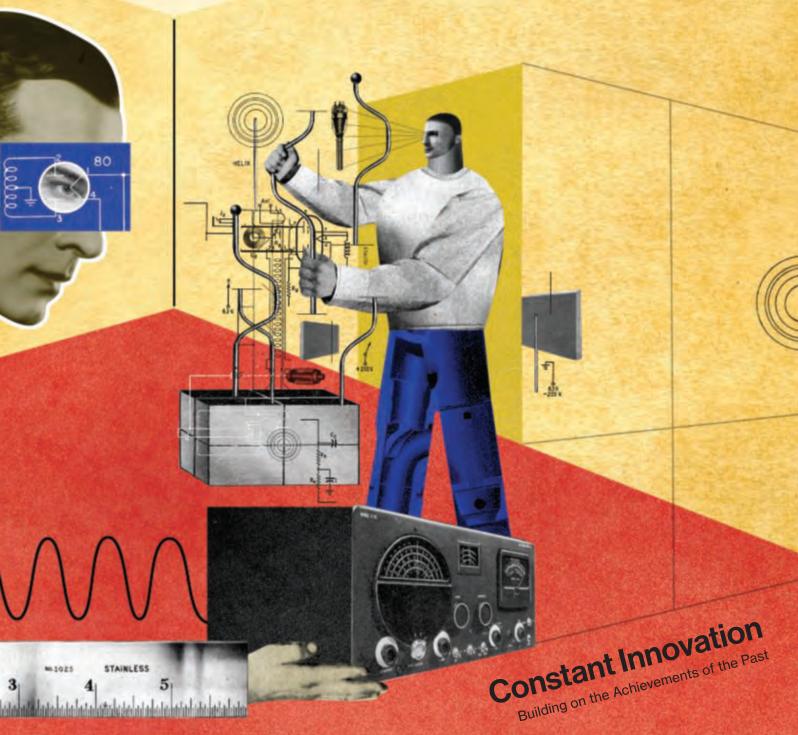
COLLOCUTO HARVARD UNIVERSITY | THE GRADUATE SCHOOL OF ARTS AND SCIENCES





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colloquy

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REGULAR READERS OF Colloquy will notice that this issue has a new look and additional features. The philosophy behind this redesign was developed after considering what the title of this publication means—a conversation-as a way of encouraging you to engage with the content and with

one another through letters to the editor and connections with other alumni in our community. I hope you will enjoy the pages that follow and that you will let us know what you think.

The 2016-2017 academic year marks the 25th anniversary of Dudley House as the graduate student center serving GSAS students. When Dudley was rededicated, few schools invested in the idea of building community among graduate students. But those at GSAS knew that graduate students needed to leave the lab or library and engage with peers in a multitude of ways, from intellectual conversation to athletic play. Dudley's success is evident, both with our students and in the larger Harvard community, and it has become a model for our peers.

To celebrate this milestone, GSAS is hosting a series of anniversary events during the academic year, which included a weekend of events during November. On page 24, you will find a recap of the gala open house that brought current students together with alumni, the Graduate School Alumni Association Council, and GSAS staff, a reunion of Dudley Fellows, and the Dudley Beer Fest, which included local beer and cider producers.

Dudley's 25th anniversary underscores the importance of community in graduate education. As graduate students, we were trained to ask questions and develop new lines of thinking in our fields, often inspired by those we engaged with in our departments and programs, at Dudley, and beyond. I hope that you will continue the conversation—the colloquy—you began with peers and others during your time at Harvard, and that you are equally engaged by what you read here.

-XIAO-LI MENG, PHD '90 DEAN

colloquy SPRING 2017

Xiao-Li Meng dean, PhD '90 Jon Petitt director of alumni relations and publications Ann Hall editor

James Clyde Sellman, PhD '93 alumni books editor Christina Tucker alumni notes editor 2COMMUNIQUÉ creative direction & design

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CONTACT

The Graduate School Alumni Association Suite 350, 1350 Massachusetts Avenue Cambridge, MA 02138-3846 617-495-5591, gsaa@fas.harvard.edu gsas.harvard.edu/alumni

Access current and back issues of Colloguy. as well as a range of other alumni services and information, at gsas.harvard.edu/alumni.

LETTERS TO THE EDITOR

ASSOCIATION (GSAA) COUNCIL

We welcome your feedback and ideas. Write to: Colloguy. Harvard University Graduate School of Arts and Sciences, Suite 350, 1350 Massachusetts Avenue, Cambridge, MA 02138-3846; or e-mail gsaa@fas.harvard.edu.

GRADUATE SCHOOL ALUMNI

Alexandra Amati-Camperi, PhD '95, music G. 'Anand' Anandalingam, PhD '81, applied sciences Reinier Beeuwkes, COL '62, PhD '70, medical sciences Lisette Cooper, PhD '84, geology Mia de Kuijper, MPA '83, PhD '83, economics; chair Stacy Dick, AB '78, PhD '83, business economics A. Barr Dolan, AM '74, applied sciences Richard Ekman, AB '66, PhD '72, history of American civilization Yonatan Eyal, PhD '05, history

John C. C. Fan, SM '67, PhD '72, applied sciences Kenneth Froewiss, AB '67, PhD '77, economics Homer Hagedorn, PhD '55, history

R. Stanton Hales, PhD '70, mathematics LaVaughn Henry, PhD '91, economics Fiona Hill, AM '91, PhD '98, history

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Gyuri Karady, PhD '80, applied sciences Imad Kordab, PhD '09, applied mathematics Felipe Larraín, PhD '85, economics Jill Levenson, PhD '67, English and American literature

and language See-Yan Lin, MPA '70, PhD '77, economics Jean Liu, SM '02, computer science Abraham Lowenthal, AB '61, MPA '64, PhD '71, government

Suzanne Folds McCullagh, PhD '81, fine arts John J. Moon, AB '89, PhD '94, business economics

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This senior (97) thoroughly enjoys Colloquy.

Question: Why does your policy not edit, print "Letters to the Editor?" I (and probably "we") do enjoy reading critically responsive "Letters" by your intelligent and learned readers. Indeed, at times I too have sent "Letters" to various publications. Some were published. But—the idea of an intelligent responsive readership (with their questions and criticisms) is most appealing.

Thank you for reading this missive.

-LEO SHATIN, PHD '51, DEPARTMENT OF PSYCHOLOGY AND SOCIAL RELATIONS RETIRED PROFESSOR OF CLINICAL PSYCHIATRY, MOUNT SINAI SCHOOL OF MEDICINE. NEW YORK

Editor's reply to Leo: Colloquy now welcomes readers' letters! Please see our contact information below. And please note that due to the volume of correspondence, we are unable to respond to or publish all mail received. Letters accepted for publication are subject to editing.



I was just leafing through the most recent issue of *Colloquy* and read through the article celebrating the 25th anniversary of Dudley House. Congratulations! When I was a graduate student at Harvard in the 1980s, Dudley then served as the house for students living off campus, and we grad students would convene in a corner or two of that then somewhat forlorn looking building.

In 1989, when I took my first tenure-track position at Michigan, I was astounded to discover the Horace Rackham Graduate School building, with beautiful terrazzo (I think) floors, glass doors leading into study rooms with big armchairs—leather I think, and built, I was told, for the graduate students at Michigan. I was bowled over, reflecting on how Harvard graduate students were (then) treated as something of an

GSAS is now on YouTube! Subscribe to our newly launched YouTube Channel today. hvrd.me/pPRt30905G7

Big challenge: students (today) get information differently.

(Prof. Xiao-Li Meng of @HarvardGSAS)

@SunwayU

-TOTOKSOEFIJANTO JAN 18

afterthought. Here, in 1989, graduate students were treated like the colleagues they were in the process of becoming. And the Rackham website in fact points out that "ground for it was broken in May 1936, and it was officially dedicated in June 1938."

So, considering that Michigan's beautiful and spacious Rackham Graduate School has been in place since the 1930s, it seems a bit of a stretch to consider the birth of Harvard's Dudley House "experimental."

Most sincerely, and with a bit of a twinkle,

—RAFIA ZAFAR, PHD '89,

HISTORY OF AMERICAN CIVILIZATION

PROFESSOR OF ENGLISH, AFRICAN & AFRICAN

AMERICAN, AND AMERICAN CULTURE STUDIES

WASHINGTON UNIVERSITY IN ST. LOUIS



ENGAGE

"What is your most vivid memory from your first year of graduate school?"

••• Share your story with us! E-mail gsaa@fas.harvard.edu. Or write Colloquy, Graduate School of Arts and Sciences, Harvard University, 1350 Massachusetts Avenue, Suite 350, Cambridge, MA 02138-3846

ILLUSTRATOR: ERIC HANSON SPRING 2017 colloquy 3

talking points

CAREER INSPIRATION

For the sixth year in a row, the Graduate School Alumni Association Council sponsored the Business Applications Workshops as part of January@GSAS-a series of seminars, workshops, and recreational opportunities designed to help GSAS students build professional skills and make the most of the winter break. Sessions led by alumni with successful careers outside of academia covered big data, innovation and entrepreneurship, strategy, finance, patent law, and government work, and provided graduate students with advice on how to utilize the skills developed while earning a PhD in nonacademic careers. "Anyone with a PhD has demonstrated that they work hard and can learn!" shared Katharine Porter, PhD '16, who studied cognitive neuroscience and now works for a data science company.



HIGHEST HONORS

In May, GSAS will announce the 2017 Centennial Medalists, alumni whose work, begun at GSAS, has

contributed to society.
You can help GSAS
recognize distinguished
alumni for a Centennial
Medal by submitting a
nomination to the Graduate
School Alumni Association.

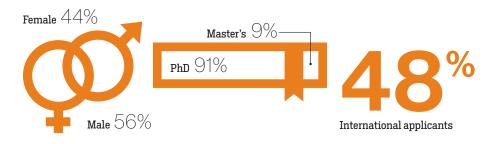
GSAS master's and PhD graduates are eligible for consideration. Past winners include Elaine Pagels, PhD '70 (Study of Religion), Zbigniew Brzezinski, PhD '53 (Government), and Ruth Simmons, PhD '73 (Romance Languages and Literatures). Read a conversation with Ruth Simmons on page 10.

••• Nominate your fellow

classmates: gsas.harvard.edu/
alumni-association/alumni-awards

APPLICATIONS TO GSAS EXCEED 14,000

GSAS received a record number of applications this year, with 14,442 prospective students seeking admission for fall 2017. As usual, a large percentage of applicants come from outside the United States.





"If you knew no words in a language, having a dictionary wouldn't help you in the least."

-SCOTT L. NEWSTOK, PHD '02, IN THE SEPTEMBER 16, 2016, ISSUE OF THE

CHRONICLE OF HIGHER EDUCATION

GLOBAL GSAS

With more than 20 percent of GSAS alumni living and working internationally, GSAS travels the world to connect with its global community. During January, the Graduate School Alumni Association (GSAA) partnered with the Harvard Club of Malaysia, the Harvard Club of Thailand, and the Harvard University Association of Alumni in Singapore for events featuring a presentation by GSAS Dean Xiao-Li Meng and FAS Dean of Social Sciences Claudine Gay titled "Impact, Innovation, and Influences: Education and Scholarship at Harvard." The trip included information sessions for area undergraduates considering graduate education and a brunch that drew a large proportion of alumni from GSAS's regional studies master's programs. GSAA Council members Mia de Kuijper, PhD '83, and See-Yan Lin, PhD '77 (current and former Alumni Council chairs), joined the delegation for events in Singapore and Malaysia. Global GSAS events are currently being planned for Europe in June.





HUMAN DIGNITY

Though Henry J. Stiener, AM '55, made the law his profession, he developed a keen eye for photography and a passion for documenting person-to-person interactions and dramatic landscapes, thanks to travel in developing countries as part of his academic work in international human rights. After six decades of capturing images, he has collected some of them in the book *Eyeing the World*, in which he asks of the reader, "In what way might these photos bear on equal human dignity?" Stiener, the Jeremiah Smith Jr. Professor of Law, Emeritus, at Harvard Law School (HLS), founded the HLS Human Rights Program in 1984 and served as its director until 2005. If you are on campus, you can see selections of his work in Harvard Law School's Wasserstein Hall.

ONLINE EXCLUSIVE

RESIDENT ADVISOR HELPS MAKE HARVARD A HOME FOR STUDENTS

Harvard graduate students have access to a myriad of housing options—GSAS residence halls, Harvard Housing, off-campus, roommates—and Prahar Mitra has experienced them all. But one thing he missed about living in a residence hall was the ease of meeting new people and learning about their work and research. After three years off-campus, Mitra, who is a PhD student in the Department of Physics, became an resident advisor (RA) in Conant Hall, hoping to foster the same friendly environment that welcomed him when he arrived at Harvard in 2011. "I had never travelled outside of India before moving to Cambridge, but I felt at home within the first two or three days," Mitra says. For him, the choice to return to the halls as an RA was an easy one.

••• Want to know more? Read the full article at gsas.harvard.edu/news/stories/added-benefits



The Secret Ingredient

HILS COMPETITION HIGHLIGHTS THE SCIENCE OF COOKING

WHEN SCIENCE STUDENTS approached GSAS with the idea of holding a cooking competition, Dean for Academic Programs and Diversity Sheila Thomas supported the idea right away. Thomas, who oversees the Harvard Integrated Life Sciences (HILS) program, saw this as an opportunity to connect HILS students who might not otherwise have the chance to work together. "I find the kitchen a different kind of experimental laboratory," shares Thomas. "The students and I started talking about how a cooking competition could be a good way to bring students from across programs together."

With HILS funding, the organizers—Sam Carlson, Constantin Giurgiu, Alexa Jackson, Vayu Maini Rekdal, and Alec Walker—set to work developing a competition that would incorporate a secret ingredient to be revealed on the day of the event. As a first-year HILS student, Rekdal was drawn to cooking as a way of fostering community. "What we are trying to do with the cooking challenge is build community and also celebrate that we are all scientists," Rekdal says.

On the day of the competition, the secret ingredient was revealed: *Aspergillus oryzae*, a grain-loving fungus that, when fermented with soybeans, grain, and salt, becomes miso paste. Four teams of PhD students from across the fourteen programs that make up HILS made three dishes showcasing two types of miso in just under two hours and presented their creations to an all-star panel of judges: HMS's Roberto Kolter, Venkatesh Murthy from the Department of Molecular and Cellular Biology, Ralph Mazitschek, an assistant professor with the Chemical Biology PhD Program, and Thomas were joined by special guest Bob Yosses, the former White House pastry chef.

Christina Jayson, a PhD student in Biological and Biomedical Sciences and member of the winning team, credited her group's willingness to experiment and draw on their training in scientific thinking to respond to the day's many culinary challenges. "We were troubleshooting the whole time," she shares. "You do that in science as well."

 $\bullet \bullet \bullet \textbf{ Read the article:} \textit{gsas.harvard.edu/secret-ingredient}$

In the kitchen: HILS cooking competition in the Northwest Labs.

6 colloquy spring 2017 PHOTOGRAPHER: RALPH MAZITSCHEK



HARVARD HORIZONS

2017 marks the fifth anniversary of Harvard Horizons, the professional development program that selects eight outstanding PhD candidates to receive in-depth, personalized mentoring and coaching designed to enhance their presentation skills. This year's Harvard Horizons Scholars include students from anthropology to statistics, who will deliver talks about their research at the Harvard Horizons Symposium in Sanders Theatre at 4:30 p.m. on April 12, 2017.

 $\bullet \bullet \bullet \ \textbf{Read more about the Scholars and their projects:} \ gsas. harvard.edu/harvardhorizons$

Four of the eight Harvard Horizons Scholars (clockwise from top: Xiawei Wang, Frederick Reece, Evander Price, Christalyn Rhodes)



noteworthy



All in the Equation

FOR MARYAM MODJAZ, PHD '07, STARRING IN A COMMERCIAL WAS BUSINESS AS USUAL.

A message from a casting company wasn't what Maryam Modjaz, PhD '07, astronomy, expected to find upon checking her e-mail, but there it was. An unnamed company was looking for scientists who could provide scientifically sound equations. After a Skype audition, Modjaz was cast in a commercial for Apple's new generation of products, the iPhone 7 and the next generation iWatch. Standing in front of a blackboard filled with equations, she explains how "nits" are a unit of measurement for brightness—one nit approximately equals the light generated by a common candle. As for the equations behind her? Modjaz made sure they were all correct and thematically appropriate.

ALUMNI UPDATES



Nikolaos Panou, PhD '08, has been named the inaugural Peter V. Tsantes Professor in Greek Literature and Language at Stony Brook University's College of Arts and Sciences. Panou's research focuses on power and authority and their representations in pre-modern discourse. He hopes to build a better understanding of Greece and Greek Society in the Center for Hellenic Studies.



Jennifer Richeson, PhD '00, has been appointed the Phillip R. Allen Professor of Psychology at Yale University. Previously, she was the John D. and Catherine T. MacArthur Foundation Endowed Chair in psychology at Northwestern University. Richeson's work focuses on the psychological phenomena related to the ways in which group memberships impact the way people think, feel, and behave.



Nicholas Lange, PhD '86, will join the American Health Council's Education Board and share his research expertise.
Currently, Lange is an associate professor of psychiatry at Harvard Medical School, as well as biostatistician at McLean Hospital. He has contributed to the development of new methods to better understand typical and atypical brains, be they human or non-human.



Tamar Schapiro, PhD '97, joined MIT as associate professor of philosophy in 2016. Schapiro returned to Cambridge from Stanford University. Her areas of interest are ethical theory, the history of ethics, practical reasoning, and human agency. Currently, she is working on a book on motivation and action, tentatively titled, "Inclination and the Will: A Kantian Conception of Passion and its Role in Action."





ENTHUSIASM FOR LEARNING

RUTH SIMMONS, PHD '73, BECAME THE FIRST AFRICAN AMERICAN PRESIDENT OF AN IVY LEAGUE INSTITUTION. BUT WITHOUT THE MENTORS WHO INSTILLED IN HER A LOVE OF LEARNING AND DESIRE TO AIM HIGH, SHE MAY NOT HAVE SUCCEEDED.

You've said that you owe much of your success to mentors who encouraged you. Who were they and how did they help?

My greatest mentor was my mother. But because my parents grew up in a world in which Blacks were disenfranchised, they didn't imagine that an African American child from Texas could benefit from education as I eventually did. Luckily, I had a series of influential teachers who opened my eyes to the possibilities. These teachers, in spite of segregation and the lack of civil rights at that time, believed that it was important for children-Black children-to be well-educated and passed their enthusiasm for learning onto me. They directed me to aim high and suggested that I could go to college, which I couldn't have believed were it not for their insistence.

You once commented that everyone you knew was a maid so you aspired to work in an office. When did you start aiming for something greater?

At a certain point, the learning took over as I tried to find an antidote for the racist world I grew up in, where people were rejected based on superficial elements and biases. After high school, my thirst for learning about the world animated me, but I didn't have any idea what I was going to do. I loved language because it was a way past the narrowness I was trying to combat, learning a different language and culture, understanding better what motivated people and how to bridge the divide across those differences. When I started applying for graduate school, I began thinking, perhaps I'll go into the academic life.

10 colloquy spring 2017 ILLUSTRATOR: JOHN RITTER

"It was leadership that made the difference."

So coming to Harvard was a way to accomplish that goal, but you eventually became an academic administrator. Was that planned or serendipitous?

It was purely serendipitous. After graduating from Harvard, I joined the romance languages faculty at the University of New Orleans and realized that language instruction was not well-organized. I told my colleagues that we needed to do this differently and then, oddly enough, got appointed to make it better. This got noticed by the dean who asked me to join his staff as an assistant dean.

I accepted the position because during the mid-1970s, the school had almost no Black faculty, and no Black students studied in my area. I felt an obligation to the rest of the student body who didn't interact with me.

As president of Smith and of Brown, you launched pathbreaking programs designed to improve the academic experience and influence employment opportunities. What role do you think colleges and universities should play in the US and the world?

Our task in universities is to provide the best education we can, but we also need to look beyond our walls to see what's happening in society. If we are not doing that, we can be held accountable for not fulfilling our mission as a whole. We need to provide an avenue for students to prepare themselves for the reality they will ultimately face. I felt this acutely because I grew up in a heavily racialized society with very little promise for African Americans. My teachers prepared me for something I could not see or anticipate—

that society would change and opportunities would develop for students like me. I think colleges must do the same for students today.

At Smith College, we knew that engineering could not continue to exclude women and minorities to the extent that it had in the past. How could we anticipate the inevitable change in the engineering workforce and shape programs that could serve as a change agent for engineering as a whole? That's what we were trying to do by creating an engineering program within a women's college. I believe strongly that universities should try to do such things.

You're now the head of the board of the Holdsworth Center, which provides training for public school leaders in Texas. How did you become involved and why is it important? We need to support public schools and improve the resources available. Most of all, we must not forget that it is our fundamental, moral responsibility as a nation to provide an avenue for the poorest of the poor to be educated and empowered.

At the Holdsworth Center, we are focusing on leadership by providing continuing education and additional support for superintendents and principals. We are also building a team around them by involving district boards. Over five years, we will have touched a majority of these leaders. Leadership played an important role in my experience, certainly in my time as a student in the Texas public schools. It was leadership that made the difference.

So, you've come full circle in a way?

That's the way I feel. I'm grateful for this opportunity because when I came back to Houston and visited my old neighborhood, I wanted to find a way to show gratitude for what I was given. When the Holdsworth Center asked if I wanted to be involved, it didn't take much for me to say absolutely, yes.

CURRICULUM VITAE

Holdsworth Center Chair of the Board

Brown University
President

Smith College President

Harvard GSAS
PhD in Romance
Languages and
Literatures, 1973

Dillard University BA, 1967

Swimming to learn

WRITING AS A
GRADUATE STUDENT
INVOLVES DISCOVERING
NEW THINGS IN WHAT
ONE ALREADY KNOWS
BY SUZANNE SMITH

PORTRAIT BY KATHLEEN DOOHER

There was an old lady who sowed her extra seeds on deserted lands every spring... Whenever she was out in the village, I often found her carefully examining the surroundings to look for anything that could be potentially useful: each piece of land, each branch of the tree, each bundle of the grass... Upon encountering anything that sparked her interest, she would kneel down, like a small child collecting a beloved toy, and put it in her pocket. She was, as I remember, a genius in breeding the crops. Her squash or winter melon seeds always produced the biggest and best products in the harvesting season. As the spring season began, the lady, after finishing the work on her farm, took the seeds to sow on the lands no one was using. The land didn't seem to be rich, since even the wild grass was striving to survive. But the lady felt ashamed about not using any piece of the land... When the harvesting season came, one was likely to find her cheerfully carrying back home bags of melons, bundles of sesame, and buckets of potatoes. As peasants greeted her on the country road, the old lady liked to open her container, proudly telling the others how fortunate she had been in harvesting from the barren lands.

-JIANG HE, PHD '16

The student's writings were full of earth and water. Animals, too. Sometimes both.

He wrote not just about the fields where rice was grown, but what those fields looked like when, "on...sunny days, reflections from the water lightened up every corner of the village, making the land appear like a gigantic mirrored jigsaw puzzle box."



Most days, I read papers full of words, images, numbers, and graphs. No animals. I read things written in academic prose. What did I read today? Well, when I woke up in the morning, I read my own writing from the night before (a screenplay that is not going very well) and fiddled around with it a bit, cutting a phrase here and changing a word there. Once in my office, I met with a student from one of the regional studies master's programs to talk about a paper on Russian politics. The next two hours were taken up with meetings; one concerned learning technology, and the other, collaboration with another office. Then it was lunchtime and I headed out to meet a GSAS student who just successfully defended his dissertation in one of the natural sciences. Afterwards, I hosted a mock job talk for a student who has three on-campus interviews scheduled. We talked about how to structure her presentation so that it might best tell the story of her research. An advanced doctoral candidate showed up at my office just after four. She was revising an article for publication. The peer reviewers had conflicting opinions. How could you satisfy both of them? In such instances, I generally advise the practice of statesperson-like diplomacy. The workday over, I headed out for dinner; I then tackled the screenplay again. At some point, I slept. Then it was morning. More writing.

TELLING STORIES

In writing, GSAS students are not just mastering the conventions of the genre. They are also learning how to tell stories. Who is the subject? Generally, either "I" or "we." For now, I'll say "you."

You have detected something of interest. It presented itself to your attention in the course of your research. What is it? What do people in your field or related fields know about it? What remains to be known, and what are you going to do about it? When you did what you decided to do, what did you find out? What did you learn from the approach you took that is worth sharing? How does it change our understanding?

Whether it's a dissertation, a seminar paper, a short story, a memoir, a blog entry, a presentation or even a short response paper, anything made out of words and images is either part of a larger story or tells one on its own. Often, it is the same story: there was something we didn't know but should know or might want to know. Something made it possible for us to know it better. What we found out has bearings on what other people are still trying to find out, as well as on what they already know.

Each element of a given piece of writing is there to do a particular kind of work, which is itself suited to the purpose of the larger project (that of scholarship) in which one is engaged. In an academic paper, why is there a "literature review"? Because academic writing is an inherently social process, and hence subject to the demands of a sort of justice. One must give others their due. Why does a lyric poem *not* need a literature review? Because the conventions of lyric poetry permit the lyric singer to sing of himself to himself. "I am large," sings Whitman in "Song of Myself." "I contain multitudes." Songs need not aim at understanding.

More often than not, writing articles entails identifying a problem (itself an art), taking an approach to that problem, and coming up with results that peers working on related problems might benefit from, in terms of heightened understanding. Indeed, one crucial goal in the development of modern research was to put knowledge-seekers and problem-solvers in connection with one another. When that happened, though, seemingly impassible boundaries gradually arose between academic and nominally more "creative" sorts of writing.

A HARVEST FROM BARREN SOIL

The writer of the passage about the old lady and her capacity to grow things in unpromising conditions was not an undergraduate working on a "creative" senior thesis in the English department. At the time, rather, he was a GSAS student in molecular and cellular biology. I had first met Jiang He back in 2012, when he contacted me to let me know that he had been working on an autobiographical book about growing up in rural China and making his way to Harvard. To Jiang's mind, these were not wholly disparate worlds. Indeed, it



was his immersion in nature that shaped the passion with which he studied it. In his first e-mail, he indicated that he was not working on an academic project, and politely asked if he could send me his stories anyway.

He said that he would understand if this was not my job. I said, "Please send me your stories." And so he did, and I could see that they were real stories, and that they were in fact going to be a book. He was concerned about the fact that English was his second language; I was not. I was impressed by his existing abilities, and I was sure that we could shape an approach to his work that would allow him to exercise his craft in English.

In the course of my work as the director of the Center for Writing and Communicating Ideas, I think often of the work that I did with Jiang from 2012 to 2014. Back then, there was no Center, Certainly, there were people in the Fellowships Office and the Bok Center working with students on developing skills that would shape their writing. My part of this joint effort entailed sitting on a couch on the third floor of Dudley House, reading students' writing, talking with students about their writing, or plans to write, or problems with writing, or questions about how to approach their writing in the context of their larger intellectual, disciplinary, professional, and pedagogical aims.

Now that we have the Center, we are poised to take a leap in terms of helping many more GSAS students with the skills of writing and communicating that are "Now that we have the Center, we are poised to take a leap in terms of helping many more GSAS students with the skills of writing and communicating that are so central to professional development." –suzanne smith

so central to professional development. I still read students' stories. I often use art as an entry point into conversations about structure, story, and style.

Here, I want to return to Jiang's description of the old lady who planted in fields that others had dismissed as barren. It's easy to see a potential analogy to writing in the description of the lady's capacity to use her well-tutored eyes to spy out untended areas where, given some effort, growth might be possible. Happy the writer or thinker who finds a seemingly barren area and manages to get a harvest out of it.

Jiang's stories were not written to gain credit for a course or degree. They were written for the sake of telling his story. Both his research in biology *and* his stories came out of his connection to nature. Through his work on developing his gifts as a literary writer, Jiang developed his overall capacities as a writer and thinker.

WHAT WE DO EVERY DAY

Countless professional writers use metaphors of planting, digging, and harvesting to describe their work. One thinks of Seamus Heaney's poem, "Digging," in which a writer sits at his desk, holding his pen between his finger and his thumb. Upon hearing the sound of a spade sinking into the ground, the writer looks out the window and sees his father digging, which reminds the writer of his grandfather digging as well. The speaker reflects that he is unequipped to dig with his forebears: "I've no spade to follow men like them." What he does have, however, is a pen: "Between my finger and my thumb / The squat pen rests." He resolves to put the pen to work: "I'll dig with it."

Digging, building, sometimes running: most metaphors used to describe writing are land-based, or, if at sea, as in, say, Hemingway, at least in a boat. One thinks of fishing. In working with GSAS students, I have found the more apt metaphor for writing to be swimming. I am not thinking of F. Scott Fitzgerald's remark that "All good writing is swimming under water and holding your breath." This may be a bit melodramatic. Not all writing that is later deemed to be "good" makes one feel deprived of oxygen. Sometimes it feels like freedom.

To the extent that writing entails something like swimming, I would say that it entails swimming to learn. How is this different from learning to swim? When you are learning how to swim, you are told what it is you are supposed to be doing: treading water, doing the crawl or the butterfly, and so on. At first, as in undergraduate writing, the goal is to build general capabilities rather than specialized skills.

Learning how to fulfill particular tasks that we know about prior to undertaking them is essential to graduate education. But graduate writing, in the process of becoming professional, moves beyond the fulfillment of required tasks. In writing, as in athletics, you cannot improve your specialized skills without drawing upon and hence, heightening your general capabilities. And absent a high degree of general athleticism, one cannot attain a high degree of specialized expertise.

In the more advanced stages of writing, we still engage in the same processes that we did when we had just started, but now, we are doing them at a different level. It is always possible to learn more about what can be done. Here is where "swimming" under different conditions may be useful. Unfamiliar activities remind you that you possess underused muscles.

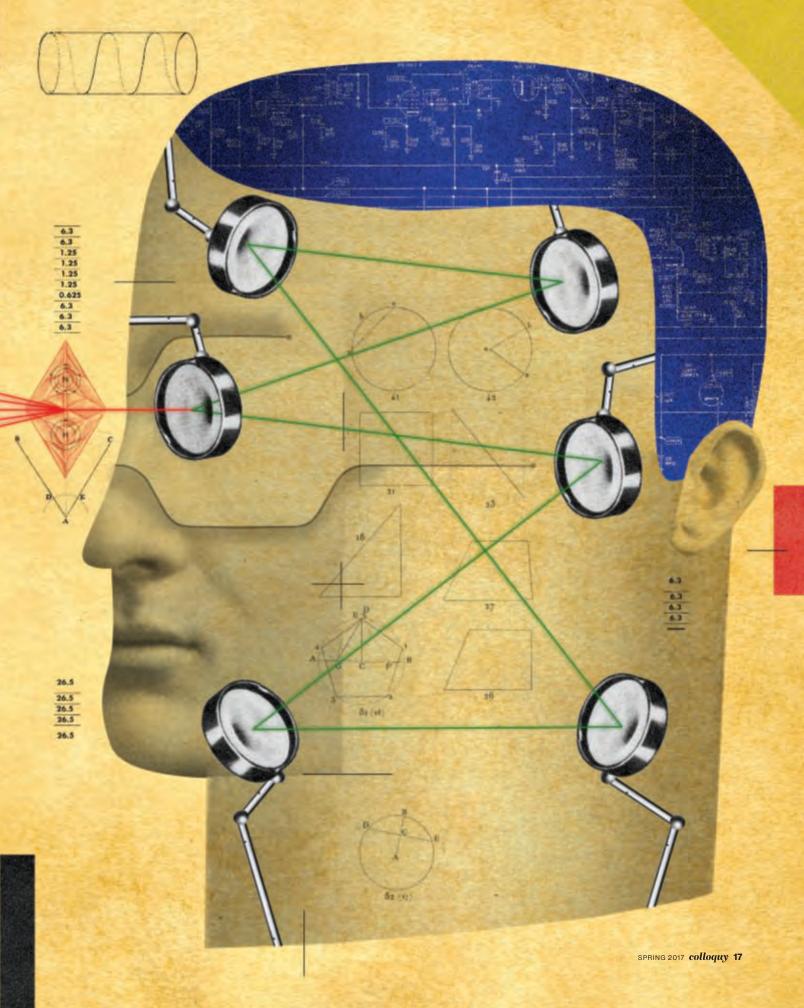
If we are serious about our work, we are always "learning to" do what we already do. We move toward what we don't yet know can be done in what we do every day.

PHOTOGRAPHER: TONY RINALDO SPRING 2017 colloquy 15

BY ANN HALL

ILLUSTRATIONS BY DAVID PLUNKERT
PORTRAITS BY MARK OSTOW

Throughout its 170 year history—
and under several different names—
the Harvard John A. Paulson School of
Engineering and Applied Sciences has
continued to make pathbreaking advances,
many of which build on the research of
GSAS graduate alumni in engineering
and applied sciences.





((Inventive men laboriously reinvent what has been produced before. Ignorant men fight against the laws of nature with a vain energy, and purchase their experience at great cost. Why should not all these start where their predecessors ended, and not where they began?))

-ABBOT LAWRENCE



In 1847, Abbot Lawrence, a mill owner in the eponymous city of Lawrence, Massachusetts, donated \$50,000 to Harvard University for the establishment of an advanced scientific school. Driven in part by his friendship with Harvard President Edward Everett, Lawrence wanted to address what he saw as a lack of individuals trained in the "practical applications of science" whom he could hire to work at his mill. The resulting Lawrence Scientific School—which would undergo multiple transformations from a graduate school in applied sciences to the Harvard Engineering School and the Division of Engineering and Applied Sciences before coming full circle as the Harvard John A. Paulson School of Engineering and Applied Sciences-was founded on the idea of building a professional school where advances would not be made in a vacuum, but rather provide inspiration for the work of those who would come later.

WHAT'S THE FREQUENCY?

Less than 50 years later, George Washington Pierce made his way from Texas to Boston—apocryphally—as a wrangler on a cattle train. Having completed a bachelor's degree and a master's in physics at the University of Texas, he decided to continue his studies at Harvard and within two years earned a second master's and a PhD, graduating in 1900. After study in Europe, he returned to join Harvard's faculty and taught physics from 1903 to 1940 while conducting multiple research projects, some of which would lay the foundation for electrical communication—most famously the Pierce Øscillator.

By the 1920s, radio had become a prime means of communication for ordinary Americans, who began tuning in for their entertainment and news. As a result, the airwaves became crowded, leading to radio interference that interrupted broadcasts. While devices existed to counteract this "drifting" into other frequencies, they were not always practical to use. Pierce saw potential in the piezoresonator, which had the capacity to control frequencies. Simplifying the design and adding several modifications, he developed the Pierce Oscillator, which could easily be added to medium wave and shortwave radios to ensure that a broadcast remained in its transmitted frequency. His innovation led to advances in radio, telephony, and more.

George Washington
Pierce in his office.

Y

TINY RADIO

In a basement lab in the Gordon McKay building, Linbo Shao checks the connections leading to a golden metal plate placed beneath a microscope. On the bench in front of him, several monoclesized lenses direct a beam of green light in a zigzag pattern while another lens placed near the microscope is fixed on a tiny device imbedded in the center of the plate.

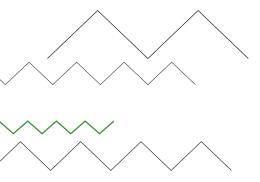
Shao, a PhD student in engineering sciences, powers up a portable speaker, turns to his laptop, and taps a few keys. Viewed through the lens, the device emits a red light as the theme from *Star Wars* plays through the speakers. The device is an assembly of two atom-sized radio receivers, transmitting from the center of a pink diamond.

To make such a unique device, Shao takes advantage of defects inside the diamond that are formed by removing one carbon atom and replacing a second with a nitrogen atom. This creates a nitrogen-vacancy (NV) center—basically a nitrogen atom next to an empty space—that can sense radio waves. Shao uses green laser light to power the NV center, which then receives the FM signal from his laptop, converts it, and emits it as red light. The light is further converted to a current by a semiconductor and amplified as sound through the speaker.

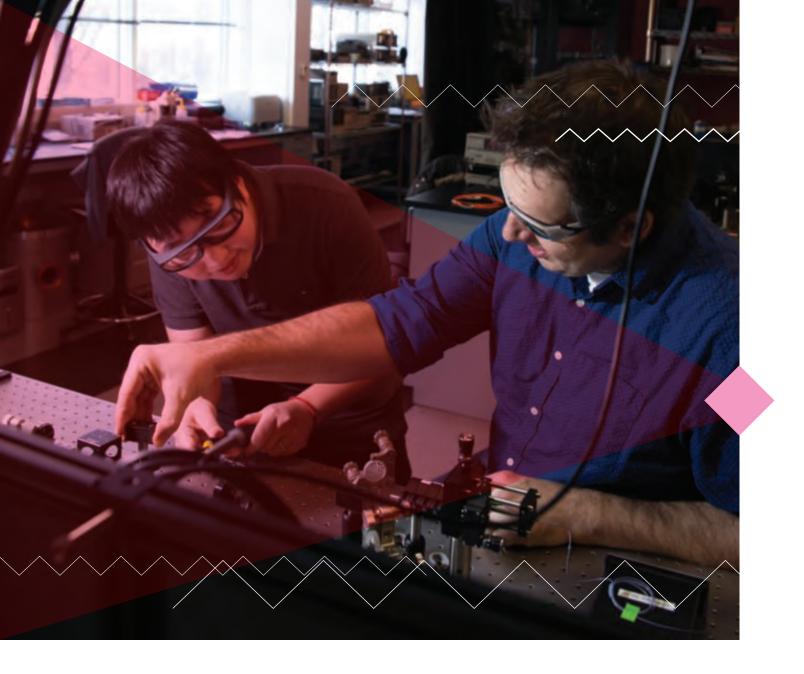


Based in the lab of Marko Lončar, the Tiantsai Lin Professor of Electrical Engineering, Shao enjoys working in an applied physics environment, a departure from his studies of microelectronics as an undergraduate at Peking University. He aims to expand his knowledge of physics during his graduate career, and the radio gave him the perfect opportunity to test a complex quantum physics phenomenon. "I'm an engineering guy in an applied physics group," he smiles. "Usually I'm looking to find interesting applications for my work."

Lončar gave Shao his full support. "I think the combination of engineering and demonstration in this project is pretty cool," he shares. "It's the smallest possible radio receiver you can ever make." What began as a cool idea has turned into something with implications beyond the transmission of music.



Marko Lončar and Linbo Shao make adjustments in the lab.

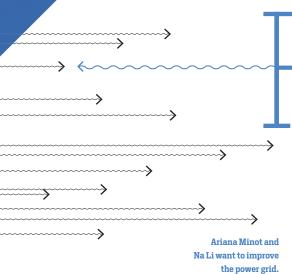


In addition to being the hardest naturally occurring mineral, diamonds have properties that make them ideal candidates for other applications. They can withstand extreme heat and cold, for example, and are also compatible with living tissue. This means that they are the perfect material for researchers who are developing instruments to be used in space, in deep-sea hydrothermal vents, or in the human body. Soon after Shao and Lončar published the results of this experiment in the journal *Physical Review Applied*, they heard from optogenetic

researchers at Harvard interested in developing biosensors that could be implanted in human tissue and controlled by microwave signals.

Even though they have finished with their radio experiment for now, Shao and Lončar continue to develop the technology, considering applications that will, among other things, impact cybersecurity. "Since the radio is a kind of microwave, I'm adapting it for use in a mobile phone," Shao explains. "I want to create a sensor that will alert users if their device is compromised." Lončar also sees the potential for combatting insidious security breaches that are not picked up by standard virus software, such as hardware Trojans—the deliberate modification of an integrated circuit for malicious purposes. "With computer chips being manufactured globally, it is easy for someone to add a piece to the hardware that is designed to monitor what the computer does," he says. "Adding a sensor could measure increases in processing activity at unexpected times and warn of possible hacking."



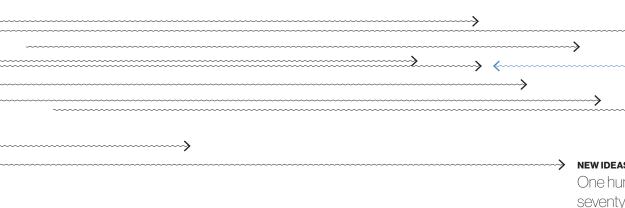


POWER UP

American desire for easily accessible entertainment and news has not waned since Pierce patented his oscillator. In the 21st century, we expect immediate access to the information we want, often in the palms of our hands. Whereas in the 1920s, finding a way to stabilize a signal was important, nowadays, ensuring that enough power is available to handle the proliferation of devices is now of paramount concern.

And this aim is becoming increasingly challenging. Little has changed from the generation and transmission systems developed in Pierce's time, which delivered the electricity needed to light a home or power a radio. Today, increasingly sophisticated appliances, smartphones, and computers tax an energy grid decades old and unprepared to handle the two-way communication and intermittent energy production of renewable sources like wind and solar.

"Traditionally, a few large and easily controlled conventional power plants provided energy that was transmitted to end users," explains Ariana Minot, a PhD student in applied mathematics.



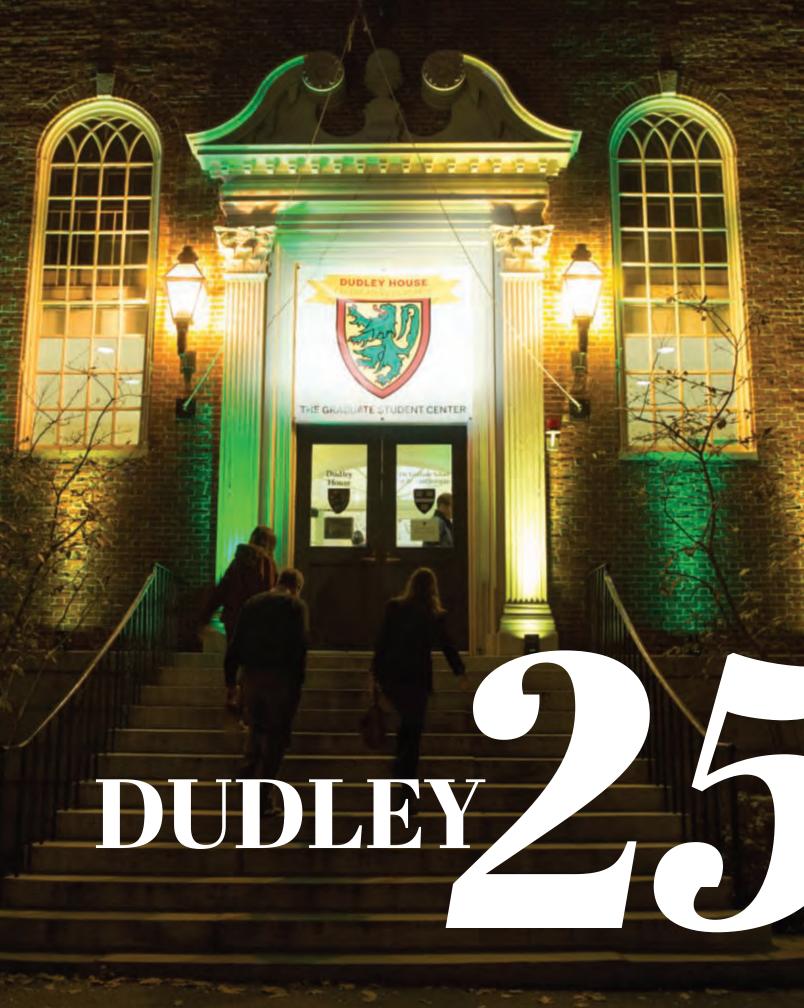
"One of the big challenges for the power grid today is that there's more and more power production being done at the distribution level of the grids." The solar panels on your house, your electric car, the small-scale wind farms being built, all are developing the potential for a twoway power flow not envisioned by those who planned our current energy generating and distribution system.

Minot came to Harvard interested in studying power grids, driven in part by her desire to apply analytical approximations to real systems. When she learned that a researcher interested in the topic was about to join the SEAS faculty, she reached out and later joined her lab. Na Li, assistant professor in electrical engineering and applied mathematics, is tackling a challenging technological problem: how to design intelligent and self-sufficient power grids that will be able to handle the coming connected world.

"Working on the power grid and electrical management is a good starting point for envisioning the smart cities of the future," says Li. "How can different systems affect and help each other?" Li sees a world where smart urban planning can reduce energy consumption while benefiting citizens, for example, by using sensors to detect traffic and turn on streetlights to light the way, then powering them down when no longer necessary. In addition to saving energy, the sensors would accumulate data to help predict peak usage times, to effectively inform the generation of electricity. "Such a connected community will give the system a better way to know what's happening, and when."

Much of the work accomplished by Li and Minot concerns the development of algorithms aimed at predicting the most efficient method for distributing energy, whether it is generated traditionally through power plants or through renewable sources, and then testing them on real systems. Because the system currently estimates usage through one central control area of the grid, Minot focuses on how to make the system more resilient and able to make estimations at more local levels. In an article they co-published in fall 2016, Minot and Li proposed an algorithm that demonstrated improved state estimation of power systems, one step closer to developing a power grid that supports Li's vision of a connected future. "I hope in a decade or two we can say we are really living in the future, in that smart neighborhood," she smiles.

One hundred and seventy years ago, Abbott Lawrence envisioned a place where research would not be conducted in a vacuum, but rather in an environment of collaboration and ongoing development. Pierce's improvement to the piezoresonator ultimately built a better radio. Shao and Lončar's two-atom radio created a transmitter with numerous applications. Minot and Listrive to create systems that enable technological advances to succeed in a sustainable way. Other SEAS researchers start with ideas that would have seemed fantastical. when I awrence made his aift. Soft robots, lunas on a chip, a robot that helps a heart beat—all exciting developments taking place in an interdisciplinary environment. Lawrence's vision and investment have borne fruit and have assured that Harvard's engineering school remains a place of constant innovation .







pudley house is celebrating 25 years as the GSAS graduate student center! In addition to events taking place throughout the year, Dudley hosted a weekend of festivities during November that included a gala featuring refreshments, a signature cocktail, and a Dudley-themed photo booth. Harvard President Drew Faust, GSAS Dean Xiao-Li Meng, and Dudley House Faculty Dean Jim Hogle delivered remarks that highlighted the importance of Dudley and the central role that graduate students play in the life of the University. The weekend finished up with a reunion of Dudley fellows and a beer fest that included Bantam Cider, Down the Road, and Cambridge's newest brewery, Lamplighter.

••• More Dudley 25: Find more photos from the Dudley Gala weekend at gsas.harvard.edu/news/stories/dudley-house-celebrates-anniversary

PHOTOGRAPHER: MARTHA STEWART SPRING 2017 colloquy 25



FEATURED BOOK

TRUTH TO POWER

Red Ellen (Harvard University Press, 2016) is an exceptional biography of Ellen Wilkinson (1891–1947), the diminutive-but-fiery British radical. Laura Beers (PhD'07, history) brings Wilkinson vividly to life—her devotion to Britain's working class, outspoken feminism, and globe-spanning outlook. Beers discusses Wilkinson's private life but focuses on her public role: few have lived so resolutely in the public sphere.

Raised in working-class Manchester, Ellen took a ballistic trajectory from childhood. She won a university scholarship, discovered socialism and feminism, and ended her fling with the Communist Party by 1924. A riveting speaker, she was a Labour Member of Parliament at age 33. She was also a world citizen, present for the founding of the Women's International League for Peace and Freedom in 1919 and the United Nations in 1945. She made speaking tours of the United States and joined fact-finding missions to Northern Ireland, Germany, and colonial India. She met Gandhi and embraced his struggle for Indian self-determination. With the rise of Nazism, her pacifism shifted to anti-fascist resistance. During WWII, Wilkinson became Britain's "shelter queen," responsible for air raid shelters. In 1945, she was made Minister of Education (and sole female minister) in Clement Atlee's Labour government. Two years later, she was dead. Though short, her life is inspiring: she consistently melded principle and pragmatism and never shied away from speaking truth to power.

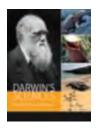
REVIEWS

Our image of historical figures is too often foreshortened. Abraham Lincoln only wore that beard for his last five years of his life. Likewise, our image of Charles Darwin is irrevocably shaped by Julia Cameron Mitchell's 1868 photograph of an elderly Darwin, a virtual Old Testament patriarch in jacket and tie. But Duncan Porter (PhD '67, biology) and Peter Graham remind us that when Darwin embarked on his transformative. five-year voyage on the HMS Beagle, he was just 22. Likewise, they caution against reducing Darwin's intellectual accomplishments to "evolution" or "natural selection." In Darwin's Sciences (Wiley Blackwell, 2016), Porter and Graham recount Darwin's career in a developmental fashion. They unfold his "many longstanding projects, some distinct and some interrelated, which together served to...enrich his understanding of change as the great constant of the natural world." Chapter by chapter, they build from Darwin's geological interests to his study of zoology, botany, and -ultimately - human society.

Eat, Live, Love, Die (Counterpoint, 2016) is a finely wrought collection of essays by food writer and memoirist Betty Fussell (AM '51, English and American literature and language). Here—as in her last book, Raising Steaks (reviewed in Colloquy, fall 2009)—Fussell focuses on food or, more properly, food and culture. Eat, Live, Love, Die includes an appreciation of the lowly hamburger and insightful

discussions of, for example, hominy, beefsteak, and oysters, the latter interweaving natural history, the economics of oyster farming, and regional oyster dishes with a tip of the hat to Lewis Carroll's "The Walrus and the Carpenter." But her most personal and deeply resonant pieces address an altogether different nexus of family and memory. She writes of her first experience of deer hunting (in her early 80s, with her son). Her mother's suicide (before Betty turned two) strikes a dark ostinato in several essays. And she probes the onion-like layers of meaning and deception in family photographs.

The Harlem Renaissance would certainly seem to be well-defined: the 1920s, the community of Harlem, and African American culture (especially literature). But in Measuring the Harlem Renaissance (University of Massachusetts Press, 2016), Michael Soto (PhD '99, English and American literature and lanquage) takes a distinctly broader view. Soto argues for a "long Harlem Renaissance," with roots reaching back to Reconstruction and blossoms that extend to the mid-20th century. Moreover, he combines his literary analysis with social history methods, using census tracts and maps. Thus, he opens with Abraham Lincoln studying the first-ever statistical map of the slave population of the United States, first, to anticipate the costs of compensated emancipation and, later, the likely reception awaiting Union forces. (The map appears

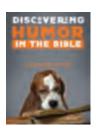












in Francis Bicknell Carpenter's 1864 painting, First Reading of the Emancipation Proclamation.) Whether probing Harlem Renaissance literature or changing census definitions of race, Soto's concern is the sources of racial identity, whether imposed, resisted, or embraced.

Shirlee Sky Hoffman (AM

'68, history) was born in 1945, which explains the title of her collection of poetry and prose, First Generation Singular (CreateSpace, 2016). Part of that first generation of Jews born after the Holocaust, she writes with the twinned consciousness of her individual life and her role in a Jewish rebirth. The trigger for this slender collection was Hoffman's two year-long visits to Germany in the 1970s. The destination wasn't Hoffman's choice but rather her husband's

(who seems oblivious to the enormity of his request). Her verse circles and recircles the larger enormity, the millions of dead, and how to acknowledge them yet continue living. "Embracing the Others" gives voice to this conundrum.

Will today's "knowledge workers" face the same technological decimation that struck assembly-line workers and secretarial pools? Thomas Davenport (PhD '80, sociology) and Julia Kirby argue that it's already underway. In Only Humans **Need Apply** (Harper Business, 2016), they show how "smart machines" are displacing workers previously little threatened by automation. The process begins with the most routinized (often entry-level) tasks. Thus, e-discovery programs undercut the need for associates at large

law firms; computer-assisted design eliminates entry-level blueprint-copying work at architecture firms: and computerized trading has cut the number of traders at the New York Stock Exchange from 5,500 in 1980 to about 500 today. Still, you can improve your odds of being one of the "new John Henrys" (hopefully, one of greater longevity). The key is using the new tools to augment your own work while concentrating on those parts of the job that are hardest to codify-good news, certainly, for jazz musicians and stand-up comedians.

Discovering Humor in the Bible (Cascade Books, 2016) might sound like a fool's errand. But Howard Macy (PhD '75, Near Eastern languages and civilizations) is nothing if not serious about his humor. He sees it

throughout the Bible, from the Pentateuch to Paul's letters. Biblical humor isn't laugh-outloud funny but more a matter of storytelling techniques, such as exaggeration, satire, jarring juxtaposition, and trickery (or tricksters). Sometimes the humor depends on how you envision a scene. Thus, when the Canaanite woman asks Jesus to heal her daughter, he rebuffs her (twice), declaring that his mission extends "only to the lost sheep of the house of Israel," then adding that he mustn't "take the children's bread and toss it to the dogs." The woman, however, is clever and brings Him around: Jesus does heal her daughter. Still, the story leaves an aftertaste: such an un-Christian Jesus! Here Macy suggests that we imagine Jesus and the woman smiling and bantering with each other.

POSTSCRIPT

African American Lives in St. Louis, 1763–1865: Slavery, Freedom and the West is the second book from Dale Edwyna Smith, PhD '93. The book chronicles the African American presence in St. Louis, starting with the arrival of free men of color who traveled from New Orleans to set up a fur trading post on the Mississippi River. The community that sprung up around this post became a place where both slaves and free people could enjoy opportunities not available to them in urban areas in the South and East.

Josef Sorett, PhD '16, published his first book, Spirit in the Dark: A Religious History of Racial Aesthetics (Oxford, 2016), and was promoted to associate professor of religion and African-American Studies at Columbia University. Sorett secured funding that led to the founding of a new center—the Center on African-American Religion, Sexual Politics and Social Justice-to advance research, education, and public engagement at the intersections of religion, race and sexuality.

• • • Would you like your book considered for inclusion? Send it to Colloquy, Graduate School of Arts and Sciences, Harvard University, 1350 Massachusetts Avenue, Suite 350, Cambridge, MA 02138. Questions? E-mail gsaa@fas.harvard.edu.



Out of Isolation

FOSTERING A LIFE OUTSIDE THE LAB

physics, discovered how to probe the physical limits of liquid water through superheating. She worked long hours studying what would happen when water is boiled inside the confined space of a nanopore, a nanoscale-sized hole. But she knew she needed to get out of the lab and connect with others. "Graduate student life can be isolating," says Levine. "It's incredibly important to bring people together from different areas of study and capacity, people you

might not meet in the library or the lab, sitting alone." To foster these connections, Levine became a fellow at Dudley House. "It's very healthy to have a life outside of your research," she says. "It's a diversion from my research and allowed me to reset and be more productive when I returned to it."

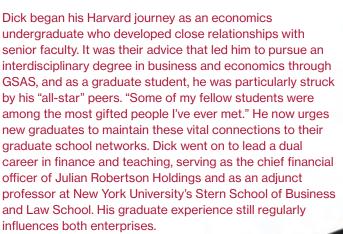
Edlyn Levine, PHD '16, found an outlet in Dudley House.

 $\bullet \bullet \bullet \textbf{ Read more at } seas. harvard.edu/blog/2017/01/alumni-profile-edlyn-levine-phd-16 \\$

28 colloquy spring 2017 PHOTOGRAPHER: TONY RINALDO

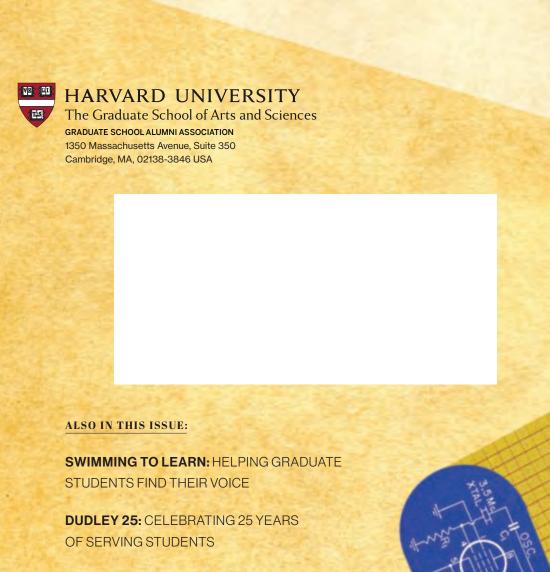
"These are the students working on the research that's making headlines."

-STACY DICK '78, PHD '83 ON WHY HE IS AN ARDENT SUPPORTER OF THE GRADUATE SCHOOL FUND





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THE SECRET INGREDIENT: HOW SCIENCE

AND COOKING CONNECT