to implement ideas that make an educational impact at Lehigh. Knowing the unique issues that need to be addressed when developing a software engineering company, he was instrumental in creating the *Software Ventures* entrepreneurial class taught by Joshua Ehrig, professor of practice in Lehigh's department of management.

"So much of the innovation and economic growth in the past few years has been driven by software companies that I thought it would be useful to focus specifically on the issues around this software venture," said Gillis, who has been a guest lecturer in the class. "My own kids took that class and absolutely loved it."

Gillis has also sponsored several independent study projects in the *Computer Science and Business Capstone Project* course taught by Ron Crane, an adjunct professor in the university's computer science and engineering department. The projects engaged teams of students to work on technical aspects of computer science security such as looking at performance of storage systems on public clouds to see how to stabilize those systems.

"The output was terrific. I think the most interesting thing was that we got to know a handful of really top programmers," said Gillis of the experience. "Some of them have gone on to work in technology companies at Silicon Valley."

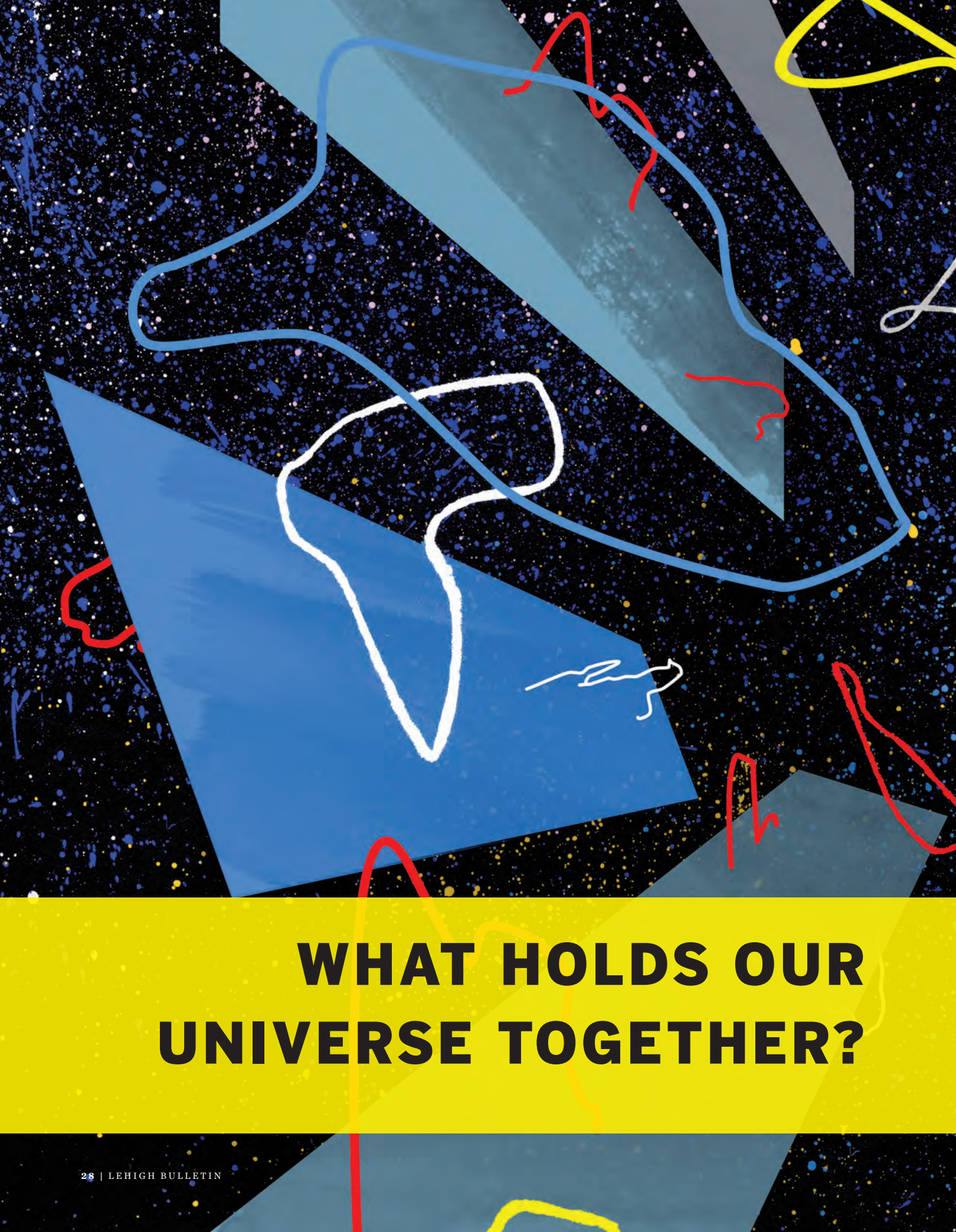
Through Bracket Computing, Gillis is providing complimentary cloud computing security to Lehigh for research and instructional purposes, while the university begins to access supercomputing resources outside of the physical boundaries of the school.

"We can help the Lehigh researchers make that transition secure and reliable," he said.

Gillis is deeply rooted at Lehigh and believes that what sets the university apart is a strong commitment to multidisciplinary academics.

"The way Lehigh makes things possible for students to traverse the various options that the university has is really, I think, excellent. It creates an environment for broad out-of-the-box thinking, which is often what is necessary in entrepreneurship," he said. "As a parent, all I want is for my children to be happy. I think they have been able to be very happy at Lehigh."

STEPHANIE VETO



WHAT HOLDS OUR UNIVERSE TOGETHER?

String theory, says Sera Cremonini, connects Einstein and quantum mechanics, and the Big Bang with black holes.

Story by Kurt Pfitzer *Illustrations by Jon Han*

The secrets to some of the universe's biggest mysteries, Sera Cremonini believes, may well lie in the behavior of its tiniest constituents.

Consider the beginning of the universe. In a fraction of a second after the Big Bang 14 billion years ago, an immense amount of tightly confined matter exploded into a super-hot sea of subatomic particles.

And consider the black holes that form when massive stars collapse. They compress matter so densely that nothing that enters their domain, not even light, ever escapes.

How did the universe's first particles interact? How did they form quarks, and how did these combine to form the first protons and neutrons? And what laws govern a black hole's "gravitational singularity," a tear in the fabric of spacetime, where density and gravity become infinite?

Cremonini, an assistant professor of physics, probes these questions through the lens of string theory, which proposes that every particle in the universe is made of tiny vibrating strings of energy. Measuring just 10^{-34} meters, a string compares in size to a quark as an atom compares in size to the Earth.

Strings are one-dimension objects, possessing length but not width. They can be open-ended, form a closed loop, or attach to membranes, or branes, which could be tiny or could fill the entire universe. Like guitar strings tuned to produce different frequencies, the vibrations of strings can be associated with the various particles we are familiar with. One of these corresponds to the graviton, the particle that is believed to carry the gravitational force. The way in which strings and membranes arrange themselves and interact with each other gives rise to the properties of the subatomic particles we observe.

"The idea behind string theory is simple," says Cremonini. "Look deep inside any particle and you'll see this tiny vibrating string. This is the fundamental unit we've been searching for, the fundamental entity that makes up everything."

String theory, says Cremonini, is the best framework yet devised to bridge the two incompatible theories that describe how the universe works. Albert Einstein's general theory of relativity teaches that gravity is the bending of space and time; it is deterministic and it describes large-scale phenomena. Quantum mechanics is probabilistic; it governs the behavior of atomic and subatomic particles.

"Einstein's theory of general relativity is a beautiful, well-tested theory that tells us how massive objects warp the fabric of spacetime," says Cremonini. "Because of it, we have GPS systems and we understand the orbits of planets and the bending of light around galaxies. And only last year, the LIGO [Laser Interferometer Gravitational-Wave Observatory] experiment detected for the first time gravitational waves, which Einstein predicted 100 years before. These are ripples in spacetime itself, caused by the collision between two black holes, a spectacular confirmation of general relativity.

"But general relativity works well only at large distances or large scales—with a planet, an apple or an airplane. The theory fails to describe gravity everywhere in the universe. It breaks down when you go to very, very short distances, where the effects of quantum mechanics cannot be ignored.

"General relativity and quantum mechanics explain their respective regimes well, but we need a theory, a theory of quantum gravity, which unifies both of them, in order to describe situations in which gravitational and quantum effects are equally important. String theory right now is the most promising and consistent framework we have to shed light on the quantum nature of gravity. It is a set of tools we can use to answer questions about the beginning of the universe, the behavior and properties of black holes, and the fabric of spacetime. All of these ideas go together."

Cremonini recently received a three-year grant from the National Science Foundation to study the microstructure of spacetime, the four-dimensional continuum into which the three physical dimensions are woven with time. By utilizing a technique called holography, she hopes to shed light on phenomena ranging from the immediate aftermath of the Big Bang to the structure and properties of black holes to the behavior of unconventional materials like high-temperature superconductors.

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Cremonini begins much of her research with a pencil and a sheet of paper, writing differential equations not much more complicated than those that students learn to solve in college calculus. The equations are those of general relativity with quantum field theory and string theory.

"A lot of these calculations require physical intuition," she says. "Some of them can be done by hand. Once I've set up a problem in the right way, then I use the computer to help."

Like most physicists, Cremonini makes many approximations and assumptions about the real world. This is especially important with string theory as scientists have not yet developed tools that can produce or observe strings.

"There's a joke in physics about a spherical cow," she says. "Most of the problems physicists work on require us to make approximations of the real world, like taking a cow and making it spherical because a sphere is a lot easier to model than a real cow.

"We don't have the mathematical tools to solve certain problems, so we are forced to make simplifications and approximations that reduce them to something we can tackle. We have to relate a problem we don't know how to solve to something that we know is solvable without losing its essential physical properties."

CHRISTA NEU

Sera Cremonini often begins her research by writing equations that represent approximations of the real world.

Holography's "rich web" of connections, says Cremonini, makes it possible to translate between a gravitational theory and its corresponding quantum theory.

A duality in string theory, says Cremonini, gives insights into how gravity relates to the world of quantum mechanics. Some aspects of gravitational spacetime, she says, have alternative descriptions in the quantum world.

"In string theory, we learn that certain theories of gravity that live in a specific number of dimensions have corresponding and completely equivalent descriptions in quantum theories that live in one less dimension. Because of this difference in the number of dimensions, we call this holography, as it is reminiscent of a hologram, which is a projection of a 3-D object onto two dimensions."

Like a French-German or Japanese-English dictionary, says Cremonini, a gravitational theory and its corresponding quantum theory contain the same amount of information but are written with different words and conventions. Holography offers a "rich web" of connections, Cremonini says, that make it possible to translate between gravity and the quantum world, and to think in an entirely new way about some of their most challenging aspects. As it turns out, a problem that is difficult to solve in one domain can be translated into the other one—usually the gravitational domain—where it can be more easily solved.

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The goal of Cremonini's current research is to expand the scope of problems to which holographic techniques can be effectively applied.

"Holographic techniques were originally developed for simple systems that are well-behaved, have a lot of symmetry and are not too realistic," she says. "We've found that these techniques are much broader and quite powerful. I'm asking how much we can extend and generalize these ideas to more complex systems with less symmetry, which are closer to our universe, and therefore more realistic.

"Physicists like to think of things in terms of symmetries. Most of our progress, especially in particle physics, has relied on understanding systems that are highly symmetric; they are simply easier to understand. But in real life, nature has many mechanisms to break symmetries, and processes are dynamical and much more complicated."

The problems that pose the greatest challenge to physicists, says Cremonini, usually involve systems whose constituents—electrons, for example—interact strongly with each other. In these cases, modeling how the systems behave at different temperatures, or how they undergo phase transitions from one state to another, is notoriously difficult.

One of the phase transitions that Cremonini has studied occurs in a quantum system called "quark-gluon plasma." According to the theory of quantum chromodynamics (QCD), the protons and neutrons that make up the nucleus of an atom are themselves made up of three small quarks that are tightly bound to each other by particles called gluons. At sufficiently high energies, in a phenomenon that echoes the state of the early universe, quarks and gluons separate physically and float freely in a hot soup, or plasma. The phase transition that unbinds quarks is known as QCD deconfinement and is the subject of experiments at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, and the Large Hadron Collider at CERN, the European Organization for Nuclear Research in Switzerland.

"Because of the strong interactions between quarks and gluons," says Cremonini, "this system is very difficult to study. But it can be mapped to an appropriate gravitational system, where some of its properties are much easier to probe."

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In her NSF project, Cremonini is seeking to use holographic techniques to study quantum phases of matter whose behavior is poorly understood, precisely because of such strong interactions. An example is that of high-temperature superconductors, which achieve superconductivity at temperatures as high as -70 degrees Celsius, compared to the -240-degree threshold for ordinary metallic superconducting materials.

Because they have strongly interacting constituents, says Cremonini, high-temperature superconductors are much more challenging to model than regular superconductors.

"High-temperature superconductors are very interesting materials, but there's no deep understanding of why they superconduct," she says. "The behavior of the constituents of those materials is very strange. Their electrons are so entangled and interact so strongly that we can't really understand their behavior using the techniques we would normally use for regular superconductors or conventional metals. Holographic techniques give us a way to write tractable calculations that make it possible to model these systems and their unusual properties."

The behavior of many systems can be likened to the behavior of children experiencing a sugar-induced high. When energy is removed from a system, says Cremonini, the system relaxes to its zero-energy or ground state. When energy is added, often with the application of heat, the system becomes excited and exhibits a rich behavior.

"String theory right now is the most promising and consistent framework we have to shed light on the quantum nature of gravity."

–SERA CREMONINI

"In physics, it's important to understand how systems behave when you drain away their energy and what state they relax down to. Behavior is a function of energy.

"Think of what happens when water boils. A bubble forms—an instability in the system—and starts to grow. Then more bubbles form and grow into a steaming mass. That's how we think of phase transitions; they are there because an instability forms and then grows. In my work I am exploring a variety of quantum phases and the types of instabilities that can result."

In her NSF project, Cremonini is also exploring how gravity emerges from microscopic, quantum-mechanical constituents. She hopes her answers will shed light on the structure of spacetime, the beginning and early evolution of the universe, and the physics of black holes.

"String theory has given us a lot of insights into the relationship between general relativity and quantum mechanics, especially in the last 20 years. It has helped us learn about the fundamental structure of black holes. We know black holes have temperature, meaning there is entropy associated with them. But entropy is not only a measure of disorder. It also tells us that the black hole should be made up of a bunch of microscopic bits. One of the great successes of string theory is that it has given us a way to calculate the microscopic bits that make up certain black holes, and it has reproduced their entropy very precisely. This is remarkable, and it is a must for any theory of quantum gravity.

"Maybe there is another theory that can describe all of these phenomena. That's possible, but so far, string theory is the best framework we have." L


Gary Chan '80 '17P


Michael J. Connor '80 '14P

Reflections from Two Alumni Leaders

The Lehigh University Alumni Association (LUAA) Board of Directors is composed of a group of passionate individuals. Our role is to represent the interests of alumni as the university plans its future. LUAA's goals are "to build a vibrant and mutually beneficial alumni network" and "to mobilize alumni to elevate Lehigh's visibility and reputation." We work in collaboration with the Office of Alumni Relations, headed by Jennifer Cunningham, to optimize the alumni engagement experience. Programs under way include regional networks, webinars, diversity, Greek, professional networks, admissions, career services, legacy commencement celebrations, class affinity, reunion, volunteer engagement and ambassadorship with alumni, parents and students.

Alumni play an important role in ensuring the success of Lehigh going forward. The future is exciting, and there is much we as alumni can do. It is not just about monetary contributions; as important is the engagement of our 80,000 alumni in bringing their knowledge, skills and experience to the benefit of Lehigh. Being connected and involved with Lehigh is an extremely gratifying experience. I have had numerous opportunities to interact with fellow alumni, Lehigh staff and faculty, students, parents and friends of Lehigh. I encourage you to get involved. You will find it fulfilling and fun. There are numerous volunteer opportunities. Please check out the Lehigh Volunteer website at **mylehigh.lehigh.edu/volunteer** or contact Shannon Jaeger, director of volunteer engagement, at **shj211@lehigh.edu** for more information.

Lehigh holds a special place in my heart. Our daughter, Laura, recently graduated from Lehigh. Her Lehigh experience was remarkable, and she blossomed beyond my wildest imagination—one more reason I am eternally grateful to Lehigh. I am sure you have wonderful stories to tell regarding your experience, and I would love to hear them. My email address is **gkchan80@alum.lehigh.edu**.

Sincerely and Forever in Brown and White,

Gary Chan '80 '17P
Outgoing President, LUAA Board of Directors
Incoming Alumni Trustee

While it seems like we just finished celebrating the 150th anniversary of Lehigh's founding, in two years we will hit another milestone: the 150th anniversary of the first graduation at our alma mater. Yes, members of the Class of 1869 became Lehigh's first alumni, but they also did something to ensure that alums' spirit and passion stay embedded in the institution's DNA: They formed the Lehigh University Alumni Association (LUAA), and class members became the first alumni trustees. The Board of Trustees is the governing body responsible for ensuring that Lehigh relentlessly pursues its mission of education and service and stays true to the ideals established by Asa Packer, William Bacon Stevens and the university's other founding fathers.

Packer and these young alumni set in place a practice that stands to this day. There are six alumni trustees, selected by LUAA and serving simultaneously on the LUAA Board and the Board of Trustees, and they carry on their predecessors' work: bringing alumni's interests, insights and passion to the university's governance and acting as ambassadors of Lehigh to fellow alumni and the world. I have been honored to hold one of these positions for the past three years, and it has been a marvelous experience. I have learned so much about what has happened, is happening and will be happening on South Mountain and the many Lehigh touch points around the world. Board members engage with great commitment in a wide spectrum of issues and challenges, from the growth of Mountaintop, to the increasing global reach of our programs, to efforts to attract the best students, faculty and staff from around the world.

I hope you will take some time to learn about the marvelous things going on at your alma mater. President John D. Simon has set an ambitious agenda for us. He has had solid support from our outgoing board chairman, Brad Scheler, and this will continue with our incoming chair, Kevin Clayton. We have added to our impressive leadership team with people such as Cheryl Ann Matherly, vice president and vice provost for international affairs; Donald Outing, chief diversity officer; and Ricardo Hall, vice provost for student affairs. Stay tuned. It's going to be a glorious ride.

Sincerely,

Michael J. Connor '80 '14P
Outgoing Alumni Trustee

ALUMNI FROM LEHIGH

SPOTLIGHT

ALUMNI EVENTS

All alumni, parents and friends are welcome at Lehigh events. Find the complete calendar online anytime at mylehigh.lehigh.edu/events.

MUSIKFEST RIVALRY PLATZ 2017
Aug. 5, 2017
ArtsQuest at SteelStacks, Bethlehem
Join Lehigh and Lafayette alumni and enjoy the sights and sounds of Musikfest 2017.
mylehigh.lehigh.edu/rivalryplatz17

SENDOFF
Nationally through August 2017
The Lehigh family celebrates members of the Class of 2021 at welcome events around the country, giving first-year students a chance to meet alumni and each other.
mylehigh.lehigh.edu/sendoff

FIRST-YEAR RALLY
Aug. 26, 2017
Lehigh University, Grace Hall
Be part of this time-honored tradition as Lehigh alumni welcome the Class of 2021, which will be adopted by the Class of 1971. Those not able to come back to campus are invited to watch online.

View newly archived Mountain Talks and find upcoming offerings at **mylehigh.lehigh.edu/mountaintalks**.

ALUMNI PROFILE
From left, Andrew Pohle '12, Jake Schaufeld '15 and Jordan Levy '14

Lehigh Alumni Startup Named to Forbes' Finest

CASE STUDIES GIVE STUDENTS a chance to solve problems facing real companies. However, in a fast-changing world, it can be hard to keep the business curriculum fresh and the questions relevant. Thanks to three Lehigh alumni, business students now have easier access to real cases provided by companies including KIND Healthy Snacks, CustomInk, and Uber and are providing solutions to its executives.

Real Time Cases (RTC), a company co-founded by Jake Schaufeld '15, Jordan Levy '14 and Andrew Pohle '12, provides current case material to the college classroom through a virtual digital format so students can gain more walk-on experience needed for jobs after graduation. Included in more than 100 undergraduate and graduate classrooms across the country and internationally, these real business cases simulate what it is like to be employed and receive actual assignments from top-level management.

For this innovative educational concept, Schaufeld, Levy and Pohle have been named to the *Forbes* 30 Under 30: Education List for 2017. Real Time Cases has also been named as one of the top 50 startup companies for 2017 by *Startup Grind*.

"Being recognized by Forbes brings a lot of credibility to what we are doing. The honor is like being published in the academic world. It shows people care about real world and experiential learning," said Schaufeld, whose higher education clients include Wake Forest, Syracuse and Brigham Young universities.

Schaufeld, an earth and environmental science major, and Levy, a finance and accounting major, were entrepreneurship minors at Lehigh and partnered in their Entrepreneurship 312 class to develop Levy's idea of using video to bring company executives into the classroom. Live case learning is robust at Lehigh, but typically happens by executives speaking on-site in the classroom. Levy, who prefers live-case learning more than dated textbook-based material, wanted to use technology to expand that experience on a broader scale.

The partners worked the following summer as part of the Baker Institute's student business incubator program at the Ben Franklin TechVentures facility. Levy focused on developing faculty relationships, and Schaufeld established relationships with top business executives.

Levy graduated in August 2014 while Schaufeld continued as a full-time student, but the duo still tested their cases during the fall semester by providing their content free of charge to Lehigh professors and their students in the College of Business and Economics. Students interacted with executives who brought questions about topics such as business ethics, clientele opportunity and supply chain and logistics.

Pohle, who majored in bioengineering, was providing Levy business advice while working in his home state of Texas. He became the third partner of RTC in February 2015 and built the public-facing side of the business and the marketing, editorial and web development of the company.

In just a few years, the company has grown exponentially with 13 full-time employees and an expansion of in-house services which includes aggregating large forms of data to create easily digestible reports for companies. RTC has partnered with executives from more than 40 companies, while students gain experience and expand their professional network.—*Dawn Thren*

ALUMNI PROFILE
Bert Ball '76

Fill Needs, Not Landfills

Bert Ball '76 had a game-changing, eco-friendly idea when he was in the master of fine arts graduate program in the 1990s at UCLA's School of Theater, Film and Television. Classes were taught by Hollywood bigwigs, and Ball learned from Peter Guber, chairman of Sony Pictures at the time, that the *Hook* movie set was about to be struck.

Ball arranged for the production staff to take apart *Hook*'s ship on the set and for $1 million worth of lumber to be donated to a nonprofit organization that works to improve senior citizen housing. The *Hook* movie received a large tax deduction and the material was not dumped in a landfill—a result Ball describes as a win-win.

Realizing the potential of his concept, Ball began the Materials for the Arts program with funding from the City of Los Angeles. His initiative connected movie donations to the local arts community. Ball recalled that Warner Brothers Studio donated "a half-a-mile of movie sets."

Soon, the self-proclaimed "artrepreneur" decided to widen the circle to help more in need. He turned the city program into L.A. SHARES, a Los Angeles nonprofit that serves public schools and community organizations.

Since 1991, Ball has been connecting corporations' unwanted materials with local nonprofit requests. He has developed L.A. SHARES into the world's largest nonprofit multimillion-dollar waste diversion program.

"I am in the stuff business," says Ball. "Why bury it if you can give it a second chance?"

That motto, says Ball, has helped more than 4,000 local schools and nonprofit organizations to date while keeping more than 25 million pounds of materials out of landfills.

"We changed the nature of the waste management business. We provide an alternative where it never gets into the waste stream in the first place."

Harnessing the intersection of business, government, and the nonprofit and educational communities is at the heart of the L.A. SHARES mission. Ball says all areas have something to contribute to and benefit from.

To date, Ball has worked with more than 3,000 companies, including Deloitte Touche LLP and Cushman & Wakefield, to coordinate the donation of more than $180 million worth of goods and materials throughout the Los Angeles area. Thanks to the city's continued funding, L.A. SHARES does not charge for its services.

"We get more than 1 million pounds of stuff each year ... all avoided going into the landfill," says Ball.

Recipients pick up donations and benefactors receive a tax deduction, and a thank-you note from the recipient. Donations range from file folders and phones to furniture and appliances. Smaller shelf items are kept in two warehouses owned by the city where people can go on "Shopping Day" for carry-out merchandise.

Spreading Sustainability with Help from Lehigh

Ball has taken his concept beyond Los Angeles to Phoenix, Las Vegas, San Francisco and other cities, where he advises officials attempting to create similar materials-reuse programs. But he says his concept cannot work on a grand scale until the process of manually receiv-

ing donations and matching donors with charitable organizations is automated and moved online.

Ball, who majored in English and fine arts at Lehigh and minored in technology and human values, knew just where to go for help to develop such an interface computer program—his alma mater.

At a West Coast alumni event, Ball met Mark Orrs, professor of practice and director of Sustainable Development at Lehigh. The two discussed how to make the waste-reuse program work on a larger scale. Orrs and Ron Crane, adjunct professor of computer science and engineering, enlisted Lehigh students to advance the mission of L.A. SHARES.

Crane teaches the two-semester computer science and business (CSB) Capstone Project course in which CSB majors work in teams using the fundamentals of creating websites on projects provided by companies. Ball pitched his ideas at the CSB Capstone project fair in January 2016 and commissioned a team of eight students to begin developing the needed interface platform and to create a user-friendly website.

The team—all CSB majors and class of 2017 members—were Christopher Byam, Siddharth Ambatipudi, Bruke Mammo, Thomas Marrapodi, Jessica Petrakovic, Stephen Friedman, Qing Yi and Qiran Ying. The team brought the project to about 80 percent completion during the spring and fall semesters of 2016.

"My experience made me appreciate how the intersection of technology and communication brings value to society, which is a core idea of the CSB program," says Byam.

Goals included designing a more user-friendly website for administrative users and regular users (such as profiles for donors and recipients), a new backend database, and additional visual and functional features. The team did not have time to develop a website template for a web application to provide similar services for other organizations.

Ball, who Skyped regularly with the team, was impressed with the work of the 2016 Capstone group and is confident the 2017 Capstone team will finish the project by December. Team members are CSB majors Pablo Felipe Avilés Ruiz '18, Stephanie L. Beddow '18, Matthew S. Buell '18, Brittany O'Neill '18 and Holland M. Roza '18, who are also creating a reporting mechanism that leverages data collected on the website. Reports will be generated that L.A. SHARES needs for nonprofit recordkeeping and its own research.

> "BERT BALL HAS BEEN MAKING AN IMPACT ON THE ENVIRONMENT AND COMMUNITY FOR YEARS. HE IS A VISIONARY WHO IS STRIVING TO APPLY THIS CONCEPT ON A BROADER SCALE."
>
> —SAM EVERS '19

Bringing IT to the Lehigh Valley

During the summer of 2016, a team of Mountaintop students—Rebecca Woods '19, Chad Wallace '17, Anna Putelo '17 and Sam Evers '19—worked on LV (Lehigh Valley) SHARES to address the issue of environmental sustainability within the area.

Inspired by L.A. SHARES, the Mountaintop team made connections with nonprofits and corporations to complete a needs assessment with the local business community. Orrs advised the team and Ball served as a West Coast mentor, Skyping weekly and meeting with the students in New York.

When the final product of the 2017 CSB Capstone team is available, says Orrs, a new team of students will use the website and interface platform to address environmental sustainability in the Lehigh Valley through LV SHARES. *—Dawn Thren*

A New College Dean at U-Mass Amherst

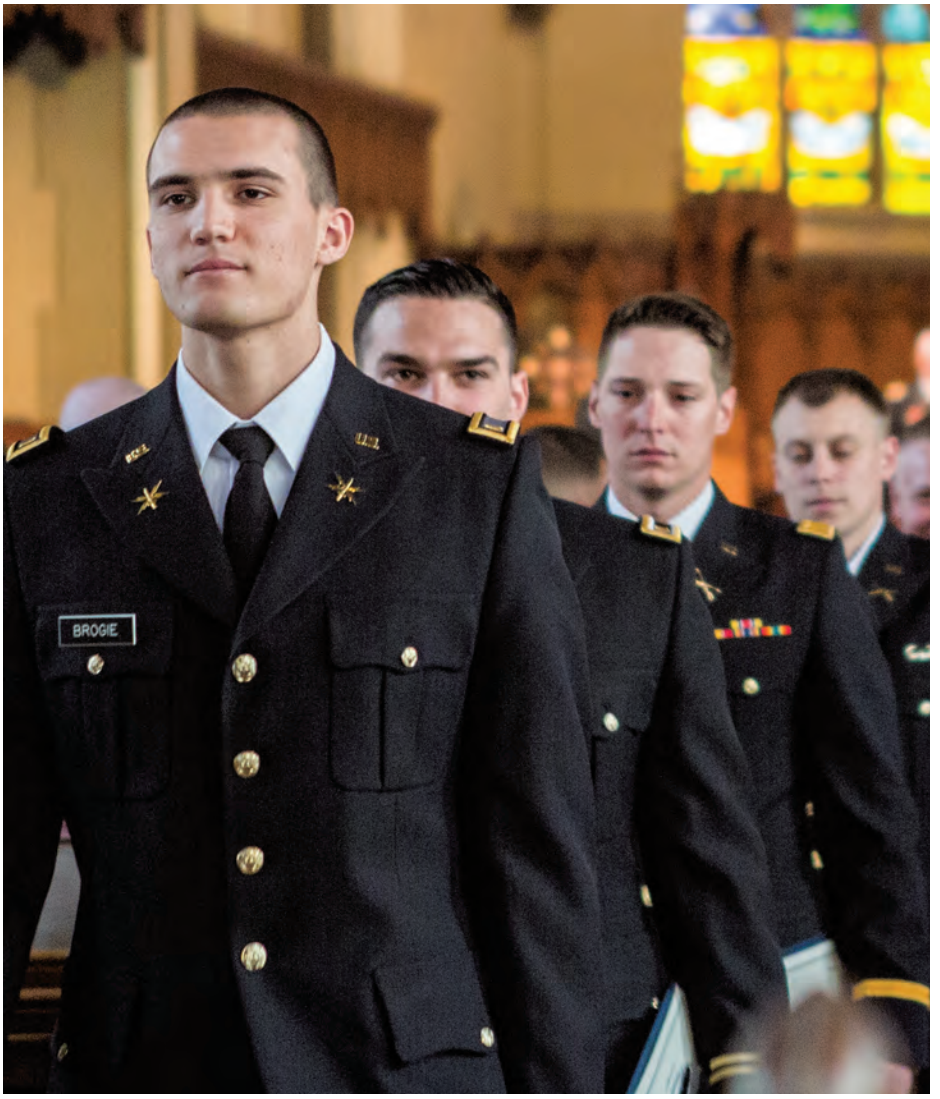
Tricia Serio '91, a cell biologist who studies the consequences of protein misfolding, has been named dean of the College of Natural Sciences at the University of Massachusetts, Amherst beginning this August.

Serio, who holds a B.S. in molecular biology from Lehigh, currently heads the Department of Molecular and Cellular Biology at the University of Arizona.

In her research, Serio seeks to understand the mechanisms by which protein conformations can self-replicate. She studies their links with human diseases, especially age-related neurodegenerative diseases, and how these processes can be reversed.

In 2016, Serio received the 2016 Mid-Career Award for Excellence in Research from the American Society for Cell Biology for her work on the dynamics and functional consequences of protein misfolding, with a focus on prion proteins. Serio has also received the National Cancer Institute's Howard Temin Award, and a Pew Scholarship in the Biomedical Sciences.

She has written articles for the *Huffington Post*, *Chronicle of Higher Education*, *U.S. News & World Report* and *Nature* about the unintended consequences of seeking tenure, mentorship, work-life balance, increasing college graduation rates, subtle sexism in science, the role of basic research in finding cures for human diseases and her son's experience in a charter school.



SEVEN CADETS FROM Lehigh, DeSales and Kutztown universities were commissioned into the U.S. Army as 2nd Lieutenants at the 98th Commissioning ceremony held in Packer Memorial Church. The ceremony was part of Lehigh's 149th Commencement exercises on May 21.

At left, Cadet Zachary Brogie of Lehigh University leads the other cadets as they prepare to take the oath of office as commissioned officers. Below, left, after taking the oath of office, 2nd Lt. Mikayla Mayoryk of Lehigh University is pinned by her parents. 2nd Lt. Billy Ramsey of Lehigh University, bottom right, is pinned by his stepmother and brother.

Lehigh's ROTC program, the Lehigh Steel Battalion, was established in 1919. It is open to students who are enrolled at 12 other colleges and universities in the Lehigh Valley.

One of the first ROTC (Reserve Officers' Training Corps) programs in the country, Lehigh's program began under the direction of then-Lehigh President Henry Drinker, who supported the idea of military instruction even before the Defense Act of 1916 established ROTC.

CHRISTA NEU

LEHIGH UNIVERSITY

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THEY DID IT! *Cameras flashing, the Class of 2017 strides into Goodman Stadium on May 22 for Lehigh's 149th commencement exercises. Spirits were high despite the gray skies and light rain that fell intermittently during the morning celebration.*
Photo by Christa Neu