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ALUMNI INTERVIEWERS

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On the cover: *Methicillin-resistant* Staphylococcus aureus. *Image courtesy of the National Institute of Allergy and Infectious Diseases*

FROM TOP: BRUCIE ROSCH; SUSAN BENNETT; STU ROSNER; HOUGHTON LIBRARY/HARVARD COLLEGE LIBRARY

Cambridge 02138

Attentive Schlesinger, "Bellboys," bigger data

NUCLEAR WEAPONRY

As a physicist and activist, I read "Nuclear Weapons *or* Democracy" (by Craig Lambert, March-April, page 47) with interest. Though it would be wonderful to ban and destroy extant nuclear weapons, it is an unrealistic prospect considering that the genie is out of the bottle. On top of that, despite their incredibly dangerous nature, humanity has had one of the longest periods of relative stability due to the MAD (mutual assured destruction) concept which provides a deterrent to their use and thus to world wars.

Given the reality that nuclear weapons are likely here to stay, what is far more worrisome is that our leaders are in general scientifically illiterate and thus wouldn't honestly have a clue as to the truly destructive potential of these weapons of mass destruction for all life on this planet. We need leaders who understand the miracles of science that largely drive our economy, wellbeing and national security. They can make informed, educated, and rational decisions that will benefit all humanity. We also need to make major efforts to educate our citizens about science so that they too will be able to select like-minded leaders. Other-

7 WARE STREET

Quiet Campaign

By the usual metrics—large gifts, *lots* of them, for the identified aims—The Harvard Campaign and its school components announced to date are proceeding very well, with 57 percent of the overall goal realized just a few months after the public launch (see page 27).

But in other respects, the campaign is unusual: seemingly quieter to date in its public phase than it was in the formal quiet period of fundraising that preceded the unveiling hoopla last autumn. The snazzy campaign website tells essentially nothing about specific campaign goals, or the level of giving needed to fund a scholarship, professorship, or other priority—and inquiries into such matters elicit the response that the figures are not public. This appears tactical: broad program descriptions maximize Harvard's leverage and flexibility. With variable pricing, a dean can negotiate the size of the naming gift for a professorship above some floor, for instance. Nor is the University put in the awkward position of failing to meet any of its targets. Still, it seems odd, considering the information readily available from peer institutions.

More information might inspire more useful engagement. How much does Harvard plan to invest in athletics (plenty, apparently: the hockey-rink renovation, Stadium addition and reconfiguration, new basketball arena, and more) and the arts (a theater and dance concentration, for instance)? The libraries? Professorships in new fields (and which ones)? Global initiatives, and seemingly critical—but unspecified—research priorities such as energy and the environment? Donors and fundraisers may well know the answers. But the community at large, not so much.

It is clear that the campaign as a whole seeks to make a significant statement about engineering and applied sciences (targeted for perhaps a billion dollars, counting new faculty members, research and fellowship funds, innovations in pedagogy, and the facilities to be built in Allston). At a time of justifiable anxiety about higher-education finances, it is also designed to shore up the balance sheet by endowing as many *existing* professorships and as much aid as possible (to free unrestricted funds for future use).

But bringing the rest of the agenda into clearer focus, soon, would help educate the University community about the campaign's other intellectual outcomes, illuminating the impact of the philanthropic largess now happily heading Harvard's way.

~John S. Rosenberg, *Editor*

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"The Region of Ideas and Invention"

During his commencement day address to the senior class in 2001, the Reverend Peter Gomes shared a New Yorker cartoon featuring two scientists standing together at a lab bench. "Sometimes," one scientist remarks to the other, "I wonder if there is more to life than unlocking the mysteries of the universe." That same year, a team of researchers from Harvard, Stanford, Caltech, and the University of Minnesota—led by Harvard associate professor of astronomy John Kovac—began doing exactly that, searching for evidence of cosmic inflation, a pivotal moment in the Big Bang. This March, they gathered at the Harvard Center for Astrophysics and shared their breakthrough discovery with the world, expanding our knowledge of the universe's very beginnings and reminding the world of the wonder of discovery, memorably described by Professor Kovac as a "mixture of awe and elation."

Of what use is astronomy? In 1880, Asaph Hall, discoverer of the moons of Mars and erstwhile researcher at the Harvard College Observatory, asked that question while addressing the annual meeting of the American Association for the Advancement of Science. The chief value of the growing field was not, in his estimation, to be found in its "great benefits on navigation and on commerce," but in "the spirit of honest, unrelenting criticism, and impartial examination" that it embodied and encouraged. Working in what Hall described as "the region of ideas and invention" satisfies a fundamental fascination with knowing more about ourselves and the world we inhabit, and leads to new insights and useful outcomes that we cannot predict. Yet if Hall's question was posed to policymakers today I fear we'd hear a one-sided answer. Federal investment in basic research has declined sharply, from an estimated $40 billion in 2009 to $30 billion last year, and budget cuts continue to hamper research efforts in many fields. Limiting the scope of human inquiry will forestall human progress, stunting the growth of new branches on the tree of knowledge before we can see what fruits they might bear.

Similar problems are emerging in research areas with the potential to generate knowledge with more immediate applications. Just a few days after the Big Bang discovery was announced, a team of Harvard Medical School researchers led by professor of genetics and neurology Bruce Yankner published a study on a protein—known as REST—that appears to protect the aging brain, a finding that may revolutionize treatments for Alzheimer's disease and other forms of dementia. This groundbreaking research could have gone even further toward clinical applications if it had received additional support from the National Institutes of Health, but the squeeze of sequestration led to limited funding.

At a moment filled with opportunities, the nation seems to be reconsidering the merits of supporting science; we will feel the deleterious effects of budget cuts for generations. Imagine if the National Science Foundation had not helped fund the construction of the telescopes used by Professor Kovac and his colleagues, if the National Institutes of Health had not supported the Human Genome Project that enabled Professor Yankner and the members of his lab to identify genes that cause changes in the aging brain. We would know less about ourselves, about the wonders of the universe, and about the mechanisms that sustain life.

Curiosity and inquiry lift the shroud of humanity's ignorance, allowing us to glimpse deeper understandings and to ask—and answer—new questions. The desire to understand is among humanity's most beautiful capacities, and it is the wellspring from which innovations flow. We must continue to reaffirm the importance of science and the indelible connection between ideas and invention, recognizing the moments of awe and elation that encourage us to push on the frontiers of knowledge and seek the next horizon.

Sincerely,

Drew Faust

wise, it is a classic case of the blind leading the blind.

Michael Pravica, Ph.D. '98
Las Vegas

Scarry says and Lambert agrees that "We got rid of Congress and the citizens" as support for their proposition that nuclear weapons and democracy cannot co-exist.

First, they do co-exist and have for many of the more peaceful decades in human history.

Second, if an ideal resolution of the conflict between war and democracy (hardly new) is the gradual reduction, to zero we hope, of nuclear weapons, that program will be more likely and more energetically pursued by democracies than alternative forms of government. See Obama.

Third, Congress has not "abdicated" its function, nor have we citizens. Congress rightly refused to declare war in any conflict since World War II because it wisely recognized how that would transform the conflict into Armageddon. We risked all against fascism for good reason. No equivalent challenge has presented itself, and our Congress and our citizens have recognized the difference, thank God.

Nuclear-weapon existence is a fact. We address that fact best within our democratic ideals and procedures because therein lies our best hope.

Bruce A. McAllister, LL.B. '64
Palm Beach

Thanks very much for the article about Elaine Scarry's book on nuclear weapons. Although the Cold War has ended, these weapons remain to be dismantled and until then they threaten all of us. I'm in complete agreement with Scarry that democracy and n-weapons are incompatible.

As a Quaker who has spent many years of my life struggling against these weapons, I would take the analysis one step further. Our most basic biological (and theological) imperative is survival and since these weapons threaten that, they must be considered evil in the most fundamental sense. In order to finally get rid of nuclear weapons, as Scarry urges, we must come to perceive the construction, holding and planning, and of course the use of these weapons as morally wrong. As a colleague of mine once wrote on the wall of a highway underpass, "It's a sin to build a nuclear weapon."

A corollary is that we must also close down the nuclear-power industry. All nuclear fission reactors produce plutonium in their waste fuel and this can be reprocessed to separate the material for a weapon. Again, the huge amount of power which a nuclear weapon places in the hands of a small group of people creates a temptation which we as humans cannot resist.

I also agree that of course we humans can take apart the nuclear weapons. The power of people working together may be the only power stronger than a nuclear weapon. My suggestion is that the United States close all of its nuclear power plants and challenge the rest of the world to do the same, while pursuing international negotiations to lower n-arsenals to zero within less than a generation.

William W. Smith III '69
Jamestown, R.I.

SPEAK UP, PLEASE

Harvard Magazine welcomes letters on its contents. Please write to "Letters," *Harvard Magazine*, 7 Ware Street, Cambridge 02138, send comments by e-mail to yourturn@harvard.edu, use our website, www.harvardmagazine.com, or fax us at 617-495-0324. Letters may be edited to fit the available space.

ANIMAL RESEARCH

Professor Seung-schik Yoo's research on computer-mediated brain-to-brain connectivity ("Fusing Faculties of Mind," March-April, page 8) provides another reminder of the startlingly sophisticated work being done by Harvard's talented faculty. And yet, as this project is described as being undertaken to better comprehend empathy and connectivity between subjects, I cannot wonder if it is compromised from the outset by its very methodology. Confining and subjecting a non-volunteer (in this case members of the species *Rattus norvegicus*) to an albeit minimally invasive experimental procedure seems to almost inescapably deny a basic empathetic acknowledgement that the rodents would prefer not to be there at all. If, as Yoo says, his research "is more philosophical than practical," perhaps he ought to acknowledge the increasingly orthodox ethical opinion that the abuse of non-human ani-

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mals to satisfy what he himself describes as "boyish curiosity" is indefensible and instead conduct his trials on willing human volunteers. Confinement and unidirectional manipulation seem at the least to be a circuitous route towards empathy and, more likely, a dead end.

Dr. Nancy Schniedewind, M.A.T. '70
New Paltz, N.Y.

HOW LIBRARIES SERVE

Tozzer library staff members are looking forward with great excitement to our move into our new building on Divinity Avenue in a few short months for all the reasons given (Brevia, March-April, page 22). I would only argue that adding more collaborative spaces does not mean that without them in our very outdated 40-year-old building we were merely a "storehouse" for print volumes. I know all the thousands of faculty, students, and scholars Tozzer Library has served over our almost 150-year history would agree. And the role of academic libraries is not so much changing in my view but rather expanding, since we are expected to do all the things we've always done, including identifying and acquiring a huge amount of material appearing only in print, plus much more.

Janet L. Steins
Associate Librarian for Collections
Tozzer Library in William James Hall

ATTENTIVE SCHLESINGER

About the life of Arthur M. Schlesinger Jr. (Open Book, March-April, page 57): I had a seminar with Schlesinger during my graduate year in history at Harvard in 1959-60. In my mind's eye I see him, in seminar sessions in the grey of late fall afternoons, discoursing informally on the writing of history. I wrote a long seminar paper for him, for which he provided detailed comments. I also took his course in American intellectual history.

Later, as a law student, I wanted to do a graduate year in law at Harvard. I wrote Schlesinger, who was then in the White House, asking if he would recommend me for that graduate program. I mailed the letter on November 20, 1963. After a couple of weeks I assumed that because of the assassination of President Kennedy, he would not be writing a recommendation.

But in mid-December, I received a note on White House stationery. Schlesinger commented that I could appreciate that he had been exceptionally busy but advised me that he had in fact written a recommendation for me. I subsequently learned that his letter had been a factor in my admission to the graduate program, with an accompanying fellowship. I'm now well into my fifth decade in law teaching, and that experience still provides extra incentive for my long-time practice: to put letters of recommendation ahead of everything else, including current manuscripts.

After my first year as a law student, while interning at the National Labor Relations Board, I was able to get an appointment with Schlesinger in the White House. I brought along my copy of his *The Coming of the New Deal*, which he autographed. I recall his appraising eye as he turned the pages of my Book-of-the-Month Club edition, with obvious interest in the very texture of the book.

Marshall S. Shapo, A.M. '61, L '65, S.J.D. '74
Vose Professor of Law
Northwestern University School of Law

"BELLBOYS"

Re: yesterday's news (March-April 2014, page 20). The entry for 1939 lists amusing nicknames for undergraduate houses, including "Puritans" for Winthrop and "Elephants" for Eliot. However, the nicknames are not as innocuous as they sound. My father, Charles H. Robbins '42, lived in Lowell House, which acquired the nickname "Bellboys." At the time, Lowell House was where all the students on scholarships lived.

Elizabeth Robbins, M.D.

BOUNDARY BLOODSHED

Belligerent threats over the proposed U.S.-Canada boundary settlement of 1831 may have been "inflated humbug" ("Boundary Issues," Treasure, March-April, page 76), but they sent 20,000 militia to the Maine-New Brunswick border in the 1839 "Aroostook War." Maine's Governor Fairfield was urged "to become second only to Moses and Washington [and] overrun the whole of Canada." So bellicose was New York that "any sympathy with the 'Peace Party,' will ruin a man unto his third or fourth generation." In Boston whiskers were curling and mustachios growing, because those lacking them "cannot with a good grace shout war! WAR! WAR!" Hawks assailed squeamish Governor Everett, Harvard's future presdent: "Ye Yankees of the Bay State,/With whom no dastards mix!/ Shall Everett dare to stifle/The fire of seventy-six?" Maine lost two men: a soldier died of measles; a bullet fired to celebrate peace ricocheted and killed a farmer.

David Lowenthal '44
Berkeley

EVICTION

I appreciated the article on eviction ("Disrupted Lives," January-February, page 38), but was dismayed by the letters from readers who prescribed the nuclear family, a high school education, and a fast-food job with no benefits as routes out of poverty (March-April, page 2).

As a teacher, I have seen students who stayed in high school and yet are barely literate—it doesn't matter how hard you work if your school cannot provide a quality education. I assume that those readers who promoted "staying in high school" as a solution are all ardent advocates for public education themselves, doing everything they can to support public schools in the poorest areas of the cities in which they live.

As for escaping poverty through a fast-food job, readers might consult the McDonald's Corporation's own "suggested budget" released last year, which showed that someone working two jobs for 71 hours a week at minimum wage would still be unable to afford gas or heat.

Regarding nuclear families, I'm not from one myself, but I did have access to a quality public school system, as well as family who had been union members for two generations, able to bargain for decent wages, benefits and retirement—one of the most effective ways in which the poor have improved their lot, historically, and yet one which conservatives usually fail to mention, oddly enough.

The bottom line is that people can escape poverty, but they need those of us who have had the luck to attend elite institutions to join them in advocating for quality public education, a living rather than a minimum wage, and the restoration of a strong social safety net that guarantees freedom from food insecurity, universal access to health care, and pre-K childcare for working parents. The rest of the developed world does it; we could do it, too.

Dr. Tara Kelly '91
Durham, N.C.

BIGGER DATA

In his otherwise admirable article, "Why 'Big Data' Is a Big Deal" (March-April, page 30), Jonathan Shaw quotes Curtis Huttenhower as saying that commercial antibiotics "didn't exist until about 50 years ago." In fact, the first commercially available antibiotic, Prontosil, was developed in 1932, and its discoverer won the 1939 Nobel Prize, 75 years ago. Another early drug, tyrothricin, was widely used during the Second World War.

This is more than a quibble about whether or not 70 or 80 years is "about" 50 years. I can remember clearly what I was doing 50 years ago as a high-school student. When I reach 80, I may not remember much of anything.

John W. Farley '70
Las Vegas

Editor's note: We neglected to fact-check our sources fully enough, apparently. (For more on antibiotics, see this issue's cover story, beginning on page 40.)

Visit harvardmag.com/extras for additional letters

I found the "big data" article a good read; I certainly learned a lot from it. However, at the end, I noticed an historical error: you say, "From Copernicus using Tycho Brahe's data to build a heliocentric model of the solar system..." No way! Tycho Brahe (1546-1601), whereas Copernicus (1473-1543). Obviously, Copernicus built his heliocentric model before Brahe was born. The astronomer who used Brahe's data, particularly that for Mars, was Johannes Kepler (1571-1630), which led him eventually to propose that the planets travel on elliptical orbits about the sun, with the sun at one of the foci of the ellipse. Ironically, Brahe gathered his data to *refute* Copernicus, since the heliocentric model cast doubt on the Bible, and Brahe was a staunch Lutheran for whom the Bible was the ultimate authority.

Frank R. Tangherlini '48
San Diego

CITIZEN SOLDIER

I did a double-take when I saw the piece "Citizen Soldier" about Seth Moulton joining the U.S. Marines and fighting on the ground in the Mideast (The Classes, March-April, page 64I). No, this cannot be *Harvard Magazine* in 2014, I thought to myself! Sincere kudos to Moulton for walking the walk and marching to the tune of his own drummer.

William S. Patten '70
Mount Desert, Me.

LOVING LIVING IN L.A.

As a former Harvard student who is now a professor at the University of Southern California, I was very interested to read Noah Pisner's "The Undergraduate" column (January-February 2014, page 31) about transferring from USC to Harvard. But seriously: some random guy tells him "No one reads in Los Angeles," and he accepts that as gospel? Time to work on those critical thinking skills!

I loved Harvard, and I love USC. But I can tell you from personal experience: it's much nicer in February to sit outside in the sun, reading a good book, than to huddle inside under a blanket, avoiding frostbite.

Todd Brun '89
Pasadena

HURRAH FOR HUMANITIES

I agree with Drew Faust's comments on the importance of humanities for a "successful life" (The View from Mass Hall, March-April, page 3). However, I think she has left out the most important aspect of a liberal arts education versus majoring in something "useful."

Let me explain: I majored in economics, the dullest possible subject, to help prepare for a "useful" career. Only one good thing came out of it: I wrote my thesis on the "Stock Market Predictions of Merrill Lynch Pierce Fenner & Beane." They were terrible.

On the other hand, I have had a most "successful life" because of a liberal-arts education. It has lead to a life-long enjoyment and love of history, French, fine arts, Shakespeare, music, and the general course on the sciences. Of course, I should add my thanks for English A.

W. M. Glasgow '50, M.B.A. '52
Houston

ROBERT FROST

Remarkable: Frost went from a broken home in the Victorian period to become a major poet and pioneering teacher in the twentieth century ("Extracting the Woodchuck," January-February, page 44). The best assessment of his work probably comes in poet Randall Jarrell's essays.

Ed Barna '70
Middlebury, Vt.
First manager of Robert Frost Farm State Park in Derry, N.H.

ALTERNATIVE GIVING

With Harvard knocking on our doors for contributions to the Harvard Campaign, we think it is vitally important to alert fellow alumni to the recent launch of the Harvard Social Alternative Fund. As previously reported, responding to pressure from students and alumni, the Corporation Committee on Shareholder Responsibility (CCSR) inaugurated a Social Alternative Fund on July 1, 2013. The Corporation Committee has selected the Parnassus Equity Income Fund as the investment vehicle. Managers at the Parnassus fund give special consideration to environmental, social and governance factors when making investments (www.parnassus.com).

We do not believe that the University is going to do much, if anything at all, to promote the Social Alternative Fund. Thus we want to explain how alumni can earmark contributions to the Campaign to be invested in the Social Alternative Fund: The primary avenue for giving will be online through the HAA website. (Go to "Make a Gift"; select the Social Alternative Fund.) Gifts to the Social Alternative Fund will still receive class credit even though they fall outside the Harvard College Fund.

Nina Gardner '82
Washington, D.C.
Barbara Gillette '82
New York City
Helene Marsh '82
Tiburon, Calif.

CORRECTION

In the Harvard Portrait of Huntington Lambert, Harvard's new dean of continuing education and University extension (March-April, page 19), it was reported that Harvard is now offering HarvardX online courses for credit. In fact, *one* HarvardX course is being offered with additional student services, but enrolled learners earn certificates of completion, *not* course credit, through the division of continuing education.

Right Now
The expanding Harvard universe

THE KNIFE-EDGE OF ANXIETY AND EXCITEMENT

A Better Path to High Performance

When forced to perform in a high-pressure situation—addressing a room of skeptical colleagues, meeting with a demanding boss, or singing for a crowd—keep calm! That, at least, is the conventional wisdom. Yet new research by social scientist Alison Wood Brooks, assistant professor of business administration at Harvard Business School, suggests that people in fact perform best *not* when they try to relax, but when they take simple steps to get excited about the challenge at hand.

In previous work, Brooks studied how even run-of-the-mill anxiety (Did I remember to turn off the stove? Will I meet my deadline?) can harm decision-making. Her research revealed that anxiety is a drain on cognitive resources, using up brain power and information-processing ability and reducing confidence. "Feeling anxious is very unpleasant," she says, so people go to great lengths to avoid it. If they are involved in negotiations, for example, "they exit early, they make large concessions, they respond very quickly to counteroffers, and ultimately they perform poorly."

Yet anxiety doesn't always harm performance. The Yerkes-Dodson Law, formulated in the early twentieth century, maintains that "a moderate amount of anxiety can actually be motivating and energizing," Brooks explains: it may prompt thorough preparation for a high-stakes presentation. If arousal and anxiety build, though, performance begins to decline.

In especially large doses, anxiety can be debilitating, and trying to quash mounting anxiety in high-pressure moments is a tremendous challenge. "You must fight against your physiology—your automatic physical responses to the situation—which is very difficult to do," says Brooks, who began to wonder whether learning to think about this physiological state in a different way might help people. Anxiety and excitement, she recognized, "are very similar emotional states. Both emotions are high-arousal, signaled by a racing heart, sweaty palms, and high levels of the stress hormone cortisol." Her studies have found that people *do* perform better when they assign those sensations a positive meaning, calling them "excitement," rather than "stress" or "anxiety."

In a series of three experiments she describes in *The Journal of Experimental Psychology: General*, Brooks invited people into a behavioral laboratory and asked them to perform an anxiety-inducing activity: sing karaoke, give a speech, or complete a difficult math problem. She divided the participants for each task into multiple groups; some were instructed to say "I am excited" aloud or read instructions on getting ex-

Alison Wood Brooks

Photograph by Stu Rosner

cited, and others were asked to say, "I am calm" or "I am anxious."

Brooks says she saw a "Fake it until you make it" effect among the excited group. ("If you say, 'I'm excited,' you're likely to actually feel excited," she notes.) The karaoke-singing participants used a video game with voice-recognition software that scored singing performance on measures such as volume, pitch, and rhythm. "People who said, 'I'm excited,' before they sang actually sang *better* on this objective performance measure," she reports. In the public-speaking experiment, independent judges found that excited people seemed more persuasive, competent, persistent, and confident.

What makes the excited state so powerful? Brooks explains that feeling anxious is "associated with a threat mind-set. We're worried about how things can go wrong in the future." But when people are feeling excited, they are "focusing on the opportunities, how things can go well and work out in their favor. What we find in this paper is that, by focusing deliberately on the positive potential outcomes, you actually are more likely to achieve them."

The findings are particularly appealing, she adds, because simple self-encouragement can make a dramatic difference.

Brooks had the opportunity to put her findings to the test when she was applying for jobs as she completed her doctorate in 2013. The process involved lecturing on this very research before groups of senior academics who peppered her with tough questions. It was a "challenging, thrilling, and strangely reflective process," she says. "Everyone loved asking me, 'Are you anxious, or are you excited?'"

~ERIN O'DONNELL

ALISON WOOD BROOKS WEBSITE:
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THE TEMPERATURE TARIFF

Climate Change's Economic Heat

By May, snow and ice may seem a distant memory, but the economic effects of an unusual winter still linger. Frequent snowstorms in the eastern United States are estimated to have cost the economy tens of billions of dollars as productivity slowed and both consumers and workers stayed home. Meanwhile, the season's record-high temperatures in the American West intensified a lengthy drought, which will increase the risk of wildfires this summer.

Weather has diverse and far-reaching effects, and—given realized and anticipated climate change—there is growing interest in predicting how rising temperatures will affect global economies. In a review in the *Journal of Economic Literature*, Junior Fellow Melissa Dell (who becomes an assistant professor of economics on July 1) and two coauthors summarized the findings of this rapidly growing field of research.

Curiosity about climate is nothing new. The French philosopher Montesquieu argued at length about climate's effect on human temperament and, thereby, on a region's politics and economics: "The inhabitants of warm countries are, like old men, timorous; the people in cold countries are, like young men, brave," he wrote at one point. But isolating the effect of climate has always been difficult. Dell and her collaborators found in 2009, for instance, that countries that are one degree Celsius warmer are, on average, 8.5 percent poorer per capita. "In the raw data, we see this huge correlation," she says. "We want to understand how much of that is actually due to a causal effect of temperature."


Changes in climate have surprisingly far-reaching economic effects.

GETTY IMAGES

Recent studies try to discern temperature effects by observing the impact of weather fluctuations within a single region. "Within one place, you have multiple observations and compare *within* that place over time," she explains. A harsh winter, for instance, is an opportunity to observe the effects of colder temperatures. "You use that variation instead of comparing, say, Boston to California."

"Weather has a surprisingly broad number of impacts across different sectors of the economy," says Dell. The agricultural damage done by a heat wave or drought is easy to imagine, but the literature suggests effects on manufacturing, crime rates, and health as well. Some correlations may have complex roots: higher temperatures may be linked to more civil unrest, for example, because crop failures make it less costly for farmers to protest, or because the stresses of extreme weather highlight government ineptitude. Other findings seem surprisingly straightforward: for instance, both laboratory studies of individual workers and broad analyses of economic output have found that productivity is lower on hot days. "I think that because we mostly have air conditioning in the United States, it's very easy to forget how big a deal this is," Dell observes. "Before air conditioning, when it was above 90 degrees, the federal government would just close down."

Predicting the economic consequences of climate change is especially relevant as governments consider policies like a carbon tax, but is far from easy. "We don't even have a great sense of how large the climate effects are going to be," let alone their economic impact, Dell says. She also points out the difficulty of predicting the impact of potentially large changes in climate using data collected from smaller fluctuations in weather. Above certain thresholds, for instance, even minor temperature changes have disproportionately large effects as crops begin to fail. Moreover, resources like water reservoirs that buffer the impact of short-term fluctuations may be depleted by more persistent climate change.

A major question now is how well economies can adapt. Farmers, for instance, might switch to more heat-tolerant crops, but most analyses so far have found limited avenues for heading off long-term effects. Critically for international development, says Dell, the impacts are particularly large on poor countries, which tend to depend more heavily on agriculture. Weather shocks like droughts or storms are also known to strongly slow their growth *rate*, suggesting that climate change could significantly impede long-term development.

Many areas for further research remain, Dell acknowledges, but evidence from these recent studies has an undeniable trend. "Even fairly modest changes have potentially large impacts," she says. "We don't know the exact magnitudes, but we know enough to say that, barring major changes in our capacities to adapt, we'll see significant negative effects."

~KATHERINE XUE

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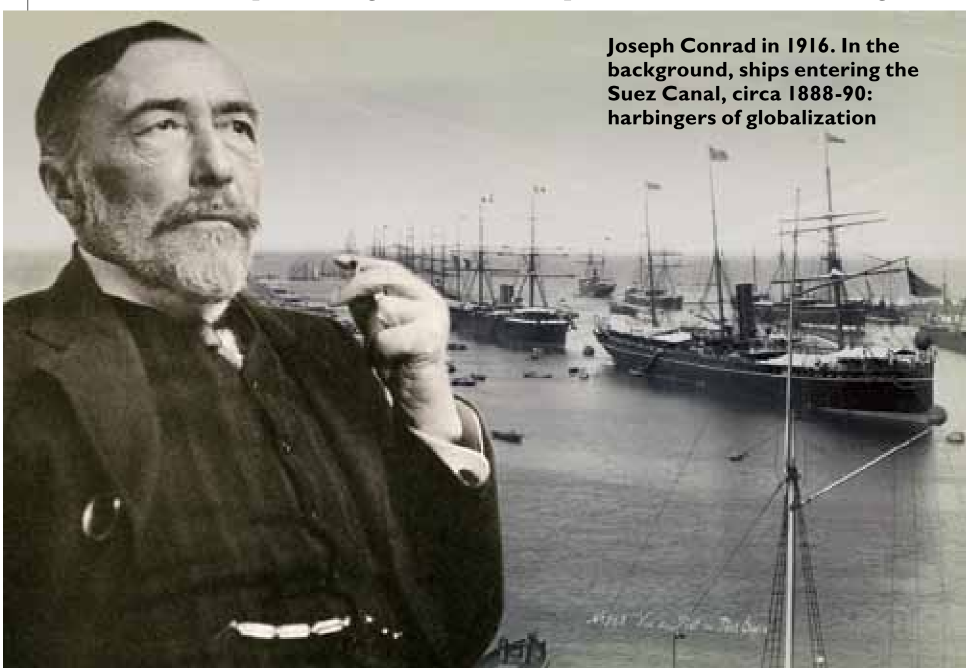
PRESCIENT FICTION

Joseph Conrad's Crystal Ball

MANY CALL Rudyard Kipling the scribe of the British Empire, but novelist Joseph Conrad (1857-1924) may have best rendered its waning years and foreshadowed its demise. Around the turn of the last century, Conrad's books portrayed terrorism in Europe, limned the reach of multinational corporations, and foresaw patterns of globalization that became clear only a hundred years later. The contemporary Colombian novelist Juan Gabriel Vásquez has described Conrad's books "as 'crystal balls in which he sees the twentieth century,'" says professor of history Maya Jasanoff. "Conrad observed the world around him from distinctive and diverse vantage points because of his own cosmopolitan and well-traveled background," she continues. "Henry James wrote him a letter that said, 'No-one has *known*—for intellectual use—the things you know, and you have, as the artist of the whole matter, an authority that no one has approached.' James meant not only what Conrad had seen, but the depth of his insights. I would echo that."



Joseph Conrad in 1916. In the background, ships entering the Suez Canal, circa 1888-90: harbingers of globalization

Born in Poland, Conrad spent 20 years of his adulthood as a merchant seaman on French, Belgian, and English ships, steaming to Africa, the Far East, and the Caribbean before settling down as an author in England. His grasp of the tensions and forces tearing apart the Victorian-Edwardian world is a counterweight, says Jasanoff, to the "widely held stereotype of the period as a golden age before everything got wrecked in the trenches of World War I. If you read what people were actually *saying* then, you get a strong sense of social and economic upheaval. World War I didn't come out of a vacuum. Conrad's novels suggest what it was like to be a person living in those times. Fiction can bring alive the subjective experience of the moment, which isn't rendered by the kinds of documents historians usually look at."

Jasanoff is writing a book, tentatively titled "The Worlds of Joseph Conrad," that focuses on four of his novels: *Lord Jim*, *Heart of Darkness*, *Nostromo*, and *The Secret Agent*. The

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ALUMNI VOLUNTEERS STRENGTHEN HARVARD COMMUNITY

Dan Rothenberg '04 lives 2,600 miles from Cambridge, but his Harvard community remains strong, thanks to enduring friendships and his engagement as a volunteer and campaign donor.

"Some of my closest friends came from Harvard, and I'm lucky to have two of those guys here in LA with me," says Rothenberg, referring to Quincy House roommates Eli Shibley and Henry Lowenfels. Their fourth roommate and classmate, Gabriel Jostrom, is on the other coast, in New York.

The four came from different parts of the country—California (Dan), Ohio (Eli), New York (Henry), and Montana (Gabe)—and pursued varied academic and extracurricular interests, but they had compatible personalities and shared a love of sports. Together they developed a wide circle of friends in Quincy House and beyond.

Above: Daniel H. Rothenberg '04 made a signficant gift to support the recent modernization of Old Quincy, now known as Stone Hall.

> **"GETTING INVOLVED WITH THE CAMPAIGN AND THE REUNION HAS BEEN A GREAT WAY TO RECONNECT WITH HARVARD…"**

After graduation, Rothenberg, an economics concentrator, headed back home to Los Angeles and worked for a few years with Morgan Stanley. He then joined UBS Financial Services, a wealth management company, where today he is managing director of Investments. He has been recognized as one of the country's "Top 40 Under 40" financial advisors.

Rothenberg is busy with work and family—he and his wife, Sarah, have a toddler and a second child on the way—but he reconnected with Harvard through the Campaign, including serving on a Faculty of Arts and Sciences task force on balanced philanthropy, which brought together alumni from across the decades.

As a co-chair for his 10th reunion this May, Rothenberg has reached out to classmates to encourage gifts to the Harvard College Fund and recruited others to help out, including pals Shibley and Lowenfels. He also participates in Harvard Alumni Association gatherings in Los Angeles.

"Getting involved with the Campaign and the reunion has been a great way to reconnect with Harvard, and it has reignited my desire to maintain that connection going forward," he says.

Rothenberg made a significant gift toward House Renewal to support the recently completed renovations to Old Quincy (now Stone Hall), the first phase of an important project to reinvigorate the House system and ensure its role as a cornerstone of undergraduate education.

To recognize his generosity, a contemporary conference room on the repurposed lower level of Stone Hall has been named the Rothenberg Meeting Room.

Giving back this way is especially meaningful to Rothenberg, who spent three years in Quincy House, two of them in the neo-Georgian section called Old Quincy. His father, University Treasurer James Rothenberg '68, MBA '70, also lived in Quincy. "My dad worked as a cook at the Quincy Grille," the younger Rothenberg notes. "He always impressed me with his skills at whipping up breakfast and lunch like a short-order cook, and it all made sense after I saw the Grille."

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PHOTOS: LEFT, COURTESY OF DAN ROTHENBERG; RIGHT, KRIS SNIBBE/HARVARD STAFF PHOTOGRAPHER

THE HARVARD CAMPAIGN
FOR ARTS AND SCIENCES

backdrop to *Lord Jim* (1900) is the era's international and intercultural maritime life. *Heart of Darkness* (1899) probes the fallout of colonial empires, and adumbrates their demise. *Nostromo* (1904) explores political instability, dictatorship, and revolutionaries in Latin America, with a treasure in precious metal at the center of the story. *The Secret Agent* (1907) delves into anarchism, *agents provocateurs*, and a terrorist bombing—purportedly a symbolic attack on science—at the Royal Observatory, Greenwich.

Unsurprisingly, ships, rivers, and oceans figure importantly in most of these books. But unlike the vessels of Herman Melville, Conrad's ships include steam-powered ones. He writes, Jasanoff says, about the "industrialization of the sea." Steamships shrugged off the vagaries of wind and water far better than sailboats. They also enabled cheaper, larger-scale intercontinental migrations, like those of so many Europeans to the United States: *Lord Jim* opens with a shipload of Muslim pilgrims making the hajj from southeast Asia to Mecca. New technologies of transportation and communication, like the telegraph, were transforming international demographics and patterns of commerce: improvements in refrigeration enabled Europeans to eat meat from Australia and New Zealand, for example. All these changes affected Conrad's fiction. *Nostromo*'s title character is an Italian expatriate in Latin America; a local silver miner of English descent also figures in the plot. Conrad eventually captained a cargo ship in the Indian Ocean, and had to make telling decisions like how much wheat from Australia or sugar from Mauritius to load onboard.

"I want to restore shippers, shipping agents, sailors, and dockworkers to our picture of how globalization actually worked," Jasanoff says. To get a full sense of shipping life on some of the oceans Conrad knew, she booked herself as the sole passenger on a container ship last December, making a month-long voyage from Hong Kong to Southampton, England, and posting a blog about her experiences (http://america.aljazeera.com/multimedia/2013/11/27-days-on-a-cargo-shipfromchina.html). "On the boat, there is an incredible contrast between the enclosed container boxes and being out in the middle of the ocean," she says. "When I got off the ship, I was struck by how closed-in I felt everywhere: there were buildings, trees, and things getting between me and the light. That tension between freedom and constraint is a defining element of being on a boat. After spending 20 years of his adult life around ships, it's hard to imagine it didn't influence Conrad's understanding of the parameters of human action."

"World War I didn't come out of a vacuum…. Fiction can bring alive the subjective experience of the moment, which isn't rendered by the kinds of documents historians usually look at."

Jasanoff makes imaginative use of atypical sources in her research. For example, *Edge of Empire: Conquest and Collecting in the East, 1750-1850* (2005), her award-winning first book, illuminated the British empire by examining individual collectors of art objects and material culture in colonial settings. *Liberty's Exiles: American Loyalists in the Revolutionary World* (2011) painted the diaspora and fate of thousands of Tories after their side lost the Revolutionary War; it won the National Book Critics Circle Award for nonfiction.

Literary studies, such as the well-established school of New Historicism, often seek to locate literature in historical contexts. Yet the converse doesn't, so far, apply. "Historians remain pretty wary about the use of literature," Jasanoff explains. "Those working on earlier eras, where there's less available, often engage more with literary materials. For the modern period, where we have such a plethora of written materials and other documents to draw on, we tend not to make literature the centerpiece." Jasanoff, who concentrated in history and literature at Harvard, graduating in 1996, may be perfectly positioned to rectify that imbalance—with help from Joseph Conrad.

~CRAIG LAMBERT

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Harvard Magazine's

Commencement & Reunion

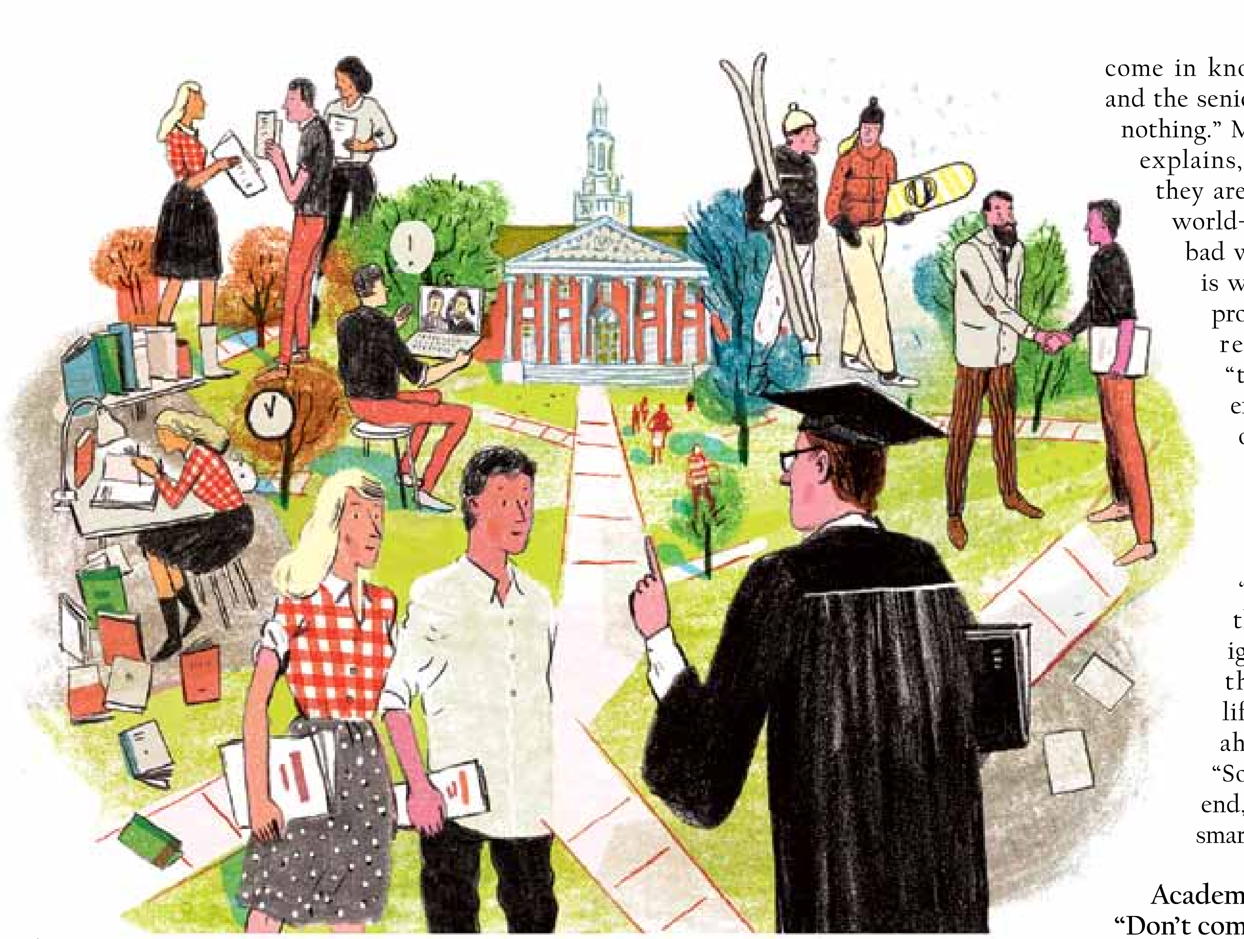
GUIDE 2014

- "I Am Not the Best Anymore"
- Fall In with Classmates
- The Week's Events
- All Are Welcome
- Creative Kitchens

Photograph by Jim Harrison

"I Am Not the Best Anymore"

Seniors reveal some unexpected lessons learned at Harvard. • *by Nell Porter Brown*



As they scrambled to wrap up coursework and fine-tune their résumés, some members of the Class of 2014 took time to reflect on their experiences during the last four years. What had they learned about Harvard—and themselves? And what wisdom was gained that they will not only carry throughout the rest of their lives, but can also share with friends, younger siblings, or even with the parents of future undergraduates? Are there some concepts that can help students make the most of their time at Harvard?

Laszlo Ryan Seress, a chemistry and physics concentrator who will start graduate school in the fall, says he is inspired by the annual influx of "freshmen who come in with so much optimism. It's invigorating for the community to see all those smiling faces."

Yet it also reminds him of a campus joke. "Why is there so much knowledge at Harvard?" he asks. "Because the freshmen come in knowing everything and the seniors leave knowing nothing." Many freshmen, he explains, arrive "thinking they are going to run the world—in a good and a bad way." Their energy is welcome, but there probably isn't enough recognition that "they are inexperienced and have a lot of growing up to do over the next four years." Seniors, at least, have gained some humility. "They have realized the depth of their ignorance and that they now have a lifetime of learning ahead," he reports. "So, it's true: in the end, everyone does get smarter here."

Academics: "Don't compare, connect"

That's what Seress took from a speech by Michael D. Smith, dean of the Faculty of Arts and Sciences, during freshman convocation. "Everyone sort of snorted and thought, 'That's silly,' because you spent your whole life comparing yourself to other people and that's how you got to Harvard," he says. "But what I realized, over time, is that 'Don't compare, connect' is so true." As a freshman, it seems that *everyone* else at Harvard is successful at *everything*, he notes, but that's "only because nobody gets up on a pulpit and screams, 'I failed!'" The

Illustration by Peter Oumanski

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best mathematician he knows, for example, was afraid to go to Expository Writing because he found it daunting. "Maintain perspective," Seress advises. "It can be easy to fall into a funk early on because suddenly half of us are in the bottom half of the class," despite working extremely hard. "Learn to navigate 'I am not the best anymore,'" he urges, "and accept the fact that this takes awhile to learn."

But at the same time, he says with a laugh, "Study harder than you think you have to." This is "un-fun advice," he adds, but freshmen tend to coast, only to realize later that they have fallen behind. Everything is new, and there are significant distractions, he notes: "Living at home, you never had people knocking on your door at 2 A.M. saying, 'Let's go get a pizza.'" The workload, too, is harder than it was in high school. This was true even for Seress, who took multiple courses at nearby Ohio State before graduating from high school. "Here, you will not be at the top of the curve just by doing the minimum," he says. "It can never hurt you to study too much, but many people I know have regretted not applying themselves as much as they could have."

As a specific piece of advice with general applicability, Ainara Arcelus, an applied math concentrator, recommends that all freshmen take "Classical Chinese Ethical and Political Theory," a popular General Education course taught by Klein professor of Chinese history Michael Puett. "He is an awesome lecturer and person," says Arcelus, who took the course last fall and wishes she had done it earlier because it "opened her up" to Eastern philosophy "and made me question why we are all so outcome-oriented." That perspective might have helped her put less pressure on herself to "be better and ski faster" on the women's cross-country ski team and focus instead on learning, training, and enjoying the process.

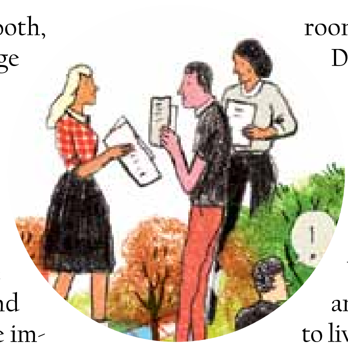
Professors: "More personable than you had imagined"

Office hours at Harvard are more formal than in high school, says Ginny Fahs, a class marshal. "They are a little awkward and confusing at first, but keep going, because they get better!" Professors put students in "the driver's seat," she explains. "Be ready with questions and comments. It took me awhile to realize that people actually prepared for office hours as they would for a class."

Get to know professors personally whenever possible, the history and literature concentrator emphasizes. This can feel daunting, she allows, but push past that discomfort. Share tea or coffee in Harvard Square, or invite a professor to the semi-annual faculty dinners: great opportunities, she says, to dress up, enjoy a sit-down meal, and talk outside of class. Hearing stories of professors' own trajectories—building a career, making difficult personal decisions, or managing periods of doubt, or even failures—is illuminating, she adds. "They are much more personable than you had imagined."

"Look for mentors" among professors

and graduate students both, Arcelus adds. The College can help with pairings, but the relationships "work better when you are interested in a topic and meet someone who is older" and find a way to work with them, she says. Upperclassmen and graduate students can be immensely helpful "because they are younger and often closer to your own experiences." They can help find summer internships, research opportunities, jobs, and even travel fellowships. (Arcelus also highly recommends such fellowships, having traveled every summer and January term while at Harvard.)



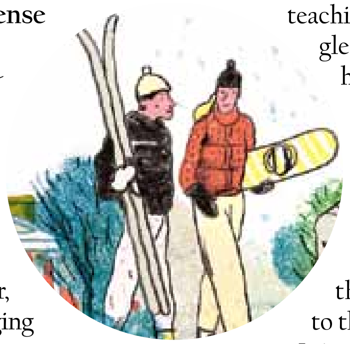
Social Life: Too much, too little?

Arcelus warns against "fairy-tale" expectations about roommate relationships. "There's a difference between being a good roommate and being a friend. Don't feel pressure to be both," she says. Blockmates often *are* best buddies—but there is no "recipe for friendships." "Don't put pressure on the living relationships," she adds. "Just clean up the bathroom and public spaces and do what needs to be done to live well together."

Don't overdo the socializing freshman year, cautions Thomas Dai, even though there is a lot of pressure to "break into what you imagine the social scene to be." True friends will emerge naturally. "It was helpful for me to realize that I didn't need to meet everyone here; that everyone is doing incredible and interesting things," says Dai, who balances his concentration in organismic and evolutionary biology with a passion for fashion design, and counts his blockmates among his closest friends. "At the end of the day, it's not the social network that's important," he adds. "It's the friendships, pure and simple."

Conversely, be on alert for feelings of disconnection or isolation, especially in the first year. Elizabeth "Libby" Felts is a peer adviser; she has been trained to reach out to fellow students who may be struggling with anxiety and depression, or are floundering in other ways: feeling, perhaps, "that you have lost control of your own life, that you cannot keep up with things, as if you cannot stop what you are doing or everything will fall apart, or that life is going on around you but you are just going through the motions." *Talk* to somebody, she advises: friends, roommates, proctors, therapists at University Mental Health Services—or go to the confidential peer-counseling care center, Room 13, in the basement of Thayer Hall. "Or call your parents," she adds. "Sometimes touching base with home can help you feel you have a bit more control."

Home and family: "A sense of displacement"



Know that relationships with home and family will change, and visit more often—or not—to preserve relationships. "I avoided going home at all," says Dai. "I regret that now." When he did, however, things seemed to be changing without him, which led to "a sense of displacement." "It's unclear whether going home more would have solved that, but I think it would have given me more closure," he says. "Understand that, in general, distance really matters and that 'home' will not just stay there in a neat little box that you can lift out again and experience exactly how you used to feel in high school and growing up."

Personal Growth: "Don't be afraid to trust yourself"

For Dai, this is crucial, because four years at Harvard will not necessarily result in a neat sorting of one's life, career, relationships, and passions. Personal and professional growth is not linear, nor should it be. "I grew comfortable with contradictions," he explains. "I can go to the lab and spend hours studying entomology and butterfly wings and then go and spend time editing a fashion magazine." He has faith that life will ultimately "turn into something clean. You will have a job and get basic things taken care of. But in the meantime, it is OK to be a little all over the place."

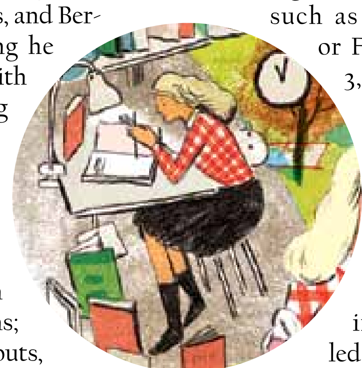
Felts agrees. "The most important thing I've learned is to define my own idea of success," she says. The earth and planetary science concentrator grew up in England, and likes studying earthquakes and doing fieldwork. She spent last summer at the Hawaiian Volcano Observatory, and wrote a thesis on seismicity in the Kilauea volcano system, despite the absence of a Harvard professor in the volcano seismology field. "If I am not happy with what I am doing, then I am not going to be successful," she explains, "regardless of whether I am getting good grades or 'doing things well.'" She learned that painfully in freshman year when she took a challenging math course. "I found the teaching style difficult and struggled to keep up. Poor advising had convinced me that this was what I should be doing, so I stuck with it for an entire year. Despite doubling my effort, I was left miserable, and with a mathematical knowledge that wasn't even applicable to the field I was interested in."

It is scary, she concedes, to deviate from traditional paths linked to certain rewards. But "we're paying so much to be here in this resource-rich, culturally rich place, and it's such a large investment of time and effort," she says, that it's critical for students to figure out for themselves "what they actually want to put all that time and effort into."

Extracurriculars: "Harvard can be a big place"

Harvard social life, notes Fahs, most often revolves around extracurricular activities, clubs, and campus organizations such as *The Harvard Crimson*, where she is a staff writer. "Being part of a committed group of people who are all working together on something they care a lot about," she says, "is really important."

Seress sings. He began in the Harvard University Choir and Harvard Glee Club, and in senior year joined the Krokodiloes. That group's historic relationship with the Hasty Pudding Theatricals involved him with a new social group, and also enabled him to travel and perform in Europe in January. "It was an amazing experience, to go to Amsterdam, Paris, and Berlin," he says—something he would never have done with his peers without leaving the lab occasionally and joining a performing-arts organization.



"Join a sport," recommends Arcelus. Varsity sports have their own tryout policy for walk-ons; club teams hold open tryouts, she adds. She had enjoyed cross-country skiing in high school, and became a member of the women's team. "I wasn't very good," she says, "but it was a lot of fun and very humbling to be embraced by my super-fit teammates and coach. Harvard can be a big place sometimes." It helps to have a support system with people to see every day, she thinks, especially during freshman and sophomore years, when students are finding a niche. And, she adds, sports help structure free time, ensuring less of it is devoted to procrastination.

Exploring Harvard's arts and science collections, along with the lesser-known corners of campus, such as the lower depths of Widener Library and tucked-away gardens, also provides respite from the daily routine. While writing her thesis, Fahs worked in a different library each day, discovering many "hidden gems," including the Fung Library in the basement of the Knafel Building.

Fahs also advises freshmen to take advantage of the many stimulating events happening on campus nearly every day. She attends at least one a month, such as the lectures offered by the Radcliffe Institute for Advanced Study. "Disneyland is cool, but I feel like this is the most magical place on earth," she concludes. "Try to remember that, when you are pulling all-nighters and are really sleep-deprived and just feel exhausted by this place."

Felts, the peer advisor, points out the benefits of community or public service, mentioning the many programs run by the Phillips Brooks House Association. "It's a way to get outside yourself and your own daily experiences to help others."

Also helpful is getting off campus and exploring Cambridge and greater Boston, including Harvard's own natural reserves, such as the Arnold Arboretum or Felts's favorite place, the 3,000-acre Harvard Forest (dedicated to ecological research) in Petersham, Massachusetts. A freshman seminar took her to the property, where she went snowshoeing and met with scientists studying climate change. That led to a summer there, working with researchers studying the seasonal cycle of plants. "It's nice," she says, "to get out and appreciate the living world."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Fall In with Classmates

Alumni on campus in September get to enjoy Harvard in action.

Images from the class of 1968's October reunion (clockwise from top left): classmates rock with their very own Central Park Zoo band, gather for the traditional class picture, and groove to a daytime dance party in the Radcliffe gym; Chris Mortenson and his wife, Winnie, applaud an open-mic music session; and reunioners enjoy an undergraduate choral concert.

Spring reunioners may revel in the celebratory hoopla of Commencement crowds, but alumni gatherings in the fall promise closer, more contemplative conversations. "There is more of a focus on personal connections," says Anne Holtzworth '84, M.B.A. '89, a co-chair of her forthcoming thirtieth reunion in September. She has attended and helped organize every one of her College reunions, yet each time, she says, "I meet new and fascinating people I did not know. As we get older, people are more open and less locked into whatever group they might have been in in college, and the strength of that experience we all shared as young people becomes the foundation for more meaningful adult relationships."

The decision to shift the thirtieth, fortieth, and forty-fifth reunions from their usual spots during Commencement week to the fall was made by the Harvard Alumni Association (HAA) in the 1990s, according to Michele Blanc, senior associate director of classes and reunions. The reason? "Space constraints," she reports. "We just could not continue hosting 14 reunion classes at the same time, during Commencement—but we still do the other 11."

Thus, the classes of 1984, 1974, and 1969 will gather in Cambridge on September 18-21. The long weekend generally opens with evening cocktail receptions on Thursday and ends with brunches on Sunday. At least one of the social events swirls around a Harvard football game (e.g., a tailgate party and optional game attendance), but the reunions also feature symposiums, art and cultural performances, and the traditional memorial service. Last year, the class of 1983 held coed pick-up basketball and soccer games, along with concerts and a slide show of art and books created by classmates. The class of 1968, which boasts the longest-running cabaret show in reunion history, also held a dance featuring the class band, Central Park Zoo.

In recent years, two new features—"Harvard Today: A Faculty Forum" and "Glimpses"—have been added to many reunion programs for both spring and fall. The forums were instituted in the spring of 2013 by the HAA, says Blanc; they include a faculty panel discussion that highlights

Photographs courtesy of the class of 1968


Reunions include a memorial service.

topics ranging from current research and innovations to advances in teaching and learning. Open to all the reunion classes at the same time, the forum is "a way for alumni to get in touch with what's happening at the University," Blanc adds. "They have become a highlight of a reunion."

"Glimpses," by contrast, are alumni-driven. A number of pre-selected classmates take three to five minutes each to "share enlightening, inspiring, and amusing personal stories," in the words of the class of 1983's fall reunion schedule. Gary Pforzheimer '84, M.B.A. '91, one of the organizers of his class's fall "Glimpses" and other "intellectually stimulating" sessions, says the event is an informal, personal experience. "People are picked out of the Red Book for something interesting about how they have lived the past five years, or how they are doing something that seems fulfilling," he explains. "They just stand up in front of a mic and tell the class about their lives."

The fall reunions can differ radically from the more scripted spring gatherings, according to a class's particular predilections. In part, that's because even though Commencement offers an exciting culmination to the May reunions, the real work and daily life of the University have wound down for the year. But in the fall, Blanc continues, "Harvard is in full throttle with classes and sports and student art performances. So alumni get a great taste of Harvard life today."

Some alumni are surprised by the new fall timing—especially the thirtieth reunioners, who have always met in the spring, when Commencement is a natural enticement to return to Cambridge. "It's also hard," says Holtzworth, "to go from the peak of the twenty-fifth reunion—subsidized by the

HAA, with children's programming, when everyone brings their families and you're staying in the Yard, which is a prime location on campus"—to the fall reunions, when alumni stay in local hotels and pay out of pocket for almost everything. "People aren't that happy, initially," she adds. "But once they come, past surveys [from other classes] tell us, they are thrilled they did. And of course we can't stay in the dorms because the students are actually there—which seems fair enough!" (A note on reunion financing: only the twenty-fifth, thirty-fifth, and fiftieth reunions are subsidized by Harvard, although reunioners still pay, on average, $675—plus the costs of any housing—for the twenty-fifth, Blanc says. Fall reunions typically cost each class member $350, plus hotel lodgings, but that includes food, drinks, a reunion souvenir, and any costs involved in holding activities in University facilities. At the memorial services, for example, the sexton and organist, flowers, and printed programs must all be paid for.)

Classmates (from left to right) Ed Gotgart, Bill Barrett, and Al Raine enjoy the game.

Fall reunions face more complicated logistics, such as finding spaces for meeting sessions and general socializing, says veteran reunion planner Eva Kampits '68, who co-chaired last year's group (which atypically met in October). Sharing space with students or planning activities that integrate a sense of academic life on campus, while desirable, can also be tricky, she says, yet "we saw it as a great advantage to be on campus at the same time as the students." Kampits's class asked to mingle with students and even to share dining hours at Leverett and Currier Houses on different days, although organizers were careful to ensure that alumni who found the venue too noisy or crowded could eat a bit later than most students, but still sit with classmates. Reunioners also integrated The Opportunes, a student choral group, into their Thursday-evening welcoming events, and had a few students join panelists in the symposiums on higher education.

Kampits and Holtzworth agree on the importance of finding or creating a unifying event to replace Commencement. Many classmates want to attend the Saturday football game, to be among students or to enjoy the nostalgic novelty, but plenty of others want an alternative. Kampits reports that her class organized several informal affinity discussion groups that met during and after a Murr Center luncheon, as the game was shown on the center's big screens: "The best of both worlds!" she declared. Holtzworth and her co-planners are expanding the focus beyond the game itself, and will "combine it with a cocktail fun party and barbecue at the football field."

Some of the perceived drawbacks to fall meetings turn out to be benefits. The groups are significantly smaller, for example: instead of the 850 classmates and guests who generally attend a twenty-fifth reunion, somewhere between 200 and 400 generally turn out in September. "They are more intimate gatherings," Blanc reports, "often because more couples come solo, without partners or kids, because it is a hard time of year for the rest of the family to get away. So this really becomes a time to totally reconnect with classmates."

Because of that closer contact and qualitative difference in alumni reunions, the class of 1968 held a "single mingle" last fall—not explicitly to foster romantic liaisons, but to share experiences and information about living alone in their later years. "Many of us will likely be single in our seventies, and the meeting was about how to plan your life," reports Kampits. "People were talking with each other about how you meet social and personal and psychological needs."

Organizers are adept at creating fun and meaning—most often, simply by mining the rich talents and life experiences of their peers. The class of 1984, for example, was the first to introduce a community- or public-service component to Harvard reunions. Its reunion committee, in discussing what to do for this fall, has reached out to the Phillips Brooks House Association for ideas and possible partnerships. Pforzheimer says he and others are also thinking about holding a "pitch" contest among classmates who work at nonprofits, to raise money and awareness. Last fall the class of 1968, which has happily entertained itself and any guests through its traditional cabaret, for the first time offered an "Open Mic Farewell" that combined a wine bistro atmosphere with music and songs by classmates, as well as a time and space to showcase 10 classmates' work in various nonprofits.

Reunion committee planners also organized symposiums on climate change, public policy, and the future of healthcare—along with a lively discussion on "Living the '60s in Our Sixties." That panel included veteran political activist and organizer Michael Ansara, a leader of the Students for a Democratic Society, former White House correspondent for the *Wall Street Journal* Ellen Hume (now in Budapest writing a book on journalism and politics), and Dale Gieringer, a director of California NORML, which promotes the campaign to legalize medical marijuana there. Many in attendance celebrated the pot-smoking, political reporting, protests, and general spirit of the times through collective reflections. "I think it's great," noted moderator Stephen "Mo" Hanan, an accomplished actor and writer, "that 45 years later...we are still seniors."

~NELL PORTER BROWN

Autumn Advice

Tap into the spirit of the class by involving classmates during, before, and after the reunion in planning or brainstorming about ideas for new events and activities. "Get people involved early, even while they are at the current reunion, while they are saying that everything is great," says Eva Kampits '68. And follow up after the reunion to solicit feedback while experiences are still fresh.

• Don't be afraid to copy great ideas from other classes.

• Find a unifying event that will draw people to Cambridge, starting on Thursday or at least Friday night, says Anne Holtzworth '84. "You want people coming in for the whole long weekend, not just showing up on Saturday morning."

• Centralize the planning and plan in consistent, incremental ways during the prior 18 months. Having an "on-site reunion committee able to meet frequently with the HAA is essential," says Kampits. "The HAA staff is key to making reunion activities work—or not."

• Find opportunities to meet with students, or attend student events focused on the arts, sports, or academics, enabling alumni to connect with life on campus life and see firsthand all the changes at Harvard.

• Be flexible and inclusive. Solicit volunteers and be prepared to hear ideas. "Over 70 classmates participated in the reunion committees," reports Kampits, including fundraising, attendance, and programming. "And, for good or for ill, the ideas kept coming into September!"

The Week's Events

The SIGnboard
Visit harvardmagazine.com/commencement for news of SIG gatherings.

Commencement week includes addresses by Harvard president Drew Gilpin Faust and entrepreneur, civic leader, and philanthropist Michael R. Bloomberg, M.B.A. '66. For details, visit **www.harvardmagazine.com/commencement.**

* * *

TUESDAY, MAY 27

Phi Beta Kappa Exercises, at 11, with poet Donald Revell and orator Andrea Barrett, a novelist and short-story writer. Sanders Theatre.

Baccalaureate Service for the Class of 2014, at 2, Memorial Church, followed by class photo, Widener steps.

Class of 2014 Family Dinner and Party, at 6. Tickets required. Athletic complex.

WEDNESDAY, MAY 28

ROTC Commissioning Ceremony, at 11, with President Faust and a guest speaker. Tercentenary Theatre.

Kennedy School Commencement Address, at 2, by U.S. ambassador to the United Nations Samantha Power, J.D. '99. JFK Park.

Senior Class Day Exercises, at 2, with the Harvard and Ivy Orations and a guest speaker. Tickets required. Tercentenary Theatre.

Law School Class Day, 2:30, featuring U.S. attorney for the Southern District of New York Preet Bharara '90 and actress/comedian/writer Mindy Kaling. Holmes Field.

Business School Class Day Ceremony, 2:30, with speaker Salman A. Khan, M.B.A. '03, founder and executive director of the Khan Academy. Baker Lawn.

Graduate School of Design Class Day, at 4, with a guest speaker. Gund Hall lawn.

Graduate School of Public Health Award Ceremony, 4-7. Kresge Courtyard.

Graduate School of Education Convocation, 3-4:30, with Colorado state senator Mike Johnston, Ed.M. '00. Radcliffe Yard.

Divinity School Multireligious Service of Thanksgiving at 4. Memorial Church.

A Special Notice regarding Commencement Day
Thursday, May 29, 2014

Morning Exercises

To accommodate the increasing number of people wishing to attend Harvard's Commencement Exercises, the following guidelines are provided to facilitate admission into Tercentenary Theatre on Commencement Morning:

- Degree candidates will receive a limited number of tickets. Their parents and guests must have tickets, which must be shown at the gates in order to enter Tercentenary Theatre. Seating capacity is limited; there is standing room on the Widener steps and at the rear and sides of the Theatre. For details, visit the Commencement Office website (**http://commencement.harvard.edu**).

Note: A ticket allows admission, but does not guarantee a seat. Seats are on a first-come basis and can not be reserved. The sale of Commencement tickets is prohibited.

- A very limited supply of tickets is available to alumni and alumnae on a first-come, first-served basis through the Harvard Alumni Association (**http://alumni.harvard.edu/annualmeeting**). Alumni/ae and guests may view the Morning Exercises over large-screen televisions in the Science Center and most of the undergraduate Houses and graduate and professional schools. These locations provide ample seating; tickets are not required.
- College alumni/ae attending their 25th, 35th, and 50th reunions will receive tickets at the reunions.

Afternoon Program

The Harvard Alumni Association's Annual Meeting, which includes remarks by its president, Overseer and HAA election results, the presentation of the Harvard Medals, and remarks by President Drew Gilpin Faust and the Commencement Speaker, convenes in Tercentenary Theatre on Commencement afternoon. For tickets (which are required, but free), visit the HAA website or call 617-496-7001.

The Commencement Office

Photograph by Jon Chase/Harvard Public Affairs and Communications

Graduate School of Arts and Sciences Dudley House Masters' Reception, 4-6.

Masters' Receptions for seniors and guests, at 5. The Undergraduate Houses.

Harvard University Band, Harvard Glee Club, and Radcliffe Choral Society Concert, at 8. Tercentenary Theatre.

THURSDAY, MAY 29

Commencement Day. Gates open at 6:45.

The 363rd Commencement Exercises, 9:45. Tickets required. Tercentenary Theatre.

All Alumni Spread, 11:30. Tickets required. The Old Yard.

The Tree Spread, for the College classes through 1963, 11:30. Tickets required. Holden Quadrangle.

Graduate School Diploma Ceremonies, from 11:30 (time varies by school).

College Diploma Presentation Ceremonies and Luncheons at noon. The Undergraduate Houses.

GSAS Luncheon and Reception, 11:30 to 3. Tickets required. Behind Perkins Hall.

Alumni Procession, 1:45. The Old Yard.

The Annual Meeting of the Harvard Alumni Association (HAA), 2:30, includes remarks by HAA president Catherine A. Gellert '93, President Faust, and Commencement speaker Michael R. Bloomberg; Overseer and HAA director election results; and Harvard Medal presentations. Tercentenary Theatre.

Medical and Dental Schools Class Day Ceremony, at noon, with guest speaker Vivek Murthy '98, HMS instructor, co-founder of Doctors for America, and, at press time, the nominee for U.S. Surgeon General.

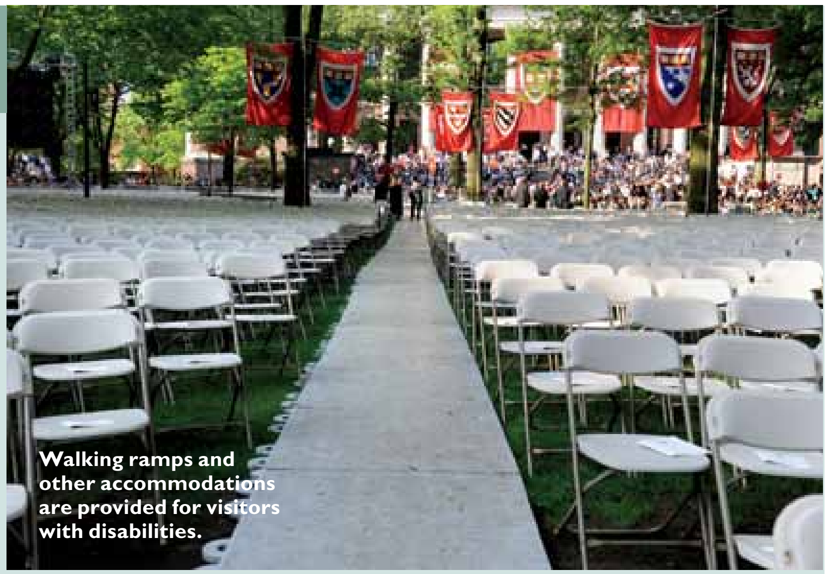
FRIDAY, MAY 30

Radcliffe Day celebrates the fifteenth anniversary of the Radcliffe Institute and 135 years of Radcliffe. A 12:30 luncheon honors President Faust, who will also deliver the keynote address and receive the 2014 Radcliffe Medal. Three panel discussions explore "From Civil War to Civil Rights: The Unending Battle to Vote," "Gender and the Business of Fiction," and "What is Life? The Science and Ethics of Making New Life in the Laboratory." A cocktail celebration follows at 5:15, Radcliffe Yard. Tickets required. www.radcliffe.harvard.edu.

For schedule updates, visit www.commencementoffice.harvard.edu, or http://alumni.harvard.edu/haa.

The Smith Campus Center is open daily except Sunday, 9 to 5 (617-495-1573).

All Are Welcome



Walking ramps and other accommodations are provided for visitors with disabilities.

STU ROSNER

Commencement and reunions week—the highlight of Harvard's social calendar—draw crowds of alumni and guests each year

To best accommodate older alumni—and anyone else—who may be in need of accessibility services in order to enjoy their visit, the Harvard Alumni Association (HAA) and the Commencement Office offer options ranging from special parking permits, shuttle vans, and rentable wheel chairs to CART (Communication Access Real-Time Translation) technology and Commencement programs translated into Braille. In 2013, for example, additional ramps and other accessible paths were installed in the Yard to make it easier for individuals, including those in wheelchairs or with other mobility concerns, to get around.

"The reunion-class program committees and the HAA work very hard to make it possible for all those who want to attend their reunions to do so," says the HAA's Courtney Shurtleff, director of College Alumni Programs. "We work with alumni and their guests on a case-by-case basis." She advises anyone who needs or wants to learn about accessibility services to contact the HAA as soon as possible, at 617-496-7001. They may also visit the Commencement Office's website, http://commencement.harvard.edu/guests-disabilities, or that of the University Disability Services office, http://accessibility.harvard.edu/commencement-2014.

Accessible parking, transportation, sign language interpreters, captioning on the LED screens, and seating will be available, as will accessible restrooms. The morning's Commencement Exercises may be viewed, as usual, in open-caption format on large-screen televisions in the Science Center and at most of the Houses. Other, specific accommodations may also be available, if requested well in advance of May 29, Commencement Day. Forms for requesting an assistive listening device can be found at http://accessibility.harvard.edu/services-individuals-who-are-deaf-or-hard-hearing. "I am unsure if more people are requesting assistance," Shurtleff says, "but people are living longer. This year I am working with officers of the Class of 1944, who are celebrating their seventieth reunion."

~N.P.B.

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Creative Kitchens

Cambridge chefs delight in novelty.

ALDEN & HARLOW

Alden & Harlow offers creative "American-style tapas."

ALDEN & HARLOW (40 Brattle St., 617-864-2100; aldenharlow.com), which replaced the local landmark Casablanca earlier this year, is well on its way to building its own loyal fan base. Its lively atmosphere has various spots to eat and drink, depending on one's mood, and a menu of inventive, even brash, combinations of tastes and textures, all in the form of "American-style tapas."

In his first solo venture, chef and owner Michael Scelfo (formerly of Russell House Tavern) kept the restaurant's series of loosely connected rooms (the space still feels like a fun hideaway), but gutted and transformed the interior to create a main dining room that is lighter and airier than it was when home to Bogart and Bacall. That room also features a new, gleaming, open kitchen framed by utilitarian white subway tiles, part of a retro-industrial and modern farmhouse motif that is echoed in exposed ducts, wooden beams, and, here and there, frosted glass partitions embedded with chicken wire. (Other newish Cambridge restaurants such as Puritan & Company, The Sinclair, and West Bridge share some of the same raw look and feel.) A second, quieter dining room, sans kitchen view, fronts Brattle Street.

The bar, lit with low lights, now sits in the slimmest section, linking the other rooms. But its wraparound nature widely embraces everyone, from a group letting loose after work, to regulars looking to chat, to a couple in the corner clearly enjoying an intimate date.

The restaurant is named for the building's original architects (a firm that succeeded H.H. Richardson), perhaps because Scelfo himself offers similarly innovative structures throughout the oft-changing menu. Read it from left to right for lighter to heavier dishes: "ubiquitous kale salad" with fennel and a creamy pistachio dressing ($8), to hickory-smoked blood pudding with plush figs and walnut romesco ($12). And watch for mischievous mergings, quirky textures, and smoke.

Charred broccoli (better than it sounds)

Modern Chinese food at East by Northeast includes pork buns, lamb meatballs, and egg noodles with spicy calamari and watermelon slaw.

EAST BY NORTHEAST

RACHEL LEAH BLUEMTHAL

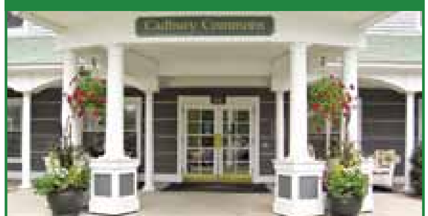
Italian fare is slow-cooked with love at the neighborhood bistro Giulia.

came with a squash-and-cashew-nut hummus and crumbled montasio, an Italian cheese that here was dried out and salted and tasted like very good bacon ($8). The salt cod and turnip *brandade* ($13) can be spread on delicate shards of house-made crackers and topped with a prickly Asian-style slaw of fennel, arugula, and cubes of blood orange. Far richer was the hand-cut rye pasta (itself maybe too bland) and a superb confit chicken thigh lolling in a warm fig-and-chicken-liver "butter," topped with crisped skin ($15).

Desserts? The smoked chocolate bread pudding (yes, slowly "baked" in a cold smoker) was stunning: drier, thinner, and less sweet than expected, it was topped by ice cream flavored with Jacobsen's artisanal salt ($9). "Like eating a cigar—in a *good* way," noted one diner. Another must-try is the roasted parsnip cobbler ($9). Strips of carmelized earthy vegetable spiced right with cinnamon and nutmeg lay under a crunchy, paper-thin crust; all was punctuated by a sharp ginger ice cream.

Also new in the Square is The Beat Hotel (13 Brattle St., 617-499-0001; beathotel.com), an alluring, glittering cavern with a warm vibe. Excellent nightly live jazz and world music loosens the mood, as do the marvelous murals by local artist Jordan Piantedosi, which blend psychedelic, punk styles and William Morris patterning with figures akin to those in Art Nouveau posters by Alphonse Mucha.

The menu is almost as eclectic. Surely, there's something here for everyone, from oysters *du jour* ($3 each) and lamb nachos ($12) to short-rib lasagna ($23) and Brazil-



ian seafood stew ($24)—not to mention the bohemianesque "earth bowl" of grains, lean proteins, and assorted veggies ($26).

For a more refined meal reflecting instead the diverse cuisine of one country, Italy, go to Rialto at the Charles Hotel (1 Bennett St., 617-661-5050; rialto-restaurant.com). Sit inside on soft banquettes amid a soothing décor in tones of sage and cream; or eat *al fresco* on the more rustic patio, with its starry overhead lights. Try the lighter braised artichoke and fava bean salad with fresh mint and coriander ($13), or the rich, butter-poached lobster with house-cured bacon, sunchokes, and leeks ($42). The elegant bar is a great place to stop with friends, and everyone can sample treats from small plates. Of note are the meatballs with green olives and capers ($7), the roasted duck sandwich with gingered figs ($14), and the traditional *arancini* touched by saffron ($5).

Italian fare, conjured with great care, also stars at Giulia (1682 Massachusetts Ave., 617-441-2800; giuliarestaurant.com), a homey bistro within walking distance of the Square. Chef E. Michael Pagliarini spikes a dish of wild boar and pappardelle with juniper ($21), softens the bitter edge of a fennel and watercress salad with chunks of blood orange ($10), and pairs a simple tuna steak with pickled ginger and grilled celery ($18).

An intimate space, Bondir offers food lovers and their closest friends small plates of savory perfection.

ANDY RYAN/BONDIR

Just as unique are Giulia's desserts. Order the hazelnut gelato with chocolate shortbread splashed with espresso ($6)—and opt for the extra $3 glass of *amaro Montenegro,* for its herbal and citrus notes.

The cottage-like feel of Bondir (279A Broadway, 617-661-0009; bondircambridge.com) celebrates the slow art of eating, and emphasizes "sustainable modern American cuisine" in a menu that changes daily.

Vintage china, abundant floral displays, and sculptural wooden chairs project a funky chic that seems casual, but is more likely arranged as preciously as the food is prepared.

A cheese custard *tartine* ($18) appetizer with fall-apart buttery crust was nice and stinky—and came with large spoonfuls of crispy red quinoa, carrot relish, and shallot confit. Seared Maine-raised mutton was extra gamy and coupled with barley-flour rigatoni, charred romanesco, and fresh pea greens ($18). Note, too, the outstanding service: "present and knowledgeable," a diner reports, "but not obsequious."

The same can be said of the more casual, enthusiastic staff at East By Northeast (1128 Cambridge St., 617-876-0286; exnecambridge.com). The atypical Chinese tapas restaurant near Inman Square serves home-style Asian comfort food, such as the hand-rolled noodles, buns, and dumplings, with more than a couple of twists. A soft Southern-style squishy biscuit is stuffed with smoked pork confit dribbled with a honey chili sauce—all offset by a side of sharp-tasting carrot and

WEST BRIDGE

West Bridge's spacious, clean, modernist look reflects its French-cooked, regionally sourced food.

BEAT HOTEL

BEAT HOTEL

At The Beat Hotel's shimmering cavern in the Square, live jazz and world music feed the soul, nightly.

daikon slaw. The fried-rice-stuffed crêpe ($9) holds smoked tofu, sunchokes, and a silky beet ketchup.

Chef and owner Phillip Tang is thoughtful and unafraid to experiment—he controls his establishment's high-quality output by taking his time and offering small plates in a small space, so that 24 diners can all be kept happy at once.

Much larger in scope and scale, West Bridge (1 Kendall Square, 617-945-0221; westbridgerestaurant.com) serves fresh New England fare with a French flair. To wit: starters such as seafood potage served with grilled toast ($14) and black Tuscan kale enriched with duck confit and gooseberry sauce ($12). Entrées are richly flavored, but light on the stomach. A braised lamb neck comes dotted with oysters, sautéed escarole, and butter beans ($44), while the bass with whelks is bathed in a Japanese *dashi* broth and paired with old-fashioned grits ($27).

The interior is modern and earthy, a lofty space grounded by polished wooden tables and rough-hewn floors. A bar, whose tenders are admirably obliging, dominates the center but is not overly noisy.

This spring and summer, choose to sit out on the equally expansive deck overlooking a brick courtyard (sometimes it features musicians) before or after taking in a film at the nearby Kendall Square Cinema. As of late May, the sun sets after 8 P.M.—and the kitchen stays open 'til midnight.

~N.P.B.

A Square veteran, Rialto continually renews itself by plumbing the (seemingly endless) depths of Italian cuisine.

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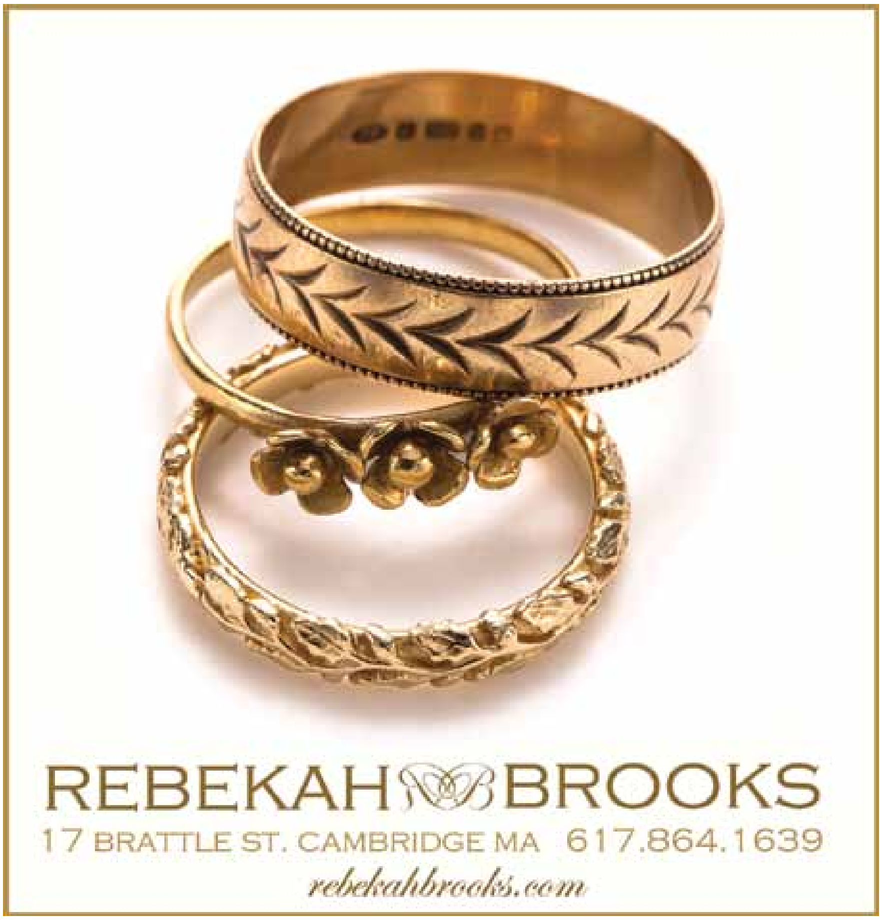
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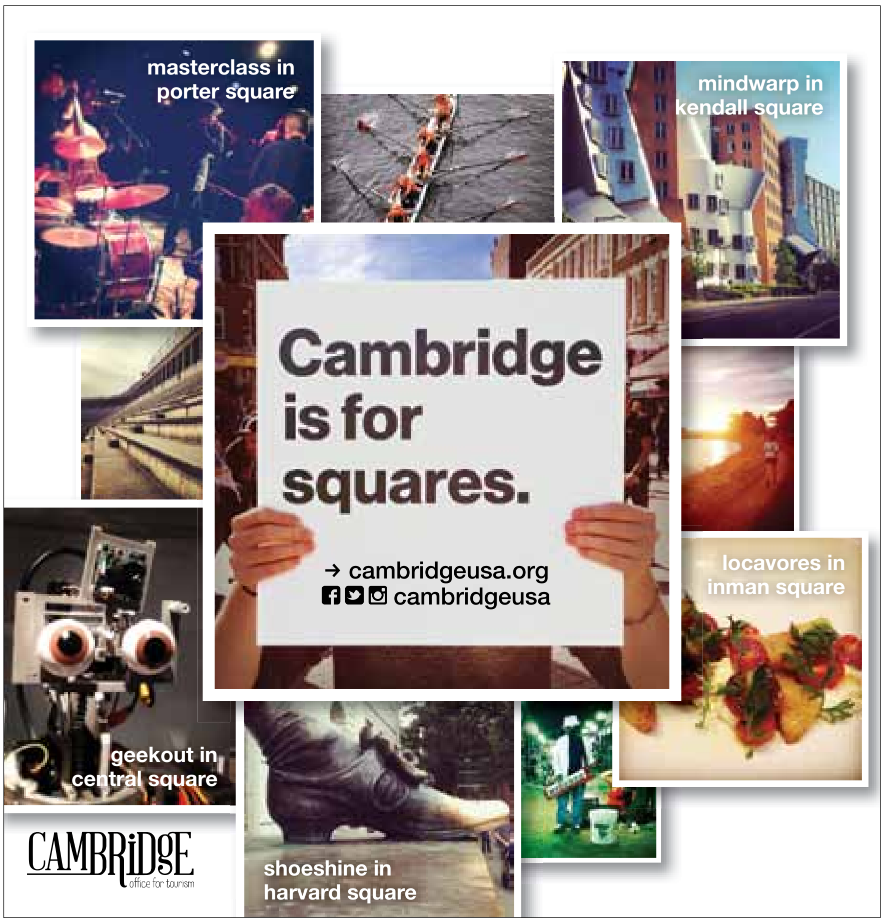
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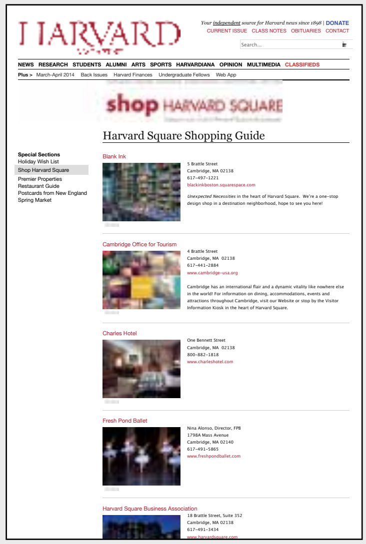

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J O H N   H A R V A R D ' S

JOURNAL

All but the Art

Harvard art museums announced in March that the renovated Fogg building and its Renzo Piano-designed addition will open on November 16, concluding a massive construction project that began in 2009. (The museum closed in mid 2008 so the art could be removed.) The building's systems are being brought on-stream now, to be followed by reinstallation of the collections.

The new facility—shown here in photographs of the reconceived Calderwood Courtyard, which has been extended vertically and naturally lit from above, and of the exterior of the complex—combines in one place the Busch-Reisinger, Fogg, and Sackler museums. It also includes art-study centers, classrooms and lecture halls, the Straus art-conservation facility, and (de rigueur for contemporary museums) a café and store. For further details, see **http://www.harvardmagazine.com/ham-14**.

Photographs ©Peter Vanderwaker/ Harvard Art Museums

Melissa Franklin and Logan McCarty in the SciBox, an experimental learning space they designed

Learning by Doing

Walls covered with blackboard paint and tables on wheels fill one of Harvard's more unusual new classrooms; hammers and screwdrivers hang from a tool board attached to a half-painted wall. "We want this space to feel like a workshop or a garage," says Logan McCarty, director of physical sciences education and one of the instructors who designed the new space. "If students are doing a lab, and they have to bolt something to the wall, or hang something from the ceiling, they can do it."

The SciBox, as its creators named the sprawling, 2,500-square-foot-space, is the stage for a few of the diverse new pedagogical experiments exploring the possibilities of experiential education—part of Harvard's broader interest in testing new ways of teaching and learning. Though the edX online learning partnership with MIT has attracted the lion's share of attention and institutional support, experiential education—sometimes referred to as hands-on learning—also plays a role in this University priority, inaugurated in 2011 with the Harvard Initiative for Learning and Teaching (HILT), and now a theme of the capital campaign.

"Experiential learning is participative—for example, either *making* or *doing*," explains Erin Driver-Linn, associate provost for institutional research and HILT's director. "What do we need to understand, as learners, that is conceptual? And what do we need to understand by experiencing things in a different way?"

Because the definitions of "making" and "doing" vary widely by discipline, experiential education has taken diverse forms, under similarly diverse auspices, across Harvard. As part of the Prison Studies Project, for instance, students learn about criminal justice alongside prison inmates. In a class on African-American popular music, guest workshops funded by the Elson Family Arts Initiative teach students to sing and dance in the style of Motown and funk.

The more experimental atmosphere of the SciBox (funded by HILT and located in the Science Center, the locus of much undergraduate science teaching) reflects a departure from the traditional physics-lab curriculum. "Just going through this process of making [the new space] makes you ask a lot of questions about how we teach and about what other possibilities there are," explains Melissa Franklin, Mallinckrodt professor of physics and the other SciBox designer, in a HILT video describing the space. Rather than performing different "canned" experiments each week, small groups of students now tackle more complex, open-ended projects; for instance, they might build models and apparatuses to investigate why the weight on a pulley swings side-to-side rather than up-and-down when the string is tugged at a certain frequency. "Each group of students might be doing a single experiment over the course of three weeks, with different students working on different parts," explains McCarty. "We found that in our old spaces, it was hard to do that."

In the introductory course "Stellar and Planetary Astronomy," the more mobile, informal setting of the SciBox—inspired by the concept of a black-box theater—has enabled professor of astronomy John Johnson (see Harvard Portrait, January-February, page 23) to implement a "flipped" classroom approach. Students learn by doing problems, spending most of each class session working in small groups at the "blackboard" walls. Their weekly homework, meanwhile, is to write five publicly accessible blog posts—some must describe problem solutions, others communicate astronomical news. Meanwhile, Johnson and his teaching fellows roam the classroom, occasionally pulling students aside for short, one-on-one oral quizzes (for instance: "Given star x and its celestial coordinates, will it be visible from Cambridge tonight?"), and giving guidance only where necessary. "We're not allowed to give out answers, we only ask questions," he says. "We're here to facilitate learning."

IN THIS ISSUE

Photograph by Stu Rosner

Such side-by-side problem-solving is the norm at the School of Engineering and Applied Sciences (SEAS), where approximately one-third of engineering courses include an experiential component. In "Engineering Problem Solving and Design Project," the approximate equivalent of a junior tutorial, students act like management consultants, taking on real-world puzzles with no clear solution or even problem definition; similarly, in "Medical Device Design," a physician might ask how to improve a clumsy surgical tool—leaving students to formulate the problem in engineering terms and design possible solutions. Faculty members act more like coaches than traditional instructors—in many cases, they do not have the answers, either. "That, of course, is real life," says SEAS dean Cherry Murray. "Engineers never have a rote situation that's really trivial and just involves applying an equation."

One year, students were instructed to help Massachusetts law-enforcement officers find new ways to deal with a gang problem. "Students spent numerous hours with the Springfield police, following them around, being able to be in helicopters over Springfield—actually experiencing what the police were experiencing," says Murray. Through an iterative process, they worked with the police to define problems and design potential solutions—for instance, a software platform that used police data to map and analyze crime—and gained new skills along the way. "It's very important," says Murray, "that you have the confidence to address problems and not be afraid that you don't have the background." A major goal of the SEAS campaign is to fund more such hands-on experiences, she says, and to create "design studios" with equipment and space for students to take on larger projects like building robots and cars. An SEAS faculty committee advising on the design of the school's new quarters in Allston focused at length on the reconceived teaching spaces required to support this kind of learning (see **http://www.harvardmagazine.com/allston-14**).

In the humanities, new spaces are allowing students to participate in art-making practices. Some artistic applications are coincidental—last year, the SciBox hosted a dramatic production—while

HARVARD PORTRAIT

Rohini Pande

You become interested in things you've seen a lot of, says Rohini Pande; for her—growing up in India—issues of poverty and gender were "first-order." The Kamal professor of public policy witnessed protests demanding more women political candidates during her studies at Delhi University; they triggered questions about representation and inequality that still dominate her work. She uses economic approaches to study the design of democratic institutions and regulatory structures, seeking to measure the effect of initiatives like voter information campaigns, microfinance, and market-based mechanisms for environmental regulation. She has found, for instance, that gender quotas in village councils raise local girls' career aspirations and educational progress. Outside work, she says, "I spend a lot of time climbing, badly." Her family (her mother is a journalist, her father a public administrator, and her sister a doctor) is from the Lower Himalayas, and Pande began climbing—"more like snow-plodding"—as a child; a recent climb had her clinging to the sea cliffs of Cornwall. She is no stranger to England: the Rhodes Scholar earned a master's at Oxford and a Ph.D. from the London School of Economics; she arrived at Harvard from Yale in 2006. She returns often to India to conduct field experiments, gathering evidence to shape policy design and implementation as part of the Evidence for Policy Design initiative she co-founded in 2008. The "craft" of a good field experiment, she says, lies in isolating specific effects that speak generally to human behavior. From policies to regulations to elections, "I'm curious to look for explanations that help link the design of a policy to its subsequent impact."

Photograph by Jim Harrison

ORE

Deloitte.

Consulting

others are more deliberate. In the HILT-funded Sound Lab, for instance, students have access to equipment and software for composing, recording, and editing music. In "The Art of Listening," one of three new introductory courses in the humanities (see "Toward Cultural Citizenship," page 35), students use this equipment to create mix tapes and soundscapes that explore the possibilities of everyday sounds.

"If you work with sounds yourself, if you learn what it is to use digital sound-editing software, you necessarily have to understand how a sound works," says Peabody professor of music Alexander Rehding, who co-teaches that course. "I could explain it all theoretically, and all that is good up to a point, but if you work with a digital version of a sound wave, you have to engage with it in very practical ways. I see it as complementary." The experiential component in fact underscores the importance of the humanities; in Rehding's words, "We're engaging with the humanities all the time, even when we don't know it."

Sometimes, the engagement is deeply personal. In the HILT-funded course "Quests for Wisdom: Religious, Moral, and Aesthetic Searches for the Art of Living," offered for the first time last fall, Rabb professor of anthropology Arthur Kleinman and Rudenstine professor for the study of Latin America David Carrasco interwove philosophical and religious texts with stories from their academic work and personal lives. Kleinman (who is also professor of medical anthropology and professor of psychiatry) spoke movingly about finding wisdom in caregiving during his wife's decline and death from Alzheimer's disease (see "On Caregiving," July-August 2010, page 25). "The academic and the existential should be mixed," says Carrasco. In the context of students' personal quests for wisdom, thinkers like William James and Toni Morrison became dialogue partners and interlocutors—as Carrasco describes it: "someone who was not just a theoretician or a novelist, but someone who was a life."

The quest expanded beyond philosophy into anthropology, religious studies, and the arts. Through excursions and guest workshops, students learned modern dance, listened to jazz, contributed art to the Day of the Dead altar at the Peabody Museum, and developed and performed a play after spending time with Holocaust survivor Judith Sherman and reading her memoir, *Say the Name: A Survivor's Tale in Prose and Poetry.* "Arthur and I were profoundly moved by the intensity and depth of the students' responses," says Carrasco; he and Kleinman have asked their students to stay in touch for the next five years. "We care for these students," Carrasco says. "We think this is one of the ways to awaken in them the potential not just for a career, but for a meaningful life."

At the same time, Carrasco offers some cautions about experiential education: "Partly because students are sitting on their behinds for hours, experiential learning sounds like stretching." But experiences gain their value in combination with intellectual discipline, he says; in "Quests for Wisdom," students assessed the readings and media they encountered through frequent analytical writing assignments and a final project. Carrasco also takes care to emphasize the value of more traditional forms of experience. "I might want to go to [Friedrich] Schleiermacher's hometown and look at the environment in which he preached and thought—and that's good," he says, referring to the German theologian and philosopher. "But you can *read* Schleiermacher and have a profound, insightful experience. You just have to know how to do it."

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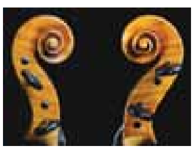

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Harvard Measures Its MOOCs

From its inception in May 2012, a guiding goal of Harvard's participation in the edX online-course venture has been to "advance teaching and learning through research" (as the HarvardX website puts it). The initial product has now been released: the HarvardX research group and MIT's Office of Digital Learning have published papers surveying the registrants in Harvard and MIT courses offered through the edX platform and the ways in which those users interacted with the contents they accessed. Separately, Harvard Business School has announced its own online program, and both edX and the for-profit online enterprise, Coursera, announced significant management appointments (see below).

An overview report on the first six Harvard and 11 MIT courses, offered during the 2012-2013 academic year, addressed the most elemental questions: Who registered? What did they do? Where are they from? It thus engages with a basic issue about the current online courses. The report tallied 841,687 course registrations, of whom:

292,852 never proceeded past registration;

469,702 viewed less than half of the course content;

35,937 explored half or more of the content, but did *not* earn certificates of completion; and

43,196 *did* earn certificates of completion.

The "shopping period," if that is a good analogy, is brief: "The average percentage of registrants who cease activity in these open online courses is highest in the first week at around 50 percent." The paper's authors, including Andrew Ho, co-chair of the HarvardX research committee, maintain that "Course certification rates are misleading and counterproductive indicators of the impact and potential of open online courses"—in part because "large numbers of non-certified registrants access substantial amounts of course content." That is, learning occurs in units or chunks, rather than in course-length study.

Among other findings, the proportion of registrants who report having a college degree ranged from 54 percent to 85 percent. That is perhaps not surprising for Harvard- and MIT-level courses, but it indicates that a different approach, or different courses, may be necessary to serve introductory learners or people pursuing foundational skills. In fact, on average, 72 percent of the HarvardX registrants had a bachelor's degree or higher. Just 2.7 percent of registrants had Internet or mailing addresses from identified "least-developed" countries—suggesting issues about the level of course content and registrants' preparation, access to the Internet, and

Yesterday's News

From the pages of the *Harvard Alumni Bulletin* and *Harvard Magazine*

1919 With the War Department's approval, the Faculty of Arts and Sciences votes to resume military training at Harvard, with courses "tuned up to the same [scholastic] standard" as others in the curriculum and military drills to be conducted at summer camps, not on campus.

1929 For Radcliffe's semicentennial celebration from May 30 to June 1, "the vicinity of Memorial Hall [is] thronged with delegates wearing gaily colored academic costumes"; Mrs. Herbert Hoover brings greetings from the White House; and President Lowell offers the congratulations of Harvard.

1934 The baseball team accepts an invitation to play 12 Japanese college teams over the summer, thereby becoming the first Harvard team and "the first [college] squad from the effete East to carry its bats to the Far East."

1939 Competing under cover, Edward C.K. Read '40, president of the *Lampoon,* wins the annual Wellesley College hoop race, a tradition alleged to determine which member of the graduating class will be married first. According to the *Alumni Bulletin,* Read reportedly "had accomplices 'within the ranks' who fitted him out with the necessary feminine paraphernalia and slipped him into the starting line-up."

1944 Instructor in chemistry Robert B. Woodward and Polaroid Corporation researcher William von E. Doering '38, Ph.D. '43, working together in the University laboratories, have succeeded in synthesizing quinine.

1989 The Graduate School of Arts and Sciences celebrates its centennial on June 2 and 3 with symposia, receptions, and awards to several of its most distinguished alumni.

1999 Harvard joins a yearlong monitoring project, initiated by Notre Dame, to gather information about the conditions inside apparel factories that make university insignia wear and to formulate ideas on how to improve them.

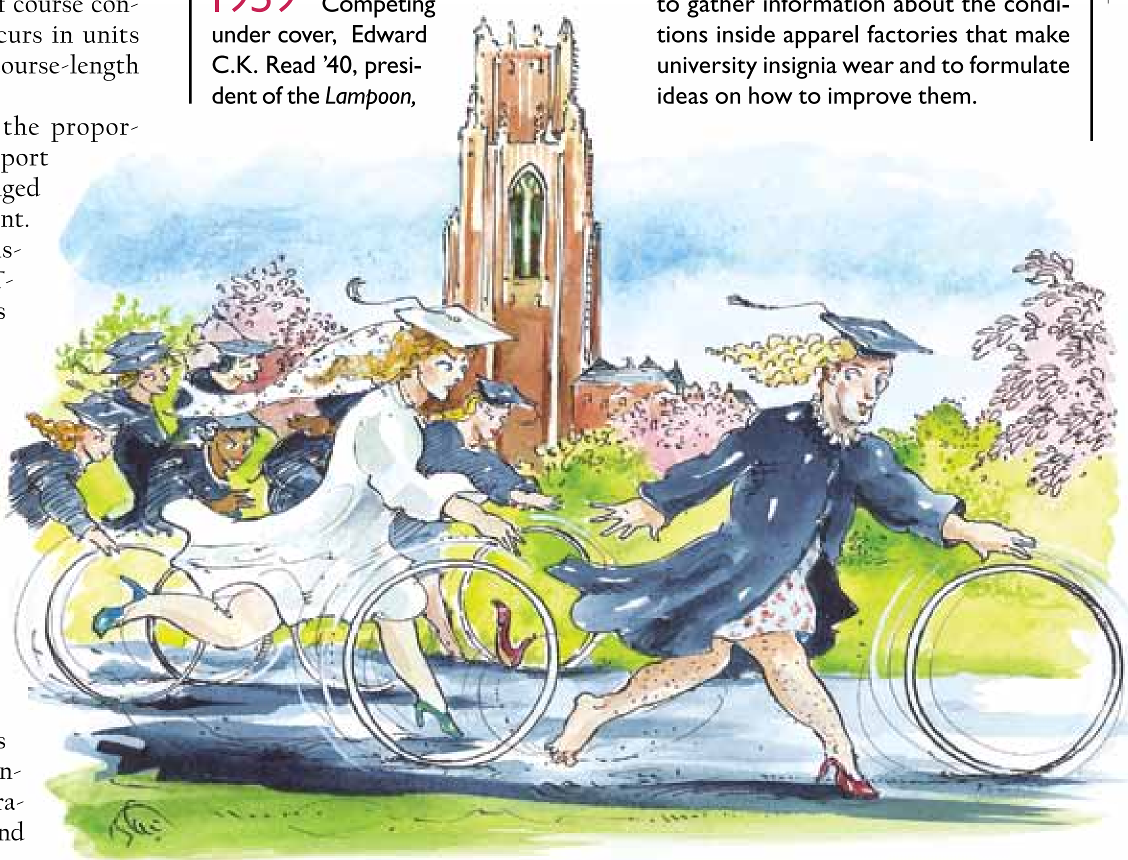


Illustration by Mark Steele

English-language skill. These matters need to be addressed if massive open online courses (MOOCs) are to extend higher-education access to countries where the availability of such experiences is very limited—an expressed aim of edX and other enterprises.

The report made these overall findings, among others:

- "HarvardX and MITx registrants are not 'students' in a conventional sense, and they and their behavior differ from traditional students in K-12 and post-secondary institutions," not least because registration "requires no cost or commitment" and "skilled learners [may be] dropping in to learn one specific aspect of a course."
- "There will be no grand unifying theory of MOOCs," given that "courses from professional schools like the Harvard School of Public Health" are certain to attract "registrants [who are] are more highly educated and...higher percentages of registrants from outside the U.S." than, say, an introduction to computer science.
- "Online courses can offer rich, real-time data to understand and improve student learning, but current data [describe] activity more often than learning gains or desired future outcomes. We need to invest more in high-quality, scalable assessments, as well as research designs, including pre-testing and experiments, to understand what and how registrants are learning." (The same is also very much true for assessing on-campus, classroom courses.)

Justin Reich

COURTESY OF JUSTIN RIECH

Brevia

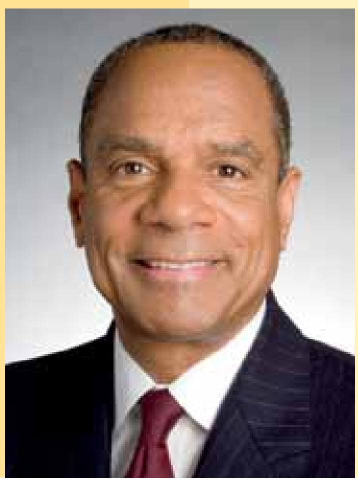
Teaching Spaces in Allston

A School of Engineering and Applied Sciences (SEAS) task force has outlined parameters for the teaching and common spaces that will be purpose-built in Allston, where a substantial portion of the school is expected to be relocated, in new quarters—a principal priority of The Harvard Campaign. The SEAS January white paper envisions highly flexible teaching spaces and learning laboratories—to the point of discouraging fixed classrooms with permanent furnishings. In a similar vein, the task force recommends consumer-grade communications and media technology, rather than more expensive equipment that might be rendered obsolete rapidly, with the savings applied to rapid refreshing as warranted. The paper also emphasizes the importance of making the building transparent, so it readily appears to passersby as an engineering campus within a liberal-arts university. For a full report on the principles and recommendations, and what they suggest about teaching at Harvard generally, see **http://www.harvardmagazine.com/allston-14**.

Reshaping the Square

A rare bit of new construction is under way in Harvard Square. Developer Richard Friedman has razed the frame building at 114 Mount Auburn Street, and will construct an eight-story, 70,000-square-foot office building (the space is reportedly fully leased to the University) with first-floor restaurant and retail space. He will also renovate the brick Conductor's Building across a narrow roadway, for restaurant or similar use. The project will in effect clean up the view from the Charles Hotel, which Friedman built previously.

THE CORPORATION REPLENISHED. Kenneth I. Chenault, J.D. '76, and Karen Gordon Mills '75, M.B.A. '77, have been elected members of the Harvard Corporation, the senior governing board, effective July 1. They succeed retiring members Robert D. Reischauer '63, who is the senior fellow, and Robert E. Rubin '60, LL.D. '01, whose service concludes at the end of the academic year. Chenault is chairman and chief executive officer of American Express Company. A graduate of Bowdoin College, he has served on Harvard Law School's visiting committee and is a member of the Committee on University Resources (COUR), Harvard's senior fundraising advisory group. A member of diverse nonprofit boards and advisory councils, he is also a director of IBM and Procter & Gamble. Kenneth and Kathryn Cassell Chenault's son Kenneth graduated from the College in 2012; son Kevin is a senior. Mills was administrator of the U.S. Small Business Administration from 2009 to 2013, and is currently a fellow at the Business School and the Harvard Kennedy School. A private-equity executive, she has served on diverse corporate boards, and was a member of the Board of Overseers, the junior governing board, from 1999 to 2005, and a Radcliffe College trustee from 1985 to 1993. She is married to Barry Mills, president of Bowdoin College; they have three sons, including George, a Harvard junior.



Author Honorands

Three of the five Harvard affiliates nominated as finalists for National Book Critics Circle awards (see Brevia, March-April, page 22) were named winners in mid March: **Amy Wilentz** '76, for *Farewell, Fred Voodoo: A Letter from Haiti* (autobiography); **Leo Damrosch**, Bernbaum professor of literature emeritus, for *Jonathan Swift: His Life and His World* (bi-

Photographs courtesy of Harvard Public Affairs and Communications

• "Open online courses are neither useless nor the salvation of higher education. Large-scale, 'low-touch' learning platforms will have sectors and niches where they are very useful and others where they are less so….Thoughtful instructors and administrators…will take advantage of resources that can be saved by using these technologies and redeploy those resources to places where 'high touch' matters."

Integrating these overall conclusions with a specific course, "The Ancient Greek Hero," Menschel HarvardX research fellow Justin Reich put the research into broader and deeper context during a symposium at the Harvard Graduate School of Education. He began by noting two limitations of the first-year analyses: the initial HarvardX courses were very heterogeneous (from a public-health statistics offering and a limited-enrollment class on copyright law to the popular "Justice" and Greek heroes surveys), and a small sample from which to draw general conclusions.

He observed further that research to date derived principally from analyzing basic data on course mechanics captured from the edX operating platform—what he called "fishing in the exhaust." Much more sophisticated research lies in the future. Some will take the form of anthropological field observations: what students do during their time online in the course, whom they talk to, what other software they are using, whether they take notes: the sorts of data not available in the "click stream" from the platform (capturing keystrokes as students register and work through a course). The ultimate goal, he said, would be "design research" that draws upon learning science, examines the pedagogy and learning objective of each course, and experiments to see what teaching methods are most effective.

His in-depth case study examined the online adaptation of the long-running course offered since 1978 by Jones professor of classical Greek literature Gregory Nagy. Its exercises emphasize "slow" reading assignments, guiding students to experience the texts from an ancient perspective, rather than reading mod-

CERAMICS CENTER. The Office for the Arts inaugurated a new ceramics center at 224 Western Avenue in Allston in late February. It replaces a prior facility, located across the street, on a site being redeveloped for other University uses.

ography); and **Frank Bidart**, A.M. '67, for *Metaphysical Dog* (poetry).

Nota Bene

The new class's term tab. **The College** announced that tuition, room, board, and fees for the 2014-15 academic year will be $58,607, up 3.9 percent ($2,200) from $56,407 this year, and a slight acceleration from the 3.5 percent increase imposed in the prior year. **Yale** increased its undergraduate term bill 4 percent, to $59,800; **Brown** imposed a 3.8 percent increase, to $59,428. The $60,000 undergraduate year looms in the immediate future.

The new class. Despite the rising price, demand remains strong: the **College** offered admission to 2,023 students (including 992 of the 4,692 who sought early-action decisions, as previously announced), from a total candidate pool of 34,295—down marginally from 35,023 applicants last year. The overall admission rate therefore crept up one-tenth of a point, to 5.9 percent. **Stanford** apparently recorded the most punishing admission statistics, with a record 42,167 undergraduate applications (up 9 percent from the prior year) and 2,138 acceptances: a mere 5.1 percent. **Yale** admitted 6.3 percent of applicants, and **Princeton** 7.3 percent.

Miscellany. **Lane MacDonald** '88, recently appointed managing director for private equity at Harvard Management Company (HMC), which invests the endowment (see Brevia, January-February, page 30), departed in February to become director of the personal wealth-management firm for Fidelity Investments chairman **Edward C. Johnson III** '54. HMC announced that **Richard Hall** '90, who was most recently at the Teacher Retirement System of Texas, will assume the post….Penguin Books, India, has withdrawn from publication and pulped copies of *The Hindus: An Alternative History*, by **Wendy Doniger** '62, Ph.D. '69, Litt.D. '09, Eliade Distinguished Service Professor at the University of Chicago and a foremost scholar of Hinduism. In a *New York Times* essay, Doniger wrote of the decision, "My case has helped highlight the extent to which Hindu fundamentalists…now dominate the political discourse in India," an issue in the current national election campaign….The charitable foundation of **Sumner M. Redstone** '44, LL.B. '47, who recently gave $10 million to Harvard Law School, has donated $30 million to George Washington University's School of Public Health….**Stanford** has approved a new joint concentration in computer science and humanities, with either English or music tracks, similar to **Carnegie Mellon's** existing bachelor of computer sciences and arts degree, which links to architecture, art, design, drama, or music.

Photograph by Stephanie Mitchell/Harvard Public Affairs and Communications ern meanings into them. The multiple-choice assessments emphasize such close readings. But of course registrants are free, Reich said, to use the course for their own purposes, as "explorers" who sample the content, or as "certificate seekers." Registrants tended to be highly educated and older than typical undergraduates; if an instructor wanted to serve a different audience, he said, an online course design could be modified to appeal to other users.

The course data generally can be arrayed to show different levels of engagement and of performance, and different intensities of "meaningful learning experience," ranging from those explorers who dip in to the diligent users aiming for course completion and certification. From the user perspective, Reich said, that is a liberating feature of online courses: a learner can pursue a specific learning objective, and achieve it, without having to invest in a complete, formal course experience. He characterized this as a "voluntary, informal" learning environment, with students registering when they pleased and pursuing as much or little of the course as they liked, at their own pace.

The online format and technology clearly will enable much deeper research into learning and the effectiveness of diverse pedagogies, along the lines Reich outlined. That there will be ample opportunities for such work is evident, too. At the beginning of the symposium, vice provost for advances in learning Peter K. Bol, who oversees HarvardX (and who as Carswell professor of East Asian languages and civilizations co-teaches the HarvardX China course), indicated that the University plans to mount 20 online offerings per semester (including initial and repeated courses and shorter modules) for the foreseeable future.

HBX, the business school's online venture, unveiled March 21, represents a significant departure from the HarvardX MOOC model. Its courses—a suite of foundational business-skills offerings for undergraduates, non-business graduate and professional students, and people early in their careers; and specialized executive courses—are fee-based, and aimed at limited enrollments. Moreover, the school has built a proprietary technology platform to replicate key features of its case-based classroom pedagogy.

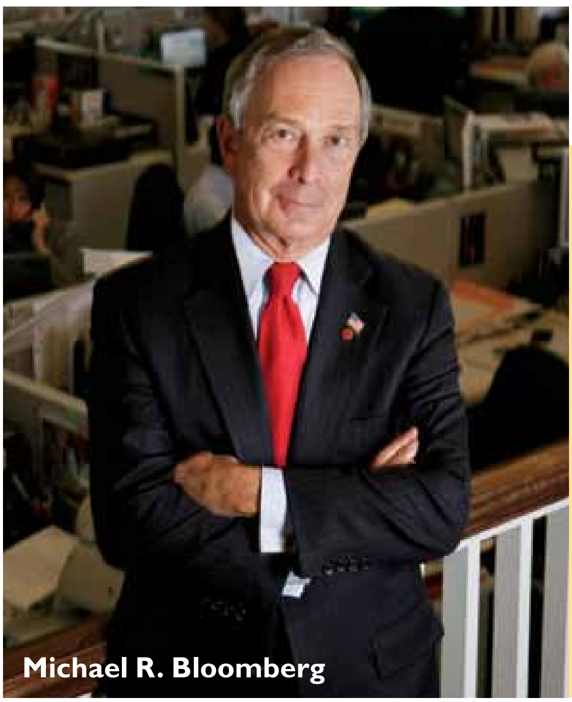
In late March, Coursera announced that Yale president emeritus Richard C. Levin would become chief executive, focusing on university partnerships, strategy, and international expansion, particularly in China, where he has been very active. edX subsequently reported that Wendy Cebula, former chief operating officer of Vistaprint, an online provider of printing and other services to business customers, would join as president, helping the organization with operations as it continues to scale up its staff and institutional membership.

Access the HarvardX research at http://harvardx.harvard.edu/harvardx-working-papers. A video recording of Reich's presentation is available at http://www.youtube.com/watch?v=Y8Bic69fS_Q&feature=youtu.be. For a full report on HBX, see **http://www.harvardmagazine.com/hbx-14**.

An E-Privacy Policy

A HARVARD TASK FORCE assigned by President Drew Faust to develop a University policy governing electronic communications released its recommendations in late February. Its work began in March 2013, following a controversy sparked by University administrators' decisions to access information about e-mails during an Administrative Board investigation into undergraduate academic misconduct (see "E-mail Imbroglio," May-June 2013, page 46). After disclosures that a senior administrator had authorized multiple searches that led information-technology personnel to access as many as 17,000 Harvard e-mail accounts to find a purported leak, Faust said the University had "highly inadequate" policies and processes in place for treating electronic communications properly.

The task force, chaired by David J. Barron, Green professor of public law, has recommended adoption of a single, comprehensive, University policy applicable "across all components, faculties and schools." The task-force report and draft recommendations were meant, it said, to "honor the University's commitment to


Michael R. Bloomberg

COURTESY OF MICHAEL R. BLOOMBERG

Mr. Speaker

Entrepreneur (Bloomberg L.P., the financial-information and news company), civic leader (three-time mayor of New York City), and philanthropist (including gifts of $1.1 billion to his alma mater, Johns Hopkins) Michael R. Bloomberg, M.B.A. '66, will be the principal speaker at the 363rd Commencement, on May 29. Born in Boston and raised in nearby Medford, Bloomberg returned to the area for his business degree—and has supported the Business School with a professorship and a gift for the renovated Baker Library|Bloomberg Center, both named in honor of his father, William Henry Bloomberg. He has spoken out nationally on issues such as gun control and public health; during his commencement address at Stanford last year ("no other university in the world has so profoundly shaped our modern age"), he advocated immigration reform, as a linchpin of economic growth, and same-sex marriage, as a basic civil right. Bloomberg will speak that afternoon, during Harvard Alumni Association's annual meeting, following the Morning Exercises.

STEPHANIE MITCHELL/HARVARD PUBLIC AFFAIRS AND COMMUNICATIONS

academic freedom and free inquiry while being sensitive to the University's administrative and operational needs." Accordingly, it said any search of electronic records should be governed by principles codified in these recommendations:

- Limited justifications for access: "Access to electronic information should be permitted only for a legitimate and important University purpose, as informed by the illustrative list of the limited purposes that have historically justified such access."
- High-level, accountable authorization: "In general, access to electronic information for reasons other than systems maintenance and protection should be undertaken by information-technology personnel only when specifically authorized by the head of the school or component of the University making the request, such as a dean of a faculty."
- Notice to users: "There should be a strong presumption that users should receive timely notice in any case in which access to their electronic information has been authorized."
- Minimization: "Access to electronic information, if authorized, should be undertaken in a narrow manner and pursuant to minimization rules and protocols that information-technology components have codified in advance."
- Record-keeping: "Written records of decisions to access electronic information should be prepared in a manner that permits subsequent review of such decisions."
- Independent oversight: "Decisions to authorize access to electronic information should be subject to periodic review by an oversight committee that includes faculty in order to ensure an independent set of 'eyes' also lends its perspective on any such decisions and on possible policy or process changes."

In outlining the kinds of legitimate access the University has exercised in the past five years, the report cites as one example "business continuity": the need, perhaps, to access important "financial information on the computer account of an individual who is not available." Academic-misconduct investigations, the report states, are another legitimate reason for accessing electronic communications, as are legal processes external to the University (such as a court-issued subpoena).

The report notes that there has been a shift in the capacity of institutions to access individuals' information as more people communicate and store data electronically. "In light of this reality," it states, "'privacy' does not exist in precisely the same way it once did. In the past, writing, conversing, and communicating did not inevitably and routinely entail that the contents of those communications or even related data might be available to anyone beyond intended recipients. Now it does. Thus, today, those who use University systems and devices often communicate in writing in a way that is extremely convenient but that unavoidably gives the University the potential capacity to access that information."

This "shift in practice," the task force declares, "does not mean access should always be permissible. In determining the appropriate rules for permitting access to this information, we must look beyond the fact that the University owns, provides, and/or administers the information systems and devices. Rather, the increased capacity for access heightens the need for policies and protocols that structure and constrain decisions about when and how such access may occur."

The policies, or some modified version, are likely to be formally adopted following a public comment period. For a complete report, see **http://www.harvardmagazine.com/policy-14.**

Undergraduate Aid and Campaign Milestones

Kenneth C. Griffin '89, founder and chief executive officer of the Citadel LLC, a multibillion-dollar, Chicago-based hedge-fund and financial-services enterprise, has given Harvard $150 million, principally for undergraduate financial aid, the University announced in February. That large gift, and others, helped The Harvard Campaign and its Faculty of Arts and Sciences (FAS) component achieve significant progress toward their overall goals in the months since their public launch announcements last autumn (see below).

In making his gift, the largest in College history, Griffin called it

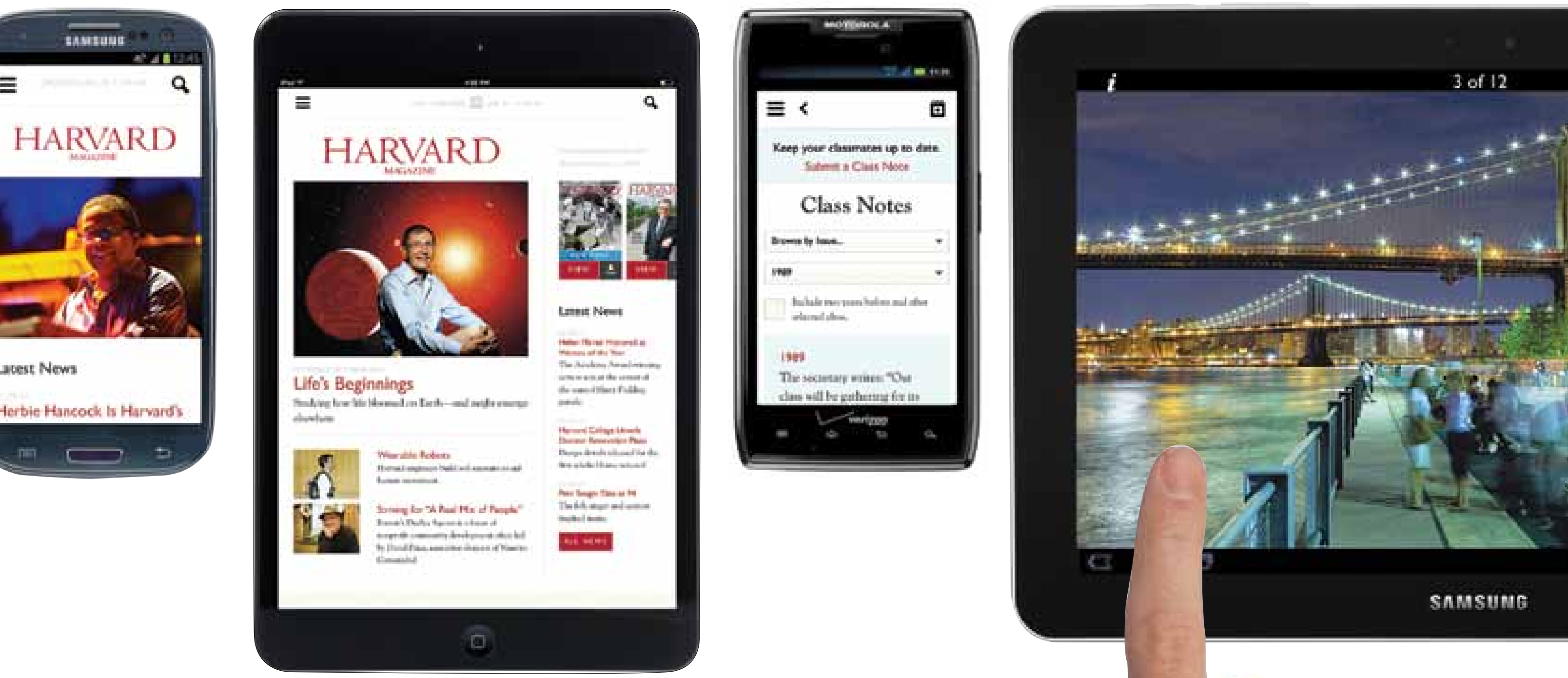
> extremely important that students of all backgrounds have the opportunity to challenge themselves, learn to solve complex problems, and ultimately better our world. My goal with this gift is to help ensure that Harvard's need-blind admission policy continues, and that our nation's best and brightest have continued access to this outstanding institution.

The gift:

- establishes 200 Griffin Scholarships (such financial-aid endowment scholarships are now available for donations of $250,000 each; that minimum is to rise to $500,000 in the fiscal year beginning July 1); and
- provides matching funds through the new Griffin Leadership Challenge Fund for Financial Aid for 600 new scholarships to encourage other donors to make commitments to the College's financial-aid program.

Depending on the matching formula and timing of gifts, the Griffin Scholarships, other donors' gifts (when received), and the matching funds provided by Griffin could collectively generate a significant portion of the Faculty of Arts and Sciences' (FAS) $600-million capital-campaign goal for undergraduate aid. (The only equivalently large FAS priority is its $600-million faculty-related target for endowed chairs, graduate-student fellowships, research support, and related purposes.) In acknowledgment, the College financial-aid office will be renamed the Griffin Financial Aid Office, led by the Griffin director of financial aid.

Introducing the



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A 2012 survey showed that more than three-quarters of the magazine's readers own a tablet or smartphone. The *Harvard Magazine* app supports iPads (version 2 and later), iPhones (4s and later), and iPod touch (4 and 5). Supported Android devices (on which Chrome is the recommended browser) include the Samsung S III and Motorola Droid Razr phones, as well as the Samsung Galaxy Tab 10.1. (The app may function on other devices, but those are not officially supported.)

Griffin's gift also includes $10 million to establish the Griffin professorship of business administration at Harvard Business School (from which his wife, Anne Dias Griffin, who runs a separate hedge fund, earned her M.B.A. in 1997).


Kenneth C. Griffin

PAUL ELLEDGE

FAS dean Michael D. Smith declared himself "absolutely bowled over by the generosity of Ken Griffin and his leadership to provide a truly transformational gift" for the top College priority in the capital campaign. During an interview last autumn, before the campaign launch, Smith said the aid budget had "never been put on the table" in the aftermath of the 2008-2009 financial crisis—even as the faculty's assets decreased by $5 billion and family need rose during the ensuing recession. But, as he said in an interview concerning Griffin's gift, he has worried continuously about "truly making our program sustainable," even at its current scale. In the statement announcing the gift, Smith declared that Griffin's philanthropic leadership "has set financial aid…on a lasting foundation," and his gift "will impact the lives of students and their families, now and for generations to come." For a complete report on the gift and its implications for FAS, see **http://www.harvardmagazine.com/aid-14.**

In other campaign-related news, the University disclosed that The Harvard Campaign has secured gifts and pledges of $900 million since last September, when it was launched with $2.8 billion in hand; that brings the proceeds to 57 percent of the $6.5-billion goal. And in a March 31 message to his faculty colleagues, Dean Michael D. Smith revealed that the $2.5-billion FAS campaign, unveiled in late October with $1.0 billion of gifts and pledges secured, had by the end of February raised an additional $300 million of commitments, bringing the fundraising drive to 52 percent of its target; he highlighted progress on priorities including funding faculty positions and scholarly initiatives, House renewal and other aspects of student life, and of course undergraduate financial aid. For a detailed report, see **http://www.harvardmag.com/campaign-14.** Harvard Divinity School launched its campaign as this issue went to press; for additional information, visit **http://harvardmagazine.com/topic/capital-campaign.**

THE UNDERGRADUATE

Word-upmanship

by NOAH PISNER '14

Lexiphane, *n.* |lɛkˈsɪfən| – Last week, I overheard one editor at the *Crimson* accuse another of being a lexiphane. The accused, quick to his wit, replied that to indict someone for lexiphanicism is the surest way to confirm one's hypocrisy. Meanwhile, I surreptitiously tapped the OED app on my iPhone to find out what all of this meant. *Lexiphane:* someone who fashions ostentatious exhibition of an eclectic vernacular via uttered or indited discernments declaimed sempre sans prudent jocosity, fatuous futility, sagacious garrulity, and sesquipedalian rodomontade to ingratiate some semblance of highfalutincy that resonates more as pleonastic philosophunculism than connatural erudition. *Lexiphane,* I read: "someone who shows off by using big words."

But I already had words to describe this kind of person: *prolix/digressive/loquacious/circuitous/periphrastic/circumlocutory.* Actually, *b.s.er* is probably the best synonym—it's a moniker just about any Harvard student will admit to affiliate with. Masses of Latinate and French words sift upon our facts when we speak, like parmesan on a pizza slice, obfuscating the topic, draping the details. Embedded in the language of the classroom are all the anxieties and social pressure we place upon ourselves as students. We tell ourselves that if we sound smarter, schmooze smarter, then we *are* smarter. When we do not know what to say in section, on an exam, in a paper, but feel compelled to say something anyway, we turn instinctively to long words and exhausted idioms. The problem, I'd speculate, is endemic to academia, to our professors whose job, an alien observer must think, is simply to invent new words for things we've already named. Indeed, to invent a phrase or coin some disciplinic terminology (I'm coining "disciplinic," by the way) is almost as much a rite of passage for scholars as is tenure. Very little art or effort is involved in this lexical invention, which, more often than not, simply entails the suffixation of an *-ism, -ic, -ent, -ium,* or *-ation*, or a combination thereof, to an old word (e.g., *boredismization*).

There's nothing inherently wrong with a lengthy or redundant word. No, the issue isn't the word, but rather it's how it's used. Once, in a seminar on Cold War art, a seemingly sheepish-looking student piped up about a recently screened film: "Though the demidocumentary's utilization of unruly display—parenthetical: cannons, fireworks, et cetera—is viscerally sensational, it fails, subjectively speaking, to arouse the amygdala." It was an Oscar-worthy performance, like watching Leo DiCaprio freeze to death in a kiddie pool. Of course, what he meant was that he thought the pyrotechnics were cool but didn't really add much to the drama.

Harvard is a place where excess language fills the void of ignorance. Walk into just about any section meeting and I guarantee you'll hear at least one of the following: *ne plus ultra, problematize, preternatural, diaspora, hagiography, antipodal.* We all do it (myself included, obviously). Just as we slip into suit and tie for our interviews, we dress up our language, too. It's expected: you may wear what you like linguistically in your dorm room or with friends, but it's only considerate, in academic settings, to smarten up your language: to be a lexiphane.

We waste words here; we toss around *sesquipedalian, animadversion,* and *pulchritudinous.* When used for aural appeal, pun, rhyme, rhythm, assonance, alliteration, or intended excess the use is justified. But more often than not, none of these apply. I've heard students use *tendentious* for *biased,* or *lacuna* for *gap.* Worse yet, I've had classmates who think catch-alls like *Foucauldian* and *globalization* are always applicable and sometimes interchangeable. It's pomp, dressing, self-flattery. Not an effort to be obscure, but one to be unclear.

When I began college, I aimed to add a new word to my vocabulary every day. It took at least a year before I realized that most of the words I was adding were simply clutter. I decided I would instead attempt to eliminate one word from my vocabulary every day. Not vital words, mind you, not those without synonym (*ersatz*) or those of particular association (*ligan*)—a favorite professor once said to me, "If you lose something's word, you forget that at one time it was important enough to have a word associated with it"—but rather those that signify nothing other than intoned pretention. What follows are five more useless words I learned at Harvard, words I have tried—but failed miserably—to forget.

Ivoriate, *v.* |ˈaɪvərɪˈeɪt| – Why was I shopping a Bronze Age archaeology seminar my first semester at Harvard? I don't really remember. I had probably just followed an older, attractive female grad student through the Peabody….Anyway, there I was, learning about my Greco-Roman blind spots from an anthropology professor, as the oldest teaching fellow I'd ever seen clicked through a manual slide show of various clay containers set against white backdrops. Pots, pots, pots slid across the slides. Disinterested and disengaged, I waited for the first hour to be over before trying to leave. That's one of those unspoken rules for shopping seminars in shopping week. I knew it. My peers knew it. The septuagenarian with clicker knew it. And yet, as I stood up, the professor, breaking custom, turned to me, grimaced, and said, "The *xoana* are up next." I wasn't sure what to do so I stood by the door as the TF clicked to another slide, revealing a gold-plated plank set atop a pedestal. "A *xoanon,*" the professor continued, "was an early idol of a god—planks to begin with, but as men became more prideful, they metallicized and ivoriated them…." *Ivoriate?* I thought to myself. *Does he mean "to cover in ivory"?* Sure enough, the next slide was an ivory-plated statue. *Well okay then.* I had had enough. The professor ended by talking about anthropomorphism, about an epoch of primitivity wrecked by vainglory and superciliousness. After an hour, my legs sore, I left.

Desideratum, *n.* |dɪˌsɪdəˈreɪtəm| – "Let's look at your desiderata," said the interviewer as I hunched in a chair. "We're looking for a candidate with integrity and a good knowledge of HTML." I thought, for a moment, about how best to respond. "But in fact," he went on, "HTML is vital."

Overwrought, *adj.* |ˈoʊvə(r)ˈrɔt| – One of the very first short stories I ever wrote was about a boy on the bank of a lake who laments his lost youth and then gets into a fight with a prehistoric fish. I took the story to my fiction-writing class, where a fellow student began our discussion of it by saying, "It's lovely writing, but the concept is a bit *overwrought.*" Her well-meant intent was to soften the curse of calling it clichéd. The problem was that overwrought became the signifier of cliché in any of our work thereafter. "The dream component is rather overwrought," someone would say. "Are you *overwrought* to be ironic?" another would ask. I love my classmates for their sensitivity and encouragement, but I hate *overwrought.*

Anagnorisis, *n.* |ænəgˈnɒrɪsɪs| – I have a friend who tells me she's been waiting for *anagnorisis.* She tells me that's what she originally thought college was for—as Aristotle defined it in *Poetics:* "A change from ignorance to knowledge, producing love or hate between the persons destined by the poet for good or bad fortune." She tells me now that she's not so sure that's what she means, but that she'll use the word anyway because she hasn't found one closer to what she does mean. "I'm waiting for something like anagnorisis,"

Illustration by Brucie Rosch

she says. "That undiscoverable moment of discovery, I guess." When she first told me this, we were sipping coffee in the Lowell House courtyard, which we've been doing recently at the end of especially stressful days. "What are you waiting for?" she asked. I had thought about it, of course, and so I told her quite candidly: "For me, it's kind of like opening a closed door. It's got nothing to do with what's behind a door, it's just the opening of a door itself, the motion." I told her it was like that moment right before you eat really warm pie, or when you let up on your brakes when riding your bike down a hill.

"It's the moment right before the door opens," I said.

"That's it," she said. "That's what I mean by *anagnorisis!*"

Acropodium, *n.* |ˈækroʊˈpoʊdiəm| – There is a man down Brattle Street who pretends to be a statue. I've seen him when I go running. He dresses up like a Revolutionary War soldier, paints himself silver, stands stock still on top of a rectangular box, watches admirers gather around, and hopes they throw a few coins into his cup. Recently I've started to wonder what would happen if, seeking even more coins and more admirers, he practices standing still longer and longer until one day he stands perfectly still—and no one notices him.

The worry hangs about me most days like flies on a horse, but especially so now, thinking as I have been about those xoana I heard about in that archaeology class. As I read later, they were simple wooden idols that the Greeks gradually began to re-sculpt into humanoid forms until the beautiful wood structures underneath were all but forgotten. To be plank-like isn't enough, it turns out. Simplicity is demanded, but immediately forgotten. A xoanon can no longer be a plank; the statue man can no longer be still. Our language mustn't be ours.

In the first draft of this column, I included the statue man under *ivoriate.* I showed that draft to my roommate. "Don't say *rectangular box,*" he said. "Say *acropodium.*"

Berta Greenwald Ledecky Undergraduate Fellow Noah Pisner '14 recently finished his senior thesis, in which he used enumerate *39 times.*

SPORTS

Speed to the Maks

Distance runner Maksim Korolev's record-breaking year

When cross-country star Maksim Korolev '14 was a sophomore, he read a *Crimson* article in which basketball star Keith Wright '12 explained why he'd picked Harvard, which had never won an Ivy title, over perennial powerhouse Princeton. When a Princeton coach urged Wright to go there, citing the Tigers' rich basketball history, Wright replied, "I don't want to be part of history. I want to *make* history."

That declaration mirrored Korolev's own reasoning. "I really liked [it]," the heavily recruited Missouri all-state runner says now. "And Harvard cross-country and track were real underdogs. Cross-country had been getting very poor results. But they were starting to come around." For example, Dan Chenoweth '11 (see "Hotfoot," November-December 2010, page 69) had just captured Harvard's first Ivy League cross-country championship in 15 years. "I was excited to be part of that," Korolev explains.

"Maks," as his teammates call him, has not only been part of that turnaround but has made some history of his own. Last fall, the Crimson qualified to compete at the NCAA cross-country championships for the first time in 35 years. Korolev finished third overall with a time of 29:59.5 over the 10-kilometer course, the highest such finish in Harvard history. He'd earlier posted an Ivy record time at the fall Heptagonals while winning the conference title on an 8K course.

Indoors, at the Terrier Invitational in Boston in January, Korolev ran the 5K in 13:42.56, shattering the Crimson record of 13:59.35 by nearly 17 seconds.

Maksim Korolev running last fall in the NCAA Cross-Country Regionals at Van Cortlandt Park in the Bronx.

Photograph by Tim O'Dowd

His time was a new Ivy record, more than three seconds below the standard set by Olympian Donn Cabral of Princeton. Then in February, at the Boston University Valentine's Invitational, Korolev won the 3K run by 0.5 seconds in a time of 7:51.52. That lowered the Harvard record by six seconds, and also set a new Ivy mark. At the indoor NCAA Championships at Albuquerque in March, he placed thirteenth in the nation in the 5K, and fourteenth in the 3K, becoming a Second Team All-American.

Meanwhile, the team as a whole has been coming together and achieving the kind of success Korolev anticipated as a freshman. In March, at this year's Heptagonal meet (which decides the Ivy indoor track championship), Harvard's women finished first and the men's team third, making the Crimson the league's best combined track-and-field squad. In a photo finish there, Korolev came in second in the 5K, only 0.16 seconds behind his training partner James Leakos '14, who won in 13:58.67.

Leakos and Korolev like to run together on Sundays, traversing 18 miles, often around Walden Pond in Concord, where exposed roots and uneven dirt terrain offer useful practice in agility, keeping your balance, and staying aware of the footing. Korolev typically trains about 100 miles weekly; head track coach Jason Saretsky forbids him to run more, so Korolev has added some cycling to his regime. "One of the most important things is being consistent," he says. "You want to train every day and not get injured. Running injuries are usually from repetitive stress, so I run on dirt whenever possible. There's less impact than on pavement." He trains year-round, taking a week off around Thanksgiving after cross-country season, and two weeks off in the summer. Since the thousands of impacts are hard on the body, Korolev tries to sleep eight to 10 hours a night to recover. In this, he is going against the grain: "The mentality at Harvard," he says, "is to get four hours of sleep a night, and try to do too many things throughout the day."

Distance runners aren't known for towering height, and at six feet, five inches, Korolev is one of the taller ones. He might have good running genes. Born in Kazakhstan, he is half Russian and half Tatar. On a trip to the old country he took runs with his biological father (his parents divorced when he was two), and found that the older man, with no training at all, could run for an hour alongside him, if not at "Maks" pace. At 160 pounds or less, Korolev himself has minimal bulk to transport; less body weight also softens the physical impact of each footfall.

Korolev came to the United States at age seven with his mother, who sought better opportunities here. They settled in Harrisonville, Missouri, where the boy enjoyed playing soccer. In seventh grade he heard about a sport called cross-country, where "you just run," he recalls. "For some reason that sounded like fun to me."

He spoke only Russian until arriving in America, but forgot it all to learn English; Harvard courses have helped him recover much of his first language. Korolev concentrates in human developmental and regenerative biology; he's been interested in the aging process since high school. He took computer science at Harvard, and likes technology and "tech stuff"; next year he will enroll in an M.S. program at Stanford in management science and engineering (a "techie M.B.A.," he calls it). "I respect Apple," he notes, "but I like Android a bit more." Even more than that, he likes making history. ~CRAIG LAMBERT

Roundball Royalty

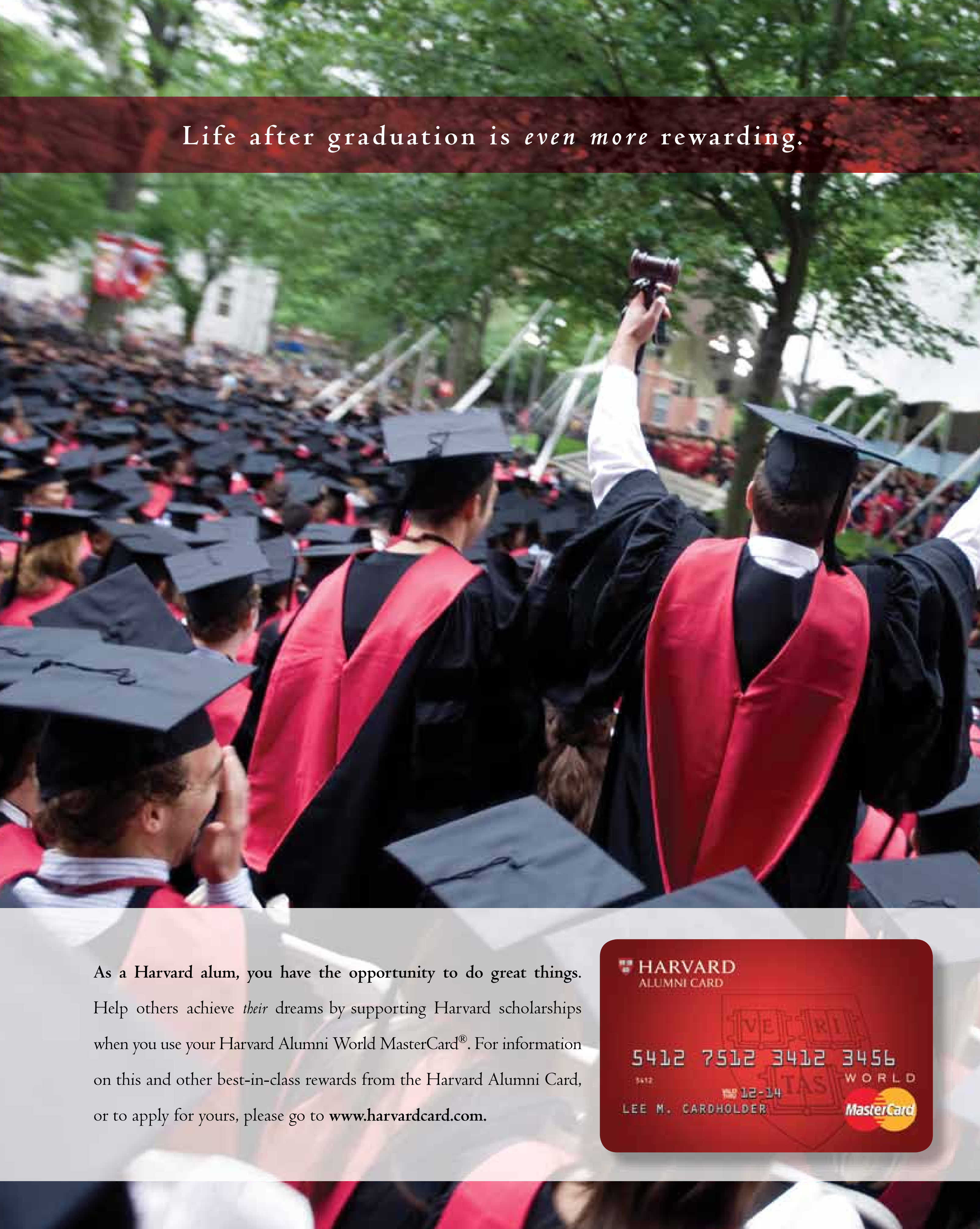
Tommy Amaker

JON CHASE/HARVARD PUBLIC AFFAIRS AND COMMUNICATIONS

Five seasons ago, Harvard had never won an Ivy basketball championship. Now it has captured four in a row and to all appearances is becoming a national hoops power. Returning to the NCAA tournament after their first win at the "dance" last spring, the twelfth-seeded Crimson upset fifth-seeded Cincinnati, 61-57, in their initial game. Next they faced Michigan State, a heavy favorite ranked first in the country early in the year and picked by many to win the whole tournament. But Harvard astounded the basketball-savvy crowd in Spokane with a stunning 29-11 run in the second half. Facing a daunting 16-point deficit early in the stanza, the Crimson took a 62-60 lead with 7:12 to play, bringing the arena to a frenzy. Ultimately, the Spartans found enough counters in the closing minutes to pull out a 80-73 victory. (More details are available at http://harvardmag.com/ncaa-14.)

"I can't say enough about our team and the effort and the guts that they showed in the second half to make a run, to take the lead, to play with so much composure and fight," Harvard coach Tommy Amaker declared in a *New York Times* report. "I was so proud to see that happen." Clark Kellogg, the lead college basketball analyst for CBS, which aired the game, said, "I am really impressed with the Crimson. Harvard played with the kind of tenacity you may not expect from an Ivy League team." And one veteran observer of Crimson athletics, former *Sports Illustrated* editor Dick Friedman '73, declared it "the best loss in Harvard sports history. Sometimes defeat makes you prouder than many victories. Tonight was one of those nights."

Amaker, who has spearheaded the spectacular turnaround in Crimson basketball fortunes, was in the news for another reason as the tournament unfolded. The firing of Boston College's head coach instantly triggered media speculation that Amaker would leave Harvard after his seven seasons at the helm to take over the floundering program across town—no doubt with a drastically enlarged salary and the big-time challenge of Atlantic Coast Conference competition. Instead, Amaker surprised many by electing to stay with the Crimson. "After thoughtful deliberation, I continue to realize my heart is at Harvard," he declared. "To teach, lead, and serve at this amazing institution, and in this special community, is truly meaningful to me."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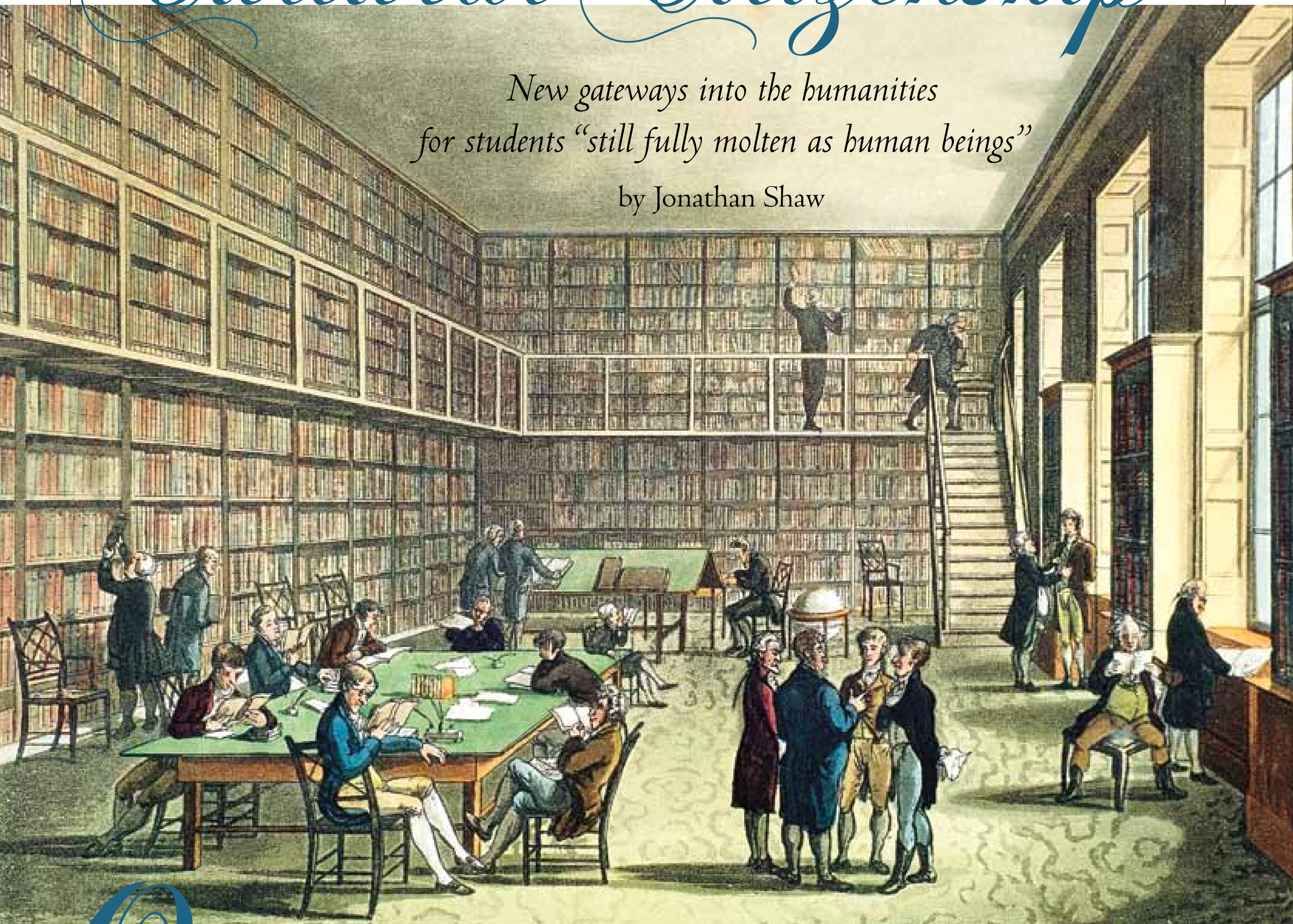
Toward Cultural Citizenship

New gateways into the humanities for students "still fully molten as human beings"

by Jonathan Shaw



Thomas Rowlandson's view of the library of the Royal Institution in London, circa 1810

CORBIS IMAGES

One day in the early spring of 2013, Alexander Rehding asked the students in his graduate seminar to join him in experiencing the sound of silence. As he led them through an exercise in deep listening, the students sat quietly for 15 minutes, becoming calm, and bending their attention to the sounds around them. "Over time, your listening experience fundamentally changes," the Peabody professor of music said later. "You become much more attuned to the very quiet background noises that we normally just ignore. Many of the students report that, after a while, they stop trying to identify what the sounds are and where they are coming from. The sounds surround us, and everything becomes musical in a way."

Rehding hoped to learn whether this exercise in sonic awareness (inspired by American composer Pauline Oliveros, a visiting artist at Harvard in 2012) might prove useful in teaching undergraduates as part of a new course, "The Art of Listening," to be offered for the first time that fall. There is always a risk, says Rehding, that pedagogical experimentation "[can] fall flat on its face. But it didn't." The students found it meaningful, and for Rehding himself—who aims to make his students more active and critical listeners—it was a novel listening experience, too.

The course is one of a trio—in the arts of listening, looking, and reading—designed to attract freshmen and sophomores to the humanities concentrations, which are losing students rapidly. Together with two small, hands-on studio courses that focus on museum and library collections—those laboratories of the humanities—and an expanded, year-long general-education course that introduces students to select works of Western literature and philosophy, they are the outcome of the Humanities Project, a general rethinking of the division's curriculum carried out by more than 40 faculty members (see "Invigorating the Humanities," September-October 2013, page 54).

The decline in student interest is recent, and particularly affects elite institutions like Harvard, Yale, and Stanford, says Bass professor of English Louis Menand. (His 2008 lectures at the University of Virginia, collected in *The Marketplace of Ideas*, trace the long-term *national* decline in the humanities since the early 1970s.) The current crisis is "continuous with that [national] story" of polarizing and contentious philosophical debates about the legitimacy of various subjects and approaches, but those conflicts, he says, "were never accompanied by a huge flight of students." Now, "the numbers are a little alarming. From 2006 to 2012 we had a 35 percent drop in concentrators in English. I think history has also had a fairly dramatic drop. And when sophomores signed up for concentrations last fall, almost *every* department in the arts and humanities was down—some by a lot." In five departments, there were fewer than half as many concentrators as among the previous class.

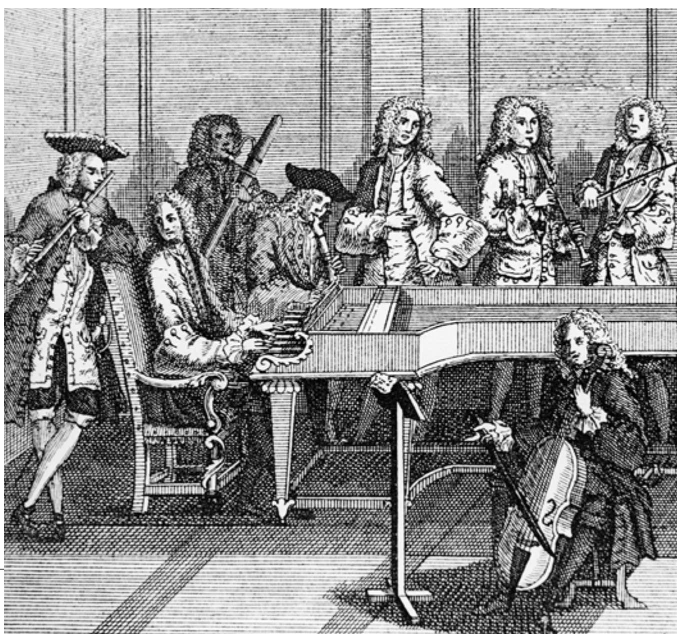
The reasons for waning student interest are not entirely clear. *The Teaching of the Arts and Humanities at Harvard College: Mapping the Future*, a report of the Humanities Project published in the spring of 2013 that included a quantitative study of the problem, revealed a 50 percent attrition rate among Harvard students who as prefreshmen had expressed an intention to concentrate in the humanities. Most of those students defect to social sciences such as economics, government, and psychology. Menand believes that this trend is partly attributable to "what has become a kind of general conventional wisdom: that the humanities don't offer people much that is practical in way of a career. And that is a little scary." But because this has all happened since the recession, he says, "The hope is that these choices are tied to the economy," and that with rising prosperity, interest will rebound.

But clearly other forces are at work, too, such as rising student interest in entrepreneurship, and in coursework that directly relates to, or even engages with, important social problems. Cogan University Professor Stephen Greenblatt says that among undergraduates (and their parents and advisers), "There is a perception that the humanities are not as trustworthy a launching pad as in the past. There is considerable real-world evidence that this is not true, but—as with recessions and the economy—the perception is as important a fact on the ground as the reality." Greenblatt was recently talking with Tiampo professor of business administration Ranjay Gulati about the ways in which Harvard Business School uses stories—their famous case studies—to train managers. "Figuring out the threads in these stories and why people behave the way they do has been the subject of literature for the last several thousand years, so it's entirely relevant," he points out. "The public perception that there is a huge gap between what it is to be gung-ho for business and what it is to study literature is just absurd. They are deeply integrated, speaking to this particular moment we are in and the anxieties it triggers."

"Professors in the humanities are struggling with how to integrate the study the *we* really value with the world that our undergraduates inhabit"—a world of smartphones, texting, Twitter, and Facebook.

Against this backdrop, arts and humanities dean Diana Sorensen and Mahindra Humanities Center director Homi Bhabha conceived of the three foundational "frameworks" courses in the arts of listening, looking, and reading as "a positive bulwark," says Bhabha, "a platform to try and address the problem." The two new studio courses are under way this spring, and the relaunched, expanded general-education course, taught by Menand and Greenblatt, will debut this fall. Sorensen, who is Rothenberg professor of Romance languages and literatures and of comparative literature, says the new framework and studio courses aim to introduce students to the interpretive skills that are the hallmark of the humanities by developing habits of mind: the sense of how to reason rigorously, the means to express ideas in a compelling way, and the ability to write well. All of them depart in interesting ways from the traditional lecture course.

Bhabha, the Rothenberg professor of the humanities, who is teaching "The Art of Reading" this spring with Marquand professor of English Peter Sacks, asserts that the humanities are "the *preeminent* sciences of interpretation." Whether assessing linguistic, aural, or visual evidence, "the humanities through literature, the classics, modern languages, [or]…philosophy" use interpretation to create a "whole world of associations, contexts, significations, and values." Interpretation, he stresses, is therefore an activity that through the exercise of judgment about important works (of art, literature, music, sculpture, architecture, etc.) "creates social and cultural values. And therefore, the humanities help us to become…



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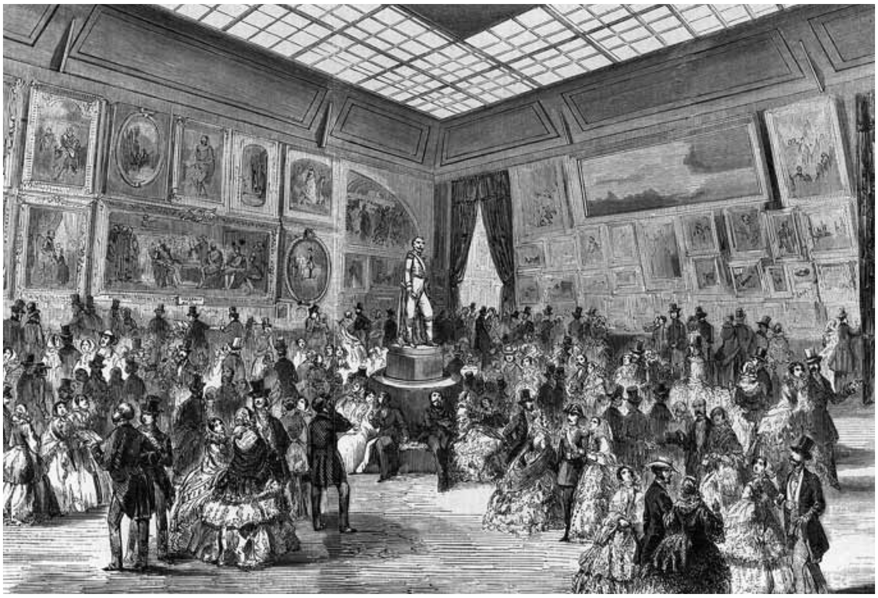
Anonymous print of a chamber music ensemble at the time of Johann Sebastian Bach not just political citizens, not social citizens, not citizens in a legal sense, but *cultural* citizens. *That* is the real force of the humanities."

Humanistic interpretation also plays an important role in coping with the outpouring of information from the digital world, Bhabha says. "As we teach our students how to interpret, that allows the flood of facts and information to be turned into knowledge. *Interpretation* is the mediating force that winnows through all the information" to produce and categorize knowledge.

In their frameworks course, first taught as a graduate seminar last year, Bhabha and Sacks introduce students to four modes of reading: literary, historical, social, and digital. In literature, Bhabha explains, the texts may be fiction, but they relate to historical, ethical, moral, and psychological issues, often developing great symbolic presence. The students who read Joseph Conrad, for example, are learning to interpret by engaging with works in which "the central characters, like Marlow in *Lord Jim,* are themselves involved in the practice of learning to read a situation."



Similarly, in reading history, the students are asked to consider how historians interpret or judge an event. This leads in turn to considerations of how the humanities engage with the past, present, and future, says Bhabha—whether by assigning values to memory and traditions that help us interpret or judge in the present, or by projecting our values into the future as aspirations for the planet, the race, the nation, or the community.

"Reading the social" focuses on the literature of 9/11, including the W. H. Auden poem "September 1, 1939" ("much requested" in the bombing's aftermath, says Bhabha). And in the fourth mode—reading technologies—students consider the blog of an Iraqi girl, assuming the point of view of both author and audience, as well as other new forms of digital expression, such as Twitter, with its imposed limit of 140 characters.

What the "Art of Reading" further teaches, beyond the subject matter and broadly applicable skills of interpretation, is *self-awareness* on the part of the students, Bhabha says: that ability to think about their own role and responsibilities as readers. "Self-reflection…is now structurally part of the course. And that is a different approach. Our hope is that…will help students to have that kind of self-awareness in their other choices, and in their other courses."

Self-awareness is an important element of all the frameworks courses. Rehding's "Art of Listening" course, which he co-teaches with professor of comparative literature John Hamilton, pairs important canonical works relating to sound, such as Wagner's essay "The Virtuoso and the Artist," with hands-on assignments that train the students to become more active and critical listeners. They learn about the components of sound and how to manipulate them with editing tools, create a soundtrack for a silent film, and map the sounds of Harvard and its environs. (In parallel with the development of the course, Rehding applied for a Harvard Initiative for Learning and Teaching grant that allowed him to install a sound lab in the music library.) Students also explore the ethical, psychological, and emotional dimensions of sound: Plato, in an extreme example, banned certain types of music from his ideal state because they were thought "inappropriate to creating good citizens." The students make a mix tape (and learn about the ancient analog technologies that their parents used for recording sound) and study the mechanics of the ear, and how it mediates what humans hear. And they explore the relationship between sound and memory, in part, by memorizing a poem and learning about the use of epithets and melody as mnemonic devices during a visit to Harvard's Milman Parry archive of oral literature, which preserves (in its recordings of South Slavic heroic songs that resemble ancient Greek epics) examples of some of the greatest human feats of memorization known.

"The purpose is to draw attention to the sonic dimension of many activities that people engage in," Rehding says. "I find this mixture of fairly challenging and historically important texts—a beauty parade of Western intellectual history from Plato via Rousseau and Nietzsche to contemporary thinkers—paired with practical exercises, assignments, and engagement with sound in immediate ways, very attractive." The hope is that students will, too. Many undergraduates already choose music as a secondary field, Rehding notes, but the course may persuade them to "concentrate in one of the existing disciplines within the humanities" by providing "a taste of what we do and providing them with useful tools that are applicable in a number of different contexts."

Burden professor of photography Robin Kelsey, who chairs the department of history of art and architecture, says that one aim of the frameworks courses is to give undergraduates a clear gateway into the humanities. Survey courses once did that, but "in a moment of questioning authority and 'meta-narrative,' [they] tended to fall by the wayside," he says. As a consequence, "There has been a concern among some of us that the humanities curriculum for undergraduates at Harvard has too often these days seemed like a smorgasbord,…without any clear sign as to where one might start if one was unfamiliar with humanistic inquiry." Now, faculty members "are trying to find a way to give a kind of cohesive introduction that avoids the perhaps excessive ethnocentrism of the old survey" while providing "a kind of transparent and reasonable progression in terms of developing expertise in humanistic inquiry."

Kelsey taught "The Art of Looking" this past fall with Jennifer L. Roberts, professor of history of art and architecture (and chair of American Studies). Their course uses historic and contemporary examples of visual technologies such as the map, the telescope, the

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An engraving of artworks displayed at the Salon of 1857, held at the Palais de l'Industrie in Paris

impressed by the ingenuity with which the students approached that and other assignments." Listening to their discussions, he thought, "Someone from Silicon Valley could be overhearing this and thinking that here is their next $100-million company. It's impressive to see what the students can do when they are given a creative assignment that appeals to their entrepreneurial impulses."

THE FRAMEWORKS COURSES are just one way that Diana Sorensen hopes to draw students into the humanities. The new, yearlong, introductory course for would-be humanities concentrators to be offered this fall by Stephen Greenblatt and Louis Menand is another. Disciplines such as computer science, the life sciences, and economics stage large courses that "draw freshmen who hear their peers talking about them," says Menand, whereas "we haven't had such a thing in the humanities" since the demise of survey courses (see "Yearning for Big Humanities," January-February 2005, page 72).

daguerreotype, and the television not only to teach students about the ways these tools have "framed our understanding of the world, often in ways that we aren't conscious of," but also to "hone skills of visual, material, and spatial analysis through encounters with aesthetic objects from Harvard collections."

Kelsey says that "professors in the humanities are struggling with how to integrate the study that *we* really value with the world that our undergraduates inhabit"—a world of smartphones, texting, Twitter, and Facebook. The key, he thinks, is to find a way to give assignments "that feel relevant and at the same time develop those thinking skills, those looking skills, that critical acumen that we have always wanted to provide to students in the humanities and that remain exceedingly important to being a citizen and an educated person."

Roberts, who teaches students to engage in deep-looking (see "The Power of Patience," November-December 2013, page 40), begins the course with a lecture on the world map. Kelsey suggests it is "eye-opening for students to learn" that the maps they find on Google Earth are "based on the Mercator projection, which was created for navigational purposes" in the sixteenth century and distorts the world (as all maps do) in specific ways. For example, it specifies North as up—with wide-ranging consequences—and grossly distorts land area so that high-latitude countries like Greenland appear nearly as large as the African continent. "One can't imagine an equatorial nation coming up with a system like that," Kelsey notes wryly.

One subject he covered was the daguerreotype, those silvery little nineteenth-century portraits under glass, often in velvet-lined, engraved leather cases (see "From Daguerreotype to Photoshop," January-February 2009, page 42). "The origin of the idea behind the course, actually, was in the correspondence between the experience of looking at a smartphone and looking at a daguerreotype," he reports. (Of course, he adds, "you only get the one image" with a daguerreotype, but he found it fun to introduce the subject in that fashion.)

Taking this conceit one step further, a course assignment challenges students to "conceptually design" a filter or app that will produce an image that *looks* like a daguerreotype. That requires them "to think analytically about how the daguerreotype processes visual information: its reflective qualities, its conversion of the world to a monochromatic visual field," Kelsey says. He was "very

This revamped humanities offering expands the existing and very popular English 110, "An Introductory Humanities Colloquium," which covers important works of Western literature and philosophy. It will start in the ancient world, with Homer's *Odyssey,* and follow an arc focused on themes of love and self through Dante and Montaigne to Shakespeare, to Mozart's *Don Giovanni*, and on to James Joyce's twentieth-century *Ulysses.* The second half of the course will address themes of war and politics, working backward from Tolstoy's *War and Peace* to the *Iliad.*

"As [the undergraduates] read more and more," says Sorensen, "they understand allusions, references, and echoes, and start to think of culture as a dense conversation through time." Students "derive a lot of pleasure from being able to be part of that conversation." Menand and fellow Pulitzer Prize-winner Greenblatt (the authors, respectively, of *The Metaphysical Club* and *Swerve,* both organized around such "conversations" and written for general audiences) head the course, but half a dozen or more faculty colleagues will join them to lead sections.

"Students coming to Harvard rightly feel that they should grapple with those books and other cultural objects—paintings, sculpture, music—that will be important to them for their whole lives," says Greenblatt. He calls liberal-arts education "one of the great things that we at Harvard and in the United States collectively have created," because it arrives at a moment in late adolescence when students can "explore lots of things while they are still fully molten as human beings"—subjects that will help them build a meaningful life. "When you open a book that was written centuries ago by someone who couldn't possibly have known you, or anything about your life, and discover that it seems to have been written for you, that's an amazing experience." The realization that humans have been grappling with issues like love for a long time creates a sense of community, he says, "as when you learn a foreign language and, instead of a babble of voices you don't understand, you suddenly hear what the conversation is around you."

"The best thing we can do," says Menand, "is to have students encounter these famous works in fresh ways. We teach Dante, Homer, Proust, Nietzsche, Rousseau, Sophocles. To cover all that [within

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Raphael's famous painting of the School of Athens, with Plato and Aristotle at its center individual disciplines], you would have to take six courses. From a scholarly point of view, that's a little bit of a scandal, but really, what are we talking about? We're getting 18-year-olds to read Dante."

"Can that compete with student perceptions of exciting and successful lives in the financial industry, or the allure of launching a startup? We don't have a huge amount of career-specific knowledge to offer that student," Menand admits. But there *is* abundant innovation in the humanities, including experimentation with entrepreneurial work.

This spring, the initiative's two new studio classes are offering students the opportunity for hands-on engagement in creative scholarship under the direction of professor of Romance languages and literatures Jeffrey Schnapp, faculty director of Harvard's metaLAB, a center for research and teaching that focuses on networked culture in the arts and humanities (see "The Humanities, Digitized," May-June 2012, page 40). "The challenge," Schnapp says, "is to couple the humanities content to questions that engage students and that shape skills that make sense to them in the environment they operate in. Using video, for example, to make a compelling argument—that's an arrow you might want to have in your quiver alongside expository prose and critical thinking skills."

Schnapp points to seismic shifts within the humanities, such as the erosion of the traditional system of knowledge distribution that included scholarly monographs and books published by university presses, as harbingers of deep change. The idea of what it is to be "a scholar, an author, an intellectual, a teacher, is changing," he says, "and this is chipping away at comfortable boundary lines, including those of the university itself," which increasingly can "reflect only a small part of the world of possible knowledge." Even within universities, formerly distinct areas—the library, the museum, the classroom, the laboratory—are becoming "increasingly interconnected and porous," he points out. Schnapp is optimistic about the future of the humanities; he thinks the changes happening now are part of a revolution, a "participatory turn in culture," that is, in part, about entrepreneurship and invention.

His studio courses therefore frame a pedagogical experience focused on a research question that presupposes disciplinary and technological skill-based expertise (on the part of the professor and others); they are small master classes in which the students learn by doing. The undergraduates immediately discover "how difficult real scholarship is, but in a supportive environment," he says. "At the end, they deliver something, whether it is a book, an exhibition in a museum, or a website." With the assistance of experienced sound and video producers, students in "Cold Storage" are documenting the workings of the Harvard Depository, the suburban storage facility for a vast and growing proportion of Harvard's library books (see "Gutenberg 2.0," May-June 2010, page 36). The work will include "short interviews with the personnel, who will tell us how they work in a complex ballet with machines and movable shelving structures." Students will thus create an ethnography, says Schnapp: "a complex, multilayered portrait of the place," for publication of a web documentary that will be organized around a floor plan of the facility. Students will also participate in the development and production of a more conventional 25-minute film that reworks and remixes the classic 1956 documentary by Alain Resnais about the national library of France, *Toute la mémoire du monde.*

The other studio course focuses on the late Bernard Berenson's collection of 17,000 photographs of missing works of Italian Renaissance art. A project called Curarium (www.curarium.com) is hosting these images along with their metadata (see "Why 'Big Data' Is a Big Deal," March-April, page 30) in a format that allows scholars like Schnapp to teach, interpret, tell stories, and ask questions about them. The course is essentially a studio in digital curatorial practice. Schnapp aims to get students engaged in thinking about what it means to make choices about a series of objects: how to show relationships and to reason and make arguments in multiple media. He hopes that such courses will "develop a generation of humanists who have a rich sense of possibility in terms of how traditional forms of scholarship could connect to more public-facing forms of cultural work, such as exhibitions or websites."

Rehding calls the decision to develop these new humanities courses "an enormously courageous thing": "Harvard is doing the right thing and hopefully setting a new model for what the humanities can be." What remains to be seen is whether *students* can be convinced that culture is much more than "a sweet rhetorical effusion, an art of using words to bear witness to a transient moistening of the soul" (to quote essayist Roland Barthes in a text from "The Art of Reading"), but is in fact the embodiment of fundamental human values—and thus worthy of focused study.

Liberal-arts education is "one of the great things that we at Harvard and in the United States collectively have created," because it arrives at a moment in late adolescence when students can "explore lots of things while they are still fully molten as human beings…."

During a symposium on the humanities convened at the University last year, Harvard Corporation member and former Tufts president Lawrence Bacow said "We have done our students a disservice when we have failed to help them understand that their careers are not defined by what they major in in college." When executives are hiring, he pointed out, they "look for critical thinkers, candidates with a basic understanding of culture, and people who can work in diverse environments, and who appreciate the larger world." Citing debates over the federal deficit and the global climate crisis, Bacow said that they are, at their core, not about science or engineering but rather "the responsibilities of one generation towards future generations," a subject about which "philosophers have a lot to say." "The most fundamental issues that we are facing as a society in some ways can never be answered by scientists, or by social scientists," he emphasized. "But, in fact, the conversation *can* certainly be elevated by humanists."

Jonathan Shaw '89 is managing editor of this magazine.

Less than a century ago, the age-old evolutionary relationship between humans and microbes was transformed not by a gene, but by an idea. The antibiotic revolution inaugurated the era of modern medicine, trivializing once-deadly infections and paving the way for medical breakthroughs: organ transplants and chemotherapy would be impossible without the ability to eliminate harmful bacteria seemingly at will.

But perhaps every revolution contains the seeds for its own undoing, and antibiotics are no exception: *antibiotic resistance*—the rise of bacteria impervious to the new "cure"—has followed hard on the heels of each miracle drug. Recently, signs have arisen that the ancient relationship between humans and bacteria is ripe for another change. New drugs are scarce, but resistant bacteria are plentiful. Every year, in the United States alone, they cause two million serious illnesses and 23,000 deaths, reflected in an estimated $20 billion in additional medical costs. "For a long time, there have been newspaper stories and covers of magazines that talked about 'The end of antibiotics, *question mark*,'" said one official from the Centers for Disease Control and Prevention (CDC) on PBS's *Frontline* last year. "Well, now I would say you can change the title to 'The end of antibiotics, *period*.'"

After 10 years in obscurity, the compound caught the attention of Oxford researchers Howard Florey and Ernst Chain. In 1941, the scientists conducted the drug's first clinical trial. The patient, a policeman suffering from a severe staphylococcal infection, died a month later—supplies of penicillin had run out after just five days—but his initial improvement had been remarkable. The drug shot to prominence against the backdrop of World War II. In the Allied countries, penicillin production increased exponentially, and the compound helped save thousands of solders' lives. "Thanks to penicillin…he will come home!" promised an advertisement in *Life* magazine in 1944, when the drug became available to the general public.

For all of prior human history, minor injuries carried the threat of severe illness and even death: the first recipient of penicillin, for instance, developed his deadly infection after being scratched by a rose bush. *Staphylococcus aureus*, named for its colonies' golden color, was a frequent culprit. Though it resides harmlessly in the noses and on the skin of some 30 percent of the population, *S. aureus* has long exploited scrapes and cuts to cause ailments ranging from boils and abscesses to life-threatening sepsis. But with the beginning of the antibiotic age, humanity gained a powerful,

SUPERBUG

An epidemic begins.

by Katherine Xue

If the end is here, it has been a relatively long time coming. Its complex roots are evident in the lengthy relationship between humans and *Staphylococcus aureus*, a resilient species that has met each antibiotic challenge with new, more resistant incarnations. If the gains of the antibiotic revolution are to be preserved, the lessons to be learned lie in this relationship as well. *S. aureus*, after all, was present at the antibiotic era's very beginnings.

Newton meets Darwin

In August 1928, Scottish scientist Alexander Fleming had just returned to his London laboratory from vacation when, amid the usual clutter, he found a petri dish that gave him pause. At the edge of the dish was a colony of mold, and around it, a halo within which the *Staphylococcus* bacteria that dotted the rest of the dish were conspicuously absent.

"That's funny," Fleming is said to have remarked to his assistant. Fleming was no stranger to compounds that could kill bacteria; seven years earlier, he had discovered the enzyme lysozyme, which inhibits bacterial growth, by culturing his own nasal mucus. Suspecting another antibacterial compound, he set about investigating the mold, *Penicillium notatum*, and the substance he later named penicillin.

almost miraculous, new weapon—a "magic bullet" that fulfilled Nobel laureate Paul Ehrlich's vision of a chemical that would specifically eliminate pathogens, without harming patients.

Yet wrapped up in penicillin's serendipitous beginnings were hints of challenges to come. "It is not difficult to make microbes resistant to penicillin in the laboratory by exposing them to concentrations not sufficient to kill them," Fleming warned in 1945 when he received the Nobel Prize in medicine or physiology, together with Florey and Chain, "and the same thing has occasionally happened in the body."

His remarks proved ominously prescient: penicillin-resistant strains of *S. aureus* began appearing in hospitals just years after the drug was introduced. "It's Newton meets Darwin," says Michael Gilmore, Osler professor of ophthalmology at Harvard Medical School and Massachusetts Eye and Ear Infirmary, and director of the Harvard-wide Program on Antibiotic Resistance (HWPAR). "For every biological action, there's an equal and opposite reaction."

What Fleming understood was that antibiotics confer an unfortunate advantage on those bacteria that happen to be naturally resistant through some mutational twist of luck. Penicillin, for instance, kills bacteria by binding to and incapacitating an enzyme that maintains the cell wall, a critical bar-

Michael Gilmore directs the Harvard-wide Program on Antibiotic Resistance. He has used genomic techniques to trace the evolution of antibiotic-resistant bacteria.

rier between the cell and its surroundings. By chance, one bacterium might have a mutant enzyme that the drug cannot recognize, allowing the organism to escape the compound's effects. As Fleming warned: given a sufficiently large number of bacteria, at least one is bound to survive.

But even Fleming did not anticipate the magnitude of the resistance problem to come. In the 1950s, amid postwar outbreaks of dysentery, Japanese researchers led by Tsutomu Watanabe began to encounter bacteria simultaneously resistant to *multiple* drugs—impossibly unlikely for pathogens acquiring random mutations. By 1955, researchers were reporting several strains of *Shigella dysenteriae* resistant to the same four antibiotics at once. Even worse, the resistance itself was contagious. Related species, when mixed with multidrug-resistant *S. dysenteriae*, also became resistant to multiple antibiotics.

"Resistance works differently in the bacterium," explains Stuart Levy, director of the Center for Adaptation Genetics and Drug Resistance at Tufts University School of Medicine. Drug resistance itself is common in all microorganisms: bacteria, viruses, and parasites alike can gain mutations or otherwise adapt to escape the toxic effect of drugs. But bacteria have an added feature, says Levy, who studied with Watanabe. "*Their* resistance can be *transferred*."

What was happening, Watanabe and others later deduced, was that bacteria were exchanging small, circular pieces of DNA called plasmids, which happened to carry genes for resistance. Most genetic material is transmitted only from parent to offspring, but plasmids can be transferred *horizontally*—from neighbor to neighbor. This unique ability makes bacteria an even greater threat. Many resistance genes can gather on a single plasmid and spread to different species as the host bacterium moves through the environment; in clinical settings, horizontal gene transfer is by far the most common mechanism through which bacteria become drug-resistant. "It's a little frightening," says Levy, "to realize that you're running after something that can transfer its football to somebody else right away."

In the case of penicillin, plasmids helped spread naturally occurring resistance genes. In 1940, before the compound had even undergone its first clinical test, Chain and his colleagues were studying *Escherichia coli*, one of many bacterial species unaffected by penicillin, when they found an enzyme, penicillinase, capable of destroying the drug altogether. Indeed, as scientists began to uncover more natural molecules with antibiotic effects, they likewise encountered more enzymes seemingly dedicated to those molecules' destruction.

In retrospect, the discovery is unsurprising. As Fleming's serendipitous discovery suggests, most antibiotics derive from naturally occurring compounds that likely evolved to aid in inter-microbial warfare, as different species compete to colonize limited spaces. In response, some bacteria evolved to harbor natural resis-

Photographs by Jim Harrison

tance mechanisms—enzymes that pump hostile compounds out of the cell, for instance, or chemically alter drugs to render them ineffective. Recent studies have found soil bacteria that are naturally resistant to most known antibiotics; some of these species can even use antibiotic molecules as food.

As penicillin's popularity grew, therefore, *S. aureus* did not have far to look for a means of defense. Unbeknown to scientists at the time, plasmids carrying penicillinases entered the staph population, and resistant strains spread rapidly. In one English hospital, the proportion of resistant staph infections quadrupled from 14 percent in 1946 to 59 percent just two years later. By mid century, the world was in the midst of its first pandemic of antibiotic-resistant infections. As a commercially available drug, penicillin was not yet 10 years old.

The hunt for new drugs

Help came in the form of new antibiotics. In the wake of penicillin's immense impact, drug companies rushed to search for new compounds. The 1940s and 1950s marked the golden age of antibiotic discovery: streptomycin, chloramphenicol, tetracycline, and erythromycin were isolated within a 10-year span. The molecules expanded the antibiotic arsenal with new classes of chemical compounds that employed distinct strategies to achieve their deadly effect.

In the meantime, another drug-discovery strategy helped scientists make better use of existing compounds. Early penicillin production involved growing enormous vats of the fungus that made the precious molecule; in the hope of improving production, chemists embarked on a decade-long quest to synthesize the compound from scratch. It was no easy task—molecules produced in nature, and antibiotics in particular, are often far more complex than what can readily be produced in labs. As MIT chemist John Sheehan remarked to *The New York Times* after achieving the first successful total synthesis, "Nature designed the penicillin molecule to teach organic chemists a little humility."

Nevertheless, Sheehan's method ushered in a new wave of drug development. Scientists synthesizing the molecule could now make chemical modifications to improve drug activity—and, in doing so, develop molecules able to combat resistance. "Widespread germ succumbs to a new synthetic penicillin," declared the *Times* in 1961 after new treatments saved the life of actress Elizabeth Taylor, who had developed penicillin-resistant staphylococcal pneumonia on the set of *Cleopatra.* To avoid being destroyed by penicillinases, the new drug had an extra chemical group: a methyl tail, which earned it the name methicillin.

Methicillin was introduced in 1960, and strains of methicillin-resistant *S. aureus*, better known as MRSA, appeared two years later. Since methicillin was mostly immune to the enzymes that could destroy penicillins, MRSA acquired a different resistance mechanism: a mutant target protein, borrowed from another *Staphylococcus* species, that was unaffected by the drug. Within a few years, strains of MRSA began spreading in hospital wards around the world, mirroring the rise of penicillin-resistant *S. aureus* less than two decades earlier.

But even as the danger of MRSA intensified in the 1970s and 1980s, drug development began to slow down. New antibiotics were developed, but they, like methicillin, were closely related to drugs that had come before. Chemical modifications could breathe new life into older drugs, but rarely more than a few years' worth: the bacteria adapted. "It's a Red Queen race," says Cabot professor of biology Richard Losick. "We're running as fast as we can just to stay in the same place."

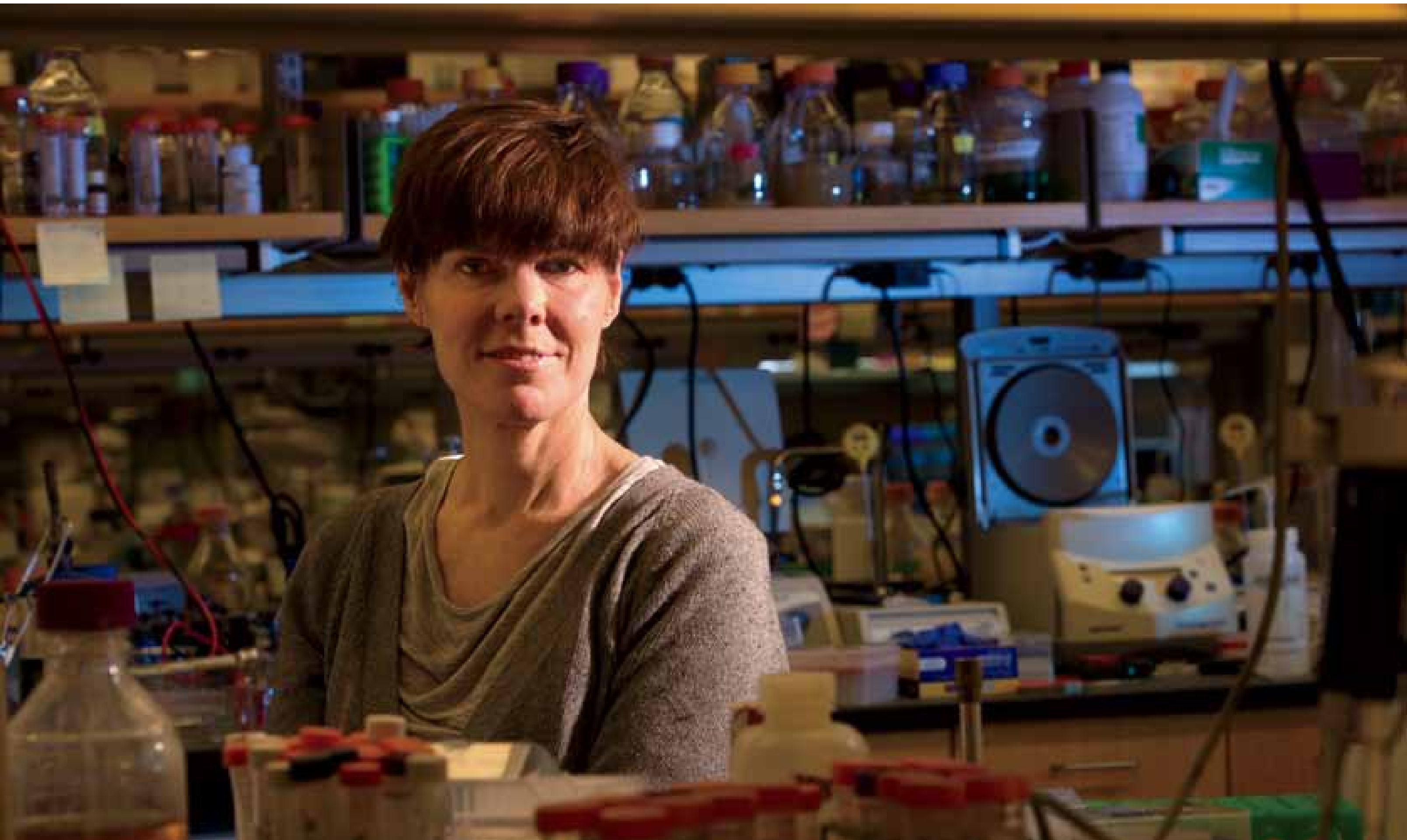
Meanwhile, the risks from MRSA have grown steadily worse. Early on, infection occurred almost entirely in hospitals, among patients already weakened by other illnesses, and by 2002, nearly 60 percent of *S. aureus* cases in American hospitals were methicillin-resistant. Adding to the toll, a new, more virulent MRSA strain began circulating in communities in the early 1990s, sickening otherwise healthy people. In 2005, an estimated 100,000 Americans suffered severe MRSA infections, and nearly 20,000 of them died—more than from HIV and tuberculosis combined.

Drug discovery has yet to catch up. "All the low-hanging fruit has been picked," says Levy. Following the introduction of synthetic quinolones in 1962, *no* new chemical classes of antibiotics were developed until 2000. Most large pharmaceutical companies have abandoned antibiotic research and discovery altogether because of its unfavorable economics: drug development is risky and expensive, and antibiotics do not generate revenue the way drugs for chronic infections do (see "Encouraging Antibiotic Innovation," page 48). "We have, at this point, a perilously thin pipeline," warns John Rex, head of infection development at AstraZeneca, one of the few pharmaceutical companies still pursuing antibiotic discovery. "There are very few new drugs coming."

Part of the problem is that, more than 80 years after Fleming's serendipitous discovery, there are still no hard and fast rules for what makes a good drug. Antibiotic discovery remains largely a matter of chance: in high-throughput screens, pharmaceutical companies test hundreds of thousands of molecules on live bacteria or key enzymes and look for evidence of inhibitory effects. But finding a hit is just the beginning. An antibiotic is the exceedingly rare molecule that survives a gauntlet of contradictory requirements—killing a broad spectrum of bacteria while being absorbed harmlessly by the human body—and there is no way to predict where a compound might fail. Sifting through early leads is expensive, risky, and time-consuming: it takes approximately 10 years and a billion dollars to bring a new drug to market.

"It's a Red Queen race. We're running as fast as we can just to stay in the same place."

Consequently, the responsibility for research is falling increasingly to academic researchers. Michael Gilmore organized Harvard's Program on Antibiotic Resistance in 2009: a multimillion-dollar project grant from the National Institutes of Health (NIH) currently funds the collaborative effort of HWPAR's seven independent laboratories to study antibiotic-resistant *S. aureus.* The goal of the academic program is less to develop new drugs—a task better suited to companies, given their superior financial resources and specialized pharmacological knowledge—than to develop innovative approaches to finding them. "We explore new drug targets that are higher risk than those a company would work on," explains professor of microbiology and immunobiology Suzanne Walker, one of Gilmore's collaborators. "It's hard to beat a company at developing a compound, and there's no reason to



Suzanne Walker discovered targocil, a molecule that blocks certain mechanisms of drug resistance.

do that. But I think it's up to academics to lay the groundwork."

In 2009, Walker's lab discovered the compound targocil, which prevents bacterial growth by interfering with a cellular pathway that creates a critical component of the *S. aureus* cell wall. Targocil is potentially useful for treating drug-resistant strains like MRSA: the compound restores the lethal effect of antibiotics like penicillin and methicillin by disabling bacterial modes of resistance. Other such molecules have been clinically useful; to combat the naturally penicillin-resistant species *E. coli*, for instance, some treatments like augmentin combine a penicillin-like antibiotic with a second compound that inhibits the enzyme that confers resistance, and targocil combination treatments have likewise succeeded in overcoming MRSA in mice. Moreover, targocil has proven to be a useful tool for understanding *S. aureus* biology. "The more we understand about the physiology of MRSA, the more likely we are to find new ways to intervene," says Walker.

Some researchers are looking beyond Ehrlich's magic bullet. That paradigm of treatment has dominated medical research since penicillin's discovery, in part because it perfectly suits the setting of a lab. A good drug molecule kills bacteria in a petri dish—an effect that, as Fleming's discovery evidenced, is easy to observe. But the realities of an infection are far more complex. In its interactions with a host or with other bacteria, a microbe takes on distinct properties that can diminish an antibiotic's success—or provide new avenues for drug discovery.

Many bacteria, *S. aureus* included, form dense communities called biofilms that are difficult to eradicate, particularly on devices, like catheters, that are inserted into the body. Sticking together helps bacteria shield each other from an antibiotic's effects, however susceptible they may be when isolated in a lab. "There is no *genetic* change, but the physiology has changed," explains professor of microbiology and immunobiology Roberto Kolter, who, with Richard Losick, studies the genetic basis of biofilm formation as part of HWPAR. "A few bacteria might survive antibiotic treatment because they were in the right *physiological* state."

Other scientists are delving deep into the intricacies of infection, targeting biological properties that may not be apparent in lab settings. "If we learn more about the host-pathogen interaction, we can be more surgical about our intervention," says Deborah Hung, associate professor of microbiology and immunobiology. Her lab searches for molecules that interfere with a pathogen's ability to cause disease. For infections like diphtheria and botulism, for instance, antitoxins are often prescribed alongside antibiotics to neutralize the pathogen's toxic proteins.

Natural immune processes may provide additional opportunities for targeted intervention. "I think it's important to understand pathogenesis—not just from the pathogen's point of view, but also from the host's point of view," says professor of genetics Fred Ausubel, another of Gilmore's collaborators. Using the nematode *Caenorhabditis elegans* as a model, he has identified more than a hundred compounds that he describes as anti-infectives: they cure a range of infections in the worm without killing the bacterial pathogens, some by modulating natural immune processes. "If you really understand how a pathogen causes disease and how a host resists," he says, "then you can intervene a lot more easily with a targeted therapeutic, or a vaccine." Such novel approaches may soon become a standard part of antibiotic therapy. Small companies are beginning to make use of recent academic discoveries, and last year, HPWAR and AstraZeneca brought together experts from academia and industry to discuss collaborative approaches to combatting antibiotic resistance.

After its long stasis, drug discovery shows signs of picking up. The approvals of linezolid in 2000, daptomycin in 2003, and tigecycline in 2005 have introduced three new chemical classes of drugs, more than in the previous three decades combined. The Infectious Diseases Society of America (IDSA) has launched an initiative to develop 10 new antibiotics by 2020, and new public-private partnerships are helping draw large pharmaceutical companies back into antibiotic discovery. Even so, treatments for some pathogens remain worryingly sparse, and the continually evolving nature of bacteria means that constant cycles of drug discovery will be necessary for the foreseeable future if medical care is to remain ahead of antibiotic resistance. Yet the *entire* 2013 budget for the NIH, at just under $30 billion, falls short of the CDC estimate of the yearly cost of antibiotic-resistant infections—as high as $35 billion, when accounting for lost productivity.

"I'm not pessimistic about the science," says Losick. "But it needs the proper investment."

Societal drugs

Since the 1970s, vancomycin has been the last-line drug against MRSA. Isolated in 1953 from a soil sample collected in the forests of Borneo, vancomycin never gained the widespread popularity of penicillin and its derivatives. Impurities in its early production (its discoverers at pharmaceutical company Eli Lilly nicknamed initial preparations "Mississippi mud") had toxic effects, and even after the drug was refined, it was mainly given intravenously rather than orally.

Perhaps because of its more limited early use, vancomycin has enjoyed a relatively lengthy life. Resistance to most antibiotics has historically become widespread within one to three years of their introduction. Vancomycin, by contrast, has been in clinical use since the 1960s, but resistance was not observed until the mid 1980s, when it emerged in *Enterococcus*, a group of gut bacteria that frequently cause hospital-acquired

Timeline of Antibiotic Use

Penicillin-related

Methicillin-related

Vancomycin-related

Historical landmarks

New classes of antibiotics introduced or discovered

Given the complexity of scientific investigations, all dates (though carefully checked) are necessarily approximate.

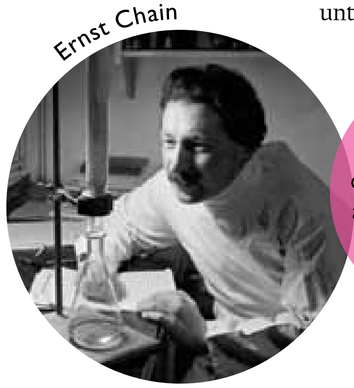
1881
Staphylococcus aureus is identified and named by Scottish surgeon Alexander Ogston.

1880

1928
Alexander Fleming discovers mold in his bacterial cultures and begins investigating its antibiotic properties.

1930

1932
Sulfonamide drugs are discovered and become very popular by the end of the decade.



1940
Ernst Chain and colleagues discover an enzyme capable of destroying penicillin.

1940

1941
Oxford researchers Howard Florey and Ernst Chain conduct the first clinical trial of penicillin.

CLOCKWISE FROM FAR TOP LEFT: GARY D. GAUGLER; SCIENCE SOURCE; UNITED KINGDOM GOVERNMENT; NOBEL FOUNDATION; UNITED KINGDOM GOVERNMENT infections, typically of the urinary tract and blood. Vancomycin-resistant *S. aureus*, or VRSA, did not appear until 2002, and as of 2013, there had been only 14 reported cases in the United States.

Concealed behind vancomycin's apparent longevity, however, are concerns about antibiotic use and abuse. As a last-line drug administered only in hospitals, vancomycin's use was strictly limited, in turn limiting the selective pressure for bacteria to become resistant. In the late 1970s, though, two changes took place. Avoparcin, a closely related drug, was approved for use on farms in Europe. And in the United States, vancomycin usage grew exponentially with the escalating MRSA epidemic, increasing 100-fold in the next 20 years.

The farm use of avoparcin and other antibiotics has drawn fierce criticism. For decades, scientists have called agricultural antibiotic use unnecessary and harmful, because the main function of antibiotics on farms is to promote animal growth, not treat disease. For reasons still poorly understood, small amounts of antibiotics regularly mixed into feed make young animals gain weight up to 8 percent more quickly, which can help farmers cross the line from loss to profit. The practice benefits both the agricultural and pharmaceutical industries: the Food and Drug Administration (FDA) estimates that 80 percent of American antibiotic use today takes place on farms.

In 1976, Stuart Levy of Tufts led perhaps the only prospective study to investigate whether small amounts of antibiotic use in livestock could lead to the spread of resistant bacteria to humans. His team began feeding tetracycline to some chickens on a small farm in Sherborn, Massachusetts, that had never before used antibiotics in animals. Within a week, tetracycline resistance appeared in the chickens' gut bacteria, and then in untreated chickens in neighboring pens—and, a few months later, in the intestinal flora of the farmers. Even more alarming was the fact that with time, the tetracycline-resistant bacteria also developed resistance to other, unrelated antibiotics to which they had never been exposed. The finding was attributed to the aggregation of resistance genes on mobile plasmids, as described in Japan, that then spread to other bacterial species. The farm acted as an incubator for multidrug resistance.

In 1981, Levy founded the Alliance for the Prudent Use of Antibiotics, a global nonprofit group that disseminates information about and sponsors advocacy for the proper management of antibiotics. His call for a ban on antibiotic use in agriculture has been echoed by many other groups, including the IDSA, the Union of Concerned Scientists, and, recently, the Pew Charitable Trusts. "We have a lot of good antibiotics, we just haven't known how to use them," says Roberto Kolter of HWPAR, who is also past president of the American Society for Microbiology. "We have abused them."

Indeed, evidence now suggests that agricultural use of avoparcin shortened the lifespan of vancomycin, the last-line drug. Gilmore's lab established that the strains of vancomycin-resistant *Enterococcus* (VRE) that cause an estimated 20,000 hospital infections in the United States each year are descended not from relatively innocuous strains in the human gut, but rather from strains that live in the guts of livestock. From VRE, they found, the DNA trail leads to the dozen known American cases of VRSA, each of which occurred when MRSA acquired resistance genes from its *Enterococcus* neighbors. "This is a real issue," Gilmore says of continued antibiotic use on farms. "Agricultural companies are externalizing their costs—antibiotic-resistant hospital infections are not their problem." The European Union banned agricultural use of avoparcin and other antibiotics in the late 1990s, but the United States has yet to follow suit. Last December, the FDA announced a new policy to phase out the use of antibiotics for growth promotion, but the regulation is a relatively small step compared to

1945
Alexander Fleming, Howard Florey, and Ernst Chain share the Nobel Prize in Medicine or Physiology. In his Nobel lecture, Fleming warns of the dangers of antibiotic resistance.

1948
Penicillin-resistant strains of *Staphylococcus aureus* begin circulating in hospitals and soon become a global pandemic.

1948-1962 Worldwide pandemic of penicillin-resistant *Staphylococcus aureus*

1950

1

1943
Penicillin, the first β-lactam antibiotic, enters widespread production and clinical usage.

Producing penicillin, 1943

2

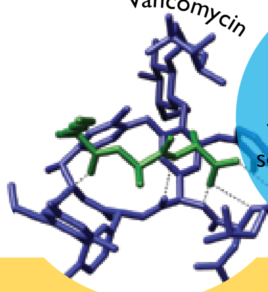
1 **1943 Streptomycin,** the first aminoglycoside drug, is discovered.

2 **1947 Chlortetracycline,** the first tetracycline antibiotic, is discovered.

3 **1952 Erythromycin,** the first macrolide antibiotic, is introduced.

3

Vancomycin



1953
Chemists at Eli Lilly isolate vancomycin from a soil sample collected in Borneo.

1940s to 1950s

During the Golden Age of antibiotic discovery, pharmaceutical companies isolate many new classes of antibiotics, frequently from exotic soils.

LEFT: UNITED KINGDOM GOVERNMENT; RIGHT: M.STONE/WIKIPEDIA/CREATIVE COMMONS what many scientists have been demanding for decades.

The controversy over farm use of antibiotics illustrates their complex role as what Levy described in his book *The Antibiotic Paradox* as "societal drugs." Antibiotic resistance begins with a random mutation or chance transfer of genes, but without the selective pressure of antibiotic exposure, a mutant never comes to dominate the bacterial population. It is *human* society, through antibiotic misuse and overuse, that gives a rare event its pandemic potential. "Each individual use," Levy wrote in 1997, whether human or animal, "contributes to the sum total of society's antibiotic exposure. In a broader sense, the resistance problem is ecological."

No other medications carry the same societal consequences for abuse. Yet in the United States, an astonishing half of antibiotic use in humans is estimated to be unnecessary. Drugs are often prescribed needlessly for ailments like the common cold and the flu, which are not even caused by bacteria, but by viruses—which are not susceptible to the same drugs.

"It's bewildering," admits Jeffrey A. Linder, associate professor of medicine and associate physician at Brigham and Women's Hospital. Opponents of *agricultural* antibiotic use can point to specific culprits, but antibiotic *over-prescription* has complex roots. Physicians often follow medical recommendations when responding to hypothetical scenarios, but may act otherwise in reality. Linder and colleagues have found, for instance, that even though medical guidelines state that antibiotics are *never* needed for acute bronchitis, they are prescribed 70 percent of the time.

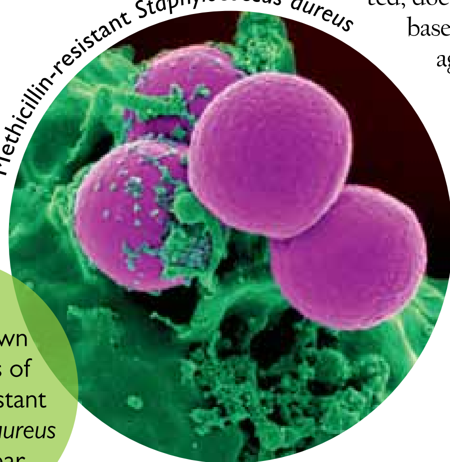
Often, he says, the over-prescription results from miscommunication. Patients are often confused about when antibiotics are effective and concerned by how long symptoms last, even though one or two weeks is normal for a cold, three for a cough. Doctors, in turn, may prescribe antibiotics in hope of avoiding a patient confrontation. "I think there's a role for educating patients" about what antibiotics can and can't do, Linder adds. "There's stuff doctors can do to help people feel better and get a good night's sleep, but antibiotics won't make the duration of a cold or cough any shorter." In fact, their over-prescription can make patients *worse*. Antibiotic overuse has societal *and* personal side effects: diarrhea, allergic reactions, drug interactions, and unnecessary cost.

Though common ailments account for most instances of antibiotic over-prescription, the problem extends to severe infections in hospital settings as well. In the case of last-line drug vancomycin, for instance, skyrocketing usage in the 1980s likely helped spread strains of the vancomycin-resistant *Enterococcus* that had emerged on farms, creating the current epidemic. Most of this antibiotic use was unavoidable, a consequence of MRSA's rapid spread, but public-health officials still see considerable room for improving treatment practices. According to a CDC report released in March, approximately one-third of vancomycin prescriptions include potential errors: the drug is given without proper testing or evaluation, or given longer than necessary.

The errors reflect a significant and longstanding information gap. When a hospital patient is admitted, doctors prescribe treatment based on an initial clinical diagnosis, but microbiological information about the infection—the organism that causes it and its resistance profile—does not become available until two days later. In the interim, physicians are forced to guess. Unnecessarily prescribing a last-line

Shigella dysenteriae

Methicillin-resistant Staphylococcus aureus



1955
Multidrug-resistant strains of *Shigella dysenteriae* are isolated in postwar Japan, providing the first indications of plasmid-mediated antibiotic resistance.

1962
The first known clinical strains of methicillin-resistant *Staphylococcus aureus* (MRSA) appear.

1948-1962 Worldwide pandemic of penicillin-resistant *Staphylococcus aureus*

1963 to the present
Emergence and spread of MRSA

1960 **4** **1970** **1980**

1957
John Sheehan completes the first total synthesis of penicillin.

1960
Methicillin, the first semi-synthetic penicillin derivative, is introduced into clinical use.

Antibiotic-induced growth

1974
Avoparcin, a close relative of vancomycin, is approved for farm use in Europe.

1980
Vancomycin use begins to rise; in the next two decades, it increases more than 100-fold.

CLOCKWISE FROM FAR TOP LEFT: SCIENCE SOURCE; NIAID; ISTOCK drug like vancomycin can decrease its long-term efficacy, but treating an infection with methicillin could be deadly if the pathogen turns out to be MRSA.

In response, many hospitals have set up infection-control units that track patterns of disease and resistance within their wards—critical measures for promoting responsible antibiotic use. "With few antibiotics in the pipeline, we have to be even more careful about preserving the ones we have," says David Hooper, professor of medicine and chief of the infection-control unit at Massachusetts General Hospital, and another HWPAR researcher. "Antimicrobial stewardship is important to help doctors select the right drugs, and infection control is important to make sure we don't amplify infections by allowing them to be passed from patient to patient."

In northern Europe, proactive infection control and vigilant surveillance have kept MRSA rates low: less than 5 percent of staph specimens isolated in Denmark and the Netherlands are methicillin-resistant, compared to nearly 50 percent in the United States. But even in the United States, increased hospital vigilance is beginning to have an effect. Between 2005 and 2011, national MRSA rates fell by nearly one-third, with rates of hospital-acquired infections dropping by more than half, and Congress is considering an act that would strengthen disease surveillance at a national level.

Nevertheless, MRSA continues to kill more than 11,000 Americans every year, and approximately a quarter of infections occur in the community, outside healthcare settings. Hospitals can play critical roles in curbing drug-resistant strains, but their role is limited: agriculture and the wider community remain bigger drivers of antibiotic use. By the time drug resistance reaches hospital wards, an epidemic is already under way.

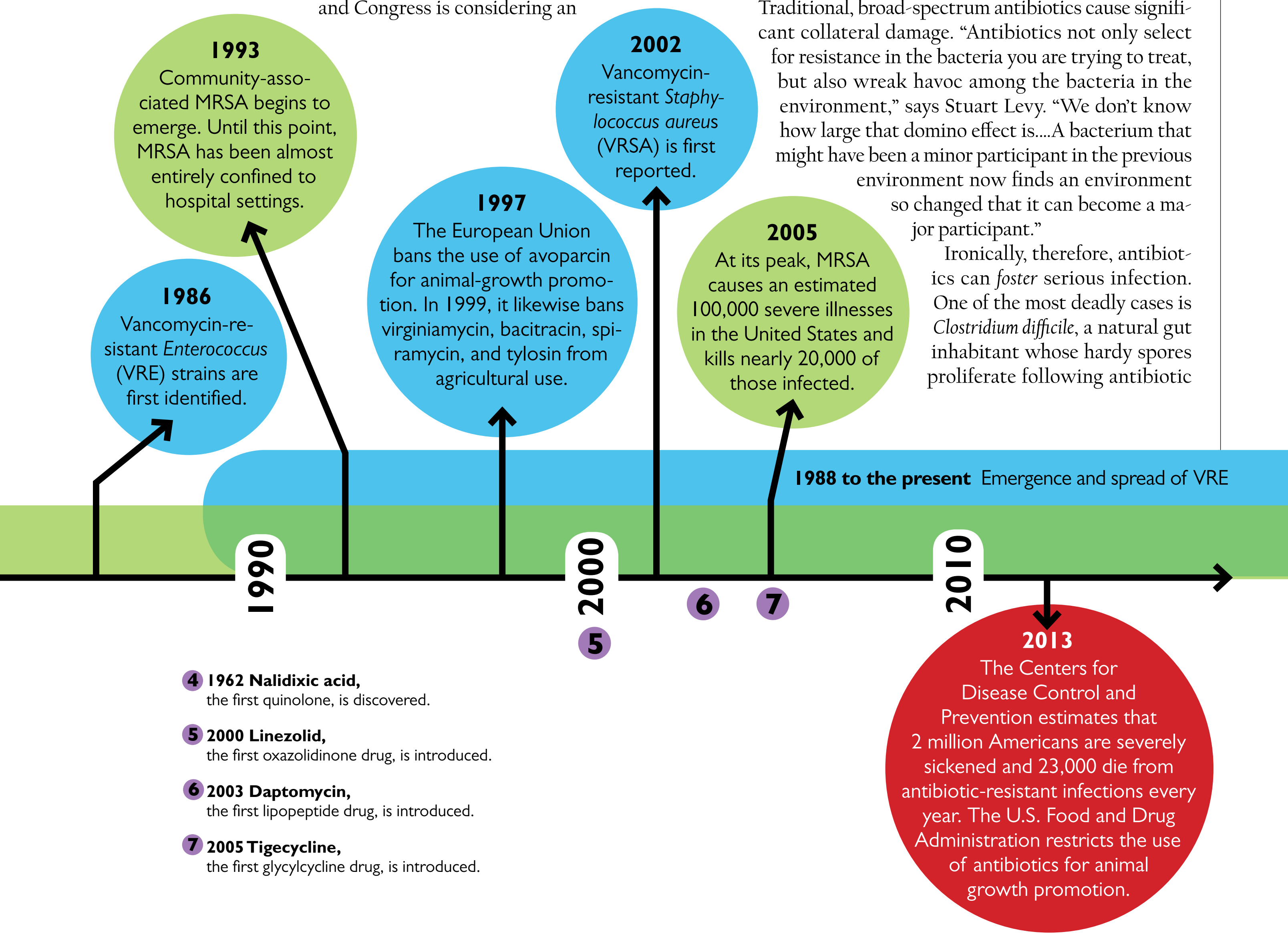
A new normal

ANTIBIOTIC RESISTANCE raises the grim specter of a return to the medicine of a century ago. Last year's emergence of plasmid-mediated resistance to carbapenems, last-line drugs against a variety of pathogens, set off alarms throughout the public-health community. Before long, officials warned, resistance might become so common that physicians will run out of treatment options altogether.

In fact, we are already in the post-antibiotic era. It is not that drugs have lost all efficacy: the handful of truly untreatable superbugs has, so far, been contained. But decades of antibiotic use have altered, perhaps irrevocably, the relationship between humans and the microbial world.

Traditional, broad-spectrum antibiotics cause significant collateral damage. "Antibiotics not only select for resistance in the bacteria you are trying to treat, but also wreak havoc among the bacteria in the environment," says Stuart Levy. "We don't know how large that domino effect is....A bacterium that might have been a minor participant in the previous environment now finds an environment so changed that it can become a major participant."

Ironically, therefore, antibiotics can *foster* serious infection. One of the most deadly cases is *Clostridium difficile*, a natural gut inhabitant whose hardy spores proliferate following antibiotic



4 **1962 Nalidixic acid,** the first quinolone, is discovered.

5 **2000 Linezolid,** the first oxazolidinone drug, is introduced.

6 **2003 Daptomycin,** the first lipopeptide drug, is introduced.

7 **2005 Tigecycline,** the first glycylcycline drug, is introduced.

Encouraging Antibiotic Innovation

One of the chief obstacles to finding new antibiotics is that many pharmaceutical companies have stopped looking. According to a report by the Infectious Diseases Society of America, just five major firms were engaged in antibiotic discovery in 2009; others, discouraged by economic and regulatory challenges, have left the field. Even worse, the report warned, "We remain concerned that the infrastructure for discovering and developing new antibacterials continues to stagnate, thereby risking the future pipeline of antibacterial drugs."

The economics of antibiotics pose a major barrier to pharmaceutical investment. Antibiotics are no cheaper to develop than other drugs, but they bring in less revenue: unlike treatments for chronic conditions like asthma or high cholesterol, antibiotics are given in courses that typically last only a few weeks. Moreover, because resistant infections are on the rise, newly approved antibiotics are held in reserve, to be used only after more common treatments fail. To encourage antibiotic development, Congress passed an act in 2012 that granted companies an extra five-year exclusive-marketing period for new drugs that combat infectious diseases, and public-private partnerships are beginning to subsidize the cost of research and clinical trials.

Such clinical trials are a formidable second hurdle: the drug-approval process traditionally requires large, costly trials with many patients. For companies developing treatments for drug-resistant pathogens, says John Rex, head of infection development at AstraZeneca, "That means the epidemic has to have already occurred." The European Union recently created a new, streamlined pathway for antibiotic approval; the U.S. Food and Drug Administration is considering similar guidelines. The pathway would permit smaller, more rapid trials for drugs that target resistant pathogens; they are similar in concept to guidelines for "orphan drugs" that treat rare diseases. Drugs approved under this pathway would carry a more provisional usage label, advocating their prescription only in well-defined cases in which other options have been exhausted. Such drugs might be considerably more expensive as well, reflecting their medical value. "Antibiotics save your life," says Rex. "And on average, they give you back many *years* of life"—but they are currently among the cheapest drugs. When accounting for the years of life saved, Rex and colleagues have argued that a course of novel antibiotics given to treat an otherwise resistant infection might rationally cost $30,000.

Together, the new policies aim to draw companies back into antibiotic development, leading to future innovation. "What I really want to see is a diverse, vibrant drug pipeline," says Rex. "We're not quite to that yet, but we've laid the groundwork."

treatment. Without a normal microbial ecosystem to keep it in check, *C. difficile* can cause symptoms ranging from mild diarrhea to life-threatening colitis; in the United States, it now causes 14,000 deaths and at least $1 billion in additional medical costs a year. Antibiotics may have subtler effects as well: some studies now suggest that, by altering the balance of bacteria in the body, the drugs contribute to weight gain, perhaps bulking up humans as they have long fattened livestock.

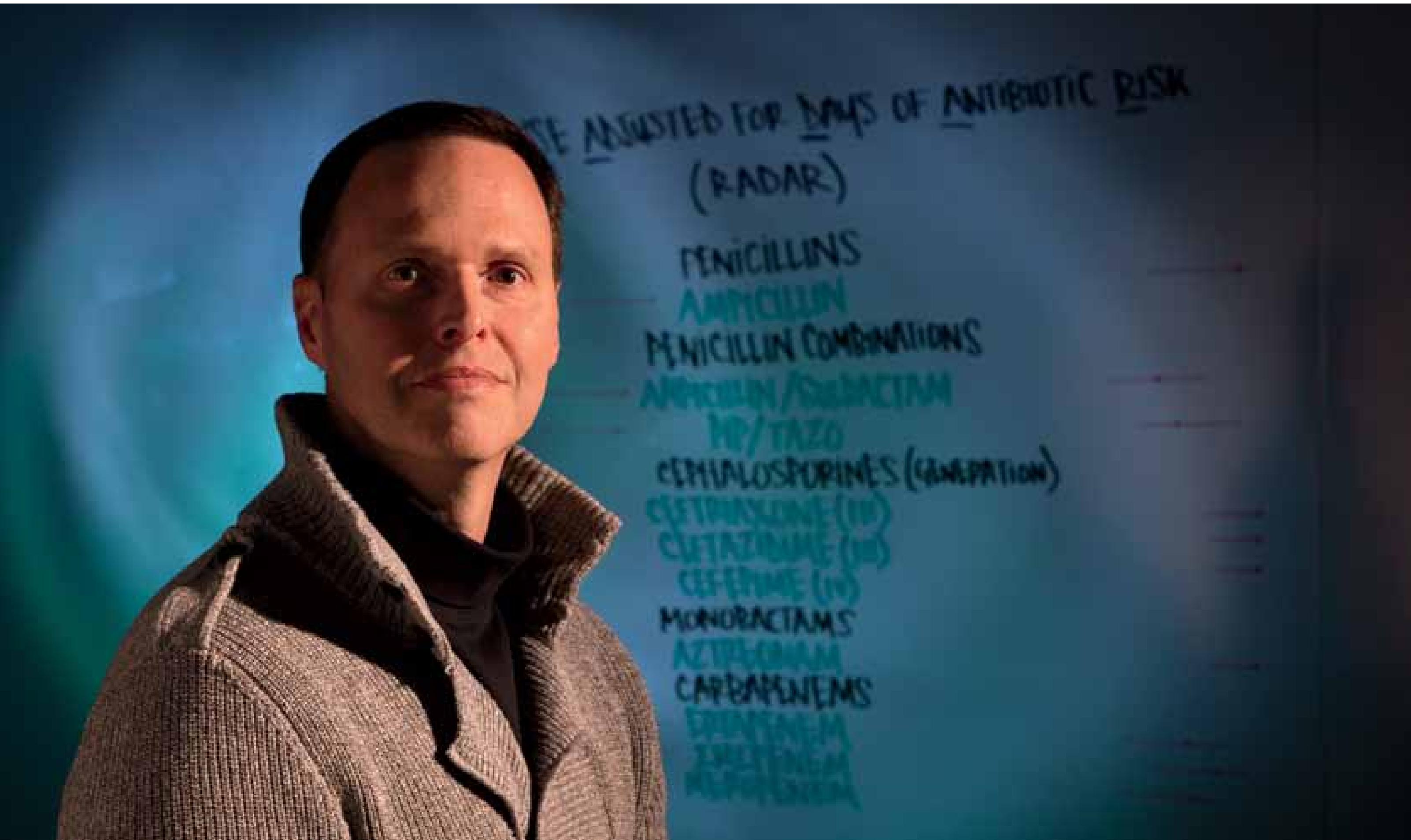
By eliminating susceptible bacteria, decades of antibiotic use have also made drug resistance more common, even in nonpathogenic species. As Levy has observed, "The antibiotic susceptibility profile of bacteria on the skin of people today, and in the environments of hospitals and homes, is very different from what it was in the pre-antibiotic era, and even 10 years ago." In the bacterial community at large, it is no longer unusual for organisms to carry one or more resistance genes, even in the absence of obvious antibiotic exposure. Microbiologists once hoped that antibiotic-resistant bacteria—both within a single patient, and in the broader environment—would die off after drug treatment stopped. But in large swaths of the microbial world, it seems, antibiotic resistance is the new bacterial normal.

It may be time, therefore, for antibiotics themselves to evolve. Michael Gilmore draws an analogy to ecological control: "What we're talking about now is human ecology management," he says. "The antibiotics we first discovered were clear-cutters—they killed everything. They were broad-spectrum, they wiped everything out." Now, he says, researchers are exploring ways to fine-tune antibiotics' lethal potential.

A holy grail for researchers and clinicians is the development of reliable rapid diagnostics, tests that identify both the microbial cause of an infection and its drug resistance profile within hours, rather than the current standard of two days. "Patients come in with a clinical disease—a urinary tract infection, or pneumonia—but the *cause* of that infection could be one of many different things," explains Scott Evans, senior research scientist in biostatistics at Harvard School of Public Health. "Currently, we often have to initiate treatment of clinical disease based on unknown causes and antibiotic susceptibility. If we could get rapid diagnostics, then we could better tailor patient treatment."

In fact, rapid diagnostics are already becoming a reality. As director of the Statistics and Data Management Center for the Antibacterial Resistance Leadership Group, a nationwide clinical research network created in 2013 by the National Institutes of Health, Evans helps evaluate the effectiveness of existing tools. He and collaborators have found that some genomics-based rapid diagnostics are able to accurately detect resistance to certain drugs like penicillins, cephalosporins, and carbapenems.

"I think that rapid diagnostics are a very solvable problem, in the very near future," says Deborah Hung. "And once we solve that, it completely changes the landscape of what we do." Reliable rapid diagnostics would pave the way for more precise incarnations of Ehrlich's magic bullet: narrow-spectrum drugs that target a few bacterial species, rather than the broad spectrum of bacterial diversity that current antibiotics are designed to eliminate. Such possibilities would also open new avenues of drug discovery. "If we get to the point of narrow-spectrum drugs—say we're looking for a staph-only drug—then you have a lot more potential targets, because a drug doesn't have to kill



Scott Evans designs clinical trials that test the efficacy of rapid diagnostics.

as many bacteria as possible," says Suzanne Walker.

A more radical antibiotic future may cut back the role of antibiotics altogether by using normal bacteria to counter relatively minor infections. A growing area of research explores how to alter microbial interactions to promote human health. Fecal transplants, for instance, have occasionally proven effective against recurrent *C. difficile* infections. Such probiotic treatments that use live microbes are in their infant stages—no one knows exactly *how* normal gut bacteria keep *C. difficile* in check—but evidence is beginning to suggest that humans' future with bacteria will depend, at least in part, on careful coexistence.

"What we're talking about now is human ecology management. The antibiotics we first discovered were clear-cutters—they killed everything."

An epidemic begins

Nearly 80 years after the antibiotic revolution, the human relationship with *S. aureus* is again on the verge of change. Genes for vancomycin resistance are increasingly prevalent, and on at least 12 separate occasions, they have entered MRSA to create new, vancomycin-resistant strains. Resistance to last-line drugs is brewing in many other bacterial species as well. Chance will determine when resistance finally catches on, and resistant strains spread through the bacterial population—taking the place of what has come before, once again transforming the game of survival that humans and microbes play.

Can humans evolve first? Bacterial evolution occurs with barely imaginable rapidity. But the antibiotic revolution that transformed our ancient relationship started not with a gene, but with an idea. This idea, once harnessed and spread through society at scale—the human version, perhaps, of horizontal gene transfer—has enabled our species to remain ahead.

The pieces are in place for change. We have our own means of resistance, and they are already common in parts of the human population. Activism and awareness are ancient, while the seeds of scientific innovation are new. What has been missing is the impetus for change, the pressure that causes an idea to spread.

"How big does this problem have to get for us to do something about it?" asks Michael Gilmore. "The challenge is, there's a lag between when we realize a problem is big enough and when we can come up with a solution."

The cause may be a gene or an idea. But sometime soon, an epidemic will begin.

Katherine Xue '13 is associate editor of this magazine.

Ishvarchandra Vidyasagar

Brief life of an Indian reformer: 1820-1891

by BRIAN A. HATCHER

Merchants, attorneys, and preachers—that's what Ishvarchandra Vidyasagar half-jokingly associated with British colonialism in India in the nineteenth century. The expansion of trade and government under the British East India Company brought changes in everything from landholding and revenue collection to legal practices and judicial systems, while the advent of Protestant missions occasioned vigorous debates about religion. Perhaps no single event better encapsulates the tensions associated with colonial rule than the 1829 British ban on suttee, the custom of burning Hindu widows on their husbands' pyres. If there were Indians, like the great Rammohun Roy, who supported the ban, there were others who contested the nature and purpose of such intervention. Both Rammohun and his opponents were members of a new class of Hindu elite who began to form voluntary associations, publish pamphlets, and enter into public debate over religion, law and social custom.

This is the world into which Vidyasagar was born and upon which he would leave his impress. A promising Brahmin child from a family of scholars of limited means in rural Bengal, young Ishvarchandra Bandyopadhyay arrived in Calcutta just as the ban on suttee came into effect. Though he never met Rammohun, he would in time inherit the older man's mantle, proving himself both a formidable Sanskrit *pandit* (scholar) and a courageous social reformer.

In Calcutta, he initially lived in squalid conditions while studying at the Government Sanskrit College (established by the British in 1824). His mastery of traditional subjects like grammar and rhetoric along with his playful intellect led his teachers to bestow the title by which he is universally known: *Vidyasagar* ("the ocean of learning"). In 1851, he became the first Indian principal of the college and, eager to institute reforms of his own, he advocated the improvement of Sanskrit learning and the promotion of vernacular education. He was as demanding as he was innovative; one *pandit* confessed he no longer had the courage to speak to his former pupil.

Discrimination was also a fact in colonial Bengal. Recommended for the position of inspector of schools, Vidyasagar had to settle for the position of assistant inspector; the higher post was reserved for a European. Even so, he was entrepreneurial enough to recommend changes in Bengali instruction that required new schoolbooks, many of which he wrote and published himself. He often used his wit to confront discrimination indirectly. Denied admission to a museum while wearing his sandals, he drafted a complaint in which he confessed to being baffled by the "mystery" of footwear among the British. When his British counterpart at the Hindu College received him seated, with his feet on his desk, Vidyasagar received his colleague the same way at the Sanskrit College. He would later explain: "I thought that we were an uncivilized race, quite unacquainted with the refined manners of receiving a gentleman visitor. I learned [my] manners...from that gentleman himself...."

Proud of his Brahmin heritage and moved by dreams of improvement, Vidyasagar like Rammohun sought to yoke the resources of Sanskrit tradition to the task of social reform. In this vein he challenged several deeply held customs, opposing child marriage and high-caste polygamy, while advocating for Hindu widow remarriage (*vidhava-vivaha*), the cause for which he is best known.

High-caste Hindu custom forbade widows to remarry. With suttee banned, attention turned to the plight of these women, enjoined by custom to lives of penance and ostracism. Vidyasagar traced his convictions to an incident in which a poor widow fed his hungry father. Anyone who could witness the "love, compassion, and goodness" of this widow and not become an "advocate for women," he claimed, would have to be "the most vile and ungrateful person on this earth." The publication of his 1855 treatise on the subject, based on his mastery of Hindu law, is often credited with convincing the government in 1856 to grant Hindu widows the legal right to marry. Vidyasagar judged this his "single greatest good deed," but his fellow pandits scorned him as "new-fangled" and composed numerous tracts in opposition to his proposal.

Then, in 1857, the "Mutiny" of native troops against their East India Company officers rocked India. In its wake, the British tempered their policies of reform while Hindu intellectuals began to promote the defense of their own customs. Vidyasagar left government service a year later. The 38-year-old cited exhaustion and increasing disappointment with British policy. Yet he remained active until his death, aiding malaria victims, caring for widows and orphans, and pursuing his work as an author and reformer. The heyday of reform had passed, though; his campaign against polygamy in the 1870s came to naught. Plagued by poor health and disappointment, he retreated in 1873 to Karmatar in western Bengal, where he built a home and provided homeopathic care to the tribal population. Today a modest memorial stands in his garden there. On the plinth are the words of poet Rabindranath Tagore, who had read Vidyasagar's schoolbooks as a boy and who in the early twentieth century saw in him traits essential for imagining a new Indian nation. While his life and legacy continue to be debated, Vidyasagar's courage and compassion, like his quest to enliven tradition for the purpose of change, continue to inspire.

Brian A. Hatcher, Ph.D. '92, a scholar of Hinduism in modern India, chairs the department of religion at Tufts and holds the Packard chair of theology. His most recent book is Vidyasagar: The Life and After-life of an Eminent Indian.

The inscription below this bust of Vidyasagar quotes Rabindranath Tagore: "The chief glories of [his] character were neither his compassion nor his learning, but his invincible manliness and imperishable humanity." The presence of a garland speaks to the reverence many still feel for the man.

Photograph by Brian A. Hatcher

A Nation, Building

Harvard and the political economy of development in Vietnam

by John S. Rosenberg

ALEX CRAIG/GETTY IMAGES

On a recent Monday morning, during a class on global trade, the professor reviewed the effects of nations' limits on such commerce: tariffs, quotas, and the "voluntary" restraints exporting countries impose on their shipments to eager customers (lest protected interests in the importing area wilt). His students, arrayed in a teaching amphitheater laid out like the classrooms at Harvard Business School (HBS)—complete with laminated placards bearing each student's name, for identification during case discussions—closely followed his analysis of the costs accompanying each intervention in the market. They applied economic concepts taught in other courses (the marginal benefits and costs that shape demand and supply) to the problems of production and consumer welfare raised by the trade policies.

But despite the similarity to teaching moments at Harvard, this one took place at the compact campus of the Fulbright Economics Teaching Program (FETP, commonly called the Fulbright School), off a narrow, twisting alley in District 3, Ho Chi Minh City. The lecturer, James Riedel, Clayton professor of international economics at the Johns Hopkins School of Advanced International Studies, visiting for the semester, spoke in English, an exception among the otherwise indigenous faculty. He was fully translated into Vietnamese in real time, and the students' texts were all in that language.

The nearly five dozen students, admitted via a rigorous, merit-based competition, from provinces throughout Vietnam—unlike their country's other institutions of higher education—were in the second term of their two-year master in public policy (M.P.P.) program, modeled on the degree offered by the Harvard Kennedy School (HKS). Perhaps it was awareness of their special status in

Complete with heliport, the Bitexco Tower rises over traditional Ho Chi Minh City (left). Hanoi's streets (in 2007, above) are now full of motorcycles and scooters, and shop shelves are no longer bare. The Fulbright School's modest plaque belies its large impact.

FROM TOP: CHAU DOAN/GETTY IMAGES; LE THI QUYNH TRAM

this special school, Riedel said later, that made the students more focused about their work (no in-class e-mail trolling, no doodling) than any he has ever taught in the United States.

Fulbright School is in its own words "a Vietnamese institution with international stakeholders, operated according to governance principles that are prerequisites for excellence: autonomy, meritocracy, accountability, and high standards." The school, now in its twentieth year, is a partnership between the University of Economics, Ho Chi Minh City, and the HKS Vietnam Program (within the Ash Center for Democratic Governance and Innovation), funded principally by the U.S. Department of State bureau of educational and cultural affairs. By bringing economic and policy analysis to bear on Vietnam's development challenges, the school has seeded a new group of leaders there—more than 1,000 alumni strong—in government, private and state-owned enterprises, finance, and academia nationwide: institutions very much in need of trained talent, in a country desperately short of it.

Education is only the most visible element in a broader program of engagement that also includes research on Vietnam's economic evolution and tough-minded policy dialogues with national leaders on the country's real, difficult problems. The relationships built through the teaching, research, and policy discourse have also opened something of a pipeline for Vietnamese students to pursue their education at Harvard, on their way to positions of increasing responsibility in their nation's government and business today. It would have been hard to envision any of this a quarter-century ago, when development advisers from Harvard, not knowing what to expect, first visited Hanoi.

Rising from the Ruins

In early 1989, recalls Dwight H. Perkins, then director of the Harvard Institute for International Development (HIID, the University's economic-advisory service until 2000), he and Vietnam Program director Thomas Vallely, M.P.A. '83, had to travel through Thailand. (Because the United States and Vietnam would not establish relations for six more years, the visitors had to pick up visas en route.) They knew that with the 1986 passing of the generation of leaders who had guided the country through 40 years of war to independence and united Communist government, Vietnam had embarked on *doi moi*, its term for economic "renovation," but not soon enough. Inflation exceeded 400 percent annually. In the winter of 1987-1988, large numbers of the northern and central population suffered from acute food shortages. The upheaval in eastern Europe the next year, followed by progressive dissolution of the Soviet Union's COMECON trading block, which had propped up Vietnam's government and economy, exposed the country to outright crisis.

Perkins, now Burbank professor of political economy emeritus, and David Dapice, Ph.D. '73, another HIID-affiliated economist who began working on Vietnam in late 1989, by then had accumulated decades of experience in Indonesia and South Korea, and deep knowledge of other developing Asian nations. They knew what to expect of the conditions that preceded Vietnam's turn toward growth: bare Hanoi shops ("The shelves were literally empty," Perkins says), barely functioning hotels, roads navigable only by Jeeps (which had to carry their own fuel supply, Dapice remembers). Ho Chi Minh City, the former Saigon, Perkins says, then had the air of "a defeated city."

The grievous wounds from the war with the United States hung over any possible cooperation and, Perkins says, "There were very few people we could talk to who knew anything about economics." In one memorable case, he recalls foreign minister Nguyen Co Thach reading Paul Samuelson's *Economics* textbook to learn about markets—*anything* to find a path from the prevailing ruins.

That pragmatism proved decisive. Despite their fears about the lingering war legacy, the HIID team found themselves welcomed to explore Vietnam and study anything of economic importance (agricultural conditions and the factory sector were initial focal points), subject only to reporting their findings to the state planning commission. The early research, gathered into a Vietnamese-language volume titled *In Search of the Dragon's Trail*, was published in 1994. Because HIID advisers were neither profit-seeking foreign investors nor aid agencies with a development agenda (Western aid arrived en masse later, after the U.S. embargo ended in mid decade), Perkins says, they got a hearing. "Does that mean they *took* our advice?" he asks. Not always.

During this period, Perkins notes in his recent book, *East Asian Development* (Harvard), Vietnam barely survived on the strength of two bits of fortunate timing. First, the *de*collectivization of agriculture (undoing the disruptive Communist design imposed on southern Vietnam and its fecund rice-growing Mekong Delta, following victory and reunification in 1975), combined with overdue changes in market pricing and exchange rates, led to a surge in output and resumption of exports. Second, following Soviet-era exploration, offshore oil production began—another source of urgently needed foreign exchange. As *doi moi* accelerated from 1989 on, prices were freed and trade was liberalized. The all-encompassing party-led state made itself a somewhat smaller part of a larger economy. State-owned enterprises began to be weaned from subsidies and slimmed down (but, crucially for the future, not dismembered or privatized). Vietnam embarked on two decades of nearly 6 percent annual growth in economic output per capita.

What made a perhaps more lasting impression than that early research were the Vietnam Program's associated educational efforts. In 1990 and 1991, Vallely and Dapice took state planners, economic ministers, and other high officials on eye-opening tours of Indonesia, South Korea, Taiwan, and Thailand, and to a retreat on Bali. (Alumni in local Harvard clubs helped arrange high-level meetings.) For many participants, this was their first visit to these fast-developing neighbors, and an initial chance to meet their counterparts responsible for inaugurating rapid growth and gains in their people's standards of living.

When the visitors saw something they liked, Perkins recalls, they were apt to ask, "How do *we* do this?" Dapice was on hand to explain the underlying economic principles: how to alleviate a fertilizer shortage not anticipated in the central plan, for instance, by trading for supplies from abroad and letting the price increase to attract sellers. The briefings, he recalls, ranged widely (extending to the role of education and the organization of modern society) and candidly explored questions of concern to the leaders reshaping a Communist country (how do money and power interact, and what about corruption?). Among the participants were a future governor of Vietnam's central bank, and Phan Van Khai, who became prime minister later in the decade.

Formal education initiatives began, too. U.S. senators John Kerry and John McCain (both shaped by their war experiences in Vietnam) led the effort to extend Fulbright scholarships to students there. Absent an embassy in Hanoi to oversee the program, the Harvard advisers active in the country were engaged to administer it for the first Vietnamese students filtering into the United States, beginning in 1992. Early recipients of these and other scholarships included some of the Vietnam Program's interpreters during its research within Vietnam and on the tours abroad for government officials. Cao Duc Phat, who was involved in liberalizing the rice market, came to Harvard in 1993 to prepare for graduate study, and then earned his M.P.A. from the Kennedy School in 1995. Today, he is Vietnam's minister of agriculture and rural development: beyond the major cities, the country remains largely agrarian. (He is assisted in refining policy by Dang Kim Son, who studied at Stanford on a Fulbright.)

Of his Cambridge experience, Phat said during an early-March conversation at the ministry in Hanoi, "What I learned was really helpful, especially in policy thinking." After 20 years of *doi moi*, he continued, "We are still in transition from a central-planning economic system to a market-oriented one," raising hard questions about rural growth and agricultural productivity. Recalling his work on the earlier *Dragon's Trail* report, Phat said, "That book contributed markedly to the process of reform....And now we are thinking of writing that kind of book for the *new* phase of rural development in Vietnam."

In that work or other assignments, he may be able to draw on a new cohort of analysts. Taking note of the several FETP graduates who work in the agriculture ministry or allied institutions, Phat said, "They are outstanding, very useful in the way they analyze the situation and propose policy measures to deal with the problems"—and see to their implementation.

For just as Phat pursued his studies in Cambridge, the Vietnam Program's most unusual imprint on the country took shape. HIID typically established a presence in nations where its advisers worked, but in the early 1990s, before U.S.-Vietnam relations were normalized, this proved impossible to accommodate in Hanoi. As an alternative, in response to Vietnam's need for basic economic literacy, the Harvard personnel conceived a residential training program. An academic partner was identified in the relatively unconstrained Ho Chi Minh City (think Shanghai, the more international, colonial trading outpost, versus Beijing, the ancient capital), and the Fulbright Economics Teaching Program opened in 1994.

It began as a one-year certificate course in classical economics, modeled on the HKS curriculum. Candidates were screened by a standardized test and faculty reviews of written applications. In a country lacking an apex university that draws a national student body (like those in China and Japan, for instance), the

Tran Ngoc Trung Nhan, a Fulbright student who works for the My Tho municipal government (in the Mekong Delta), navigates the boundries between private investment and public land ownership, attempting to modernize the waterfront wholesale produce market, shown here. The upgraded retail market is shown above right.

SUSAN BENNETT

Fulbright School aimed for candidates from provinces across Vietnam—particularly those less likely than elite urban students to have opportunities to study abroad. Senior faculty members were borrowed from around the world—among them Perkins, who taught a version of his Harvard course on Asian development for most of two early semesters, and Dapice, who was in the classroom at the beginning, middle, and end of each academic year. Lecturers and teaching assistants were appointed from local universities, with progressive efforts to develop an indigenous faculty. And from the outset, English lectures and course materials were translated into Vietnamese; they are now disseminated to all comers online, broadening the school's educational impact nationwide (up to 100,000 files are downloaded monthly).

Absent any grand plan, the Vietnam Program had seeded a new institution. Perkins has direct experience of higher education's crucial role in fostering development in Indonesia and South Korea. Twenty years on, he says, somewhat amazed, "The Fulbright School provides the best graduate-level training program in Vietnam in the social sciences." Apart from engineering, he says, higher education there remains "pretty terrible": overworked faculty members moonlight to make a living, never mind having time for research. In that context, even at its current scale, the Fulbright faculty (now writing their own teaching cases based on problems from Vietnam) and their students (now pursuing research for their theses in a full-fledged M.P.P. degree program) have come to have an outsized, and promising, impact on the country as a whole.

SUSAN BENNETT

Modernizing the Mekong Delta

South of Ho Chi Minh City's older core—its narrow streets abuzz with storefront *pho* shops and rivers of commuters astride motorcycles and scooters—the modern, European-feeling urban area of Phu My Hung ("Saigon South") unfolds with wide boulevards, greenery, and new apartment buildings. Residential towers are under construction seemingly in every direction. This growth, anchored by an export-processing zone created in the mid 1990s by Ho Chi Minh City with initial investors from Taiwan, represents contemporary Vietnam: integrating with the global economy, supporting a rising middle class, and attracting the offices of international companies like Unilever that are eager to serve a nation of some 90 million people (ranked thirteenth worldwide).

The experience of creating Phu My Hung carries over into the Fulbright School's expertise. Phan Chanh Duong, a former physics teacher who segued into business during political turmoil in the 1980s, led the Vietnamese side of the partnership that developed the export zone in the early 1990s—and acquired his first formal training in economics and management by studying in the initial FETP executive program in 1994. As his knowledge deepened, he applied it as a lecturer at the school, then developed a course on "marketing places" (how to promote investment and development), twice visiting Harvard as a fellow to take classes. Now, as a regular member of the Fulbright faculty, he grounds his teaching in practice. At the Kennedy School, Duong says, courses focus on theory and building models to "try to find out how the world works." In Ho Chi Minh City, "The students are very occupied with the problems facing Vietnam—how do you get a *solution*, how do you *get* there?"

How those students pursue those solutions is evident in My Tho, the capital of Tien Giang province, spread out across the flat land of the Mekong Delta 40-some miles southwest of Ho Chi Minh City—close enough to be in the metropolitan orbit. Farmers ship their produce north to market, and My Tho reciprocally serves as the commercial and tourist gateway to the delta. The modern Rach Mieu Bridge (a much bigger cable-stayed cousin of Boston's Zakim Bridge) spans the river to join Tien Giang and Ben Tre provinces. Taking in the bridge and the excellent connecting roads, Nguyen Xuan Thanh, M.P.A. '06—a specialist in development finance, infrastructure, and public investment, and director of the Fulbright School since 2013—observes, "Socialists are good at rural infrastructure."

The core of My Tho is the very picture of modernity: clean streets, airy halls for visitors about to embark on Mekong River excursions, spruce government offices, and narrow, multistory residences rising on the tiny lots of the houses they replaced. But at water's edge, an older Vietnam prevails: stilt-supported structures of wood, brick, rough concrete, and corrugated-metal roof and wall panels: the homes of fishing families, potters, and others whose livelihood intertwines with the river daily. A wholesale farmers' market—the conduit between the surrounding rural province and urban consumers—and a vast retail market (for foodstuffs, clothing, and household goods of every description), originally organized informally by growers and buyers, also abut the river.

Tran Ngoc Trung Nhan negotiates the boundaries here between traditional and modernizing Vietnam, and between the state and private economy. In his work for the People's Council Office and People's Committee of My Tho (the municipal government) in trade promotion, he is responsible for attracting investment to modernize those markets, while the underlying land remains in public ownership. He guides visitors through the wholesale market that yields the sensations of rural Asia: roosters under wicker cages contemplating their fate, scarlet dragon fruits and bunches of green fingerling bananas on tarps, baskets and bagged bundles of produce bound for Ho Chi Minh City. But the pavement is uneven, the roof improvised in spots, and rotted produce tumbles down the bank to the water. Vendors' rents don't suffice to maintain what structure there is, nor support improvements for health, fire safety, or efficiency.

The retail market, in contrast, has a smooth concrete floor, running water and drainage (essential for the fresh-fish vendors), good lighting and ventilation, a sturdy new roof, and much-reduced threat of fire: all the fruits of private investment. Nhan trained as a construction engineer, and so had mastered the physical details of renovation. But he enrolled in the Fulbright program in 2012 to broaden his approach to the market modernization. He cites new skills in economic analysis, in assessing cost and benefit "to look for efficiency in an investment," and in the legal aspects of the province's oversight of development. For the market project, he has had to balance a long-term agreement for private investment with the enhanced facilities for the users—and the sixfold increase in merchants' monthly rent (to $15 for a selling space three meters square). A workable path toward renewing the smaller wholesale market remains to be devised.

His thesis, being supervised by Thanh, addresses this process and the trade-offs. More broadly, Nhan has seen to changes in the local and provincial review of residential building permits—sorting out problems he had not perceived before his studies. In Tien Giang, where farming and aquaculture still employ most of the population, the cumulative effect of such steps supports local ambitions to spur further investment and increase incomes.

Nor does Nhan labor alone. Throughout the delta, other Fulbright School graduates are pursuing development and shaping Vietnam's transition—and were eager to share news with fellow alumni at a luncheon in My Tho (for some, a couple of hours by car). Vo Thi Thu Huong is vice director of the Vietnam Chamber of Commerce and Industry in Can Tho, the delta's principal city: an unexpected-sounding role in a Communist country, but, she explains, a public organization that shares business perspectives with the government. She is also vice general secretary of the Pangasius Association, representing growers of native catfish, a major aquacultural export (and the subject of trade disagreements with the United States). Tran Thanh Tung, an FETP student in 2002 and formerly the investment manager at a provincial industrial-zone authority, in 2009 became rector of Vinh Long Community College, itself evolving: formerly a vocational school, now a higher-level institution offering instruction in nine programs such as aquaculture and food processing. Enhancing its 5,000 tuition-paying students' skills represents another element in the province's larger plan to move upward economically.

Rebooting Reform

ESSENTIAL though such steps are, recent experience has proved that realizing Vietnam's potential is hardly guaranteed. As the country has grown and changed, so has the Fulbright School—in ways that have deepened the engagement of its faculty and of the Kennedy School's Vietnam Program in addressing daunting challenges.

Those challenges stem from myriad problems in the political economy. As Dwight Perkins writes, steps taken in 1989 to expose state-owned enterprises (SOEs) to competition and to reduce their subsidies seemed to indicate "a willingness to move rapidly and firmly on…reform more generally" (as in China), but that was not the case. Sales of oil and farm products, rapid gains in exports of shoes and garments assembled in foreign-owned factories, and widely available development aid following the normalization of U.S.-Vietnam relations all buffered deeper change. The Asian financial crisis late that decade slowed growth markedly, David Dapice says, and the state became "increasingly *dirigiste*" (controlling of the economy).

Even so, private enterprises, newly liberalized in the new millennium, initially thrived, and a boom followed, with growth in gross domestic product reaching 8 percent from 2005 through 2007. But as Perkins writes, the SOEs, taking advantage of their "close relationship" with state banks and party leaders, indulged in profligate borrowing, expanding beyond their core businesses into real estate and other speculative activities and helping to drive inflation up to 23 percent in 2008. As policymakers sought to control the economy, private companies found it difficult to compete with the SOEs for

COURTESY OF THE FULBRIGHT SCHOOL

Lest anyone forget, Vietnam remains a Communist Party state, as a street decoration in central Hanoi suggests (far left). For all its gains during the past 25 years, much of the economy remains traditional, as in My Tho's market street (above) and outside the major cities. Nguyen Xuan Thanh, M.P.A. '06, developed Fulbright School's degree program—and is now its director.

SUSAN BENNETT (2)

During his first visit to Vietnam as secretary of state, John Kerry met with Fulbright alumnae Tran Thuy Giang (at rear, of Tri Viet Consulting and Investment) and Dang Thi Manh (foreground, of Procter & Gamble Vietnam). Faculty members present included Le Thi Quynh Tram, M.P.A. '13 (center), and Pham Duy Nghia, a former Harvard Law School fellow (far right).

U.S. STATE DEPARTMENT

credit and land and their growth was stunted. Although *doi moi* had stimulated agriculture, the uncertain status of land ownership has discouraged farmers from making long-term investments that would boost productivity. With the advent of the world financial crisis and recession, growth slowed to a pace well below the torrid rate China had sustained for three decades. Vietnam's per-capita output had then reached only one-third of China's, and only a tiny fraction of the levels enjoyed by Korea and Taiwan (and even trailing the less successful Thailand and Indonesia)—the very places Vietnam's leaders had visited with wonder two decades earlier.

It was in this context that two landmark changes in the Vietnam Program converged. In Ho Chi Minh City, Nguyen Xuan Thanh, who initially worked for the school part-time as an interpreter and translator, and then as a tutor and co-instructor, joined the faculty full-time in 2002. Following his two years at the Kennedy School, where he added an M.P.A. to an earlier master's degree, he returned to Vietnam to develop FETP's own two-year master's. In proposing the program to the Ministry of Education, he recalls, there was no field of study in "public policy," so it took a couple of years of cultivation and explanation to get the discipline recognized, in 2008. That elevated the program from its prior certificate-granting status; created room for elective courses beyond the economics curriculum (which now extend to management, leadership, and, broadly, "law," as a proxy for political science); and accelerated development of the indigenous faculty, and of their research for Vietnam-based teaching cases.

The timing was fortuitous. During the same period, Prime Minister Nguyen Tan Dung asked the Vietnam Program to critique the country's development strategy for the decade to come—in effect, updating the *Dragon's Trail* research in an era of expanded global trade and supply chains, China's furious growth, and more complex requirements for managing the domestic economy. The resulting paper, "Choosing Success" (available on the Ash Center's website), drew on work by Dapice, Perkins, and Daewoo professor of international affairs Anthony Saich, the Ash Center director; staff members including Ben Wilkinson '98, based at FETP; and Fulbright faculty members Thanh, Vu Thanh Tu Anh, and Huynh The Du.

In reporting to the prime minister in January 2008, they fully took up the invitation to view Vietnam's situation objectively. They found "public investment…riddled with corruption and waste," entailing high costs, delay, and unneeded facilities—such as a series of deep-sea ports in central Vietnam, far from the economic centers then choking on inadequate facilities. The economy was plagued by "[p]olitically powerful Vietnamese…transforming public property into personal wealth through murky land deals and an equitization process that leaves insiders in control of state companies and their assets." The financial system was distorted by "failure to separate political from economic power. Ninety percent of job creation and 70 percent of industrial output [are] generated by the private and nonstate sectors, yet the Vietnamese financial system allocates a majority of credit and capital to the state sector."

The paper pointed squarely at policymakers and the powerful interests who influenced them to support inefficient but well-connected SOEs—a strategy "no different from a soccer coach who starts his weakest players in the championship match." To achieve their goals, Vietnam's leaders would have to improve education, reform public finances, adopt corporate transparency, empower the central bank, and, generally, "eliminate delusional policies." In comparing Vietnam to other Asian economies, the paper strongly suggested that making the right choices could lead to the results the leaders sought; their challenges lay not in ideology, but in sound governance conducted by a modern state.

It is hard to imagine such advice being warmly received in the United States—or to conceive of Vietnam's party state welcoming it from a small, distant, academic outpost. But pragmatism prevailed again, as the slow growth and economic instability the scholars forecast came to pass. Geography may have helped, too: Dapice cites a Vietnamese saying about being "too close to the sun" (in Hanoi's immediate environs)—but the Fulbright faculty wrote from comfortably far away, in Ho Chi Minh City and Cambridge. "On paper and in practice, we are completely independent," Thanh says, "because we operate from Harvard, and the people and government in Vietnam know that."

After "Choosing Success," in fact, the government sought a regular channel for unfettered conversations about such questions. The resulting Vietnam Executive Leadership Program (VELP), begun late that same year of 2008 and supported by the United Nations Development Programme, has brought senior government leaders (led by one of the deputy prime ministers) to the Kennedy School four times for week-long, confidential exchanges on globalization, Vietnam's competitiveness, and its socioeconomic development. The thematic agenda for each dialogue—dedicated, Thanh says, to "contributing to the policy debate, so the government can make *better* policy"—is developed by FETP and Harvard personnel in consultation with Vietnamese officials. With the deepening of Vietnam's economic problems and the strengthening of the faculty's capabilities, those discussions have, in turn, only become more searching.

The discussion paper for the VELP gathering in Cambridge last August showcases that evolution. The lead authors are five Fulbright faculty members plus Wilkinson, followed by Perkins and Dapice. Their analysis progresses from probing problems and posing policies to critiquing the society's basic rules. The paper first categorizes Vietnam's recent economic strength (in attracting export-oriented foreign direct investment) and weaknesses (in all other sectors, from SOEs and weakly capitalized commercial banks with conflicted ownership to private businesses and agriculture). It then outlines broad choices and their likely result: managing fiscal policy and inflation, but eschewing basic reforms (3-4 percent growth); restructuring loss-ridden banks to improve lending to the private and agricultural sectors (5-6 percent growth); and "a thoroughgoing structural and institutional reform of the major problems" restraining the economy, from cleaning up banks and taking on SOEs to reducing corruption and strengthening governance generally (8-9 percent growth—the path Vietnam nominally seeks, and the rate other Asian economies have realized at a similar stage of development).

In this sense, the Fulbright School scholars suggest that Vietnam's future depends not only on sound policies, but on overhauling fundamental institutions. Rather than exercising economic leadership, "the state should only do what the private sector does not want or cannot do." For private enterprise and agriculture to flourish, "a clear property-rights regime is…foundational." Similarly, "citizen participation in exercising public power and in delegating power to the state is the foundation of the political legitimacy of any democratic regime"—and must be recognized in law.

Can Vietnam address such an agenda? Some observers were startled by Prime Minister Nguyen Tan Dung's new year's message, in January. He spoke about focusing on "the construction of law-governed state, bringing into full use the mastership right of the people, improving the socialist-oriented market economic institution and restructuring agriculture…." During the past 30 years, he continued, "our major achievements are inseparable from major institutional reforms, the nature of which is to expand democracy and implement market mechanisms in economic activities," all while recognizing the right of the people "to participate in the policy-making process, the right to choose their representatives, and the [right of] property ownership." He talked about separating "business tasks…from political and public duties."

If the venue and timing surprised the faculty and students in Ho Chi Minh City, the essence of the prime minister's message did not.

Fulbright's Future

Meanwhile, the Fulbright School is taking its own medicine: building its skills and aiming for a truly ambitious future.

In the normal course of academic operations, the faculty continues to pursue deeper training, enabling it to address a changing Vietnam. For example, Le Thi Quynh Tram—an electrical engineer who had worked for Nortel in Canada—attended the school in 2007 to acquire training in applied economics, and then became a tutor and teaching fellow. Having completed her M.P.A. studies at Harvard in 2013, she is now Fulbright's academic affairs manager and a full lecturer in four courses. And Huynh The Du—already a civil engineer, a 2002 FETP graduate, a 2010 Kennedy School M.P.A., and a faculty member since 2005—earned his D.Des. from the Graduate School of Design last May. Having previously done groundbreaking research on the limitations of Vietnam's state-owned shipbuilding industry (the lead company went bankrupt in 2010) and on an ill-advised proposal for a national high-speed rail system (rejected by the National Assembly in the same year), he will return to the school this spring prepared to teach at a new level about Ho Chi Minh City's growth and Vietnam's rapid urbanization. After experiencing the characteristic "one-way lecturing" during his Vietnam schooling, Du says his FETP education was "the first time I had the opportunity to think and talk freely, to raise my arguments and to deal with professors equally"—a style he has brought to his own teaching, including advising several thesis students at home this year via weekly Skype conferences.

Fulbright is also expanding its reach into pressing new areas—most prominently, melding its economic and public-policy teaching and research with a focus on the environment and sustainability. Rainer Assé, a Cornell-trained natural-resources Ph.D. who has worked in Africa and Asia during the past two decades, joined the school in January to direct a new Lower Mekong Public Policy Initiative. A component of a U.S. Agency for International Development-funded project spanning the Mekong region, the initiative focuses on the development-policy challenges posed by climate change, hydrology (irrigation, subsidence, salt-water intrusion), and other threats. Assé aims to work with local officials, the private sector, and others to "design and integrate economic policies that are ecologically and socially sustainable." Given the school's record, he says, he quickly found it "very well placed among local decisionmakers and high-level policymakers" to direct a productive policy conversation in the lower delta. As he does, consistent with the Vietnam Project's origins, he will develop new courses for the Fulbright curriculum, broadening its policy reach while taking the first steps toward introducing scientific and engineering content into its educational offerings.

That last detail may, in time, be the most telling. For Fulbright is now pursuing the largest leap in its unlikely 20-year history: transforming itself from a public-policy school with impeccable academic credentials into its country's first private, nonprofit university, modeled on international standards. Even as it adds urban development, law and governance, and the environment to its curriculum, with faculty and research to match, Thanh says, the biggest contribution the Fulbright School can make is to create a larger, surrounding institution in which it thrives as the public-policy school. "The FETP structure works," he says, "because we have the academic freedom and space to innovate"—a capacity that exists nowhere else in Vietnamese higher education.

At a time when so much else in the country is being rethought, the proposal prompts "both excitement and fear in Hanoi," where it is being reviewed, he says. Like the earlier certification of the M.P.P., a Fulbright University Vietnam poses novel issues in a system built on existing public universities, for-profit *(please turn to page 83)*

HM Visit harvardmag.com/extras to learn how Fulbright School graduates are reshaping the economy and public administration in Danang and Hoi An (shown here), a UNESCO World Heritage Site and a center of Vietnam's rising service and tourism industries.

ANDREW BAIN/GETTY IMAGES

Montage

Art, books, diverse creations

Left: "Interweave," a 1982 studio quilt by Michael James. Above: a "blazing star" quilt, circa 1880-90, probably from Nashville, Illinois. Both are from the Ardis and Robert James Collection.

The Art of the Quilt

Fabric art that rises from mattresses to museum walls

by JULIA HANNA

IN THE SUMMER of 1971, visitors to the Whitney Museum of American Art discovered something new, in a way: quilts, some a century old. Each was hung like a painting, all the better to appreciate the intricate interplay of geometry, pattern, and color in every piece. Until then, quilts had more or less been lumped into the general category of American folk art, along with carousel horses and tavern signs. With the opening of *Abstract Design in American Quilts*, they were recognized as aesthetic achievements. The critical and popular response was so enthusiastic, the Whitney extended the show's run by two months.

The exhibit was the brainchild of Jonathan Holstein '58 and his partner, Gail van der Hoof. In the late 1960s, the couple lived in New York City; on weekends they visited friends with a country house in Pennsylvania, where they spent many happy hours combing through antique shops and open-air markets. "I knew of quilts, but never thought of them as anything other than bed covers," Holstein says. "Dealers accumulated a lot from house sales, but no one wanted them. One day we were going through a pile and one jumped out at me. It was a revelation. I said, 'My God, it looks like the paintings we're seeing in New York.'" In retrospect, the comparison seems easy: fawn-colored, with four verti-

Photographs courtesy of the International Quilt Study Center and Museum/www.quiltstudy.org

Clockwise from below: An Amish bar pattern quilt, circa 1890-1910, probably from Lancaster, Pennsylvania; a "Roman square" pattern, circa 1930-50, possibly from Vermont; "The Women: Mask Face Quilt #1," a 1986 African-American studio-art quilt by Faith Ringgold, New York City; a "spider web and star" pattern quilt, circa 1890-1910, probably from Pennsylvania. All are from the Jonathan Holstein Collection, except for the Faith Ringgold quilt, which is from the Ardis and Robert James Collection.

cal, centered, light green bars surrounded by a box border of violet, the Amish quilt recalled the abstract work of Barnett Newman and Mark Rothko.

Holstein and van der Hoof, who married in 1973, were most drawn to pieced quilts—made of cut pieces of material sewn together into primarily geometric patterns—as opposed to appliqué quilts, in which cut pieces of cloth in various shapes, sometimes geometric, sometimes figurative (baskets, schoolhouses, people) are sewn or stuck to a cloth backing. (Holstein, an art dealer in Cazenovia, New York, wrote the 1973 book *The Pieced Quilt: An American Design Tradition.*) A curator friend suggested contacting the Whitney; the museum accepted the quilt-show premise on the basis of six slides. To select the final lineup of 62 quilts, the couple spread their collection on the lawn of Roy Lichtenstein's Long Island home, ran up to the widow's walk, and shouted down directions for editing out some quilts and reordering others.

Those quilts, and hundreds more they collected, now reside in the International Quilt Study Center & Museum(www.quiltstudy.org) at the University of Nebraska at Lincoln. The world's leading center for the display, preservation, curation, and study of quilts as an art form, it also has the largest publicly held collection of quilts (numbering more than 3,500) anywhere. They date from the early 1700s and represent more than 25 countries. The center's 37,000 square feet include research and storage space; a 12,400-square-foot addition is underway. Through an associated academic department, it offers a unique master's degree in textile history with a quilt-studies emphasis.

The center's founders, Nebraskans Ardis (Butler) James and Bob James, M.B.A. '48, Ph.D. '53, bought their first quilt in 1979 and soon amassed such a large collection that they had to add a gallery over their garage in Chappaqua, New York, to hold them all. Their approach, different from Holstein and van der Hoof's, was to create a wide-ranging collection representative of various time periods and styles, from anonymous works of the 1800s to "studio" quilts made by contemporary artists such as Michael James and Faith Ringgold.

"Our kids were out of the house at that point," says Bob James, an oil-company executive and real-estate developer. "Starting this, we fell in love again. It was a 50-50 endeavor all the way." He grew up watching his mother quilt—and paint, and throw pots—on the family farm in Ord. His wife, a great lover of textiles, had always sewed and even quilted herself. According to her husband, she had a fine eye for colors and composition, while he considered factors such as the quality of a quilt's construction and how it fit into the collection as a whole.

From near and far, aficionados showed up to view their collection. "One weekend, seven Japanese came by to look at our quilts," Bob James recalls. "It was the most amazing thing." By 1994, the couple had amassed 1,000 quilts, with no signs of slowing. "We knew we were going to die, and that we had to do something with these quilts," James explains. They eventually settled on the Lincoln venue in 1997; with the Jameses' support and university fundraising, the center opened in 2008. Their son, Ralph, M.B.A. '82, executive director for external relations at Harvard Business School, helped his parents oversee the construction and now sits with his father on the advisory board.

Once hung in a museum, a quilt becomes something more than a bed cover. Yet the question of whether an object not consciously created as "art" should bear that label is not a meaningful discussion for either Holstein or James, who of course have known each other for years. Both men are widowers, but their wives' spirits and sensibilities live on in Lincoln.

Collecting quilts had its advantages, as compared with other types of art collection. Bob James notes that their relative affordability made the task of accumulating a significant collection easier on the pocketbook. The most expensive piece he ever bought—a Civil War-era quilt depicting a white man and his freed black slave—cost $200,000, a pittance when compared to sought-after paintings or sculptures. "It's another kind of art, that's all," says James. "If you're a man on the street, it doesn't frighten you. Any quilt, you can look at, and say, 'That's pretty nice.'"

Raw Wood Sings

Bob Childs makes world-class violins.

by LAURA LEVIS

ALONE IN HIS STUDIO, while a radio plays baroque music, master violinmaker Bob Childs, Dv '92, Ed.M. '93, holds a flat piece of spruce in his hands and taps it with his finger. He listens. Tap! Tap! Tap! He listens again. It will take him some 200 hours to create a violin worthy of some of the greatest musicians in the world. But the wood must sound right to him—must sing to him—from the very start.

"You're listening for that bell-like sound, that sustained sound," Childs says. "A really good violin will sound good right from the beginning."

After spending so much time with this piece of wood, giving birth to what will be virtually a living instrument—one that will long outlive any of its players—Childs hears his own inner voice saying, "Keep it." But he does not. His masterpiece will go to someone in the Boston Symphony Orchestra, or New York Philharmonic, or perhaps a violinist in Germany or Scotland who's waited on his list for at least a year to get it.

There are at least two consolations, he says. Crafting violins is his calling, and with every one he makes, he adds to his legacy. And he is not saying goodbye to this violin forever.

Childs has made 140 violins in 38 years. Those who've bought his instruments become eligible for membership in a very elite organization: *Childsplay*, an orchestra whose members all play, yes, a Childs violin. They tour the nation, have a forthcoming PBS special, and play both large and small venues several times a year. At any time, Childs can hear the group's 20 musicians playing fiddle music on those pieces of wood he tapped and tapped and tapped for hours on end.

"There's a commonality to my instruments—people can recognize that I made them," he says. "Just like you can recognize that Stradivarius made an instrument. Really, what you're after is just to have it be you, and then to have all those voices united together. We think of it as a family choir…a violin choir that's singing together."

In his tiny third-floor workshop in Cambridge, Childs sits at a small desk surrounded by plaster violin molds and tools of varying shapes and sizes, with the smell of freshly cut maple and spruce wafting through the air. Holding the beginnings of a violin that he will eventually sell for about $18,000 up to a window flooded with light, he carefully carves the wood, constantly check-

A Childs violin typically takes more than a year to obtain and sells for about $18,000.

Violin photographs courtesy of Bob Childs


STU ROSNER

In his Cambridge, Massachusetts, studio, Childs makes about six violins a year.

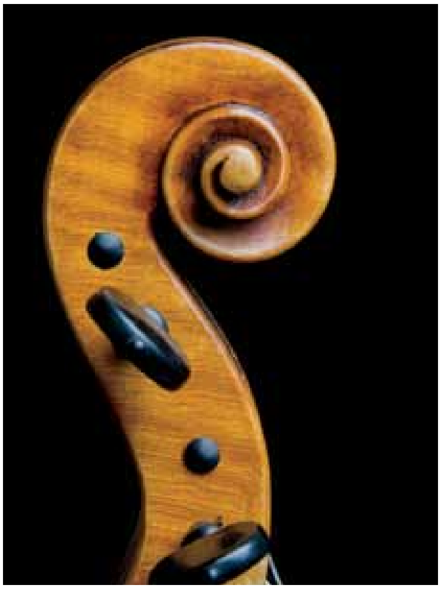
ing to make sure the thickness, and most important, the sound, are nothing short of impeccable.

"I can feel the quality of the wood, and the flex of it," Childs says. "The very amazing thing that people don't realize is that the sound of the violin is actually in the wood before you start." He lightly taps a piece of spruce that he has recently cut into the shape of the top of a violin. "There's a wisdom that you get," he adds. "It's a wisdom that I think is what I would call *anoetic:* anoetic knowledge—a wisdom that comes through your feeling, not necessarily intellectual wisdom."

HM▶ Visit www.harvardmag.com/extras to hear several songs from *Childsplay.*

Pulling down a stack of air-dried wood from a high shelf above a small "Bugs Bunny" basketball hoop, Childs demonstrates his process. It begins, typically, when a musician comes to his studio and they pick the wood together. Depending on the type of wood—spruce, maple, and ebony are the primary varieties used—and the thickness, he says, each violin will have a unique sound and tonal quality. Then Childs holds up a plaster mold. "This is an old Guarneri violin that we took apart, and we made a cast of it," he says. "You make a cast of the violin you are going to copy by creating an external cast first, which means that you protect the violin that you are copying by giving it a protective cover, then creating an external wall or barrier that will hold the plaster you pour into it. That creates a reverse mold, so you have to create a positive image of the cast by pouring plaster into the external mold and you end up with an exact copy of the shape of the original back and top that you were seeking."

The molds enable him to replicate the outline and contours used by the master



violinmakers of Italy, Childs says. "They say there are two things in the world that have completed their evolution—one of them is the redwood tree, and the other is the violin," he explains. "In terms of the form, it doesn't change."

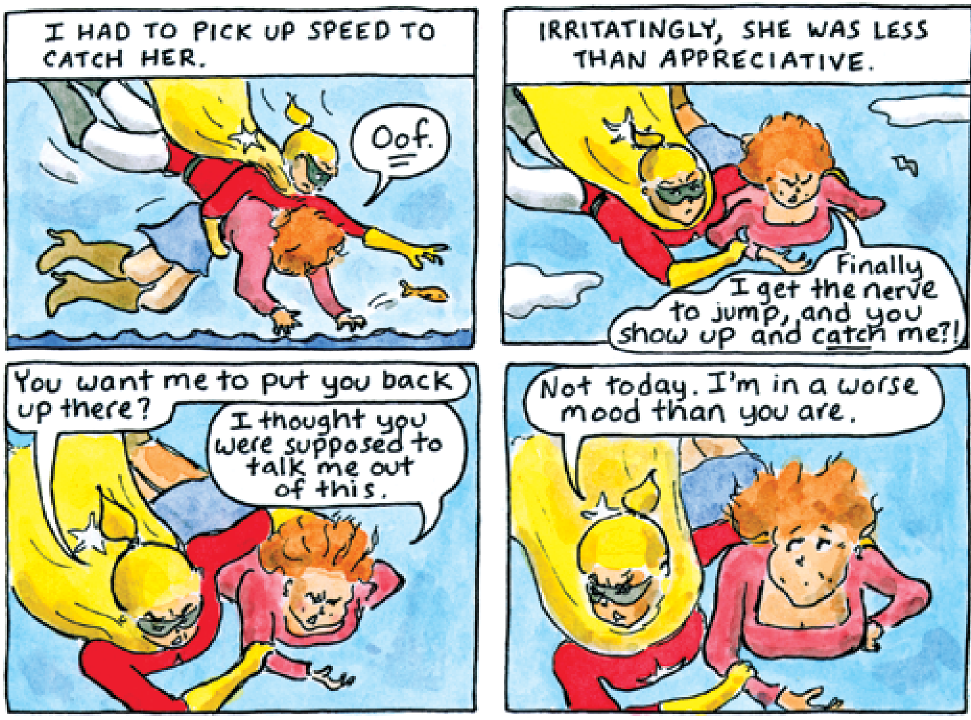
Childs says that he likes to think of violins as going in two directions: either they are like trumpets and they're way out in front of the orchestra, or they're going to draw the audience toward the player, with what he describes as a "chocolatey kind of sound."

It has taken years for Childs to develop his eye. He first started working in Maine for a self-taught violinmaker. He then worked with some of the top craftsmen in the world before moving to Philadelphia; there he repaired and restored the violins for Philadelphia Orchestra musicians and began to develop his own style. "We got to take apart really beautiful, old, famous violins from orchestra members," recalls Childs, who also works as a clinical psychologist and teacher. "So I got to know Stradivarius violins and Guarnerius violins, Amati violins—all the great makers.

At left: An ornate scroll on the neck of a violin. Above: A fiddling putto or Baroque cherub is one of Childs's trademarks.

I learned from the masters and was able to create my own brand."

Yet how does a maker, in the course of a lifetime, develop violins that all have his voice? "Some part of the violinmaker gets put in the violin, gets transmuted to the violin in some way," Childs says. "That's half of it. The other half, of course, is the player. The music that's inside the player comes out through the violin. In that way it's a remarkable thing. It's very mysterious."



COURTESY OF SAGE STOSSEL

Left: An episode from *Starling* in which the superheroine, having made a midair rescue of an aspiring suicide who's leapt off a bridge, gets a not-especially-grateful reception. Below: At home in Cambridge, Stossel works at her dining-room table.

The Anti-Superheroine

"Starling" can handle thugs and palookas, but not daily life.

by CRAIG LAMBERT

In their evil-fighting exploits, superheroes face some of the most daunting situations imaginable, but their private lives usually remain unproblematic. Apart from occasional girlfriend issues, Clark Kent simply goes about his business as, well, a mild-mannered reporter for a major metropolitan newspaper. Billionaire Bruce Wayne lounges around his mansion devoting himself to philanthropy when not suiting up as Batman.

This is emphatically not the case with Amy Sturgess, the yuppie marketing executive who often transforms herself into the superheroine title character of a graphic novel, *Starling*, by *Atlantic* cartoonist Sage Stossel '93. Amy gulps Xanax, laments her empty love life, gets outmaneuvered at the office by a conniving colleague, comes from a dysfunctional family with neglectful parents, and sees a shrink, whose diagnostic notes on her include "self-defeating negativity," "self-sabotage," and "procrastination." Amy tends toward crankiness and often grumbles when summoned to fly from her window to stop a crime at some inconvenient hour. After busting the burglars or manhandling the malefactors, she may go all softhearted and not even turn them over to the police, sometimes sending the hoods on their way with a wad of cash to ease the trip.

Amy "isn't like me," Stossel explains. "She doesn't look like me. She's outspokenly grouchy, whereas I am very retiring. I was extremely shy as a teenager, and fixated on that—I was miserable in middle school. Starling is not very self-aware: she's a better person than she gives herself credit for. There *is* a parallel: Starling feels different, and I felt different. In the book, she comes to embrace her differentness, but at the beginning, the main thing she wants is to be like everyone else."

Not so easy when you are strong enough to pick up 300-pound bouncers or subdue muscular thugs, when your hands have built-in lightning bolts that can stun crooks with 750 volts of electricity, and you can fly like Superman, cape flapping in the wind. But Amy's background doesn't fit the superhero model. Maybe Superman was born on Krypton and rocketed to earth, but Amy was born to Earthling parents who owned 36 cats and was an outcast at school because her clothes reeked of cat urine. When her extraordinary powers start emerging at adolescence, the nonprofit Vigilante Justice Association, a loose federation of superheroes with a crime-fighting mission, soon signs her up and convinces her that yes, she can really jump out a window and fly.

Love is awkward, though, when a touch from Amy's high-voltage hands acts like a Taser, decking her college boyfriend. (Later, her younger brother, Noah, kiddingly suggests that she date old men: "That way, if they have heart attacks, you can defibrillate them with your hands.") A superheroine's lifestyle also has career drawbacks: if you have to duck out of meetings unexpectedly to change clothes and fly off to foil a crime, colleagues start to view you as perhaps a tad unreliable. Amy's cover story is that irritable bowel syndrome necessitates her

TATIANA BLANCO

O P E N   B O O K

Baseball by the Numbers

Baseball resumes, with all its oddities: no time limit to play, the *defense* controlling the ball, and so on. Its long and statistics-studded history lends itself to ever-deeper analysis. Benjamin Baumer, formerly statistical analyst for the New York Mets, now a teacher of statistics and mathematics at Smith College, and Andrew Zimbalist, Ph.D. '74, Woods professor of economics there (and a prominent analyst of the economics of professional sports), cast a scholarly eye on *The Sabermetric Revolution: Assessing the Growth of Analytics in Baseball* (University of Pennsylvania, $26.50). Some of the fundamentals, from the preface:

Baseball, much more than other team sports, lends itself to measurement. The game unfolds in a restricted number of discrete plays and outcomes. When an inning begins, there are no outs and no one is on base. After one batter, there is either one out or no outs and a runner on first, second, or third base, or no outs and a run will have scored. In fact, at any point in time during a game, there are 24 possible discrete situations. There are eight possible combinations of base runners….For each of these combinations of base runners, there can be either zero, one, or two outs. Eight runner alignments and three different out situations make 24 discrete situations. (It is on this grid of possible situations that the run expectancy matrix, to be discussed in later chapters, is based.)

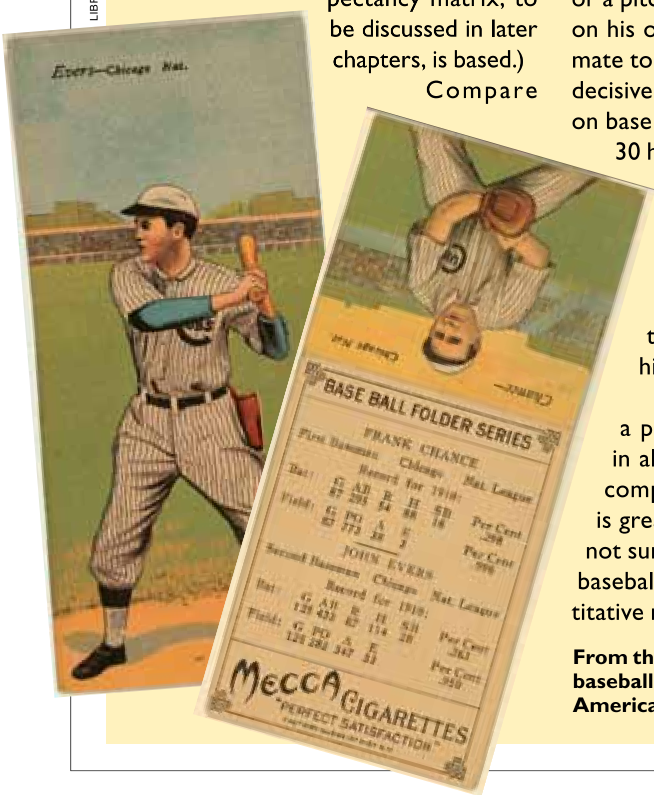
Compare that to basketball. There are virtually an infinite number of positions on the floor where the five offensive players can be standing (or moving across). Five different players can be handling the ball.

Or, compare it to football. Each team has four downs to go 10 yards. The offensive series can begin at any yard line (or half- or quarter-yard line) on the field. The 11 offensive players can align themselves in a myriad of possible formations; likewise the defense. After one play, it can be second and 10 yards to go, or second and nine and a half, or second and three, or second and 12, and so on.

Moreover, in baseball, performance is much less interdependent than it is in other team sports. A batter gets a hit, or a pitcher records a strikeout, largely on his own. He does not need a teammate to throw a precise pass or make a decisive block. If a batter in baseball gets on base 40 percent of the time and hits 30 home runs, he is going to be one of the leading batters in the game. If a quarterback completes 55 percent of his passes, though, to assess his prowess we also need to know something about his offensive line and his receivers.

So, while the measurement of a player's performance is possible in all sports, its potential for more complete and accurate description is greater in baseball. It is, therefore, not surprising that since its early days, baseball has produced a copious quantitative record.

LIBRARY OF CONGRESS



From the pre-Wrigley Field era, when baseball and smoking were *both* all-American: 1911 Chicago Cubs player cards

frequent dashes to the lavatory. When she returns to the meeting, though, bruised and battered after a violent skirmish with crooks, she admits, "Sometimes I wondered *what* intestinal agonies they thought I've been going through in those bathroom stalls."

Stossel began publishing her cartoons in college, where her comic strip "Jody"—an alter ego whose stories derived from Stossel's own collegiate misadventures—ran in *The Harvard Crimson* for four years. When trying to render characters' emotions, "I would scour the funny pages, looking for examples of, say, resentment," Stossel explains. "You look for things like which way the eyebrows are going." She also practiced the expressions herself, with the result that her roommates sometimes asked her to work elsewhere. She joined *The Atlantic* in 1994, shortly after brother Scott Stossel '91 was hired there as a fact checker. (He is now second-in-command among *Atlantic* editors; for more about him, see "Annals of Anxiety," January-February, page 64.) At first, she tracked down rights and permissions for the magazine, but soon began drawing editorial cartoons that evolved into her regular feature, "Sage, Ink." She also wrote and illustrated the children's books *On the Loose in Boston* (2009) and *On the Loose in Washington* (2013).

Stossel, who works in ink with a watercolor gouache, solved some new problems with *Starling*, her first graphic novel. There were small things like figuring out how much action could be implied "between" the panels. Editors helped her with continuity issues, like making sure Amy's shirt didn't change color within a sequence.

The book—1,740 panels long—targets adult readers, but Stossel avoided curse words throughout. "In my mind," she says, "I'd be asking myself, 'What would my in-laws think?'"

The Intoxication of Celebrity

Leonard Bernstein's life, in his letters

by CAROL OJA

Nigel Simeone, ed. *The Leonard Bernstein Letters* (Yale University Press, $38)

NEARLY A QUARTER-CENTURY has passed since the death of Leonard Bernstein '39, D.Mus. '67, yet his prodigious talent and flair for attracting an audience continue to work their charms. Call it the afterlife of the media age. Bernstein's epic performances of symphonies by Gustav Mahler and his charismatic appearances on national television, especially in the widely praised Young People's Concerts with the New York Philharmonic, are reissued periodically in ever-new formats. And his major works for the stage, including *West Side Story*, *Candide*, and *Mass*, are revived at regular intervals. A Bernstein industry is in place, with The Leonard Bernstein Office in New York City managing his intellectual property and the Library of Congress regularly acquiring new materials for its voluminous collection of his papers. Added to that, the New York Philharmonic Leon Levy Digital Archive has uploaded hundreds of Bernstein's personally annotated conducting scores into an open-access repository, making it possible to study his interpretative decisions. Fresh assessments of Bernstein's work as composer, conductor, and pianist appear with growing frequency, and today's emerging acceptance of homosexuality makes it possible to explore with candor the complex life of a man who had many gay relationships (yet managed to thrive in a closeted America) at the same time as he was devoted to his wife, Felicia Montealegre.

Nigel Simeone's *The Leonard Bernstein Letters* adds to the growing list of titles about Bernstein, offering an annotated and substantive selection of correspondence. Some of these documents have been published previously, while others are newly printed. All told, the letters selected by Simeone, a writer and critic whose books include *Leonard Bernstein: West Side Story*, are strongest in documenting Bernstein's personal relationships. This was no fly-by-night friend but a man of remarkable loyalty. The letters reveal less about his work as a composer,

COURTESY OF YALE UNIVERSITY PRESS

Dramatic even in his student days: Leonard Bernstein at the piano in 1936

and as the volume proceeds into the 1950s, a dizzyingly packed performance schedule and easy access to the telephone take a toll: the letters grow short, with major gaps in time, and they yield a less coherent story. As a result, the first half of the book provides the most gratifying experience for the reader. Yet there are gems from the later years as well, especially in Bernstein's long and loving correspondence with his wife.

Bernstein's undergraduate experience at Harvard is chronicled vividly. Writing in 1937 to Sid Ramin, a childhood friend from Roxbury who later became the orchestrator of *West Side Story*, he described how to reach his room in Eliot House from the Harvard Square T stop. Walk down Dunster Street "*as far as you can*," Bernstein directed Ramin. "Go to G (gee) entry, walk up to Room 41 (all doors are marked) and knock vigorously. Voilà." Even at this early date, a solid network of personal relationships was in place, whether with childhood friends like Ramin, Beatrice Gordon, or Mildred Spiegel; the piano teacher Helen Coates (who later became Bernstein's lifelong personal assistant); or a growing number of professional musicians, including the conductor Dimitri Mitropoulos and the composer Aaron Copland.

Bernstein struggled with Harvard's music department, which was then quite conservative. "[Tillman] Merritt hates me, but Mother loves me. [Walter] Piston doubts me, but Copland encourages me," he lamented in 1938 to Kenneth Ehrman, a friend from Eliot House. "I hate the Harvard Music Department. You can quote that.... I hate it because it is stupid & highschoolish and 'disciplinary' and prim and foolish and academic and stolid and fussy." Yet Bernstein already had a knack for seizing the limelight, which trumped his frustrations. "I've graduated with a bang," he reported in another letter to Ehrman. "An incredible A in the Government course, and a cum laude. A great class day skit which I performed to a roaring crowd through a mike, and got in some parting cracks...at the old school and its officials."

By his early twenties, Bernstein was still a kid in many ways, yet on the verge of becoming a household name. "I bruised my metacarpal (!) playing baseball this afternoon. All of which makes good for concerto-playing the 25th!" he wrote in 1941 to Shirley Gabis, a close friend from Philadelphia, as he graduated from the Curtis Institute of Music with a master's degree in conducting. Two years later, Bernstein was appointed assistant conductor of the New York Philharmonic and wrote a beguiling account of his ineffectual negotiations with Arthur Judson, the Philharmonic's powerful manager, in a letter to his mentor Serge Koussevitzky, conductor of the Boston Symphony Orchestra. "Believe me, I tried very hard to feel like Koussevitzky while I was in the Judson office," the young musician declared, "but I was only Leonard Bernstein, and I had to act as I did." That same fall, he described his modest apartment in the Carnegie Hall studios, which at that point had no furniture. "My shirts are all in suitcases," he reported to his friend Renée Longy Miquelle, director of the Longy School of Music in Cambridge, which had been founded by her father. Within a few months of signing a contract with the Philharmonic—while still living out of a suitcase—Bernstein famously substituted for Bruno Walter and made such a splash that he inspired a rave review on the front page of the *The New York Times.*

Correspondence with Aaron Copland threads through the book, starting with Bernstein's Harvard years. An intense romantic liaison existed alongside a rewarding professional partnership. "What terrifying letters you write," declared Copland in 1940, "fit for the flames is what they are." Those letters also chronicle the degree to which Bernstein served as a central advocate for Copland's music, conducting it around the world and eventually programming it frequently with the Philharmonic. In 1947, as part of an important series of postwar concerts that helped reopen transatlantic musical networks, Bernstein conducted the European premiere of Copland's Third Symphony in Prague with the Czech Philharmonic Orchestra. "First I must say it's a wonderful work," he reported to Copland. "Coming to know it so much better I find in it new lights and shades—and new faults," launching an audacious critique. "Sweetie, the end is a sin. You've got to change....We must talk – about the whole last movement, in fact." As time passed, the emotional intensity of Bernstein's correspondence with Copland dimmed, even as the fundamental tie remained strong. Yet there were ambivalences on both sides. When Felicia Bernstein died of cancer in 1978—a loss from which Bernstein never fully recovered—Cop-

Chapter & Verse

Correspondence on not-so-famous lost words

Thomas Gutheil seeks the name "of a (regrettably not recent) science-fiction story in which it is proposed that cancers exert psychological as well as physical damage and the physician has to enter into essentially telepathic contact with the patient to combat this."

Robert Kemp would like to learn the origin of an expression frequently used by his father: "Such is life in a large city with many inhabitants."

Bill Hopkins hopes someone can identify this prayer: "Lord, if only I have you,/ I make no demands of Heaven and Earth./ When my body and soul fade away,/ You, God, are ever my heart's comfort, and my portion.// When I have you, Lord Jesus,/ What should I ask of Heaven?/ How could I find delight/ in the turmoil of this vile world?/ When my body and soul fade away/ and the night of death sets in,/ you are yet my life.// Happy the man who carries Jesus/ Deep in the chamber of his heart!/ He will have fulfillment,/ He will lack no treasure,/ So long as he finds shelter and protection/ In God the Lord."

Eliot Kieval asks when the late Pete Seeger '40 first emblazoned on his banjo the declaration, "This machine surrounds hate and forces it to surrender," and whether that saying was original with him or derived in part or in whole from someone else.

Send inquiries and answers to "Chapter and Verse," *Harvard Magazine,* 7 Ware Street, Cambridge 02138, or via e-mail to chapterandverse@harvardmag.com.

Off the Shelf

Recent books with Harvard connections

Reinventing American Health Care, by Ezekiel J. Emanuel, M.D. '85, Ph.D. '89 (PublicAffairs, $26.99). Oncologist, writer, and policy adviser, the author, now at the University of Pennsylvania, rebuts critics of "Obamacare" in his subtitle: "How the Affordable Care Act Will Improve Our Terribly Complex, Blatantly Unjust, Outrageously Expensive, Grossly Inefficient, Error Prone System."

An Ocean Garden, by Josie Iselin '84 (Abrams, $17.95). Continuing her photographic explorations, Iselin, of San Francisco, who previously documented beach stones, now finds the beauty in seaweeds. After a long winter, it's time for sand-between-the-toes; this is an eye-opening guide to what else might lodge there.

Restoring Opportunity, by Greg J. Duncan and Richard J. Murnane, Thompson professor of education and society (Harvard Education Press, $26.95 paper). The authors focus on inequality (they talk about the "fading dream" of upward mobility) and proven educational interventions and support for families that enhance outcomes for low-income children.

I Don't Care if We Never Get Back, by Ben Blatt '13 and Eric Brewster '14 (Grove Press, $24). Blatt, a sports-statistics geek, and his wingman, Brewster, set out last June on an algorithmic journey to see 30 baseball games in 30 cities in 30 days, including "the good, the bad, the ugly and the Miami Marlins." You don't want to know what they ate.

Prisoners, Lovers, and Spies, by Kristie Macrakis, Ph.D. '89 (Yale, $27.50). With a sure instinct for a spicy title, Macrakis, an historian of science now at Georgia Tech, delivers what is described as the first history of invisible writing, from Herodotus to al-Qaeda. How many academic books have a chapter titled "Hiding in Porn Sites" (about possibly disguising terrorist plots in X-rated photos)?

GDP: A Brief but Affectionate History, by Diane Coyle, Ph.D. '85 (Princeton, $19.95). An accessible account of the widely used measure of economic activity—and of its limitations in an era when sustainability concerns (witness China's fast GDP growth, and cities polluted past healthy habitation) have come to the fore. Coyle finds it a measure designed for a past economy of "physical mass production."

The Ten Commandments: A Short History of an Ancient Text, by Michael Coogan (Yale, $25). Turning to matters spiritual, Coogan—a Divinity School lecturer on Old Testament, and the Semitic Museum's director of publications—proves a brisk guide to the evolution and meanings of the Decalogue.

America's Fiscal Constitution: Its Triumph and Collapse, by Bill White '76 (PublicAffairs, $35). Bill (William H.) White, former mayor of Houston, traces the implicit agreement to balance the federal budget and eschew debt financing—until fellow Texan George W. Bush, M.B.A. '75, did it in, cutting taxes while paying for wars and expanding medical benefits. Seeking a solution, White turns to history to find the different reasons conservatives and liberals embraced fiscal probity.

Women Still at Work and **Men Still at Work,** by Elizabeth F. Fideler, Ed.D. '88 (Rowman & Littlefield, $37.50 and $36). Through interviews and surveys, the author probes professionals over 60 who are still toiling: a growing cohort, motivated by job satisfaction, diminished retirement funds, and other factors. Of course, after the Great Recession, they are luckier than those in need and without either work or prospects.

The Moses Virus, by Jack Hyland, M.B.A. '61 (Taylor, $24.95). Professional novelists may quail at an investment banker on their turf, but Hyland, drawing on experience as chairman emeritus of the American Academy at Rome, sets his thriller in the passageway to Nero's Golden Palace. Archaeologists, beware.

River of Light: A Conversation with Kabir, by John Morgan '65 (University of Alaska, $19.95 paper), and **Watered Colors,** by Michael H. Levin, J.D. '69 (Poetica, $16 paper). From Fairbanks and Washington, D.C., a beautifully illustrated book-length poem by Morgan (a journey down a wild river), and Levin's debut collection, (highly colored in emotional imagery).

JOSIE ISELIN

The wrack at your feet, made lovely: Josie Iselin's photograph of *Botryocladia pseudodichotoma,* sea grapes, from San Clemente Island, California

Through a Screen Darkly, by Martha Bayles '70 (Yale, $30). The author, a lecturer at Boston College, finds that the United States, in deemphasizing "public diplomacy," cedes to popular culture the role of conveying American values around the world. The result is images of violence and vulgarity—at the expense of messages about freedom and human dignity.

A Lakota War Book from the Little Bighorn, by Castle McLaughlin (Peabody Museum/Harvard, $50, paper). An album of drawings by Lakota warriors, with connections to the famous battle, interpreted and put in context by the curator of North American ethnography at the Peabody Museum of Archaeology and Ethnology. This magazine's "Warrior Artists" (Treasure, May-June 2009, page 76) covered an exhibition of the work.

land sent a jarringly brief note before her memorial. "I'm not going to be present at the 'Remembrance' for Felicia on the 18th," Copland declared, "because I am under contract to conduct the same day in Virginia (Norfolk)."

Taken as a whole, Bernstein's correspondence brings the reader up close to his growing celebrity, which increased apace after World War II, as access to air travel made it possible to be a jet-set conductor and the advent of LP recordings opened up a mass market for symphonic works. In the process, Bernstein became the Elvis Presley of classical music.

Time and again, the letters show the intoxication of celebrity. "They say there hasn't been such a scene in a Budapest concert hall since Toscanini was here," Bernstein reported to Helen Coates from a European tour in 1948. "The audience stamped & shouted…. The bobby-soxers tonight beat everything I've ever seen. I'm exhausted." A month later, writing from the Netherlands to his friend David Oppenheim: "I live like a king, I have screaming audiences and flowers at my concerts, and even a lover." At the end of this tour, Bernstein summed up his triumph to yet another friend: "I am swollen with success, lush with living, loving and learning. Germany and Austria were fabulous, filthy, Nazi, exciting. Budapest was grim and gay. Milano was the greatest. Paris a joy, as ever, and Holland a comfort."

Bernstein's allegiance to his Jewish heritage resonates throughout the letters. Writing in 1946, he expressed gratitude to Solomon Braslavsky, the organist, choir director, and composer at his family synagogue in Roxbury: "I have come to realize what a debt I really owe to you—personally—for the marvelous music at Mishkan Tefila services." Their bond remained strong, and a decade later, Braslavsky congratulated Bernstein when he was named principal conductor of the New York Philharmonic, becoming the first American to hold the post. "My prophecy became a reality," Braslavsky wrote his protégé, congratulating Bernstein for having resisted pressure to de-Semitize his identity. "You reached your goal by your own merits… and with your *own name*. It is neither BERNINI, nor STEINkovsky. It is what you always were, what you are, and what you always will be."

Even in Bernstein's later years, when the correspondence becomes uneven, notable exchanges turn up. In 1968, for example, Jackie Kennedy wrote a loving thank-you after Bernstein conducted the Adagietto from Mahler's Fifth Symphony at the funeral of her brother-in-law Robert Kennedy. "Will you tell your noble orchestra, drowning in heat and cables when I passed them," she implored, "…how beautiful you were—how many people cried—people who don't know music." A striking letter arrived in 1988 from jazz trumpeter Miles Davis, who congratulated Bernstein on his seventieth birthday. Twenty years earlier, Davis recalled, he had balked at performing music from *West Side Story*, declaring it to be "corny shit." But his attitude had evolved over time. In the letter, he acknowledged to Bernstein that the show had "turned out to be a classic," and he placed Bernstein in a pantheon alongside great African-American musicians: "You are one of America's true geniuses along with Monk, Gillespie, Mingus and Parker."

With an outsized musical talent, and an equally extravagant gift in front of a camera, the composer and conductor lived in overdrive.

Time and again, *The Leonard Bernstein Letters* demonstrate how the composer and conductor lived in overdrive. With an outsized musical talent—and an equally extravagant gift in front of a camera—he appeared at a historical moment when a maestro could be both Jewish and American-born. There were no precedents for that particular combination. Yet Bernstein attained artistic authority in an era when the classical-music industry was at its peak, and his life and work continue to captivate music lovers the world over.

Mason professor of music Carol J. Oja also serves on the faculty of the graduate program in American Studies at Harvard. Her most recent book, Bernstein Meets Broadway: Collaborative Art in a Time of War, *will be published by Oxford University Press this summer. She is currently the New York Philharmonic's Leonard Bernstein Scholar-in-Residence.*

ALUMNI

Duty Calls

An alumna chooses "the harder right."

by NELL PORTER BROWN

ELEVEN YEARS after she was kicked out of the military under Don't Ask, Don't Tell, veteran aviator Lissa Young has returned to West Point. Armed with a 2013 Harvard doctorate, at the age of 52, Young is finishing her first semester as an assistant professor teaching general psychology. In March, as a civilian, she stood before a class of freshman cadets, called "plebes," who seemed as nervously excited as she was about the day's touchy topics: love and sexuality.

"Lu-uv," Young began, drawling out the word in her Southern accent for laughs. "The class you've all been waiting for."

She covered attraction and romance, dating and rejection. Then she flashed on screen photos of celebrity couples. Angelina Jolie and Brad Pitt. The less pretty pair from the TV sitcom *The King of Queens.* And then Ellen DeGeneres and Portia de Rossi. "So," Young said, pausing. "Let's talk about sexual orientation."

Enter the Kinsey Scale. Alfred Kinsey's research showed that sexuality is a complex phenomenon that flows along a continuum, rather than typing people as gay or straight, man or woman. "In the United States, we like our norms and are uncomfortable with ambiguity. But there's a huge spectrum, y'all," added Young, who was raised in Florida. "Here at the academy you've got beefy dudes, you've got more effeminate guys, and you have super-feminine women and more masculine girls." Many people "try and combine what they feel is an attraction with what their culture is telling them is OK to do," she continued. "Ultimately, you've got to make a decision to act on who you think you are."

The cadets, dressed in uniform grays with matching black backpacks, took it all in. It was hard to tell what they really thought.

That lecture was not given when Young was a cadet in the early 1980s. "We just tamped all that stuff down," she says later, during an interview in her office. "No public displays of affection. Dating was discouraged. Nobody talked about it much." She dated males while at West Point. But with classes, drills, sports, inspections, sleep-deprivation, and combat-training missions in the scenic hills overlooking the Hudson River campus, there was no time or energy left over, she recalls, for exploring love—or anything else. Yet she thrived on that rigor, having deliberately applied to West Point not that long after women were first admitted (in 1976), seeking "a transformative experience," reports Young, a wiry athlete who still runs 25 miles a week. "I thought it would be the hardest thing I could ever do."

About two-thirds of the 149 women in her class (of 1,006) made it to their 1986 graduation. (Today, women constitute 16 percent of the 4,400 cadets, a percentage likely to rise given the recent decision to allow combat service for women and West Point's continuing efforts to recruit them.) Young became the first woman not only to serve as West Point's deputy brigade commander (the second-highest cadet leader on campus) but to command rising sophomores during the critical eight-week field training that introduces them to combat soldiering. Never did she feel that her gender, or what would become her relatively left-leaning politics, was an issue at the academy or on active duty: "We weren't sitting around talking about erudite ideas."

She became an aviator, like her father, a fighter pilot from the class of 1956. "His father had forced him to go to West Point, and he hated it," Young says. At the end of his military service, he went to medical school, became a surgeon, and married a Southern belle. Young's sister is a retired Oakland, California, police officer.

Young chose to stay, thrilled by flying Chinooks and other helicopters. For 16

Lissa Young fosters open discussions about love and sexuality during a psychology class for freshmen cadets at West Point.

years she commanded drug interdictions in Thailand, artillery gun-team "insertions and extractions," and search-and-rescue missions in the Alaska-Saint Elias Range, including Denali, and western Canada. By the time she came out to her family, at 30, she was a captain. "I was in love with the military and my life as a leader," she says. "It wasn't what I did. It was who I was. Being homosexual didn't seem to matter."

The don't ask, don't tell (DADT) policy ended in 2011. Since then, West Point has seen three same-sex weddings on campus and some cadets and faculty members, already active within their own closed Facebook group, have formed the academy's first public gay-straight alliance, Spectrum.

Changes, at least superficially, have come fast. One Spectrum adviser is Major Howard Titzel, a physics instructor and 2001 West Point graduate who has served in Iraq. Even after DADT had been repealed, he reports, slurs were still commonly heard—"Dude, quit being a fag"—but now, "There is an established culture where that will not be tolerated. I am impressed with that. Am I comfortable being open and honest about who I really am, with everyone I meet? No. But I've opened up a little more this year, after 15 years of hiding it."

More decisive, Titzel believes, is a generational shift in perspective: Spectrum's most active members are also its youngest. Last fall at a meeting, he recounts, "we were playing a movie about DADT's repeal and the speakers were loud and the windows were wide open and I was sweating and shaking and nervous because people were going to know there was 'gay stuff being talked about in here,'" he says, laughing at himself in hindsight. "But the younger cadets had already put up slides in the mess hall saying, 'Hey, everybody! Come to the gay club!' They have no problem with it at all." Still, only about 30 people attend club meetings, even though another 120 are on the listserv, suggesting that not everyone, including straight allies, feels free to be open, he adds.

Behavioral changes often happen faster in hierarchical cultures governed by rules and punishments, Young says. "We now have recourse if someone says something outrageous. If you are brave, you can whistle-blow. We still have our pockets of Neanderthals. This is not over yet."

The U.S. Army's definition of leadership is "to provide purpose, direction, and motivation in order to accomplish a mission—and improve the organization," according to Colonel Bernard Banks, M.P.A. '02, B '06, a former combat pilot. He has led the department of behavioral sciences and leadership since 2012, and hired Young, for her "sharp intellect," to help advance the organization. That requires "improving the people therein," he says. "To improve their skills, knowledge, and attitudes, you have to improve who they are, and how they view the world."

Young was identified early on, even as a cadet, as a candidate for future leadership roles, Banks reports: "She embodies all of the Army's core ideals." This winter, when a cadet needed a ride from the train station to campus, at least a 20-minute trip, she was quick to volunteer. "Can you think of a professor at any college who would use their free time, on a weekend, to pick up a student whom she did not even know, and basically provide a taxi service?" he asks. "This highlights the kind of person Lissa is—and why she wanted to come back. She wanted to be surrounded by people who all believe that that is exactly what you should have done in that situation."

Moreover, precisely because of her personal and professional experiences, "Lissa brings empathy," he adds. "You can't lead unless you have someone to follow you, and their propensity to follow is commensurate with the extent to which they believe you understand how they feel. She can engage in the deep, serious conversations in a way that students will open up themselves."

Young also intends to open up the faculty. She is pushing the whole department to do interdisciplinary research on leadership and transformation, get published, and take part in on-campus colloquia. "My mission is to get us on the map," she explains, "because we are the premier institution practicing this art and science, every day. We can't grow as teachers or scholars if we don't engage with the academic community outside these walls." She is the self-appointed "guinea pig" this spring and presented her dissertation research, on how stereotyping affects the performance of military teams during international competitions.

This is Young's second go-around as an assistant professor at West Point. After the army sent her to get a master's degree in social psychology at the University of Kansas, she served on the faculty from 1996 to 1999, then was chosen for a year-

Photographs by Karl Rabe

long program at the Command and General Staff College—"a big nod that I was doing well," she says. She then returned to active duty, and led the high-altitude search-and-rescue unit in Alaska from 2000 until 2002.

That June, she was hired for a permanent position in West Point's department of behavioral science and leadership, and was notified of a pending promotion to lieutenant colonel. Days later, she also learned she was being investigated under DADT. Forced to resign in August, she says, "I turned in my flight gear and started on that lonely ALCAN highway all the way home, although I didn't actually have a home." She had just turned 40.

Young refuses to blame the academy or the military. "I don't feel like a victim. They enforced a policy I knew existed and I was responsible for taking the risk." The hardest part, which is also what she respects most about the organization, she says, was "the dispassionate adjudication of policy. It didn't 'come after me.' It just did what it does and it didn't give a hoot who I was or how I had served." At moments, it does hurt to be back at West Point *not* in uniform. Many of her one-time peers or mentors are now in leadership roles, or even retired with full pensions. In uniform, they command respect that cadets just don't award civilians. (Young tried to get re-appointed last year, but says she was rejected because of her age.)

Disorientation and grief hit hard but

Vote Now

This spring, alumni can vote for new Harvard Overseers and elected directors of the Harvard Alumni Association (HAA).

Ballots, already mailed out, must be received back in Cambridge by noon on May 23. The results will be announced on the afternoon of Commencement day, May 29. All holders of Harvard degrees, except Corporation members and officers of instruction and government, are entitled to vote for Overseer candidates. The election for HAA directors is open to all Harvard degree-holders.

For Overseer (six-year term):

Nicole S. Arnaboldi '80, M.B.A.-J.D. '84, New York City. Vice chairman, Credit Suisse Asset Management.

Michael Brown '83, J.D. '88, Boston. CEO and co-founder, City Year.

James E. K. Hildreth '79, Davis, California. Dean, College of Biological Sciences, University of California, Davis.

David W. Leebron '77, J.D. '79. Houston. President, Rice University.

Jane Lubchenco, Ph.D. '75, Corvallis, Oregon. Valley professor of marine biology and Distinguished Professor of zoology, Oregon State University.

Michael M. Lynton '82, M.B.A. '87, Los Angeles. CEO, Sony Entertainment.

Sunshik Min, D.B.A. '89, Seoul, Korea. President, YBM, Inc.

Lesley Friedman Rosenthal '86, J.D. '89, New York City. Vice president, general counsel and secretary, Lincoln Center for the Performing Arts.

For elected director (three-year term):

Henry Parkman Biggs '86, Saint Louis, Missouri. Associate director, McDonnell International Academy, Washington University in St. Louis.

Raphael W. Bostic '87, Los Angeles. Bedrosian chair in governance and the public enterprise; director, Bedrosian Center on Governance, Price School of Public Policy, University of Southern California.

Peter Andrew Boyce II '13, New York City. Associate, General Catalyst Partners; co-founder, Rough Draft Ventures.

Margaret Jay Braatz, Ed.M. '93, Ed.D. '99, Chicago. Vice president for planning and presidential administration, DePaul University.

Leea Nash Bridgeman '00, M.B.A. '05. Louisville, Kentucky. Executive director and trustee, Bridgeman Family Foundation.

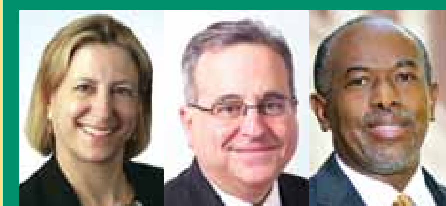
Jessica Gelman '97, M.B.A. '02, Wellesley, Massachusetts. Vice president, customer marketing and strategy, The Kraft Sports Group (New England Patriots); co-founder, MIT Sloan Sports Analytics Conference.

Jay H. Hebert, J.D. '86, Fort Worth, Texas. General counsel, Keystone Group L.P.

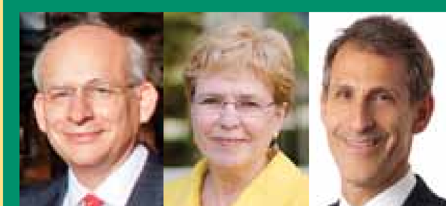
Vanessa W. Liu '96, J.D. '03, New York City. COO, Trigger Media Group.

Alvaro Rodriguez-Arregui, M.B.A. '95, Mexico City. Co-founder and managing partner, IGNIA Partners, LLC; board vice chairman, Banco Compartamos.

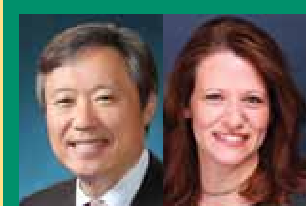
OVERSEER



Nicole S. Arnaboldi | Michael Brown | James E. K. Hildreth

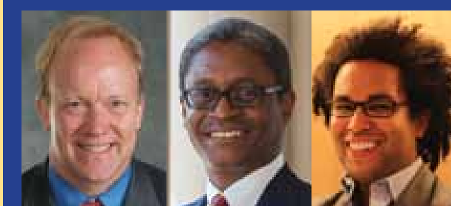


David W. Leebron | Jane Lubchenco | Michael M. Lynton

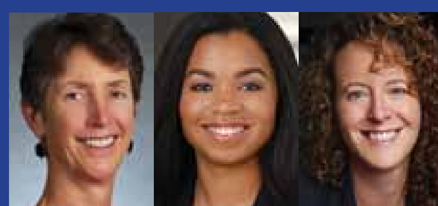


Sunshik Min | Lesley Friedman Rosenthal

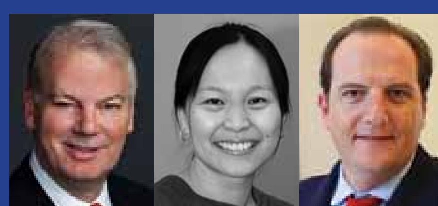
DIRECTOR



Henry Parkman Biggs | Raphael W. Bostic | Peter Andrew Boyce II



Margaret Jay Braatz | Leea Nash Bridgeman | Jessica Gelman



Jay H. Hebert | Vanessa W. Liu | Alvaro Rodriguez-Arregui

Young stayed “in motion.” After applying for more than a hundred jobs, she got one selling air-traffic-control systems in the Middle East for Raytheon Corporation. “I had a blast traveling all over, opening up my sales jacket, going, ‘Here’s an air-traffic-control system, do you want one?’” she says with a laugh. The job gave her the financial security and time to heal. “I realized I still believed in the mission at West Point and in teaching,” she says. “Nothing else felt as real or as important.”

To recapture the academy’s attention, Young in 2005 applied to graduate programs at the most prestigious universities, only to be turned down by all of them, twice. In early 2007, former West Point colleague Scott A. Snook, by then at Harvard Business School, had her speak at the Kennedy School’s Center for Public Leadership, which led center director David Gergen to ask her to help integrate aspects of military leadership into its curriculum. That spring, the Harvard Graduate School of Education accepted her for its doctoral program in education policy, leadership, and instructional practice, with a full scholarship.

At Harvard, Young focused her research on how social perceptions and stereotypes form and how those views influence education, learning, and performance, especially in a military context. She also studied gender and women’s roles, and was a teaching fellow for “Leadership, Entrepreneurship, and Learning,” a course she designed with professor of education Monica Higgins, her doctoral adviser. Young reveled in the intellectual freedom, but ultimately longed for the graver responsibility of shaping cadets. “The Ed School is trying to save the nation’s children,” she explains, “but it’s a different kind of commitment. The mission is not to ask people to die, or kill others, to save them.”

West Point is the nation’s oldest continuously occupied military post. Neo-gothic granite structures, such as the Cadet Chapel, loom on cliffs above the river, staunch signs of both a timeless and an implacable traditionalism. The chapel’s solitude allows her to “hear the voices that really matter.” While showing a visitor around, she points out the Cadet Prayer, on a plaque near the entrance. “Strengthen and increase our admiration for honest dealing and clean thinking,” she reads. “Make us to choose the harder right instead of the easier wrong, and never be content with the half truth when the whole can be won.... Help us maintain and honor the Corps untarnished and unsullied and to show forth the ideals of West Point in doing our duty to Thee and to our Country....” Young chokes up. “This place, as flawed as it is, is about trying to be better *all the time*, and about what lasts,” she says, wiping away a tear. “I guess all we can ask of ourselves is that we matter, that we make a difference.”

Having walked the same halls and marched on the same greens as a West Point cadet, Young knows the demands on her students, especially on women in male-dominated culture.

She has no interest in being the “lesbian professor,” having never overvalued her sexuality. Even under DADT, she says, “I didn’t yearn for this ‘out life’ I felt I was having to give up.” But in this time of institutional transition, she does feel some pressure to stand up—and out. With Titzel leaving in June for his next assignment, Spectrum members chose Young as their new faculty adviser. And if she receives the equivalent of a tenure-track position as an assistant professor of organizational behavior (a decision pending at press time), she would create “a web of people, gay and straight, to catch cadets who are floundering and help the prejudiced straight kids who, quite frankly, most need to see military competence and homosexuality working together, because it is so important for this institution to grow.” In enabling Young to return, West Point appears to want her guidance in teaching about and even remedying the very problems that led to her dismissal. Taking this “new opportunity of service” could be the ultimate correction.

“I can do my best, by setting the best example, to change one mind at a time, but it’s unrealistic to say I want all 71 of my students to accept homosexuality,” Young asserts. “It’s the drivers of hatred that I want to address.” When the core mission is to teach people to excel at “the art of *controlled* aggression” (as Banks put it in an interview), perhaps that distinction between thought and behavior is enough. “You don’t have the resources to ‘therapize’ every individual,” she notes. “You need them to pick up a weapon and move on.”

One of the best lessons she internalized as a cadet came two weeks before graduation, when she was caught skinny-dipping in the campus’s Luke Reservoir. “A friend and I had just been through so much over those years, we just wanted to let loose,” she reports. They were swimming and giggling when the commandant, the academy’s prime role model and disciplinarian, appeared. “Get your clothes on and meet me in my office,” he ordered. With wet hair dripping onto her rumpled uniform, Young appeared, expecting to “get slammed”—suspended or expelled. “He told me he was impressed with my spirit, my *carpe diem*,” she recalls. Then he warned her about carefully choosing to take the right risks, to avoid jeopardizing what is most important. “‘I know who you are,’” Young says he added, “‘and my decision not to punish you has everything to do with what I believe is the value you will add to the Army. Now, get out of my office.’”

He knew, she says now, that writing up a cadet who had done nearly everything just right would have taught her nothing. “By granting me that reprieve, he taught me that generosity, judiciousness, and courage are a big part of being an *effective* leader. After that,” she adds, “I would have run through withering fire for him.”

Festival Rites: The Underside

"Your wooden arm you hold outstretched to shake with passers-by."

AN INNOCENT PLEASURE of Commencement Week is cap-watching. You stroll along the line of seniors in parade formation in the Yard ready to slope into Memorial Church for their Baccalaureate service—the minister's last chance to drive the devil from them—or, on the day itself, you inspect the marchers queuing for the procession into Tercentenary Theatre—to read what witticisms they have written with tape on the tops of their mortarboards: "Thanks Mom and Dad" and "Need a Job" are perennial favorites.

Now there appears in Primus's inbox a flyer from a commercial outfit that aims to rob seniors of this form of self-expression, squelch their creativity, and make money from them while doing so.

"There's finally a way to *professionally* decorate the bland graduation cap...," the pitch goes. "There's no limit to the Tassel Toppers design-your-own feature. Upload photos, fraternity and sorority greek letters, school logos, mascots and custom messages to Tassel Toppers and your custom topper is uniquely yours....Parents can also purchase a stand to display [it] at the graduation party." To buy one of these mortarboards is "another way for the Class of 2014 to show they're ready to face the world on their own terms and in style."

While you are convulsing over "Free at Last" and other hilarities on the tops of toppers, be advised that a friend of this magazine has recently come across game-changing information about what can go on *under and inside* mortarboards. Christopher S. Johnson '64 of Cambridge, a contributing editor, was in his student days an expert on Henry Fielding and is now expert on many other things as well, among them trash-picking. He found in a Harvard recycling bin the discarded mortarboard below.

During the formal Commencement exercises each dean is directed to center stage, where he or she presents groups of students on whom the president will confer degrees. The deans remove their caps before adddressing the president and other dignitaries, and now we know why. Prudently, they have typed what they are supposed to say and pasted their lines inside their hats. (It is presumably by this method that the chaplain of the day is able smoothly to deliver lengthy and complex advisories.)

The hat below belonged to a dean of the Faculty of Education, whose job was to say: "Mr. President, Fellows of Harvard College, Madam President and Members of the Board of Overseers: As Dean of the Faculty of Education, I have the honor to present to you these women and men who in partnership with us have prepared themselves to serve as educators."

The Sherlocks among you will deduce that at the time these words were intoned, the president of the University was a man and the president of the Board of Overseers a woman. The dean of education, willing to trash this hat, was evidently no sentimentalist.

HARVARD NEWS: Next issue, this magazine will publish its annual report on the oldest male and female matriculants present at Commencement and a list of the 10 oldest living alumni according to Harvard records. Sometimes these accounts seem flawed, which is why Clarence M. Agress '33, M.D., of Santa Barbara, wrote to the editors as follows: "Last year a '36 Harvardian complained that he had been omitted from your list of oldest graduates. I recently attended my eightieth reunion, and I also was omitted.

"You request news from alumni, but there was none from the 1930s in a recent issue. If you are interested, you can find out all about me from my website. In medical circles, I am best known for starting thrombolysis, 'clot busting,' where an enzyme is given intravenously in the first three hours after a developing heart attack, saving the heart muscles and the patient's life. I also developed the first chemical test for a heart attack, and NASA commissioned me to devise the heart monitor for Neil Armstrong's moon visit.

"In March I will be 102 years old, physically active, painting, writing novels, wood sculpting.

"Please forgive my self-promotion. I always wanted to be Harvard news."

~PRIMUS V

Photographs by Christopher S. Johnson

A NATION, BUILDING

(continued from page 58)

institutions offering business and foreign-language training, and some government-to-government joint ventures.

To prepare for this metamorphosis, the school made important changes last year. The ebullient Thanh became its director, completing the transition to indigenous leadership. Ben Wilkinson, the Vietnam Program's resident staff member, relocated to Cambridge—concluding 19 years of having an HKS representative on site in Ho Chi Minh City. And Thomas Vallely, completing a quarter-century as program director, relinquished that role to Wilkinson. (That signaled a generational shift, too: Wilkinson, born in 1975, when Americans fled their embassy in Saigon, came to Harvard determined to study Vietnam and its language; studied in Hanoi for a year as an undergraduate; and then worked with FETP and lived in the country for 10 years.) Vallely in turn assumed a new status, as the Ash Center's senior adviser for mainland Southeast Asia; he and David Dapice continue to work on Vietnam, while deepening their involvement on a new frontier, Myanmar (see "Sowing Seeds," January-February, page 17).

But Vallely has also broadened his portfolio, as chair of the Trust for University Innovation in Vietnam, the U.S.-based group that seeks public and private support in both countries for the proposed new institution and promises continued involvement in its governance as a guarantor of its academic freedom. (Other board members include Leon Botstein, president of Bard College, and Marshall Carter, retired chairman of the New York Stock Exchange.) Its prospectus envisions master's-level programs in policy, business, finance, law, and engineering, with undergraduate liberal arts "in time." One backer is John Kerry, now U.S. secretary of state. In a visit with the school's leaders, faculty, and alumni during his trip to the country last December (accompanied by Wilkinson as translator), Kerry pledged to work with Vietnam's government to establish the university.

That external support aside, Vietnamese considerations will determine whether the proposal proceeds. So it is bracing to hear what some of its advocates have to say. Tran Vu Hoai, M.B.A. '94, who served as an early translator when Perkins, Vallely, and Dapice first engaged with officials in Vietnam and on the study tours abroad, recalls the "substantial, real, and intimate" basis on which the Americans' early studies and advice were built, and the "very high level of trust" engendered as a result. He says that trust carried through the recruitment of students for scholarships, building capacity among young Vietnamese who might become "capable of running the country at a later stage." (Hoai himself benefited, attending the business school as a Fulbright, then returning to his work as an intermediary for foreign businesses seeking to invest in Vietnam. He has since built a consulting, advisory, and investment-banking firm working with foreign enterprises entering the market, and now is also Unilever's senior corporate-relations officer for Vietnam.) Of FETP, Hoai says, "It's a passion, a commitment" sustained by its founders for two decades, and "as a Vietnamese, I'm grateful for that" (a feeling strongly shared by the school's alumni nationwide from the Mekong Delta to Hanoi).

Now, with the economy slowed, he believes the country's leaders "know the problem…and at least have the courage to discuss it among themselves and to try to solve it. My question is how brave they can be in addressing it." At moments like these, "We need to have the right understanding" of the challenges, so "Vietnam *has* to go the university route.…We depend on educational institutions that provide the ability to have a vision" for Vietnam's future.

One of the people driving Fulbright University's vision forward is Dam Bich Thuy, head of group development, Southeast Asia, for National Australia Bank and a board member of the innovation trust. A Fulbright scholar who earned her M.B.A. at the Wharton School in 1996 (and later attended HBS's advanced-management program), she was chief executive of ANZ Vietnam—the first indigenous leader of an international bank's operations in the country. As she considered her own daughter's schooling, Thuy says, "I realized the huge gap between our education and what the U.S. offers." She determined to address high-school and college education generally by "fighting to build a model for kids in Vietnam." After enduring "rote training with a regulated information flow," she says, the students who emerge "can't think, they can't form their own opinion on any matter. They have very good transcripts, but they can't work in real life." At least within FETP, she says, students are free to participate in discourse and to "call something ridiculous—that's not something you can see elsewhere in Vietnamese education."

The country's leaders "*know* the problems," she insists: they send their own children abroad to be educated. With the passage of time, FETP itself has become familiar, and the idea of extending it into a university is now "not as scary as we thought." If permission is granted—as she hopes it will be this year—then raising the needed funds for the university within Vietnam, Thuy's responsibility, "will be easy." Across the society, she says, Vietnamese leaders recognize "things *have* to change."

In the end, says Nguyen Xuan Thanh, an unreformed Vietnam "will be trapped in slow growth," unable to move to higher-value manufacturing, unable to accommodate its growing workforce, and, essentially, locked into a standard of living far beneath that achieved by people in neighboring countries. Then, Vietnam would face a brain drain, as its brightest students pursue opportunity elsewhere (the example of the Philippines, long a laggard, comes to mind). The progress during the past quarter-century, when *doi moi* began, has led to "very high expectations," he says, but the Vietnamese people today "are very unhappy with the macroeconomic performance of the country."

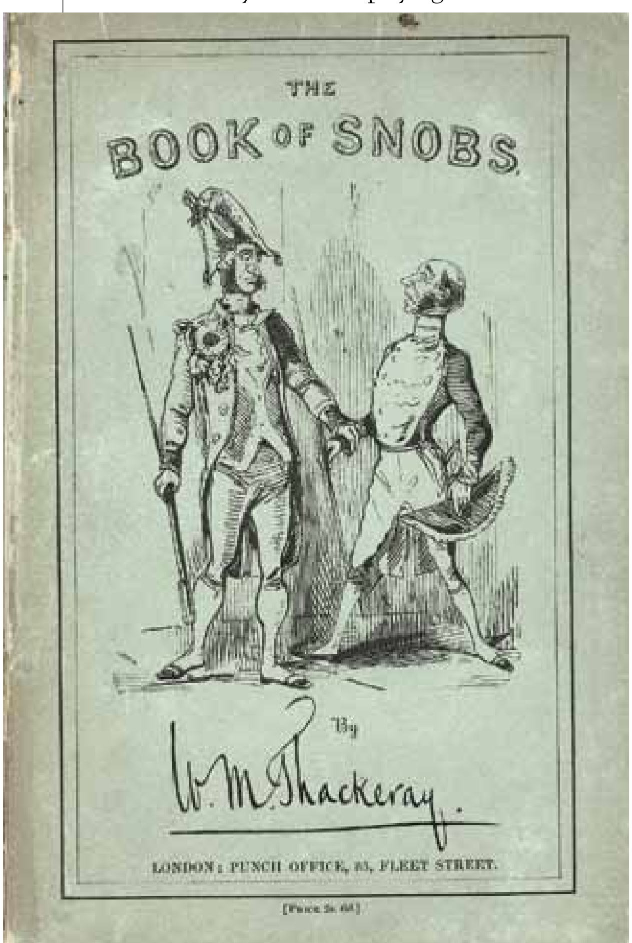
The solution to Vietnam's contemporary dilemmas thus hinges in part on its decisions concerning the quality of its education. To an extent that no one in Cambridge or Ho Chi Minh City could have imagined 20 years ago, choosing success means building upon the Fulbright School's unlikely role as a beacon of higher learning.

John S. Rosenberg is editor of this magazine.

Old Lampooner

William Makepeace Thackeray

In his time (1811-1863), Thackeray ranked second only to Charles Dickens in the English literary pantheon. Now he is mostly ignored except as the author of the novel *Vanity Fair,* in which he skewered large segments of British society with cheerful humor and hatched an agreeably roguish heroine, Becky Sharp. In an attempt to reintroduce readers to a once-celebrated writer, the Houghton Library mounted an exhibition, on the bicentennial of Thackeray's birth, displaying material from its rich collection of his books, manuscripts, correspondence, and drawings, together with items lent by other collectors. It was organized chiefly by Heather Cole, assistant curator of modern books and manuscripts, and it remains online (http://hcl.harvard.edu/libraries/houghton/exhibits/thackeray). The exhibition provides insight into Thackeray the devoted son, affectionate father, and loyal friend, not to mention the gourmandizer, of whom it was said that his main activity apart from writing was "gutting and gorging." (He was incurably addicted to spicy peppers.)



Shown here are a self-portrait from an 1848 edition of *Vanity Fair,* and (left) the 53 installments of his series "The Snobs of England," in *Punch*, in a collected edition of 1848. He lampooned all sorts, including "literary snobs," "dining-out snobs," and "party-giving snobs." Below, to entertain the children of a friend, Thackeray filled an album with the humorous "Adventures of a French Count." The count eventually escapes the executioner.

From Harvard Yard comes more Thackeray: The 1876 Gate, just by the freshman dorm Holworthy Hall, bears a snippet of his verse. Look up and read: "In memory of dear old times." The gate was given by the class of 1876 on their twenty-fifth reunion in 1901. The quotation is from Thackeray's "The Ballad of the Bouillabaisse," a poem about food, drink, and fellowship, in which the poet returns to a Parisian inn to sample the famous fish stew that sustained him and his fellows in their youth—along with a few glasses of good burgundy:

I drink it as the Fates ordain it.
Come, fill it and have done with rhymes;
Fill up the lonely glass and drain it
In memory of dear old times.

~C.R.

Images courtesy of the Houghton Library/Harvard College Library

STUDENTS CONNECT WITH AWARD-WINNING FACULTY

HARVARD
University Planned Giving

HARVARD FACULTY TEACH COURSES designed to inspire students along their academic journeys at Harvard—including this freshman seminar, Theater and Magic, with Shakespeare expert Marjorie Garber (left), the William R. Kenan, Jr. Professor of English and of Visual and Environmental Studies, and Tony Award–winning director Diane Paulus (center), artistic director of Harvard's American Repertory Theater and professor of the practice of theatre in the Faculty of Arts and Sciences.

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