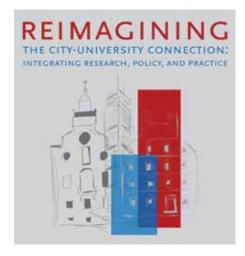


# MOLECULES MOVEMENT AND MOTORS



Radcliffe Institute Medalist and Luncheon Speaker

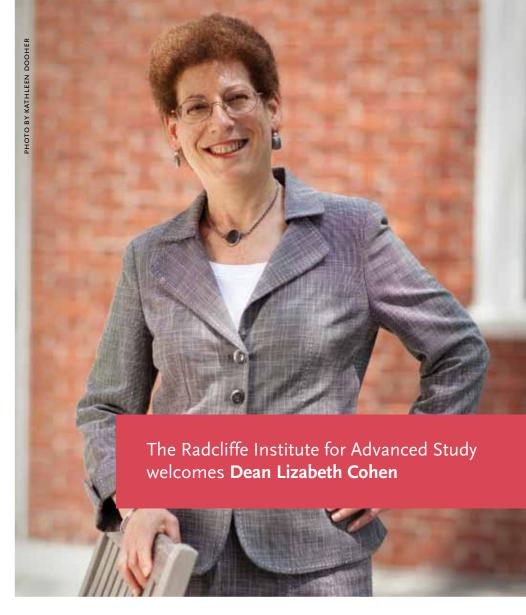
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Radcliffe Day-May 25, 2012







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On the cover: Co-founders Jeffrey Schnapp and Jesse Shapins, shown in metaLAB's new home, with projections of digital-humanities projects including the Digital Archive of Japan's 2011 Disasters. Photograph by Jim Harrison



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make the NCAAs (briefly)



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# Cambridge 02138

Lectures and learning, education essentials, Tea Party tempest

#### FIE ON AL FRANKEN

Your fawning feature article on the aggressive and obnoxious Al Franken was extremely ill taken ("Al Franken: You Can Call Me Senator," March-April, page 30). Franken, whose ideas and value system are comprehensively wrong, is an embarrassment to everyone, but in particular to the Minnesota voters who must have thought they were playing a joke on the rest of the country. (They have done so before; remember Jesse Ventura?) The notion that this former comedian (and I didn't think he was very funny, either) could be taken seriously, much less have a voice in our nation's future, is absurd. His politics are not "progressive," but rest on taking money from those of us who produce and add value, and giving it to those who consume.

Richard Sybert, J.D. '76

San Diego

WITH AL FRANKEN on the cover, the *Harvard Magazine* went straight into my trash. Condescending humor is not clever. A man so rude, profane, and partisan should never be elected to public office.

BETSY JENSVOLD, M.B.A. '86 Seattle

I USUALLY appreciate your interesting and informative magazine. However, I think that the cover of the March-April issue, which featured a recently elected

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Visit harvardmagazine.com/extras to find these and other Web Extras from the May-June 2012 issue.

#### **Art Assessor**

page 14 | Hear Christie's art merchant Brooke Lampley '02 recall discovering an undervalued Dada gouache by Hannah Hoch.

## Storytellers in Song

page 17 | Watch a music video by Vermont folk-music duo Red Heart the Ticker and listen to several tracks from their new album, your name in secret i would write.



## **Digital Humanities**

page 40 | Watch several student-produced videos from Egyptology professor Peter Der

Manuelian's course, and explore other examples of humanities studies adapting to the digital age.



#### **Power Pitcher**

page 58 | Watch an original video exploring the art of softball pitching with Rachel Brown '12, holder

> of the Ivy League record for most strikeouts in a season.

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U.S. senator making a defiant closed fist salute, was regrettable. I am mystified by your sense of priorities in selecting this person, who has not demonstrated any real accomplishments in his brief public service, as the subject of the cover article. I am disappointed by the lack of balance in this article, which presents a one-sided account of his disputed election. This article did not meet Harvard Magazine's usual high quality standard of objectivity. I believe that a much worthier choice for the cover would have been the brilliant physicians doing the extremely important scientific work described in the excellent article on "The Traumatized Brain" (page 36).

> DANIEL H. TAFT '57 Arlington, Va.

## LONG LIVE LECTURES

CRAIG LAMBERT'S article "Twilight of the Lecture" (March-April, page 23) illustrates what a difference a professor who takes his teaching of undergraduates seriously can make. It is good to see Harvard in the lead of making important changes.

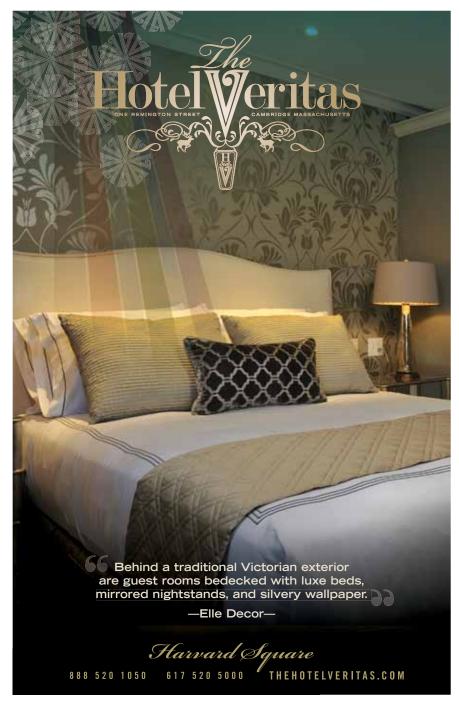
Reading between the lines gives me a less upbeat picture. Professor Eric Mazur's change of approach occurred over 21 years ago. Since then the new teaching method has spread very slowly. The article suggests it is still a distinct minority. What is holding other professors back? Could most Harvard professors be so set in their ways that they are unwilling to try new approaches?

> ROBERT L. FREEDMAN '62 Philadelphia

WHEN MAZUR has finished demonizing those of us who have spent (or, for him, wasted) our academic lives teaching large lecture courses, he might consider testing his "active learning" at, say, night classes at America's large urban universities. Until then I will continue to believe that lectures by John Finley, Harry Levin, and Perry Miller were the most memorable educational experiences I had at Harvard.

> HOWARD CLARKE, Ph.D. '60 Professor emeritus of classics University of California, Santa Barbara

THE GROUP LEARNING that Mazur advocates sacrifices potential advancement of the strong students for the benefit of the weak. It is tantamount to socialism in education, and it is especially disappointing to







see the fad promoted at Harvard. Yes, even the strong student can learn something in the interactive process that goes on, but that function may be adequately fulfilled by traditional teaching section Q&As, and does not in any way compensate for what may be lost in lecture time.

A carefully crafted lecture, particularly one that is honed over many years of feedback and presented in person (not canned on video), is still the most efficient way to transmit knowledge to a well-prepared, attentive mind. Yes, live polling can be useful to track comprehension, improve engagement, and point out fallacies; but it should be the professor who presents the best explanation refuting the fallacy, even if it must incorporate explanatory language gleaned from students who did not "get it" at first. It should not be the responsibility of those students who do "get it" right away to struggle to find ways to explain it to those who don't, and at the cost of their own instructional time. Mazur notes the "vitriolic e-mails" he gets (I would venture from the stronger students), but dismisses them as ill-informed. I would suggest he give some more consideration to that poll.

Stephen Appelroth '84, M.D., Ph.D. Norwalk, Conn.

Is MAZUR right: are all lectures bad teaching? (I think back to Marjorie Garber's wonderful lecture course on Shakespeare: I don't remember either of us sleeping, despite Mazur's claims.) He also notes that 99 percent of teaching at Harvard is via lecture, but a third of every lecture course is made up of discussion sections—and that complicates his claim that students in lecture classes are "passive." Is that the right term for people being asked to connect lecture content to readings, to discuss them in sections, and to incorporate lecture materials into their writing? And if Mazur is assuming that students can't or won't draw

### SPEAK UP, PLEASE

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those connections, then surely Harvard shouldn't be assigning readings either, since information gained from passively reading a text can be worth no more than information gained from passively listening to an expert? These questions are worth asking.

Why lecture? I find lecturing to be incredibly efficient, letting me convey knowledge to students which they could only construct themselves by reading hundreds of extra pages on the subject each week. It's not the best way to learn for some students, but then neither is group work; the existence of multiple learning styles seems to me to imply that we should use a variety of techniques in the classroom. Certainly we should be open to discussing how to teach more effectively, and I wish Mazur had done that rather than offering clever quips and exaggerated statistics that seem to close off the possibility of a dialogue. What possible response can there be to the idea that, while I may think that Garber inspired me with a lifelong love of Shakespeare, this is merely a remarkably persistent illusion, and I actually missed out on getting a real education?

TARA KELLY '91 Thompson Writing Program, Duke University Durham, N.C.

I THOROUGHLY ENJOYED the article on Eric Mazur's teaching techniques, and applaud this long-overdue movement in higher education. However, as Mazur himself acknowledges, "active learning" has been integral to K-12 education for so long as to have become cliché. The article's treatment of the method—as revolutionary and stumbled-upon by a brilliant physics professor in 1990—is an affront to the thousands of K-12 educators who have practiced this truth for decades.

There is a pretty good School of Education at Harvard, where I'm sure no one is surprised that collaborative learning is more effective than lectures for both children and adults. The real question is why a method that has been known to professional educators for so long is only now catching on among university teachers.

The uncomfortable truth is that too many professors—at Harvard and elsewhere—are absolute masters of the content they teach but not necessarily of how to teach it. I hope your article, and Mazur's work, will motivate more university teachers to draw from the expertise

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of other educators, even (gasp!) their K-12 colleagues, in thinking about how best to convey their considerable knowledge.

> LLOYD W. ENGLISH IV, ED.M. '01 Richmond, Va.

MAZUR quotes Albert Camus: "Some people talk in their sleep. Lecturers talk while other people sleep." Only lecturers? W.H. Auden came closer to the mark: "A professor is one who talks in someone else's sleep" (The Dictionary of Humorous Quotations, edited by Evan Esar, Horizon Press, 1953, page 20).

Incidentally, Auden's Lectures on Shakespeare (1946) were published from notes taken by his students.

> John J. Stephan '63, A.M. '64 Honolulu

The article touts interactive teaching or peer instruction as pedagogical tools that may supplant the classic lecture in college as the most effective approach to ensuring student understanding of material being studied. This is surely more the case in science and engineering courses than in the "softer" curricula of the humanities. It

seems to me there must always be room for those few gifted professors whose enthusiasm, speaking power, and obvious erudition serve a larger purpose beyond simple transfer of knowledge: imparting the love of learning, the excitement of immersion, and sheer pleasure in pursuing a subject well beyond just earning a good grade.

I took a beginning course in Shakespeare as an undergraduate. The professor drew the class emotionally into the works from which he quoted, evoking his own deeply felt tears and laughter as the class hung on every word. I was hooked for life. I have experienced similar feelings in a few other courses. There isn't a plethora of professors of that ilk out there, but those who fit this mold are critical to a true university education and its sequel: a lifetime of intellectual stimulation.

> BERNARD G. ELLIKER, M.P.A. '69 Laurel, Md.

## **EDUCATION AND ECONOMICS**

I was amused—as I always am when I read the comments of those unfamiliar with public education—by the letter of John Thorndike '64, J.D. '68 (March-April, page 4). He is astounded by a two-andone-half times increase in public-education expenditures, and attributes this to teachers' unions "kidnapping the system."

Thorndike should consider a few facts bearing on his comments, for much has changed since the 1960s, although the existence of teachers' unions has not; thus unions cannot be the only reason educational costs have risen. Local school districts were not required to educate students with special needs before 1975, and handicapped students rarely attended local public schools. Congress has since passed more laws expanding access to public education for disabled students. These students require more staff to educate: accordingly, pupil/teacher ratios have been driven down. There are also the considerable costs to local districts caused by members of the bar, for legal costs have risen as parents have increasingly sued school districts for failing to meet the needs of these students.

State standards for teachers have also risen, including the requirement that many

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teachers continue their education past a bachelor's degree (here in Massachusetts, teachers must earn a master's degree to stay certified). Additionally, Thorndike might have noticed that educated women have many more options to pursue than before 1970, and this has helped drive teachers' salaries higher, for local districts must compete with the private sector for talented, trained faculty. Higher salaries have still failed to attract a preponderance of qualified men to teach in public schools. Perhaps they are attracted to the legal profession, where starting salaries are much greater than teacher salaries.

Thorndike would likely advise those seeking expert advice on legal matters to turn to an experienced, qualified lawyer. As a public-school teacher, I suggest he seek some advice from experienced, qualified educators before betraying his ignorance of the subject. Or perhaps he might return to school.

MATTHEW BROWN, A.L.B. '86 Chatham, Mass.

JOHN THORNDIKE'S letter has two themes: people who work extraordinarily hard and who take risks with their human and economic capital deserve to keep most of their money; and we should shift our educational resources away from the middle class and to the very disadvantaged. I find both positions to be profoundly wrong-headed.

Lots of middle-class people work hard, some at two jobs, many with college degrees, including professionals, but they aren't seeing commensurate economic reward. By comparison, most of the rich don't work extraordinarily hard for their wealth. Many rich people don't work at all, in fact. Wealth begets wealth, and concentrates it. The financialization of American industry has created a profoundly rich class of individuals who enjoy a game of finance rigged in their favor, and their resultant rewards are hugely out of proportion to their industry and contribution.

Our public schools—once the envy of the world—are, except in the richest of communities, in spiritual and physical tatters. Withholding resources from them will merely strap and degrade them further. More and more students will graduate with substandard educations and not be able to understand the world around them nor be able to compete for the jobs their parents lost. The very disadvantaged will lose the

most: the resources they need at school to shift their attention from the dysfunctional social world in which they live after school to a productive future they can believe in.

> Michael Miller, M.Arch. '76 Key West

## CIVIC EDUCATION—AND ACTION

ELLEN LAGEMANN and Harry Lewis address a crucial issue for our times ("Renewing Civic Education," March-April, page 42). In addition to their proposals, I suggest that the University consider developing a department or interdepartmental center for learning "solutions." There is no shortage of problems that have been created by the shift to corporatism; what is needed is a profession, or life commitment, to making change actually happen.

Change is needed not only in the University, but in society and its institutions. The moral guidelines are there—in America's founding documents, the precepts of our major religions, the teaching of philosophers. To effect these values, however, requires getting our hands dirty, in politics and within our institutions. Such change is not easy, since the University, like all our institutions, has been corrupted by scholarly professionalization, government contracts, professionalization of athletics, and so on. Hopefully "Occupy" and whatever movements follow will create a muchneeded return to civic morality.

RICHARD ALMOND '59, M.D. Palo Alto

## PRESUMING INNOCENCE

Tracey Meares's review, "Justice Falls Down" (March-April, page 18), only touches upon an essential problem: the inability of hundreds of thousands of poor people, who are often black or Latino, and some of whom have disabilities, to defend themselves, even if they are innocent. The public-defender system is woefully underfunded; most defendants have no money; and assigned counsel do not have the time or tools to mount a defense. By the time these defendants are arrested, the police and prosecutors focus only on their supposed guilt.

Only by instituting pretrial, publicly funded, impartial investigative procedures can this be ameliorated. Sure, other changes are necessary to revive confidence in the system. Police stops for driving or walking on city streets while black must stop. Many drug crimes should be decrim-

inalized. The list can go on. But innocence should be the touchstone of the system.

Lewis M. Steel '58 New York City

#### TEA PARTY, PART TWO

In his attempt at irony, Sam Levin, a "double Harvard grad" (Letters, March-April, page 4), objects to Professor Theda Skocpol's comments about the Tea Party's objection to Obama ("Tea Party Passions," January-February, page 9).

I don't think she is misrepresenting the opinion of this rather odd group, whose comments have rarely met the level of factual and dispassionate discussion one might expect from grown-ups, even those with two Harvard degrees.

Levin might note that our Senator Scott Brown, who hopes for reelection this year, repeatedly refers to his presumptive Democratic opponent [Gottlieb professor of law Elizabeth Warren] as "an elitist Harvard professor." Considering that her background is about as hardscrabble as his, I think he ought stop this line of attack. He likes to complain also that much of her financing comes from outside Massachusetts, which seems to be true—but so does his.

Joseph R. Barrie, M.D. '60 Harvard, Mass.

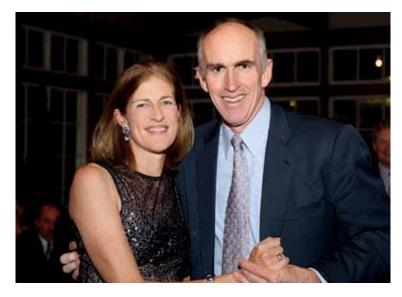
## PROTECTING PRIMATES

SINCE the Brevia coverage ("Animal Welfare Violations," March-April, page 57), Harvard has been forced to suspend all new experiments on animals at the New England Primate Research Center after the fourth negligent death of a monkey and more than 20 cited violations of the Animal Welfare Act in less than two years.

Here are some of the details behind the citations: two primates died of severe dehydration; an employee broke the leg of another by smashing him into a cage door. Another primate was found dead in her cage when it was sent through the high-pressure, scalding-hot water of the mechanical cage washer—with her still in it. Inspectors found monkeys confined to cages too small for their bodies and suffering from self-injury and other abnormal behaviors that are the result of severe psychological distress.

These cases violated the law, but students, faculty, and alumni would likely be dismayed to learn that the legal experimentation that occurs at Harvard and masquerades as "science" is just as horrific. Harvard

# I CHOOSE HARVARD...



RICHARD M. CASHIN, JR. '75, MBA '80 AND ELIZABETH SMITH CASHIN '75

Richard and Elizabeth "Lisa" Cashin met their first week at Harvard College, and their connection to Harvard and each other keeps growing stronger. The lifelong friendships they forged during classes, sports, and meals in their Houses has inspired the New York couple to make a generous gift toward Harvard's House renewal effort. Lisa, an anthropology concentrator, lived in Lowell House and Dick, an East Asian studies concentrator who found success in rowing and squash, resided in Winthrop House. The Cashins applaud Harvard's goal of revitalizing undergraduate residences with more spaces for group learning and socializing. "We are so glad our gift will have a significant impact on supporting the vibrant communities of the Houses."

 $To \ read \ more, please \ visit \ www.alumni.harvard.edu/stories/cashin.$ 

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## ANDREW L. FARKAS '82 AND SANDI GOFF FARKAS

As an undergraduate, Andrew Farkas'82 spent some of his best times with the Hasty Pudding Club, the social organization that spawned several of Harvard's most celebrated theatrical and vocal groups. So when the opportunity arose to celebrate the stunning performing arts space for students that now fills the club's original 1888 home, and to showcase Hasty Pudding history in its lobby, he seized it. With a significant gift, Farkas and his wife, Sandi, have named the renovated building on Holyoke Street Farkas Hall to honor Andrew's father and mentor, Robin L. Farkas '54, MBA '61. "My Harvard experience completely informed who I became," says the younger Farkas, a real estate investor from New York. "I arrived as an awkward, insecure fellow with great ambition but modest direction. Harvard gave me a canvas on which to reinvent myself. I loved every second of it."

To read more, please visit www.alumni.harvard.edu/stories/farkas.

confines nearly 2,500 primates—one of the largest primate populations locked in any U.S. university laboratory. Many animals are subjected to painful and distressing experiments, including being addicted to cocaine, heroin, nicotine, and alcohol. Others have holes drilled into their skulls, electrodes inserted into their brains, and steel coils implanted in their eyes.

Harvard may be an Ivy, but it gets an F for its treatment of animals.

JESSICA SANDLER '78 Senior director, Regulatory Testing Division People for the Ethical Treatment of Animals Norfolk, Va.

Editor's note: See page 45 for updated news coverage of the Medical School's primate facilities.

## **PUBLIC HEALTH IN INDIA**

As participants in the School of Public Health field trip (reported in "Into India," March-April, page 46), we were privileged to explore health issues for urban slum residents in Mumbai. But it was disheartening to see that our Business School colleagues were allocated projects that can undermine

health priorities. One caption reads, "In Mumbai, one student team worked with a chain of 'hypermarkets' trying to win business from small neighborhood grocery stores." Changing food-purchasing habits from local suppliers to hypermarkets is associated with poorer dietary choices and a rising incidence of noncommunicable disease. It is disappointing that Harvard is not pursuing a harmonized, health-promoting approach to all its activities in India.

ROSEMARY WYBER, SPH '12 JENNIFER WEAVER, SPH '13 Boston

## **CORRECTIONS AND AMPLIFICATIONS**

THE ARTICLE on the renovation of the Empire State Building ("A Green Empire," March-April, page 63) gave a figure of 2.2 million square feet for the size of the sky-scraper. The correct figure is 2.85 million gross square feet. During editing, the description of the building's ownership and management was simplified; a fuller explanation is that the Malkin family are significant owners who are responsible for the building's day-to-day operations, and that

they share control of the operating lease with the Leona Helmsley estate.

The March-April cover story on Senator Al Franken contained several small factual errors. His family did not move to Minneapolis when he was a child, but to Albert Lea, and then St. Louis Park, Minnesota. Franken graduated *cum laude* in general studies, not government. His radio show began in 2004; it moved to Minneapolis in 2005. His credit rating agency amendment, described as in committee, was actually passed by the Senate. His bill denying government money to contractors that force employees not to sue them applies to *all* defense contractors, not only to those in Iraq.

Professor Joseph Aldy (Portrait, March-April, page 49) has worked for the CEA (Council of Economic Advisers), but *not* for the BEA (Bureau of Economic Analysis).

"The Traumatized Brain" (March-April, page 36) identified Kevin "Kit" Parker as McKay professor of bioengineering and applied physics—the title provided in the University's directory, which was incorrect. Parker is the Tarr Family professor in those fields.





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"WHO'S ZOOMING WHO?"

# Mysteries of Mate Choice

OW DO WE CHOOSE romantic partners? The question has long interested sociologists, who traditionally looked to marriage records for answers. These widely available

records generally offer useful demographic information on those who tie the knot, including their racial background and education level.

But in an era of rising divorce rates and increased cohabitation, when people typically wait longer to marry and same-sex couples can't marry in most states, marriage records don't give a complete picture. After all, marriage is only one possible outcome in the complicated process of choosing a mate, and marriage data can't capture the forces that draw people together in the first place, such as shared passions for the Red Sox and Downton Abbey.

Fortunately for researchers, the increasingly popular world of online dating offers a largely untapped gold mine of information on how people pair up, says Kevin Lewis, a doctoral candidate in

sociology who reviewed data from the 1.8 million people actively using a popular Internet dating site, OKCupid, during the fall of 2010. The site provides not only

basic demographics like race and religion,

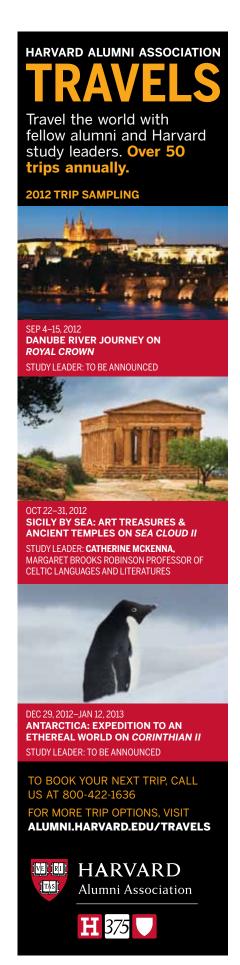
"but also body type and height and whether or not you have or like pets or children," Lewis says. "These things are obviously very important for mate choice, but we don't usually have data about them." The database includes details of which users contacted others to express interest, and who responded to those messages.

Online dating is worthy of study, Lewis says, because it provides sociologists with new ways to observe "the extent to which

> individuals of different backgrounds accept each other as equals." These data offer one of the first opportunities to analyze the earliest stages of mate selection, when users decide which groups they will and won't consider in the vast pool of potential partners, revealing much about current social boundaries. The data also allowed Lewis to test two long-standing theories about mate selection. One body of research suggests that we prefer similarity in a partner—someone who mirrors our racial background, education, or religion. Other researchers contend that we usually seek partners with higher status, including those with more education or income.

Lewis focused on a baseline population of يّ 165,000 U.S. residents who were single, heterosexual, seeking to date, and using the site for the first time,





#### RIGHT NOW

and then zeroed in on the subset of 7,671 individuals with New York City zip codes. Using multivariate modeling techniques, he found that both similarity and status play a role, but "differentially so, depending on whether you're male or female." Most users in his sample did prefer partners from a similar social background, but Lewis also observed some "highly gendered status hierarchies": for example, women tend to seek men with more education and more income, while men prefer women with a college education, "no more and no less." White men, he adds, maintain a privileged position, receiving the most initial messages, while black women receive the fewest.

The model revealed that people with traits that are uncommon on OKCupid—those who have several children, for example, or admit to being overweight—are especially likely to flock together. One of Lewis's favorite examples: people who describe their body type as "jacked" or muscular. "We don't know if this is just because people prefer similarity in body type," he says, "or if this is a proxy for people who clearly spend a lot of time in the gym and want a partner who shares that passion. But this is another group that self-segregates."

His most surprising finding involved differences in the way people initiate contact with potential partners and respond to interest from others. In initial contacts, similarity rules, he says. "I'm very, very statistically unlikely to contact someone of a different racial background," he explains. "But in the unlikely event that someone from a different racial background contacts me first, I'm actually significantly more likely to reply than I would to someone from the same background." Lewis believes that when someone steps over social boundaries to connect with us, we're particularly interested—and that can cause even sturdy boundaries to "totally disappear."

The currently unattached scholar says his own experiences on dating sites have aided his research. For example, some critics have said it's wrong to assume that people like each other based on the mere fact that they've traded messages. Lewis disagrees. "Anyone who's been on a site for more than a day or two knows that polite rejections don't really happen," he says. "If you're not interested, you just don't reply." But useful as his own online foray has been, he admits that initially it wasn't "motivated by research concerns. It was motivated by a distaste for being single."

∼ERIN O'DONNELL

KEVIN LEWIS WEB ADDRESS:

www.wjh.harvard.edu/soc/gs/Lewis\_ Kevin

HAN HEALING

# An Ancient Herbal Remedy

he blue evergreen hydrangea's history as a natural treatment for fever and malaria dates back in Chinese lore at least two thousand years, to the Han dynasty (206 B.C.–A.D. 220). During this era, information about the plant's root (and about hundreds of other Chinese herbal remedies) first appeared as part of a written collection of oral traditions said to have originated with the mythological emperor-god Shen Nong in 2800 B.C. Western medicine first noted the healing potential of the

plant's root extract, *chang shan*, in the late 1940s, when the active ingredient was identified in medical journals and put to use suppressing parasitic growth in animal feed.

But despite millennia of use, exactly how *Dichroa febrifuga* heals remained a mystery.

Malcolm Whitman, a professor of developmental biology at the Harvard School of Dental Medicine, and Tracy Keller, an instructor and researcher in Whitman's lab, began studying the root extract's chemi-

cal base in 2002, seeking to learn how it affects the body on a cellular level. A collaborative study they published in 2009 reported that halofuginone—a synthetic version of the root extract's active agent was halting the production of a particular strain of rogue T-cell. T-cells typically attack outside viruses as part of the body's immune-system response, but harmful variants turn against healthy cells, leading to inflammation and damage. In multiple sclerosis, for example, such rogue cells attack connections in the nervous system, disrupting transmission and affecting everything from coordination to speech. Halofuginone also appeared to work selectively, stopping the production of these "bad" T-cells without harming any of the good ones, leaving the immune response intact.

But Keller and Whitman wanted to understand the molecular mechanism at work in halofuginone's autoimmune suppression. What they found, as laid out in the March issue of the journal *Nature Chemical Biology*, is that halofuginone halts the production of a specific amino acid, pro-

An extract of the blue evergreen hydrangea suppresses autoimmune reactions.

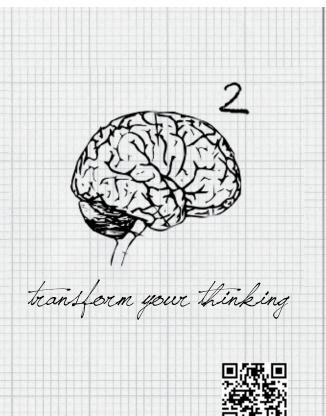
line—the absence of which in turn inhibits the production of the rogue T-cells.

For Whitman, the paper's first author, and Keller, the senior author, questions remain: What is special about proline? Are other amino acids involved in similar inhibitive functions? Are there differences in the amino acids' ability to activate changes in the immune system?

But there are also im-

their work. "Now we have a very specific chemical mechanism that can predict how to make new compounds," says Whitman. Keller notes that the near-term focus is on

developing their work for topical pharmaceutical products, offering its potential to treat severe burns as an example. In such wounds, she says, the halifuginone can af-



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fect T-cells that regulate tissue homeostasis in a way that allows for wound healing while preventing scarring.

Their work has also had an immediate impact on the study of hydrangea root's traditional target, malaria. "There is a lot of excitement about antimalarial properties of halofuginone," says Whitman, noting that collaborators from Massachusetts General Hospital and the Harvard School of Public Health are pursuing studies of this application. "It is not only effective, but it is working on a completely different target from all of the other antimalarial drugs"—a particularly important development given the spread of malarial strains resistant to current drug

The long-term application of their work could extend to autoimmune diseases like inflammatory bowel disease and rheumatoid arthritis, and Whitman notes that researchers are already testing halofuginone in humans as a treatment for muscular dystrophy. "We'll see how that works," he says. "But we think there are definitely a lot of new directions to go in, all building on what nature provided." ~DAN MORRELL

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BONDS FOR WELL-BEING

# A (Protein) Social Network

can go wrong

with proteins,

scientists need to

understand how

these molecules function together

(not just in isola-

tion) in healthy

cells. In the Oc-

tober 28 issue

of Cell, his team published a large-

scale map that

tracks the interactions of thou-

sands of proteins

in fruit flies (Dro-

sophila melanogas-

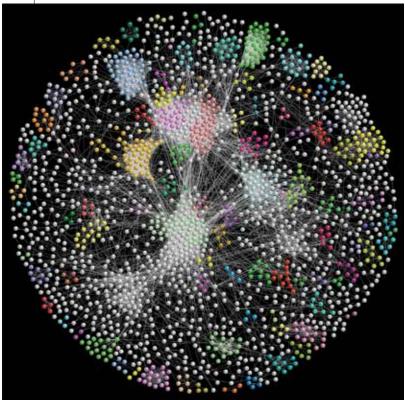
ter). Since then,

the researchers

have continued

to expand the

map and delve into these con-



UST ABOUT EVERYTHING the body does depends on the interactions of proteins—the molecules encoded by genes that serve as the primary workers in cells. "Without thousands of coordinating proteins, cells wouldn't function properly; even subtle problems in these interactions can lead to disease."

Spyros Artavanis-Tsakonas, professor of cell biology at Harvard Medical School (HMS), believes that to better grasp what

A large-scale map of protein interactions in fruit flies provides new ways to study disease.

nections in more detail. The map was created through a painstaking process that Artavanis-Tsakonas compares to fish-

ing. The scientists first randomly generated thousands of distinct proteins to serve as "bait," and introduced these proteins into Drosophila cells. When they removed the baits, they could see which proteins had adhered to them, thanks to the

application of a highly precise technique, mass spectrometry, carried out by HMS professor of cell biology Steven Gygi. The result: a vast "social network" of pro-

Although tiny fruit flies may seem to have little relevance to human disease, Artavanis-Tsakonas points out that "a lot of the basic biology is the same both in flies and humans," and flies are far easier to manipulate and study. With the new map in hand, his lab and other researchers can study how different conditions, diseases, or other pertur-

bations change the protein landscape. They can better investigate the thousands of proteins with as yet unknown functions by tracking their associations with known proteins. And the



map may also help identify new drugs; if a protein implicated in a disease is difficult to modify with a drug, the map will allow researchers to identify alternative targets for a similar drug in a protein's network. Although scientists have been working on similar maps, this is the largest of its kind for a complex organism. "We had enormous feedback" from other researchers about the map, Artavanis-Tsakonas says, and the data have been added to a public database for ∼COURTNEY HUMPHRIES others to use.

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# Montage Art, books, diverse creations



# High Art under the Hammer

Brooke Lampley of Christie's moves masterworks.

HERE'S A KIT OF ITEMS—tape measure, flashlight, camera, and a UV light—Brooke Lampley '02 takes along to appraise a work of art. "If anything fluoresces under the UV, that indicates that it was added more recently, and the painting may have been retouched," she says. "Sometimes a work has been damaged—maybe the original surface was cracking—and the damage filled in or covered up." Lampley is a senior vice president and head of the impres-

sionist and modern art department in the Americas for Christie's. She travels well over 100,000 air miles a year to see sellers, buyers, and lots of art.

With 53 offices in 32 countries, Christie's, founded in 1766, is one of the world's two great auction houses (Sotheby's is the other half of the duopoly) dealing in art objects—and even extreme-high-end real estate: properties that might also qualify as artworks. Lampley organizes the firm's biannual evening sales in New York; each

- 17 Vermont Folk Songs, Plugged In
- 18 Spaces for Art, People, and Light
- 19 The Art of the Possible
- 20 Off the Shelf
- 22 Open Book

The 1931 Picasso painting Nude, Green Leaves and Bust being auctioned at Christie's in 2010. The sale price of \$106 million set a world record.

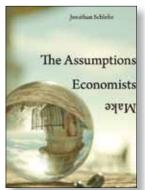
typically auctions \$200 million worth of art, though the take has gone as high as \$500 million. She works on

marketing plans, sales strategies, pursuit of consignments, and promotion of sales, while managing a team of 15 in her department. Like Lampley, her team travels widely seeking special pieces because, as she says, "The quality of the art is what powers the most interesting auctions and brings buyers to us."

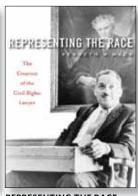
Authentication is crucial: for example, Christie's will not sell a work by the French dadaist Fran-

cis Picabia (1879-1953) without a certificate from the Comité Picabia. Experienced intuition also plays a big role. "Ninety-five percent of the time," Lampley says, "I am looking at something and I am resoundingly sure that it is authentic or inauthentic."

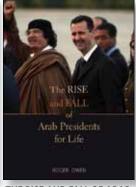
An auction at Christie's New York headquarters, like this spring's sale of postwar and contemporary art, gallops along at a bracing clip: the gavel bangs down on most lots in only a minute or two, and some auc-



THE ASSUMPTIONS
ECONOMISTS MAKE
JONATHAN SCHLEFER



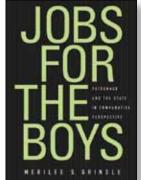
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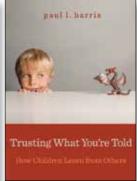


WORLDS OF DISSENT
Charter 77, The Plastic People of
the Universe, and Czech Culture
under Communism
JONATHAN BOLTON



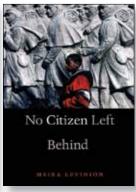
JOBS FOR THE BOYS

Patronage and the State in Comparative Perspective MERILEE S. GRINDLE

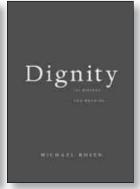


TRUSTING WHAT YOU'RE TOLD

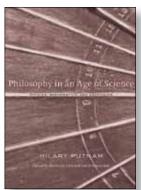
How Children Learn from Others PAUL L. HARRIS



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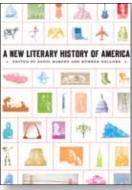
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### VOLUME IV:

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tions are over in seconds. The auctioneer stands at a lectern atop a podium before the room of bidders and curious spectators. A video screen on the left displays the catalog lot number with a color photograph of the work on offer, while another, to the right, shows the current bid price in seven currencies.

Many of the most active bidders aren't in the room, or even on the continent. Long wooden counters on both sides accommodate a score of in-house specialists who bid on behalf of clients connected by telephone. Newer art markets like Brazil, China, Russia, and the Middle East "are having a phenomenal impact," Lampley explains. "Some emerging-market buyers have such deep pockets that they can bid in one sale and completely distort the impressions of the marketplace. Sale statistics might say there were '30 percent Russian buyers'—but that could be just one person! An artist's world record might be tripled at one sale." That creates a conundrum for those in the art market who must then estimate a price point for the artist's next sale, given the wide gap between the previous record and the new one.

In meeting such challenges, Lampley draws on a deep background in art history. Born in Manhattan, the daughter of painter Joanne and sportscaster Jim Lampley (now of HBO; the couple is long divorced), she grew up a "very bookish, academic" type who haunted museums; at 14, at the American School in London, she discovered art history, an ideal fusion of her two passions. "I'm inclined toward specificity," she says, "drilling down deeper and deeper into one thing." At Harvard, she concentrated in literature and history of art and served as arts editor and president of the Advocate and an officer at the Signet Society. She also worked as a curatorial assistant for the Fogg Art Museum and then, for a postgraduate year, at the Smithsonian's Hirschhorn Museum and Sculpture Garden. After a year in a Yale doctoral program in art history, Lampley departed with a master's: "I craved more direct work experience before making a long-term commitment for my career." Curatorial work

> consult on Léger, so we have to be exof the work and the provenance," she says. The painting "was stupendous to look at; it clearly appeared genuine: very graphic, great color, and it represented a type of work that hadn't come to market for some time. The clients

felt strongly that they wanted to set the reserve price at \$3.5 million; we agreed to an auction estimate of \$3.5 million to \$6.5 million, very ambitious for a work of this type. There was a lining on the reverse of the canvas, and I told the client I expected that when we took the lining off, there would be a signature, date, and title

> Visit harvardmag.com/ extras for an excerpt from the interview with

sold for a \$7.2 million hammer price (the "gavel" price, before ancillary fees) to the Nahmad family, well-known art dealers based in Monaco. "A member of the family told the Financial Times they had bought it for their personal collection, as opposed to stock, and described it as of museum quality," Lampley reports."It was a remarkable privilege to bring to market a rediscovered masterpiece that had never before been seen and had been in the family's hands since it was acquired from the artist."

∼CRAIG LAMBERT





# Vermont Folk Songs, Plugged In

Notes from the rural past

HE GREEN MOUNTAIN STATE does not leap to mind when the subject of indigenous American music comes up. Yet Vermont has bred American folk music, and your name in secret I would write (http://yournameinsecretiwouldwrite.blogspot.com), a recent CD produced, arranged, and performed by Tyler Gibbons '99 and his wife, Robin MacArthur, collects some of its best. "Nowadays, when most people say 'folk music,' they mean acoustic-based singersongwriter music," Gibbons says. "But that really isn't folk music. The old meaning of folk music is less about the individual and more about common themes. It was music meant to be passed on: the songs are a way of sharing stories."

For example, the wintry "Stratton Mountain Tragedy" takes its story from an 1843 poem by Seba Smith about a real event from the late 1700s. The song tells of a young mother carrying her infant home through a nighttime mountain blizzard; the mother's strength ebbs, and "She took a mantle from her breast/Bared her bosom to the storm/ As round the babe she wrapped the vest/ She smiled to think that it was warm." The parent freezes to death in a snowdrift, but the infant survives; sung as a duet accom-

panied by plaintive, slow banjo chords and a drone note from a small pump organ, it makes an affecting musical tale. When the couple performed the song at their local historical socemetery, and a female deon her grave every Moth-

Again" offers a sharply different take on three wishes in her heart she were single turtle dove/But when they get married it's no such thing/It's get up and get the breakfast you cross ugly thing." The song sounds Appalachian, and may have migrated to Vermont. Originally, "It's fairly clear it came across from England," says Gibbons, noting a reference to pounds sterling in the lyrics. Yet the song does not appear in any folk archive either in this country or Great Britain. "No one knows how it came here, or anything about it," he explains. "There's no record of it anywhere. We were excited to record it because that is a dying song—no one is performing it."

Like all the songs on the CD, "Single Again" was collected by MacArthur's grandmother, Margaret MacArthur (1928-2006), who in 1948 moved to an abandoned 1803 farmhouse in Marlboro with her husband, a professor at Marlboro College. With a Wollensak reel-to-reel tape recorder and children in tow, she began "seeking out folk songs that resided, nearforgotten, in the surrounding hills," as her granddaughter Robin writes in the liner notes to your name in secret I would write. Margaret MacArthur performed the folk songs around the state, and in 1962 Moses Asch

Below: Tyler Gibbons and Robin MacArthur outside the Vermont home of her

child, with Margaret

grandmother, Margaret MacArthur. Left: Robin as a

of Folkways Records heard her and asked that she send some of her music. "Surprised (and flattered)," the notes continue, "Margaret put some batteries into her Wollensak, sat down at the kitchen table after her children were asleep, and pressed record." The album Folksongs of Vermont began a nine-record career.

In 2005, Gibbons and MacArthur formed Red Heart the Ticker, a two-person band (http://rhtt.net); they released two CDs

of original music, For the Wicked (2005) and O My! Mountains Below (2008). In 2010 they set up a laptop and microphones in the very farmhouse room where

Visit harvardmag.com/ extras for a music video and songs from Red Heart the Ticker's new

Margaret had died and began re-recording some of her favorite songs with support from the Vermont Arts Council and the National Endowment for the Arts. "The idea was to take these songs and, while very much respecting them, take them into a post-folk or contemporary aesthetic," Gibbons explains. "Margaret sang them with just guitar or dulcimer. We wanted to complicate them musically: in some songs we used electric guitar or bass, and a lot of percussion, which is not typical of how people performed these old ballads. Pure traditionalists would hate this album, because we didn't handle the music with



traditionalist gloves. Sometimes we would change the chord structure under melodies. We weren't trying to recreate something that existed 100 years ago—we were filtering the songs through us, and our understanding of this place and time."

The couple are native southern Vermonters—MacArthur from Marlboro, Gibbons from nearby Brattleboro—and have known each other since high school. MacArthur, a singer and guitarist, went to

Brown and the two dated while Gibbons, at Harvard, studied the lyrics of Leonard Cohen and Bob Dylan ("I was real interested in how words and music fit together") and played professionally on weekends as a bassist with the indie-rock band The Humming. "I find great inspiration in almost all genres of music," Gibbons says. "Hip-hop is really interesting because it is so text- and word-based—literally eliminating the melody and reciting stories,

which is much closer to these old ballads than a lot of other pop music. In fact, I was traveling once with Margaret and we were fiddling with the radio dial. This hip-hop song came on, and she loved it. She was listening to the lyrics and saying, 'This is good, this is good.' In a way you'd think it couldn't be farther from the kind of music she was invested in, but in another way it made perfect sense: it was storytelling."

∼CRAIG LAMBERT

#### ARCHITECTURE

# Spaces for Art, People, and Light

his winter, the entire Gund Hall lobby of the Graduate School of Design (GSD) was given over to various depictions, commentaries, and celebrations of the Herta and Paul Amir Building at the Tel Aviv Museum of Art, which opened in November. Its designer is McCue professor of



architecture Preston Scott Cohen. who is chairman of the GSD's architecture department. The dramatic 195,000-square-foot building greatly enlarges the museum housing Israel's largest collection of modern and contemporary art. Cohen's plan won the design competition in 2003; design development went on from 2005 to 2007 and construction proceeded over the

Clockwise from above, right: the Herta and Paul Amir Building; the building's library; its "Lightfall" atrium.



four years ending in 2011. An 87-foot-tall spiraling atrium that Cohen styles as "Lightfall" is the structure's central element.

In a booklet on the building, Cohen writes that it "embodies the tension between two prevailing models: the museum

Visit www.harvardmag. com/extras to view additional photos of the Tel Aviv Museum of Art.

of neutral white boxes that allow for maximum curatorial freedom and the museum of architectural specificity that intensifies the experience of public spectacle. An antidote to the Bilbao phenomenon [a reference to the Guggenheim Museum Bilbao in Spain, one of the most widely admired works of contemporary architecture, designed by Frank Gehry, Ds '57, Ar.D. '00], the Amir Building signals a new synthesis: deeply interiorized and socially choreographed space, as opposed to the tendency in the 1990s to display the museum as a sculptural object in the city."

# The Art of the Possible

On the evolving system of international criminal justice

by JACQUELINE BHABHA

LEMENTS of a system of international criminal justice abound on the contemporary world stage. Radovan Karadzic, the former president and commander of the Bosnian Serb Republic, the defiant architect of the 1995 Srebrenica massacre of approximately 8,000 Bosnian Muslim men and boys, is in the dock in the Hague, before the International Criminal Tribunal for the Former Yugoslavia, facing 11 charges of war crimes, including two counts of genocide. On March 14, 2012, in the same small Dutch city, the International Criminal Court (ICC) delivered its first judgment a unanimous finding of guilt for war crimes—against Thomas Lubanga Dyilo, leader of the Patriotic Forces for the Liberation of the Congo, who conscripted boys and girls under 15 and deployed them as front-line soldiers in the brutal civil war in the Democratic Republic of Congo. For the first time in history, an exploiter of child soldiers is being punished. Muammar el-Qaddafi was indicted by the ICC before he died, a fugitive in disguise—and as the deaths mount in Syria, world leaders have called Bashar al-Assad a war criminal, and the United Nations has recommended referral of his regime to the ICC for investigation. International accountability for attacks on unarmed civilians is no longer just the preserve of diplomats, jurists, or law scholars. Millions have watched the American-student-produced video Kony 2012, documenting the brutality of the infamous commander of the Lord's Resistance Army in Uganda.

Twenty years ago, those who questioned the viability of a permanent system of in-

David Scheffer '75, All the Missing Souls: A Personal History of the War Crimes Tribunals (Princeton, \$35.) ternational criminal justice were considered hardheaded realists, puncturing the idealism of enthuEstablished 1883

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siastic but naïve human-rights advocates. Today, to argue that heads of state responsible for systematic brutality against civilian populations are shielded by "sovereign immunity" is to place oneself amid international pariahs.

All the Missing Souls: A Personal History of the War Crimes Tribunals, by David Scheffer '75, Brown-Helman professor of law and director of the Center for International Human Rights at Northwestern University School of Law, traces this remarkable political, legal, and diplomatic journey—what one expert calls "the biggest step forward in law since the Magna Carta." A lucid, frank, and fascinating personal testimony, the book provides a key participant's chronicle of the vital albeit deeply ambivalent role of the United States in building the existing international criminal justice system.

The story starts in early 1993, when Scheffer was appointed to lead the U.S. effort to establish what eventually became the International Criminal Tribunal for the Former Yugoslavia, the first war-crimes court created in the midst of the conflict it was charged with judging. The book ends in 2000, with the convoluted negotiations leading to the establishment of the so-called "Extraordinary Chambers in the Courts of Cambodia," a "hybrid" court of Cambodian and international judges that



started to gather steam during Scheffer's term as U.S. ambassador for war crimes in the second Clinton administration. (The notorious commandant of an infamous Khmer Rouge prison finally entered the court for the first day of his prosecution in February 2009, 10 years after his arrest and more than 20 years after his crimes were committed.) Along the way, *All the Missing Souls* describes the unimaginable intricacies and obfuscations involved in addressing the Rwandan genocide, the brutal carnage in Sierra Leone, the second phase of Balkan atrocities in Kosovo, and

U.S. ambassador David Scheffer examining the bodies of two Serb policemen in central Kosovo, November 1998

the protracted negotiations culminating in the creation of the first-ever permanent International Criminal Court—despite the United States' refusal to support it.

Several key themes emerge from the narrative. One is the tension between setting aside past pain in the interests of harmonious coexistence, on the one hand, and pursuing an accurate historical record for the sake of the victims or their survivors, on the other. Most striking is the ever-present

# Off the Shelf

Recent books with Harvard connections

Glock: The Rise of America's Gun, by Paul M. Barrett '83, J.D. '87 (Crown, \$26). A veteran journalist profiles the making and marketing of a simple, lethal weapon—the gun used in the shooting of Congresswoman Gabrielle Giffords and others in Arizona.

Strategic Vision: America and the Crisis of Global Power, by Zbigniew Brzezinski, Ph.D. '53 (Basic Books, \$26). The former national security adviser reminds those dubious about the effects of American hegemony that in a twenty-first-century world "now almost everywhere politically awakened," a stable global order still "ultimately

depends on America's ability to renew itself and to act wisely."

Mozart at the Gateway to His Fortune, by Christoph Wolff, Adams University Professor (W.W. Norton, \$27.95). The formidable Bach schol-

ar reinterprets Mozart's final years, during his service to Emperor Joseph II of Austria, citing the "forward-looking drive" of his music at a period long presumed to be shadowed by his impending death.

Capitalism at Risk: Rethinking the Role of Business, by Joseph L. Bower, Herman B. Leonard, and Lynn S. Paine (Harvard Business Review Press, \$29.95). Three Harvard Business School professors find business leaders worried about the capitalist system. They challenge businesses to look beyond their firms' traditional roles and to take on as business challenges systemic problems (healthcare, environmen-

tal quality, income inequality) that have traditionally been left to governments. The U.S. Competitiveness Project (www.hbs. edu/competitiveness) makes similar points.

Searching for Utopia: Universities and Their Histories, by Hanna Holborn Gray, Ph.D. '57, LL.D. '95 (University of California, \$39.95). The president emerita of the University of Chicago and former Harvard Corporation member used her 2009 Clark Kerr Lectures on Higher Education, now published, to argue for "stripped down" universities: "leaner, more selective in aspiration and more focused in purpose," and less homogeneous in their aims.

Moral Origins, by Christopher Boehm, Ph.D. '72 (Basic Books, \$27.99). As that snake and apple on the jacket suggest, the author, professor of anthropology and biological sciences at the University of Southern California, is after a Darwinian tussle between justice and peace, as the author's unshakable conviction that justice must and shall be done rubs up against the pragmatic imperative of saving lives at all costs, stopping torture, and reestablishing peace without other preconditions. For example, could Serbian leader Slobodan Milosevic persuade U.S. assistant secretary Richard Holbrooke to offer amnesty to Bosnian Serb leaders Ratko Mladic and Radovan Karadzic in return for a cessation of hostilities in Bosnia? Throughout the Dayton Peace talks, many observers, including the Yugoslav Tribunal prosecutor Richard Goldstone, concluded that "the United States was prepared to sacrifice justice for peace....[and] that the Dayton negotiating team would not insist that the parties cooperate with the Yugoslav Tribunal." Was that stance wise and justified—or a cynical abdication of responsibility?

In Rwanda, the stakes of achieving peace were if anything even higher. How should the imperative of arresting those responsible for unimaginable massacres measure up to the critical task of securing an end to the killing? As Scheffer tells it, while General Roméo Dallaire, the heroic Canadian commander of the UN Assistance Mission for Rwanda, was reporting that Hutu leaders were training their men "to kill Tutsi (at a rate of up to 1,000 Tutsi in 20 minutes)....in Washington the unreasonable view that everything must relate to the peace process [between Tutsi and Hutu leaders] prevailed."

Again and again, war-crime work is an unwelcome interference and complication in the business of dealing with governments, particularly when the stakes are very high. Nowhere is this clearer than in the tragic history of the negotiations surrounding the civil war in Sierra Leone. As intoxicated child soldiers were mutilating civilians by the hundreds—chopping off hands, arms, ears, and legs—the international community entered peace talks with the rebels led by Liberia's "charismatic and diabolical former president" Charles Taylor and his Sierra Leone counterpart, Foday Sankoh, despite the rebel insistence on unconditional amnesty. Scheffer describes a scene at Netland Hospital in Freetown, the capital of Sierra Leone, as the peace negotiations got under way in February 1999: "I visited with one teenage girl, 'Nancy,' whose eyes had been burned out by pouring heated plastic into them. She was still traumatized from being gangraped and refused to speak to anyone."

Five months later, the Lomé peace agree-

ment included an "absolute and free pardon" for Sankoh

and for "all combatants and collaborators in respect of anything done by them in pursuit of their objectives..." up to the time of the peace agreement. The U.S. and British governments congratulated the parties and expressed their support for the agreement "which will bring to an end the tragic war of Sierra Leone." Instead the rebels, apparently emboldened by their victory in securing immunity, resumed their butchery and the peace process imploded. It took more than two years for a new compromise to be negotiated—this time anchored by the creation of a special criminal court where leaders would be held accountable. But by the time the Special Court for Sierra Leone got around to handing down judgments, some of the key culprits, including Sankoh himself, had died. Only Charles Taylor was successfully indicted and put on trial. At this writing, the verdict on his case is expected on April 26, but procedural delays may yet again push the day of reckoning

The book also tackles the chess-like complexity of international diplomacy the art of the possible—particularly complex for a principled actor such as the author. Charged with representing a su-

explanation of what the subtitle calls "the evolution of virtue, altruism, and shame."

Representing the Race: The Creation of the Civil Rights Lawyer, by Kenneth W. Mack (Harvard, \$35). Professor of law Mack (a J.D. '91 classmate of Barack Obama), a legal historian (he is also a Princeton Ph.D.), portrays the African Americans who took on segregation while dealing with the tension between their professional and personal identities, and the lingering issues of authenticity.

Paris in Love, by Mary Bly '84, writing as Eloisa James (Random House, \$26). If you cannot spend your spring in Paris this year, you can go, vicariously, via the author's infatuated, episodic memoir of a sabbatical year with her family.

No Citizen Left Behind, by Meira Levinson, RF '03 (Harvard, \$29.95). From her teaching experience in an all African-American school in Atlanta, the author, an associate professor of education, came to perceive a civic-empowerment gap as powerful and debilitating as the urban academicachievement gap. She prescribes activist

civic education.

How To Be Black, by Baratunde Thurston '99 (HarperCollins, \$24.99). The author-an editor at The Onion, standup comedian, and co-founder of the Jack & Jill Politics blog ("a black bourgeoisie perspective on U.S. politics")—lays out a tongue-in-cheek, autobiographical guide to the ways race is perceived, constructed, and acted out in America.



A young participant in the "Million Man March" in Washington, D.C., 1995, in front of the General Ulysses S. Grant Memorial, from the cover of No Citizen Left Behind

The Ivy League, by Daniel Cappello '99 (Assouline Publishing, \$65). "What is it about the Ivy League that makes it so intriguing, so appealing, so butterflies-inducing?" the author asks, in an album of stock photos, with his accompanying brief meditations on the distinctive character of each school in the lvy brand.

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#### MONTAGE

perpower with a multiplicity of agendas, personalities, and strategic interests, he is forced to straddle a stated commitment to human rights and nondiscrimination, on the one hand, and a vigorous rejection of



Scheffer in 1997 at the Nyanza massacre memorial site in Rwanda

any scrutiny of American actions undertaken by international judicial entities, on the other. His narrative, depicting split-second decisions over key issues, the astute elaboration of multilayered negotiating tactics, and the excruciating obligation to forcefully present and defend positions diametrically opposed to one's own, could pass as a terrific diplomatic primer.

This theme emerges with particular clarity in his account of the U.S. negotiating position during the final drafting conference for the statute establishing the International Criminal Court, held in Rome during the summer of 1998. Scheffer presents the complex and shifting diplomatic and legal terrain clearly and, at times, poignantly. Faced with the Pentagon's insistence that U.S. military staff should never risk international criminal liability, Scheffer—who had dedicated his career to building an architecture of international criminal justice and accountability—had to press for a requirement that states give their consent prior to the prosecution of their nationals, a position that sounded "impractical" (surely an understatement!) to the rest of the world. In the end he was compelled to vote against the treaty in the company of China, Israel, Iraq, Cuba, Syria, and Yemen. To many observers and participants, he appeared, as he accurately notes, "the guardian of impunity rather than its slayer," arguing on the same side as some notorious and persistent violators of human rights.

Some of the most interesting ideas in the book are surprisingly underexplored. For

example, Scheffer suggests that the outcome of the Rome conference and the eventual participation by the United States in the ICC might have been different if the case for American exceptionalism had been

presented more creatively. The imperative of U.S. government consent prior to any prosecution of U.S. citizens by the ICC was justified simply by reference to the country's national security and economic interests—an argument, Scheffer implies, that could be advanced by any country. Instead he suggests America's changing role

in a post-Cold War world, as a key player in international humanitarian and peace-keeping missions with unparalleled global troop deployments, would have constituted a much more persuasive argument to explain the unique risk of malicious or rogue prosecutions facing American leaders. I disagree. Other governments, and close U.S. allies such as the United Kingdom, also deploy sizable military contingents in challenging situations without calling for international immunity for their soldiers. Why should an international court not prosecute U.S. war criminals if the U.S. courts refuse to do so?

One of the most convincing legal arguments is made at the end of the book. In a short postscript, Scheffer advances the powerful suggestion that the term "atrocity crimes" should replace the complicated and confusing trinity of genocide, war crimes, and crimes against humanity as a unified category underpinning international criminal culpability. The egregious failures in Rwanda, he suggests, might have been averted if critical time had not been wasted on vacillations over what constituted genocide. But maybe not. The most enduring and sobering message of All the Missing Souls is that—unless the most powerful players in international military actions insist otherwise—international criminal justice is always at the bottom of the list.  $\nabla$ 

Jacqueline Bhabha, Smith lecturer on law, is the director of research at the Harvard François-Xavier Bagnoud Center for Health and Human Rights, and the University adviser on human-rights education. Her research focuses on transnational child migration and trafficking, and on children's and adolescents' economic and social rights.

BOOK

# The Era of Inequality

Timothy Noah '80, then of Slate (and now at The New Republic), set out to document and understand a new, and unsettling, state of affairs that has finally attracted wide attention—in part reflecting his work. He has now recast his series of prize-winning reports into book form as The Great Di-

vergence: America's Growing Inequality Crisis and What We Can Do About It (Bloomsbury Press, \$27). From the introduction:

As late as 1979, the prevailing view among economists was that incomes in any advanced industrial democracy would inevitably become more equal or remain stable in their distribution. They certainly wouldn't become more unequal. That sorry fate was reserved for societies at an earlier state of development or where the dictatorial powers of the state preserved privilege for the few at the expense of the many. In civilized, mature, and free nations, the gaps between rich, middle class, and poor did not increase.

That seemed the logical lesson to draw from U.S. history. The country's transformation from an agrarian society to an industrial one during the late nineteenth and early twentieth centuries had created a period of extreme economic inequality—one whose ramifications can still be glimpsed by, say, pairing a visit to George Vanderbilt's 125,000-acre Biltmore Estate in Asheville, North Carolina, with a trip to the Tenement Museum on Manhattan's Lower East Side. But from the early 1930s through the early 1970s, incomes became more equal, and

remained so, while the industrial economy lost none of its rude vitality. As the 1970s progressed, that vitality diminished, but income distribution remained unchanged....Starting in 1979, incomes once again began to grow unequal. When the economy recovered in 1983, incomes grew even more unequal. They have continued growing more unequal to this day.

The United States is not the only advanced industrialized democracy where incomes have become more unequal in recent decades. The trend is global.... But the level and growth rate of income inequality in the United States [have] been particularly extreme.

There are various ways to measure income distribution, and by all of them the United States ranks at or near the bottom in terms of equality.... As of 2007 (i.e., right before the 2008 financial crisis), America's richest I percent possessed nearly 24 percent of the nation's pretax income, a statistic that gave new meaning to the expression "Can you spare a quarter?" (I include capital gains as part of income....) In 2008, the last year for which data are available,

> the recession drove the richest I percent's income share down to 21 percent. To judge from Wall Street's record bonuses and corporate America's surging profitability in the years following the 2008 financial crisis, income share for the top I percent will resume its upward climb....We already know from census data that in 2010 income share for the bottom 40 percent fell and that the poverty rate climbed to its highest point in nearly two decades.



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-Dr. jur. Daniel Paul Schreber, Memoirs of My Nervous Illness, Leipzig, Germany 1903. Translated, Edited, with Introduction, Notes and Discussion by Drs. Ida Macalpine and Richard A. Hunter. WM. Dawson & Sons Ltd., London 1955, p. 149.

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# Pride, Elation...and Relief?

Families gather to see their children graduate. • Nell Porter Brown



OMMENCEMENT—the culmination of so much hard work, financial planning, and even anguish—has special meaning for the parents of seniors. We asked five families for their views on what their children's graduation connotes, and how they are planning to celebrate this momentous event.

## Mary and Willie Luntao

MAY - JUNE 2012

Stockton, California Parents of Lange Luntao, second marshal of the class of 2012

THANKS TO A feasible tuition-aid package, it wasn't the money that led to familial sacrifices for the Luntaos. It was their son's choice to go to college on the East Coast. "My heart was a little broken because I knew he would be so far away. That's been the biggest sacrifice of all," Mary Luntao says of her only child. "But I knew it wasn't about me, that's what I kept telling myself. And coming east has been very eye-open-

ing for him." Every fall, she has stayed for a week in Kirkland House's guest suite, enabling her to spend time with her son and his friends—having dinner and going to concerts and other events on campus. "He is one of those kids who doesn't mind my coming," she adds. "It's been wonderful for our family to have him here and wonderful for us to explore Boston and New England. It's just a very different way of life from central California" (where she is a second-grade teacher and her husband, whose family moved to America from the Philippines when he was five years old, is an assistant principal).

That traveling is not likely to end after Lange graduates. A social studies concentrator, with a minor in modern Middle Eastern studies, he has learned Arabic and is a finalist for the Fulbright Foreign Language Teaching Assistant Program. He wants to spend a year in Malaysia teaching Arabic-speaking children. "We get to visit him," his mother adds, "wherever he goes! He's a very ambitious young

man and I give him all the credit for doing things in life. We might have suggested something, but he takes the ball and runs with it."

They credit the University's financial aid with making it possible for their son to benefit from a Harvard education. "Harvard paid about 50 percent of his tuition," she reports. "Without that, it would not have been in the cards. We could've sold the house, but that probably wasn't the best thing to do."

Nearly 20 family members and friends will attend Lange's graduation. Many plan to stay for about a week at a townhouse they found online through VRBO. com (Vacation Rental By Owner). As for the restaurant? Lange is looking for reservations at a casual place, perhaps a spacious pub: "any place that can hold 20 people, with a special emphasis on Irish pubs because my mom's German-Irish family would love that," he reports. "It's a very exciting time," Mary concludes. "That young man has been working hard since he was 12 years old—he has always pushed himself and we're very proud of everything. This will be a very special week for our family."

## Jill Colombosian and Jay Hachigian Weston, Massachusetts

Parents of Lea Hachigian

LEA HACHIGIAN HAD some qualms about choosing a college so close to home. Her mother asked, "What are you afraid of? That I will stand outside your classroom door and call your name?" Despite that initial hesitation, four years later the proximity appears to have worked out for everyone. The two women, along with Lea's younger sister, Amy, a student at Boston

Photographs by Stu Rosner

#### **COMMENCEMENT & REUNION GUIDE**



College, have had dinner with each other about once a week at a fun, new restaurant. "I wanted to keep in touch with both of my children and their friend group and hear what they are doing and share what's happening at home," Jill Colombosian explains. "This was a way for them to see each other, too—and yet they felt that their space was being respected." Colombosian has also hosted her daughters and their friends at their Weston home, a manageable commuter-train ride from both their campuses.

As a volunteer with the Harvard College Parents Fund (http://alumni.harvard. edu/give/college/parents), Colombosian had her own reasons to be in Cambridge. At one point, she also took an evening marketing class at the Harvard Extension School, which made dinner meetings even more convenient, and a break for her daughter from lab work. Hachigian is a neurobiology concentrator getting a certificate in mind, brain, and behavior. "I would like to elucidate the mechanisms behind dysfunction in disorders like autism, and hopefully in the future schizo-

phrenia, bipolar disorder, depression, et cetera," Hachigian notes. "For a little while I was a bit scared to leave Harvard." she adds, "but now I'm just incredibly excited to go out and begin putting my education to use. I feel like we are at this amazing point where we have so much potential and now we're about to take everything we've been given and start making a real impact." Colombosian calls Harvard "a wonderful growing experience" for her daughter, "with all the different types of people she has met from all over the world. She has had access to wonderful labs and has had great mentors there."

Commencement signifies a move forward into the professional world. What's truly important, Colombosian says, is "finding your place, finding your happiness. I want my kids to find something that's right for them. Does

it give you satisfaction? Pleasure? Does it make you feel good at the end of the day? I want them to do something they want to get up for every day, that they think is important." By mid March, Hachigian had narrowed her graduate school choices to MIT, Stanford, and the University of California, San Francisco; should a West Coast

school prevail, Colombosian has made her peace with that. Will she continue working for the parents fund? "I tried not to get too attached to the place because this is her thing, not mine," Colombosian answers. "I believe and support the work they do to enrich the students' experience and I found all

the folks there truly wonderful. I wouldn't have traded the experience for her or us, and I look forward to remaining involved."

As for Commencement plans, the family is thinking of two celebrations: one for family members and one for the new graduate and her friends. Hachigian favors Ten Tables or Oleana in Cambridge—although dim sum with friends and family in Chinatown also appeals. "That's her day," Colombosian explains. "Whatever Lea wants, that'll be what we do."

## Wenqing "Wendy" Tang and Liansheng "George" Cao

Arcadia, California
Parents of Bonnie Cao, first marshal of the class of 2012

FOR WENDY TANG, Commencement means spending time with her daughter's friends—and saying thank you. "I have known a lot of them through stories Bonnie has told me, or through my own Facebook stalking," says the trained physicist, a research staff member at NASA's Jet Propulsion Laboratory. "But this is my chance to say thank you because I know Bonnie has had many ups and downs in the past four years and she has been surrounded by excellent friends who always gave her a hug" when her mother could not.

Aside from this lack of physical closeness, Tang never felt her daughter was too far away because of what she herself experienced while growing up in China. "I left my parents after high school and went to





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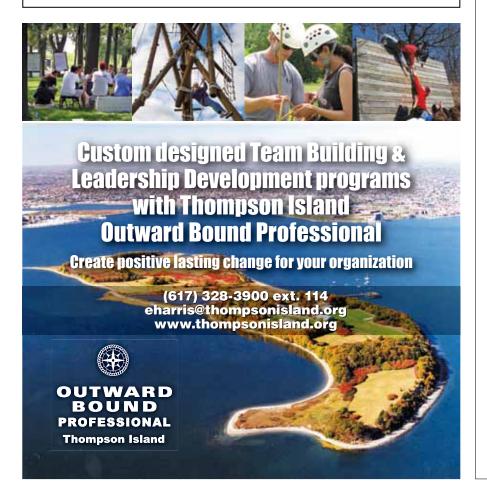
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#### **COMMENCEMENT & REUNION GUIDE**

the countryside to be re-educated during the Cultural Revolution," she explains. "I always valued leaving my family early because of the positive side: we learn society better." The bigger worry was whether "Bonnie would fit in and do well at school and live up to the high standards. I didn't know," she recalls. "But she immediately was involved in everything. And as part of the dorm crew cleaning bathrooms it's very tiring work—she made a lot of friends even before school started." Tang has not only kept in close touch with her daughter, she has also learned about Bonnie's world on campus through reading The Crimson online every morning. Last September, Tang was in Shanghai for her mother's funeral when she read that her daughter had been elected first marshal of the senior class.

Though Commencement signals Cao's entry into the world—a government concentrator with a secondary focus in computer science, she will be working as a business analyst for McKinsey & Company—it also means Tang's departure from Harvard. "It is hard for the parents; I feel I have become part of the big Harvard family," she explains. "It is really hard to say good-bye now."

Cao's parents and family friends who have known her since she was born will all come to Commencement—but not before they stop off to explore Niagara Falls. (Tang has been there and wants the other couple to see it.) They will spend three days in Cambridge after that. As for gifts? "It's the other way around in our culture," Tang notes. "It's the people who are graduating, meaning Bonnie, who give gifts to the family and relatives—something small and meaningful. I know she has been thinking about it. I just hope she has saved enough money."

Miles and Suzana Karabasevic Palm Beach Gardens, Florida Parents of Aleksandra Karabasevic, senior class gift co-chair

THE KARABASEVICS plan to celebrate their daughter's achievement with a trip to London or Rome, combined with traveling to see all their family members in Serbia. "We are just the four of us in the

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U.S.," says Miles Karabasevic, an IT expert in database management (who also enjoys the chickens and ducks on his five-acre farm near Palm Beach). "We'll all spend a few weeks together this summer. It is a good time to go and it helps the kids keep their roots." He recalls dropping his older daughter off in Cambridge for her new adventure four years ago, and says the news that she had been accepted "was amazing, unbelievable, especially at a time when so many kids are applying. She was accepted at top places, but Harvard was a remote dream. So we were all very happy—we're still very happy!" He has not been back to Cambridge since, although his wife and younger daughter, Sofia, a high-school senior who has applied to the College, have visited several times. "Harvard does a great job of making parents feel welcome during Junior Parents weekend," Suzana Karabasevic says. "We were able to explore so many of the sights and museums the area has to offer. We sat in on some lectures as well, and it was amazing to see for myself the academic resources available to the students."

Her husband credits Harvard's new financial-aid initiative with making tuition affordable without huge familial sacrifices. Aleksandra herself says, "I think there are a lot more first-generation Americans at Harvard over the past few years, mainly

#### **COMMENCEMENT & REUNION GUIDE**

because of the initiative. Harvard is so unique with its financial-aid program, since it reaches out to middle-class families that often get overlooked by other schools." An economics concentrator, the senior will work after graduation in investment banking at Barclays. (On campus, she has been involved with the Charles River Growth Fund and the Harvard Investment Association.)

The family will stay through much of Commencement Day, but will not sleep over because Sofia receives *her* high-school degree on May 25. "It would be wonderful if we could go back to Cambridge to drop Sofia off for freshman year," Miles Karabasevic adds. "We hope this is not the last time we will visit Harvard!"

## Greg Rosenbaum '74, J.D.-M.P.P. '77, and Marti (Radlo) Rosenbaum '74

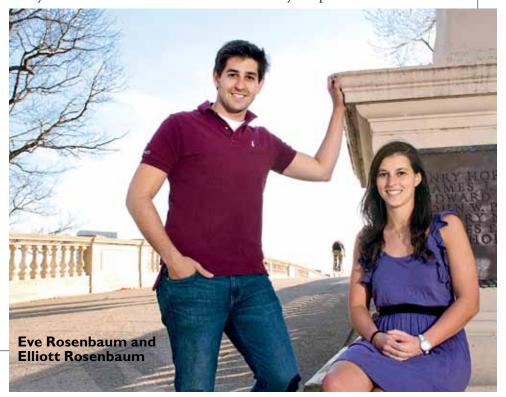
Bethesda, Maryland Parents of Eve and of Elliott, senior class gift co-chair

HARVARD GRADUATION is old hat—or should that be "old top hat"?—to the Rosenbaums, who have attended almost every Commencement Day (and class reunion) since proceeding down the Tercentenary Theatre aisles themselves. "We're

among that small group of people who come back for random-year reunions," says Marti. Greg is also a proud member of the Harvard Alumni Association's "Happy Committee," whose duties include donning top hats and tails (or crimson sashes, for the women) to usher imminent graduates' family members and friends around on the big day. "Commencement is a tremendous event generally for us," Greg says, "but it is squared, or cubed, when it's our own kids." (Their older son, Eli '05, earned his J.D. and M.P.P. in 2009; his wife is Meghan Haggerty '06, M.P.P. '10.)

Marti has opted not to usher this year, because she wants to focus on her kids. But Greg still plans to engage fully in the morning exercises: he enjoys helping families find seats, assuring them that the best photo opportunities come at the Houses, where the actual diplomas are awarded, and showing them the glory of Harvard's pageantry. "I do appreciate it all the more because I understand the singular sensation of having a child graduate from Harvard," he explains. "I try to be a good host because I am representing the whole University and I want the memory that these parents take home to be that it was a great experience!"

No degree of passion, however, can overcome the several logistical challenges presented by this particular Commencement



#### **COMMENCEMENT & REUNION GUIDE**

day. The twins are in different Houses and their extracurricular activities—Eve is on the softball team, Elliott is a member of the Krokodiloes—have their own respective fetes. "When it comes to getting the diplomas, we hope to get one of them moved forward in the lineup so that we can be at both of the ceremonies," Greg notes. "Fortunately, they're at Mather and Quincy, both river Houses. The only difficulty is that they won't be able to see each other." They will all reconvene in the late afternoon and go on to a restaurant, although where and with whom has yet to be decided.

After graduation, Eve plans to move to New York City to work for the National Football League's sports-management training program while Elliott heads to the opposite coast to work in global business development for Walt Disney Parks and Resorts. "For us this will be the *real* change," their mother says. "This will be the first time they will live apart."

College is "a four-year continuation, in most cases, of the academic pattern they've followed for the past several years," Marti explains. "They are still kids and in many ways have some connection/ dependence on you as parents." But moving to a new city, with jobs and new colleagues, at a time in life when timelines and plans are unpredictable, means that parents have a much weaker sense of where their children really are and what they are doing. "Many parents feel this way," she says, "although we have it perhaps more so because we have had all of our kids in the same place." And it is their parents' alma mater.

As for leaving Harvard, "It's not going to be saying good-bye in any way," Marti notes. "But it is definitely a shift, for the kids as well as for us. While there is always an amazing connection to the University, it is a different outlook on life once you are away from it as a student." Greg agrees. "We hope that the enthusiasm and love that we have for Harvard has worn off on them," he adds. "Harvard has made such a difference in our lives that we try to give back in any way we can. We hope they will do the same to make Harvard educations available to future students."



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# Class Reports, Redux

Harvard-flavored midlife melodramas make breezy summer reading.



EADING The Red Book, an often funny and entertaining Harvardinspired fluffy confection, is a bit like watching the women of Sex and The City return for their twentieth college reunion. Except we don't get to see their splashy designer outfits. The new novel by Deborah Copaken Kogan '88 chronicles the midlife stories of four fictitious friends from the class of 1989 as problems in their messy lives of privilege come to a head during a long weekend in Cambridge. (The title comes from the nickname for the anniversary books put out by the Class Report Office every five years—part of the Harvard Alumni Association [HAA]—every five years, in conjunction with class reunions.)

One unhappily married character, a dabbling artist questioning her sexual identity, is arrested for a mountain of unpaid parking tickets from her undergraduate years. A Vietnamese adoptee and international journalist mourns the death of her mother, while grappling with a partner's infidelity. A third roommate tends perfectly to four children in place of her once-promising acting career. And their biracial friend, raised in a hippie commune in Berkeley, hopes to solve her infertility problems with the unwitting aid of her once Adonis-like freshman-year boyfriend (whose WASP parents rejected her so long ago). Oh, and she was also recently laid off from Lehman Brothers.

In the words of one reader: "It's trash, but it's good trash." No source of melodrama is left unexamined. And all reflect the novel's primary theme, veiled in sometimes frenetically paced humor: coping with loss, failure, and disappointment while confronting the exuberant ghosts of the char-

acters' youthful selves at Harvard. "The impetus to write the book came out of the vortex of loss and insanity in my own life," says Kogan, a writer, photographer, and married mother of three in New York City. "I was envisioning what dreams you have to let go of, all the compromises you have to make." In short: life as it once was expected to be has morphed into life as it is.

Kogan began the book in 2009, after her father, Richard D. Kogan '63, had died of pancreatic cancer and her husband, an information technologist, had been out of work for eight months due to the recession. Their financial situation had already led the

couple to let their full-time babysitter go, pull their youngest from private school, and move to a series of lower-rent abodes. Now settled in a Harlem apartment, they are paying "\$2,000 less a month for a larger place," Kogan asserts, "although we are still paying back debt from my husband's job loss and I still wake up asking how we are going to make ends meet." These experiences were redefining the Kogans and others they knew: "The only way to deal with it was to put it into words and atomize the experience in these characters." The novel centers on the class of 1989 because they wrote their class-report entries in 2008, before the recession fully hit, yet their reunion occurred in the spring of 2009, "when things were just awful," she says. "That historic event just exacerbated all the mid-life issues that people deal with."

The class reports, of course, are a trea-



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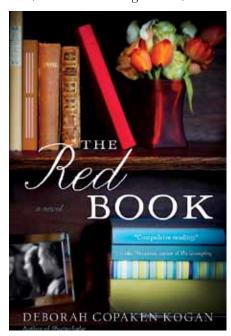
sure trove of such "issues." Like many alumni, Kogan devours the essays as fascinating human narratives. "We're all these fragile, imperfect characters in our own lives," she says. "It's comforting to read about other fragile, imperfect people and their lives." Truths, half-truths, and lies of omission happen all the time, she adds. "People say things are all hunky-dory when they have just gotten divorced, and

plenty of people say work is great when they really don't like what they do."

In doing research she had access not only to her own classmates' entries, but to those of her father and sisters (Jennifer Copaken Yellin '90 and twins Julie and Laura Copaken of the class of '94). She views the Harvard tradition of submitting class reports, which dates back at least to the mid 1800s, as a useful personal

exercise: "It forces alumni to sit down and take stock of their lives every five years and account for themselves." It's one thing, she notes, to do that in a private diary that gets shut in a drawer, but quite another when the entries are published and distributed within the Harvard community. "They say a lot about how honest you can be with classmates—and that is a measure of how honest you can be with yourself."

KOGAN'S OWN twentieth class report (written in 2007) finds her admitting "with no lack of shame" that the last few years have been "marked mostly by professional and financial hardship. My husband insists 'failure' is the wrong word to use here, but if there is a right word, I'm not



sure I know it." She goes on to discuss a third pregnancy, hustling for writing jobs just to make ends meet, an emergency appendectomy—and a large red bump that "kept spontaneously bursting and bleeding in the center of my forehead." And this was all *before* the death of her father and the recession.

Published personal revelations are typical for Kogan. Her other books—Shutterbabe, Between Here and April, and Hell Is Other Parents: And Other Tales of Maternal Combustion—cover, respectively, her years as a war photographer (1988-1992); the disappearance of a childhood friend while growing up in an upper-

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middle-class enclave in Potomac, Maryland; and her experiences as a modern, urban par-

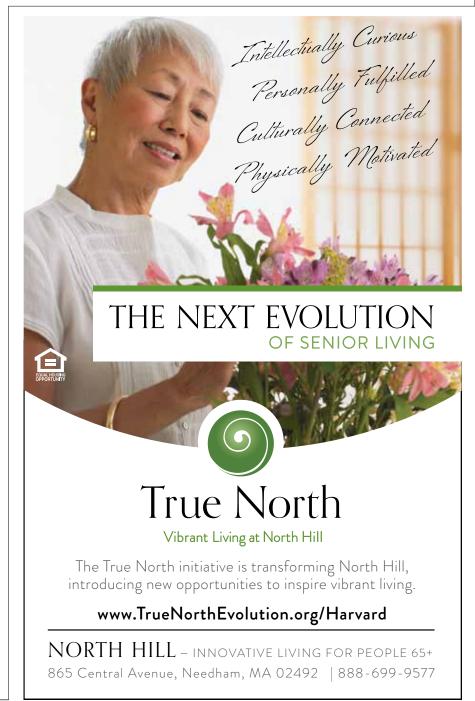
The female characters in The Red Book are similarly inclined to "tell all," down to the bodily needs of a woman spending the night in a prison cell. They echo different aspects of their author, giving voice to her anger and struggles over personal and professional choices. "We're a generation of women who grew up with bra-burning and feminism flags flying high and yet we entered the workforce when men still believed that women should be doing all the work at home," Kogan asserts. "The next generation has different expectations around work and children, but we are still stuck inside this bizarre generation where there is no subsidized daycare and the school day ends at three o'clock. It's hard to be a working mother in this day."

The "push and pull" of the novel, she continues, comes in comparing the "public faces" of the class reports with the protagonists' true, three-dimensional selves. Addison, jailed overnight for blithely throwing away what ultimately adds up to \$100,000 in parking tickets, is a "trustafarian" who lives in Williamsburg, Brooklyn, with her absentee "novelist" husband, bulimic daughter, and two sons who spend much of the reunion watching Internet porn on handheld devices. Her class report reveals a busy mom of hardworking kids who is pushing her career to the next level. But she's sprung from the pokey not by her husband, who has scurried off to the local library to write, but by her freshman-year lesbian girlfriend, who easily pays the fine because she is among the early Google millionaires. Only to her does Addison sadly reveal, "I suddenly feel like I am disintegrating."

At reunions, the narratives people tell themselves can suddenly unravel. The promising undergraduate actress, Mia, returns to Cambridge with her husband, a Hollywood director, and their four children, the youngest of whom is still nursing. She avows supreme satisfaction with motherhood, yet bumping into a less talented classmate who has nevertheless become a major celebrity leaves her angry and anxious. They exchange niceties and vague promises to meet that evening,

but Mia "has no intention of exposing her fragile ego to Viveca Snow's anytime soon. After...kissing each of Viveca's Juvéderm-injected cheeks, she pivots on her feet, gripping Zoe's little fingers just a tad too tightly, and marches her own jiggling thighs up Dunster Street toward the taxi stand in Harvard Square." "People do judge themselves against their classmates. How could they not?" Kogan asks.

One of the more discomfiting vignettes occurs during a reunion picnic when Mia and Clover, the newly jobless wannabe mother, meet classmate Lytton Hepworth, a schizophrenic with a searing stare whose "cocktail of meds seemed to be working well enough for him to engage in actual conversation with an old friend." He questions why his old roommate, who once aspired to be a poet, now operates a Subaru dealer-



#### **COMMENCEMENT & REUNION GUIDE**

ship, and why Mia did not use her gifts as an actress. "What the hell is wrong with you? All of you?" Lytton cries out. "You went to Harvard. You had every opportunity in the world laid out on a silver platter at your goddamned feet." He then quotes Horace

"The rare few. And it's wonderful when that happens. But 99 percent of us do not and we have to come to terms with that."

The novel does its best to show how these characters do so. And although its plotlines may not necessarily end satis-

# "You went to Harvard. You had every opportunity in the world laid out on a silver platter at your goddamned feet."

Mann: "Be ashamed to die until you have won some victory for humanity," violently upends the entire picnic table, and walks away from the stunned crowd.

Mia subsequently crashes an audition at the Loeb and aces the monologue, proving to herself that she still can act—and later applies her skills to selling real estate. But the Hepworth scene goes to the heart of what everyone faces at reunions. "Do any of us live up to our potential?" Kogan wonders. factorily, alumni will likely find shades of themselves and their college friends amid Kogan's imagined protagonists. Kogan is quick to reassure that no one in the book is based on a real person, yet some are amalgamated versions of people she knows. She contacted the HAA and the Class Report Office only after the book was finished, "to let them know about it," she says, "and I got a lovely reply from both." Kogan says HAA president Ellen Gordon Reeves,

also a published author, gave her ideas about how to publicize the novel, and a class-report editor sent "a warm e-mail... which she ended with (and I just loved this, for its hall-of-mirrors effect), 'We will look forward to hearing much more about where *The Red Book* has taken you in the next installment of your own class report."

A myriad of answers to the novel's midlife questions can be found by leafing through any red book from an older class and reading the ruminations of alumni spread across the globe. Kogan, a quick study, knows this better than anyone. In the novel's acknowledgments, she rightly thanks the nonfictitious class of 1988 for "consistently and collectively writing, every five years, the most engrossing book on my nightstand." —NELL PORTER BROWN

Kogan will read from and discuss The Red Book at the Harvard Book Store in Cambridge on May 3 at 7 P.M.



## The Week's Events



OMMENCEMENT WEEK includes addresses by Harvard president Drew Faust and international-affairs expert Fareed Zakaria, Ph.D. '93. For details and updates, visit www.harvardmagazine.com/commencement.

#### **TUESDAY, MAY 22**

Phi Beta Kappa Exercises, at 11, with Pulitzer Prize-winning poet Kay Ryan and orator Derek Bok, Three Hundredth Anniversary University Research Professor and former Harvard president. Sanders Theatre.

Baccalaureate Service for the Class of 2012, at 2, Memorial Church, followed by class picture, Widener steps.

Senior Class Family Dinner and Party, at 6. Athletic complex.

#### **WEDNESDAY, MAY 23**

ROTC Commissioning Ceremony, at 11, with President Drew Faust and speaker TBA. Tercentenary Theatre.

Kennedy School Commencement Address by Christine LeGarde, managing director of the International Monetary Fund, followed by a reception. JFK Jr. Forum. Time TBA.

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

Law School Class Day, 2:30, with U.S. Attorney General Eric H. Holder as speaker, followed by a reception. Holmes Field.

Business School Class Day Ceremony, 2:30, with speaker Sheryl Sandberg '91, M.B.A. '95, COO of Facebook, followed by a reception at 4. Baker Lawn.

Graduate School of Education Convocation, at 3. Radcliffe Yard.

Graduate School of Design Class Day,

at 4, with designer Brue Mau as speaker, followed by a reception. Gund Hall.

Divinity School Multireligious Service of Thanksgiv

ing for the Class of 2012, at 4. Memorial Church.

The SIGnboard

Visit harvardmagazine.

com/commencement for

news of SIG gatherings.

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 24**

Commencement Day. Gates open at 6:45.
The 36lst Commencement Exercises, 9:45. Tercentenary Theatre.

All Alumni Spread, 11:30. The Old Yard. Tickets available at http://annualmeeting.alumni.harvard.edu.

The Tree Spread, for College classes of

## A Special Notice Regarding Commencement Exercises

Thursday, May 24, 2012

#### Morning Exercises

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

• Degree candidates will receive a limited number of tickets to Commencement. Parents and guests of degree candidates must have tickets, which they will be required to show at the gates in order to enter Tercentenary Theatre. Seating capacity is limited. However, there is standing room on the Widener steps and at the rear and sides of the Theatre for viewing the exercises.

*Note:* A ticket allows admission into the Theatre, 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.

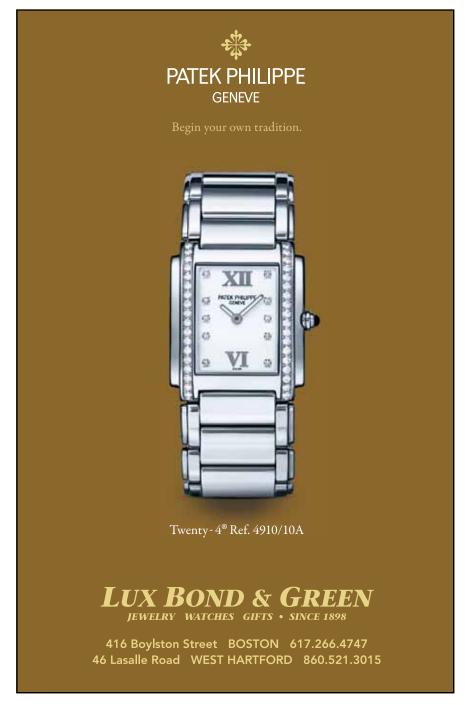
- Alumni/ae attending their reunions (25th, 35th, 50th) will receive tickets at their reunions. Alumni/ae in classes beyond the 50th may obtain tickets from the College Alumni Programs Office by calling (617) 496-7001, or through the annual Tree Spread mailing sent out in March with an RSVP date of April 13th.
- Alumni/ae from non-reunion years and their spouses are requested to view the Morning Exercises over large-screen televisions in the Science Center, and at designated locations in most of the undergraduate Houses and graduate and professional Schools. These locations provide ample seating, and tickets are not required.
- A very limited supply of tickets will be made available to all other alumni/ae on a first-come, first-served basis through the Harvard Alumni Association by calling (617) 496-7001.

#### Afternoon Exercises

The Annual Meeting of the Harvard Alumni Association convenes in Tercentenary Theatre on Commencement afternoon. All alumni and alumnae, faculty, students, parents, and guests are invited to attend and hear Harvard's President and featured Commencement Speaker deliver their addresses. Tickets for the afternoon ceremony will be available through the Harvard Alumni Association by calling (617) 496-7001.

—Jacqueline A. O'Neill, University Marshal

Photograph by Jim Harrison Harvard Magazine 24m





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#### **COMMENCEMENT & REUNION GUIDE**

1919-1961, 11:30. Holden Quadrangle. Tickets required.

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

GSAS Luncheon and Reception, 11:30 to 3. Maxwell Dworkin lawn on Oxford Street. Tickets required.

Alumni Procession, 1:45. The Old Yard. The Annual Meeting of the Harvard Alumni Association (HAA), 2:30, with HAA president Ellen Gordon Reeves '83, Ed.M. '86; Overseer and HAA director election results; Harvard Medal presentations; and speeches by President Drew Gilpin Faust and Commencement speaker Fareed Zakaria. Tercentenary Theatre.

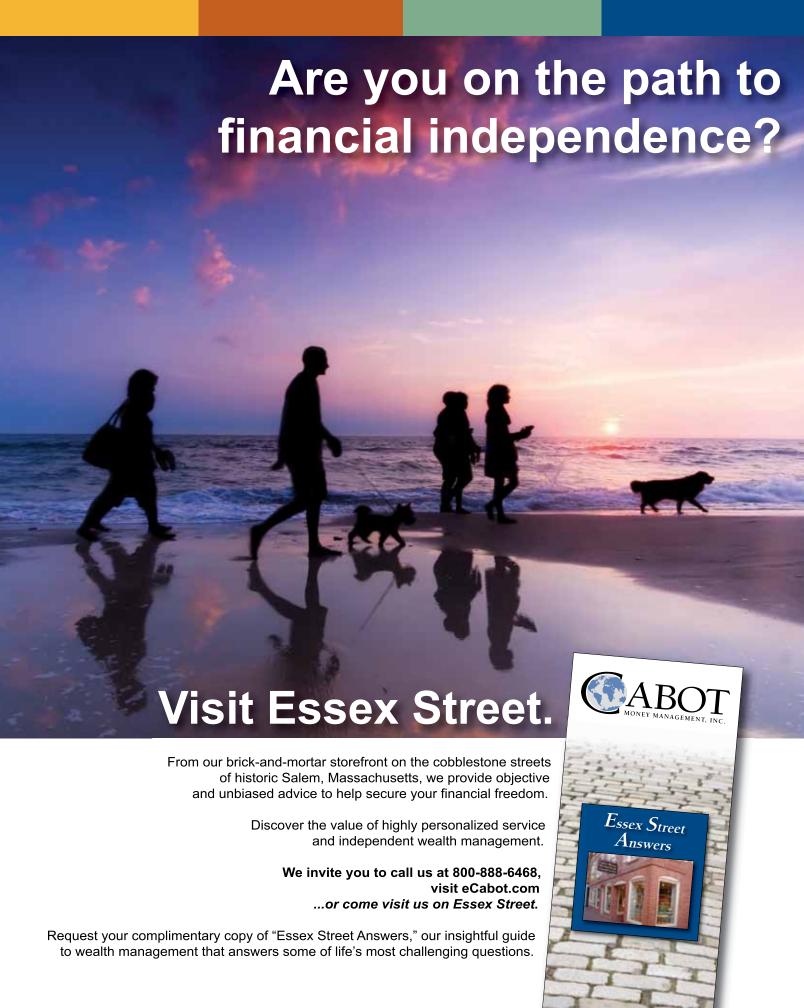
Medical and Dental Schools Class Day Ceremony, at 2, with speaker Donald Berwick '68, M.D.-M.P.P. '72, former administrator of the Centers for Medicare and Medicaid Services under the Obama administration, former president and CEO, Institute for Healthcare Improvement, and lecturer on healthcare policy at HMS. HMS Quadrangle.

#### FRIDAY, MAY 25

Radcliffe Day panel discussion, 10:30 to noon, "From Front Lines to High Courts: The Law and Social Change," moderated by Harvard Law School dean and Smith professor of law Martha L. Minow. (For details on the panelists, visit www.radcliffe.edu/events/calendar\_2012radday. aspx.) Luncheon at 12:30, with a speech by Radcliffe Medal recipient Margaret H. Marshall, Ed.M. '69, former chief justice of the Massachusetts Supreme Judicial Court, and now senior counsel, Choate Hall & Stewart LLP, and senior research fellow and lecturer at HLS. Radcliffe Yard.

For updates on Harvard reunions, Radcliffe Day, and events for graduating seniors, visit www.commencementoffice. harvard.edu, or contact the Harvard Alumni Association (124 Mount Auburn Street, Cambridge) at 617-495-2555; haa@harvard.edu; or www.haa.harvard.edu. For information on all other professionalor graduate-school events, visit their respective websites.

The Harvard Information Center, Holyoke Center, is open every day except Sunday, 9 to 5 (telephone: 617-495-1573).



## Fine-Art Construction

Remaking a museum, delicately

ven the heaviest of heavy construction can seem like precision watchmaking. Take the reconstruction of the Fogg Art Museum.

It began in early 2010 by removing much of the original structure beyond the Quincy Street façade, then propping up what remained while excavating deep underground to create new spaces. That required shoehorning massive concrete pumps onto the narrow site (hemmed in by Quincy and Prescott streets, Broadway, and the swooping Carpenter Center ramp) to drop tons of slurry, just so, into forms far below. During this mild winter, an enormous crane was anchored to the new subterranean structure; it finally be-

gan lifting the steel girders into place for the new structure that will rise within, around, and over the skeletal Fogg—a rebirth, timed to the early arrival of spring in New England. (Harvard Art Museums documents the project's progression in a stunning set of elevated and aerial photographs taken through the changing seasons; see http://tiny.cc/dhbubw).

As this multihundred-million-dollar task has proceeded, the Quincy Street façade has been wrapped in white tarps to protect the work and craftsmen within—almost as if Christo had been retained to make the site one of his monumental sculptures. The project, surrounded by the campus and hard by Cambridge Rindge and Latin high school,



has been a feast for sidewalk superintendents, as intimate a viewing experience as watching a painter at work in her studio. (And it has been timely for construction fans, given the completion of the Law School's massive multiuse building; the stillearly work on the Business School's Tata Hall for executive-education students; and the dearth of other Harvard mega-projects in this post-recession era.)

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## Think Locally, Eat Globally

A roundup of some of the Square's best international cuisine



OLDLY DELICIOUS Venezuelan food is served in an intimate dining room at the newly opened Orinoco (56 JFK Street, 617-354-6900; orinocokitchen.com). Arepas, grilled cornpocket sandwiches, come with a variety of fillings; we liked the black beans and a white salty cheese called palmizulia (\$5.75). For entrées, the cordero tradicional, pistachio-encrusted lamb chops with mint mojo, a spicy sauce with garlic and olive oil, is delicious (\$19). For dessert-lovers, the torta fluida, a molten chocolate cake as beautiful as it sounds, is a must (\$5). Try to sit on the outdoor patio, set way back from the street; it's a romantic spot on a summer evening.

If you crave Indian food, step across the

street to a 2011 newcomer to the Square: Maharaja (57 JFK Street, 617-547-2757; maharajaboston.com). With windows overlooking Winthrop Park, this large, grandly decorated space (complete with a brass palace-like front door and ornately carved wooden dining chairs) works well for groups. The menu features a wide selection of vegetarian dishes along with some more unusual specialty appetizers, such as the lollipop chicken (\$9.95), an Indo-Chinese snack of wings stuffed with seafood, or the jeera (cumin) scallops, served in a creamy saffron sauce (\$9.95).

Since 1997 Sandrine's (8 Holyoke Street, 617-497-5300; sandrines.com) has offered richly prepared Alsatian food in a quiet, posh setting. The fare is essentially

#### **COMMENCEMENT & REUNION GUIDE**

French—with a thick German accent. Diners can tuck into the braised organic rabbit leg with comforting egg noodles flavored with lardon and a grainy mustard sauce (\$25). Or they may like the choucroute garnie au Riesling, which features bauernwurst, boudin blanc (a white sausage), grilled pork loin, and ham hock, all slow-cooked over a tangy mound of sauerkraut (\$25).

The traditional dish is the tarte flambée, or flammekueche (\$10-\$13), a crisp flatbread layered with creamy cheese and a choice of savory elements, from hickory-smoked bacon to artichoke hearts. One is plenty for a meal, we think, especially when coupled with the pear and gorgonzola salad (\$12) with spicy almonds.

For exquisite Italian food, Rialto (1 Bennett Street, 617-864-1200; rialto-restaurant. com) at the Charles Hotel is the place to go, especially with its pretty outdoor patio. The menu offers three courses, side dishes—and some of the most enticing desserts in the Square (e.g., try the tiramisu parfait with candied chestnuts, walnuts, and maple fudge). For all those who don't often get to New England, the lobster bucatini (thick straws of spaghetti) prepared with green and red tomatoes, chilis, and saffron is a delicate delight (\$16/\$22), while the eggplant parmesan is atypically served

with capers and pine nuts (\$25).

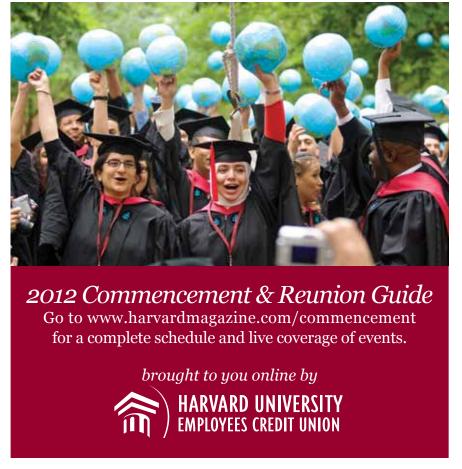
For more moderately priced ethnic food and a lively atmosphere, there's always the popular Border Café (32 Church Street, 617-864-6100; bordercafe.com), which serves large portions of Tex-Mex fare (fajitas, quesadillas, and such) along with Mexican beers and all styles of margaritas. It is a small chain and the place can border



on boisterous, but the food is fresh and the colorful Mexican-style décor and prevailing mood make it hard not to have fun.

Middle Eastern food can be found at both the Algiers Coffee House (40 Brattle Street, 617-492-1557; no website) and at the smaller, mostly takeout joint, Sabra Grill (20 Eliot Street, 617-868-5777; sabrafoods. com/sabra restaurant.htm).





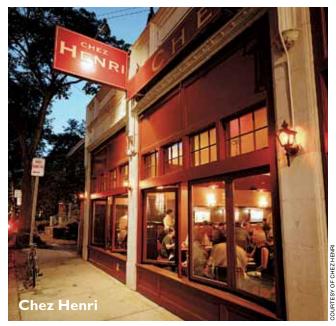
#### **COMMENCEMENT & REUNION GUIDE**

The charming Algiers, atop the Brattle Theatre, is a longtime favorite for a range of goodies, from richly brewed coffees and teas, Italian sodas, and a new menu of beers and wines, to homemade merguez (lamb sausage, \$9.95), expert omelets (\$7.75), fresh baba ghanoosh (\$9.95), and a light lentil and rice dish with fried onions called mujaddara. (\$8.95). The restaurant's hours—8 A.M. to midnight—also allow plenty of time for noshing, studying, brooding, or long conversations. Sabra is a more utilitarian place. It has about 10 seats and offers the usual hummus and falafel sandwiches (\$6.95), along with a fine kibbee (baked meat pies, \$7.50) and spanakopita (spinach and feta cheese pies, \$7.50), lamb and chicken shish-kebab plates (\$16.95-\$19.95), and succulent shawarma (that vertical, rotating bulk of stacked meats grilled on a skewer) served with rice pilaf, beans, and tahini sauce (\$14.95).

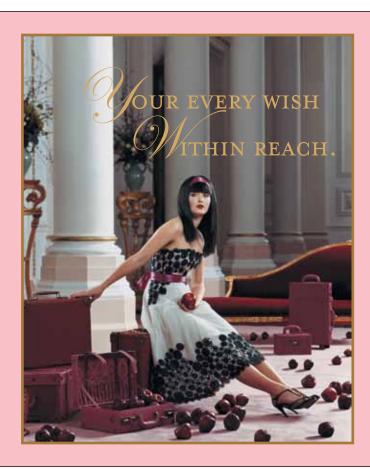
To avoid crowds in the Square, take a short walk north on Mass. Ave. to the red-

fronted Chez Henri-a French bistro with Latin flair (1 Shephard Street, 617-354-8980; chezhenri. com). Superb cocktails, including mojitos, are served at the cozy bar. In the adjacent dining room, festive yet comfortably elegant, you may opt for the sassy ceviche appetizer with avocado and mangolime sauce (\$14). The more traditional steak frites (\$29) or Cornish game hen with red kuri squash polenta (\$24) are perfectly cooked, or try the novel chickpea-flour crêpes with cardamom-

scented eggplant, winter greens, and *chévre* (\$27). For dessert, we could not resist the banana tart in a macadamia nut crust with



vanilla *créme*, toasted coconut, and dark chocolate (s9). That's a sure way to celebrate anything.





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# Designs for a New India Rahul Mehrotra's architecture spans eras and cultural divides.

HERE ARE TWO Hyderabads. One, a historic city in the heart of India, established with a hilltop fort built by Hindu rulers in the fourteenth century, is rich with ancient palaces, tombs, and mosques built by the Muslim rulers who came later. The other is HITEC City, the northwestern suburb booming with industry linked to that acronym: Hyderabad Information Technology Engineering Consultancy.

The two worlds rarely mix. Workers from HITEC City's towering office buildings—emblazoned with their logos: Motorola, Novartis, Deloitte, Tata Consultancy—tend to live in equally monolithic apartment towers near their offices.

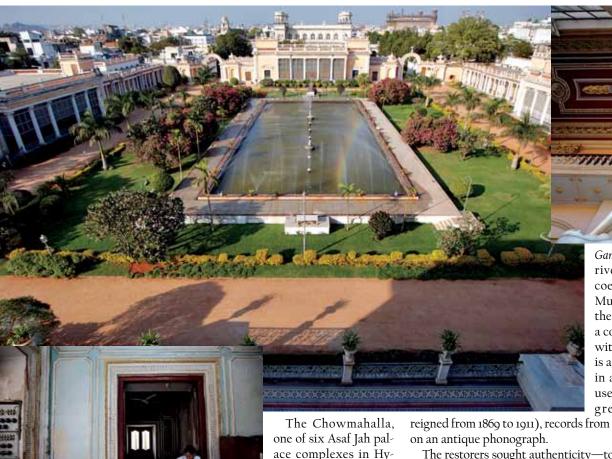
They rarely come in contact with old Hyderabad, a densely populated district of winding medieval streets, inhabited mostly by poor Muslims.

Rahul Mehrotra, M.Arch. '87, has seen both Hyderabads. His Mumbai-based architecture firm designed a corporate campus in HITEC City and restored a palace in the historic center. In his work, Mehrotra—now professor of urban design and planning at the Graduate School of Design—endeavors to engage disparate worlds with each other, reminding the inhabitants of each to consider the existence of the other. "Softening thresholds" between different sectors of society is one of his guiding principles.

Many of india's historic sites are open to the public, but absent official tours and interpretive signs, their stories remain inaccessible. In restoring Hyderabad's long-closed Chowmahalla Palace, Mehrotra sought not only to bring the public inside, but to create a setting where visitors could step into the story to gain understanding. The palace had long been disconnected from the city around it: first, commoners weren't allowed inside; later, nobody was, as the royal family fled and the complex fell into disrepair.

The palace belonged to the Asaf Jah dynasty, Muslim rulers of Hyderabad and the surrounding area from 1720 until Indian independence in 1947, and is still privately owned by the royal family. Of India's many dynasties, this was one of the wealthiest: the region is rich in diamonds and pearls, and in 1937 the nizam, or ruler of Hyderabad, was officially ranked the richest man in the world.





ace complexes in Hyderabad, was used for ceremonial functions and receiving guests. It was abandoned for three decades, amid a

morass of legal issues, until Princess Esra, wife of the current nizam, decided in 2000 to restore the site and reopen it as a museum. She called on Mehrotra to lead the conservation effort.

On his first visit to the sprawling complex, whose staff once numbered 6,000, he found buildings in a state of severe decay. Intricately molded plaster ceilings had caved in; floors of rare wood were rotting. Ultimately, dozens of specialists—woodworkers, upholsterers, and textile restorers; experts on identifying and preserving antique art, ceramics, and photographs; structural engineers, landscape architects, and historians of Urdu and Persian—were needed for the massive conservation project.

Work began with basic structural repairs and protective measures—for instance, fixing the site's drainage to prevent further water damage. Because no plans, drawings, or site map existed, it took two years just to document the grounds, buildings, and artifacts. The repairs needed were so extensive, the conservation team built a kiln for slaking lime on site. Eventually, the team restored the central palace containing the *darbar*—the gallery where coronations were held—and the original chowmahalla (the word means "four palaces"), used for day-to-day living. The new museum opened to the public in 2007; now, about a thousand people visit per day. The restorers' work won a UNESCO conservation prize in 2010.

Today, visitors marvel at the grand marble darbar (where women once had to watch events from upper rooms, through silken shades hiding them from view) and admire objects such as tapestries woven with thread of real silver and gold (a style called

Ganga-Jumni after two Indian rivers—a reference to the coexistence of Hindus and Muslims in the kingdom). In the library, they can examine a collection of Qur'ans, some with gold-leaf pages. Visiting is a multisensory experience: in a room displaying a desk used by the current nizam's great-grandfather (who

reigned from 1869 to 1911), records from the latter's collection play

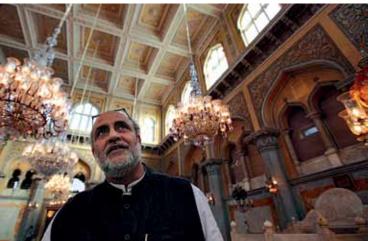
The restorers sought authenticity—to repair the terra cotta balustrades on some of the palace buildings, they tracked down the great-great grandson of the original craftsman—but they also nodded to local context in a way the royal family had not done in days

## A "Magic Bus" for City Kids

THE MAGIC BUS CAMPUS, designed by professor of urban design and planning Rahul Mehrotra, aims to ease cultural divides starting with India's youngest citizens. The name of the nongovernmental organization (NGO) refers to the bus that brings children from Mumbai's slums to a haven of green 60 kilometers outside the city. Children come for the day or for a week to engage in the usual summer-camp programming: games, arts and crafts, canoeing, hiking, soccer, a ropes course. But for these children, the camp is a whole new world.

Here in the countryside, the sky is bright blue instead of Mumbai's dull gray. The ambient sounds are chirping birds, buzzing insects, and wind in the trees—not honking horns. Children tend to be "pretty stunned" when they arrive, says Rob Thomas, director of the camp, which opened in 2005. The grounds must seem impossibly spacious to children who come from a place where every available square foot is used with maximum efficiency, and pedestrian passageways are often so narrow that people walking in opposite directions must turn sideways to pass each other. Many of the children already work to help support their families; away at camp for a week, they are allowed to be children.

When designing the buildings for this important space, Meh-



when foreign materials signified vast riches. Touring the grounds in January, Mehrotra pointed out the signs posted to direct visitors: they were made by local painters from local stone. In fact, one-story colonnaded structures along one of the palace courtyards have been designated as workshops for local craftspeople. Princess Esra's desire to engage with modern-day residents in her family's former seat of power lined up well with Mehrotra's sensibilities: "I firmly believe that architecture is not autonomous," he says. "Architecture grows

ALTHOUGH WORKERS in HITEC City—nicknamed "Cyberabad"—may not venture often outside their sector, the corporate campus Mehrotra's firm designed there reminds them that there is a larger world outside. Through their windows, employees at KMC, a company that builds roads and bridges, see not other of-

fice towers, but flowering plants growing on trellises outside their own building. Instead of turn-

out of place. It has to be local and contextual."

The buildings at the Magic Bus camp—like this cabin where campers sleep—were made from materials commonly used in Mumbai's slums, so that visiting children from poor districts would encounter familiar materials used in new ways.

rotra didn't want to fetishize country living by using stereotypical materials such as thatch roofs and mud walls. Instead, he chose materials commonly used in the slums where the campers live; in fact, his team visited a slum to create a "palette" for the project—so when the children arrive in this very foreign place, they find some familiar details. To avoid making the camp a "caricature," though, he took care to present the transplanted materials in new ways: the angular, modern cabins have metal roofs, so the sound of rain mimics what the chil-

dren might hear at home. Blue plastic tarps become rain shields, unfurled along the sides of the open-air dining hall during monsoon season.

On a dry, sunny Thursday in January, the group on the camp's athletic field, rambunctiously raising flags in a team-building exercise, was the senior class from the American School of Bombay. (Paying groups subsidize the experience for poor children, who come for free.) Yet even these children from wealthier families seldom see green space in Mumbai. The camp experience is

Clockwise from bottom left: With the Chowmahalla Palace complex already open to visitors, the restoration effort continues; in a workshop area closed to the public, seamstresses sew and iron dozens of sets of curtains for the palaces. Overview of the main courtyard. Rahul Mehrotra's team restored exquisite details that had been lost to water damage during the years that the site was abandoned; he is shown in the darbar, the ceremonial hall where coronations took place.

ing on the air conditioning, they can open the windows to admit a misty, jasmine-scented breeze. The second-floor terrace, where they may go to smoke or take a personal call, evokes a park: lemongrass grows three feet high; lotus blossoms float in a pool.

Mehrotra's buildings reflect the clients for whom they are designed. In KMC's case, the lobby on each floor features a decorative wall of rusted steel (weathered to a cer-

tain color, then coated to stop the oxidation) of the type used in bridges. Small gray stones form rock gardens on the terrace; employees may recognize this aggregate material from roadbeds. The anodized aluminum latticework that holds the plants resembles construction scaffolding.

Such purposeful details and thoughtfully chosen materials are typical of Mehrotra's creations. Companies that commission him know they will not end up with a plain glass box—a building "impossible to penetrate visually," he explains. "The glass is reflective. People can't see what's inside." He believes that style symbolizes India's new economy, cut off from the country's history and willfully ignoring the poverty that still exists.

In the KMC building, on the other hand, company employees may come face to face with a low-wage worker gardening on the terrace or watering plants outside an office window. "Those are,



transformative for them, too, says Thomas: "Just cognitively, you can't think about things in a big way if you're always penned in."

Mehrotra's habit of using familiar materials in new ways and unexpected locations is also eye-opening for the private-school group in a way he didn't foresee when designing the site. Eating in the concrete-floored dining hall and sleeping under a metal roof, they get acquainted with materials from the slum; although these campers probably don't realize it, they are sharing an experience with their poorer peers.



The building Mehrotra's firm designed for KMC, a company that builds roads and bridges, stands out in an office park of faceless towers outside Hyderabad. Plants on the latticed outer façade, hydrated by a misting system, provide shade and fresh breezes. Far right: A worker trims lemongrass on the second-floor terrace.

Mehrotra went home—then a rare decision among Indians who had gone abroad for schooling. "I

was just so charged up about what was happening in India that I didn't even think about staying in the U.S.," he says. He recalled seeing Rajiv Gandhi (India's youngest prime minister, who succeeded his assassinated mother, Indira, in 1984, and was himself assassinated in 1991) speak at Memorial Hall in 1987. In the speech, famous among Indians, Gandhi echoed Martin Luther King Jr., declaring, "I, too, have a dream"—in this case, for a new India.

He says he came to teaching "by accident," after a chance encounter with the dean of the University of Michigan's Taubman College of Architecture and Urban Planning, who was visiting India. Mehrotra was asked to show him around Mumbai; that led to a job offer in 2002. He taught at Michigan for four years,

for me, nice moments," says the architect, because they remind both parties of their interconnectedness. The cafeteria offers views of lush green internal courtyards, lighted by openings in the roof above. Even the plants on the building's outer façade are a reference to "the other India": villagers use similar trellises of moistened thatch to cool their homes.

These innovative concepts didn't instantly win over the KMC employees. The building may be *too* natural for some: one day a snake got into the office through an open window. Because air conditioning is also a status symbol, some prefer its use to natural ventilation, no matter how carefully planned. "To the workers, it's like, 'What is this thing?'" Mehrotra says of the building. "We are educating the clients as we go along."

MEHROTRA and the 15 associates he employs at his firm, RMA Architects, design everything from compact art galleries to corporate campuses—what he calls a "crazy mix" of historic conservation, new construction, and projects with social motives. "For me," he says, "what's interesting about working in India is that you can actually engage with very disparate conditions."

He spends academic breaks and intermittent visits there, splitting his time roughly evenly between homes in Mumbai—where he grew up, and where he and his wife, Nondita (Correa), M.Arch. '91, now live in a 1920s apartment building he helped restore—and Brookline, Massachusetts. Because of his father's job managing machine-tool factories, the family moved frequently, mostly among different Mumbai neighborhoods. Mehrotra grew to enjoy changing homes so often: "I loved going into a new space, arranging and rearranging." This interest in space and the built environment led him, after high school, to enroll in the School of Architecture at Ahmedabad, in the northwestern state of Gujarat. He says he loved architecture "from the start." Immediately after graduation, he enrolled at the GSD, where he and Nondita met. (Her family is from Goa, a former Portuguese colony on India's western coast.)

A year after earning his master of architecture degree in 1987,

## **Engaging Students** with Conservation

Professor of urban design and planning Rahul Mehrotra has been involved with restoring historic palaces, writing a law on historic preservation in Mumbai, and crafting a conservation master plan for the Taj Mahal. Harvard recruited him in part for this expertise, and this academic year, with Noyes professor in architectural theory Michael Hays, he has launched a conservation track for Graduate School of Design (GSD) master's students.

Conservation, he says, is not the same as preservation, which focuses on protection and repair. Conservation is broader and richer, combining historical integrity and creativity to develop narratives connecting the present with the past. In fact, Mehrotra sees conservation as part of every project: "Even if you go to an empty site, there's a history there"—natural history. "Nothing is a tabula rasa."

This broad view makes Harvard's program unique within the historic conservation field. Most programs focus on the "canons" of conservation, such as the criteria for UNESCO World Heri-



and at MIT for another four, before coming to Harvard in 2010.

But even before he formally entered academia, Mehrotra's professional interests had taken a theoretical and analytical turn, starting with his involvement in the movement for historic preservation of Mumbai's Fort District. As the city's art scene took off after the liberalization of India's economy in 1990, his fledgling firm was hired to design seven art galleries, one after the other, in that fast-developing quarter. He settled on the idea of designating part of the area as an art district, and staged art installations in nearby streets so that anyone, not just art connoisseurs, would feel welcome to enter the galleries—an early instance of "softening thresholds."

Out of this interest in historic conservation came legislation: Mehrotra was one of the authors of the 1995 historic preservation act that protects that part of Mumbai, the first such law in India. From 1996 until 2005, even after the move to Michigan, he directed Mumbai's Urban Design Research Institute, advising the city and developers on thoughtful, context-sensitive design. He also wrote books on conservation in India and on the history of Mumbai landmarks, including the Victoria Terminus train station and the

Fort District itself. As a result, he was invited in 2000 to advise the government on the conservation of the Taj Mahal. For this purpose, he created the Taj Mahal Con-

servation Collaborative, a seven-person body with expertise in structural engineering, landscape architecture, history, conservation, and architecture charged with formulating a conservation master plan for this World Heritage Site. With physical protection and upkeep of the monument already well under control, the group's report, commissioned by the Indian government and funded by the charitable arm of the multinational Tata Group, focused on creating a richer visitor experience.

It saddens Mehrotra that a visit to the Taj Mahal "is reduced to a one-liner" about a gigantic mausoleum built by a Mughal emperor in memory of his favorite wife. Charming as that story may be, the monument has "a hundred untold stories," he says, adding, "Constructing the right narratives to engage people with their past is a critical strategy for conservation purposes and for boosting tourism. Accordingly, the master plan shares many of these little-known tales. For example, flanking the main structure are red sandstone buildings that few tourists enter; these are tombs for the emperor's other wives and the favored wife's favorite servant. Across the Yamuna River, one can see the crumbling remains of a terraced garden that was part of the complex. The gardens and reflecting pool sited in front of the monument were British additions—originally, an orchard covered the grounds, hiding the base of the mausoleum and making it appear to float above the trees. Paving stones bear engraved signatures of the original craftsmen (apparently a way of tracking their work to ensure they would be paid fairly); elsewhere in the complex, one can visit the medieval city where these crafts-

tage Site designation, and the mechanics of conservation. Harvard's program envisions the subject more broadly, sometimes even challenging whether the canons apply in every context.

It is further enhanced by the rare combination of urban-planning and urban-design programs within one school. Ever since the urban-planning program was transferred from the Harvard Kennedy School to the GSD in 1992, it has been "an uneasy fit," says Mehrotra, but he and GSD dean Mohsen Mostafavi are working to transform the unusual pairing into an asset: architecture and public policy collaborate instead of clashing.

This melding appears in the design studio that Mehrotra has organized for the past two years, which takes students from the GSD and the schools of business and government to Mumbai during the January break to study a part of the city and make recommendations. (For more on the course, see "Into India," March-April, page 46.) The studio combines principles of conservation with another focus of his teaching: he chairs the department of urban planning and design, and leads a course called "Cities by Design," which takes as case studies Quito, Detroit, Istanbul, Shanghai, and Berlin, as well as Mumbai. (Students may then choose among these cities for subsequent studio courses that include an on-location segment.)

The recommendations from the first Mumbai studio—which examined a fishing village threatened by its location within the city's prime business dis-

trict—were delivered at a February symposium attended by decisionmakers in the government,

More than two million tourists visit the Taj Mahal each year.

business, and nongovernmental public-policy sectors. Nobody expressed opposition or outright skepticism; Mehrotra considers this a good sign. Because of his long track record in the city, he says, his students' ideas may be taken more seriously: "People see me as an insider, not an outsider."



men lived or the nursery where garden plants were cultivated.

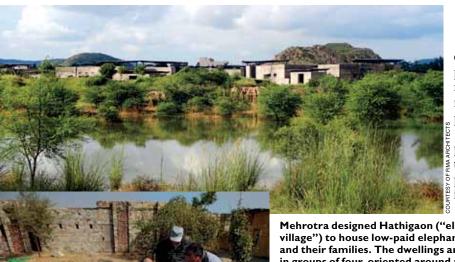
The report's recommendation that these stories become part of the tourist experience has not yet been implemented, and a visitors' center completed five years ago is still not open. This experience and others have taught Mehrotra that political factors are nearly as important as the design itself in determining a project's ultimate outcome.

VISITORS CAN ASCEND the sinuous road to Amber Fort—a sixteenth-century hilltop palace outside Jaipur, in Rajasthan state in northwest India—by car, foot, or elephant. This last means affords the best vantage point for spectacular, panoramic views of lakes and gardens below. High in the air, shifting back and forth in time with the elephant's slow, lurching steps, one has time to

It is common to take a ride like this and barely notice the other person atop the elephant: the *mahout* who conducts beast and tourist up through the palace's entrance arch. Thanks to skill and longstanding relationships, there is one—and only one—person each elephant will obey: its *mahout*. Yet the keepers are not well paid: they make 5,000 rupees (\$100) per month. (Each ride costs close to \$20, but the *mahouts* must give most of what they collect to the elephants' owners.) Some tourists may be curious about the keepers' lives, but a language barrier often prohibits conversation, and no visitors' center or signage offers more information.

When Mehrotra's firm won a competition organized by the Rajasthan government to develop housing for the *mahouts* and their families, he saw another opportunity for softening thresholds. Hathigaon (its name means "elephant village" in Hindi) is intended as both a residential complex and a tourist destination in its own right. Once finished, it will have enough units to house all 200 of the city's elephants and their keepers.

The dwellings are small—200 square feet—and arranged in sets of four, wrapped around communal courtyards. Oriented this way, the homes feel more spacious: the courtyard becomes part of the living space. Many families cook and eat meals out-



Mehrotra designed Hathigaon ("elephant village") to house low-paid elephant keepers and their families. The dwellings are arranged in groups of four, oriented around a central courtyard (bottom left). Each unit includes an elephant "garage" (far left) with a door that opens outside, not into the courtyard, so children can safely play; pits left by sand quarrying (above) were transformed into ponds where the elephants themselves can relax and play. Near left, Mehrotra visits regularly to work out details as construction continues.

side, and children can play away from the

elephants (which are housed in garage-like rooms with exits on the outer, non-courtyard-facing, sides of the buildings). The houses have electricity and running water, still rare amenities for India's poorer residents, and families can customize their dwellings as they wish, including enclosing the rooftop terrace to add living space.

The mahouts' previous accommodations, in an urban setting without a water source nearby, made for sick and sad elephants. They are social animals by nature—and tropical as well, not native to this part of India; they were brought in by Mughal invaders in the thirteenth and fourteenth centuries. Hathigaon has ponds for the elephants to play in and thatch-roofed pavilions where their keepers can let them socialize. What started as a barren site is now lush and green, especially during the rainy season. (The ponds were pits created by earlier sand quarrying; rather than fill them in, Mehrotra considered them part of the site's "natural history" and incorporated them into the design.)

Walking through the development in January, Mehrotra commented on all the small changes residents had made. Each fourhousehold group splits the cost of improving their inner courtyard; many had added trees, grass, and garden stones. Some units had glass windows and metal doors. Though most of the homes still had their original exterior finish of rough local stone, Mehrotra hopes for more customization—with plaster, whitewash, or brightly colored paint—as time passes: "We are hoping that in 10 years, you won't be able to recognize them at all." In his years as an architect, he has become less concerned with controlling all details; instead, he is fascinated by the way the residents' contributions become part of the final product.

If he is pleased when residents' alterations adapt or obscure the original design, adaptations due to politics and graft are harder to accept. On site visits, he and his colleagues discovered features that weren't part of the original plan: a road made from rocks instead of compressed dirt, a stone wall around a septic tank that had been designed flush with the ground so elephants could walk over it,

cement cylinders for burying a water body that was supposed to be a creek flowing above ground. They eventually realized that these deviations from the plan were add-ons requiring additional contracted work—and presenting opportunities to collect a kickback.

Mehrotra considered quitting as a matter of principle, but decided it was better to see the project through to completion for the mahouts' sake. In time, he became passionate about not quitting: "You start to want to fight back."

Political factors have stretched the Hathigaon project

to four years, and counting, from the one year specified in the original contract. When the government that started the project lost an election, construction was put on hold. When that party came back into office, it resumed. Mehrotra estimates that in another three years, a visitors' center might be open for busi-

Hathigaon also brought him face to face with the area's cultural dynamics. On one site visit, he noticed that contractors were substituting cheaper materials and omitting some flourishes that had been part of the plans. When he asked why, he was told that including these features would be a waste of time and money because the homes' future occupants were poor Muslims, and therefore didn't need these details.

This was one instance where he pushed back, ensuring that certain details that affected quality of life, such as the infrastruc-

ture and design of the water bodies, matched the original plan. Over the years, he has seen architecture's potential to smooth or heighten social contrasts, depending on how it is used. When he works with wealthy residential clients, he tries to steer them toward "introverted worlds"—luxurious interiors—rather than



Visit harvardmaa.com/ extras to read a Q&A with Rahul Mehrotra and view more photos of his projects.

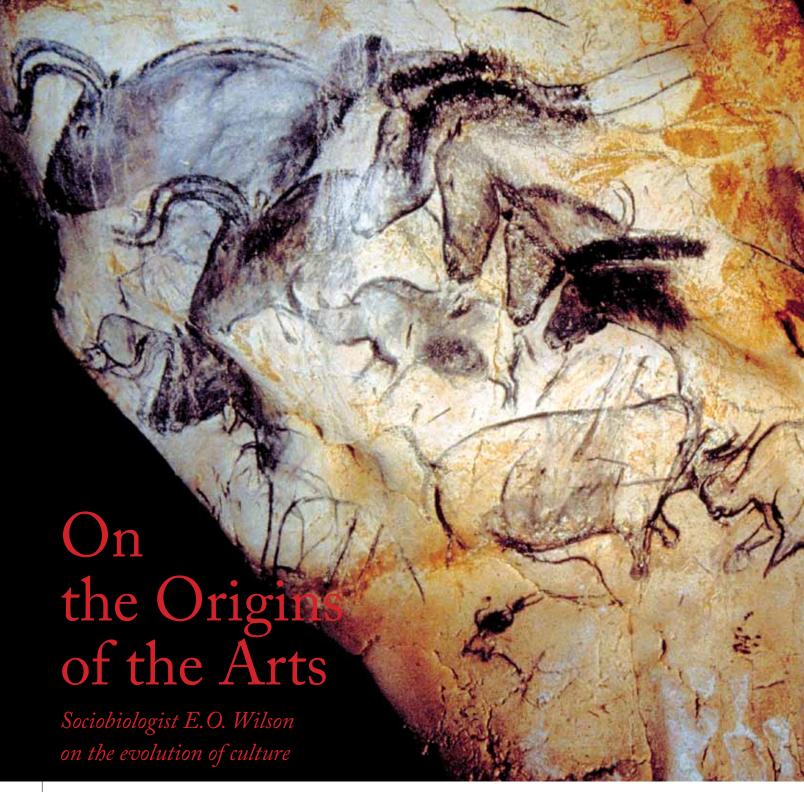
outwardly ostentatious homes: "When wealth is flaunted, polarization occurs. Architecture can get coopted in that process."

On the January site visit, in lieu of an office, a desk in the middle of a dusty lawn served as the conference room. With his glasses perched on his forehead, Mehrotra spoke quickly in Hindi, with English words peppered in: ecology, sustainability.

Halfway through the meeting, a white-bearded man arrived, wearing a white cap and a black-and-white shawl over his brown jacket. This was Haji Abdul Rashid, president of the mahouts' association. He had brought a book of remedies for elephant ailments, passed down through the generations of his family; he proudly displayed it, turning the weathered pages to show Mehrotra.

He was excited that construction at Hathigaon was proceeding. As he described his vision for what the site could eventually become—perhaps it could host an annual elephant festival, drawing thousands of tourists—his eyes gleamed. He confided, "Forty years I have been crusading for this."

Associate editor Elizabeth Gudrais '01 previously provided an overview of Harvard-India connections in "Into India" (March-April, page 46). Her work was supported by an anonymous donation for international reporting.



ICH AND SEEMINGLY BOUNDLESS as the creative arts seem to be, each is filtered through the narrow biological channels of human cognition. Our sensory world, what we can learn unaided about reality external to our bodies, is pitifully small. Our vision is limited to a tiny segment of the electromagnetic spectrum, where wave frequencies in their fullness range from gamma radiation at the upper end, downward to the ultralow frequency used in some specialized forms of communication. We see only a tiny bit in the middle of the whole, which we refer to as the

"visual spectrum." Our optical apparatus divides this accessible piece into the fuzzy divisions we call colors. Just beyond blue in frequency is ultraviolet, which insects can see but we cannot. Of the sound frequencies all around us we hear only a few. Bats orient with the echoes of ultrasound, at a frequency too high for our ears, and elephants communicate with grumbling at frequencies too low.

Tropical mormyrid fishes use electric pulses to orient and communicate in opaque murky water, having evolved to high efficiency a sensory modality entirely lacking in humans. Also, unfelt by

us is Earth's magnetic field, which is used by some kinds of migratory birds for orientation. Nor can we see the polarization of sunlight from patches of the sky that honeybees employ on cloudy days to guide them from their hives to flower beds and back.

Our greatest weakness, however, is our pitifully small sense of taste and smell. Over 99 percent of all living species, from microorganisms to animals, rely on chemical senses to find their way through the environment. They have also perfected the capacity to communicate with one another with special chemicals called pheromones. In contrast, human beings, along with monkeys, apes, and birds, are among the rare life forms that are primarily audiovisual, and correspondingly weak in taste and smell. We are idiots compared with rattlesnakes and bloodhounds. Our poor ability to smell and taste is reflected in the small size of our chemosensory vocabularies, forcing us for the most part to fall back on similes and other forms of metaphor. A wine has a delicate bouquet, we say, its taste is full and somewhat fruity. A scent is like that of a rose, or pine, or rain newly fallen on the earth.

We are forced to stumble through our chemically challenged lives in a chemosensory biosphere, relying on sound and vision that evolved primarily for life in the trees. Only through science and technology has humanity penetrated the immense sensory worlds in the rest of the biosphere. With instrumentation, we are able to translate the sensory worlds of the rest of life into our own. And in the process, we have learned to see almost to the end of the universe, and estimated the time of its beginning. We will never orient by feeling Earth's magnetic field, or sing in pheromone, but we can bring all such information existing into our own little sensory realm.

By using this power in addition to examine human history, we can gain insights into the origin and nature of aesthetic judgment. For example, neurobiological monitoring, in particular measurements of the damping of alpha waves during perceptions of abstract designs, have shown that the brain is most aroused by patterns in which there is about a 20 percent redundancy of elements or, put roughly, the amount of complexity found in a simple maze, or two turns of a logarithmic spiral, or an asymmetric cross. It may be coincidence (although I think not) that about the same degree of complexity is shared by a great deal of the art in friezes, grillwork, colophons, logographs, and flag designs. It crops up again in the glyphs of the ancient Middle East and Mesoamerica, as well in the pictographs and letters of modern Asian languages. The same level of complexity characterizes part of what is considered attractive in primitive art and modern abstract art and design. The source of the principle may be that this amount of complexity is the most that the brain can process in a single glance, in the same way that seven is the highest number of objects that can be counted at a single glance. When a picture is more complex, the eye grasps its content by the eye's saccade

The human urge to create art appears magnificently in the Paleolithic paintings from roughly 30,000 years ago at Chauvet Cave, in southern France. Here, the Panel of the Horses.

or consciously reflective travel from one sector to the next. A quality of great art is its ability to guide attention from one of its parts to another in a manner that pleases, informs, and provokes.

In another sphere of the visual arts there is biophilia, the innate affiliation people seek with other organisms, and especially with the living natural world. Studies have shown that given freedom to choose the setting of their homes or offices, people across cultures gravitate toward an environment that combines three features, intuitively understood by landscape architects and real estate entrepreneurs. They want to be on a height looking down, they prefer open savanna-like terrain with scattered trees and copses, and they want to be close to a body of water, such as a river, lake, or ocean. Even if all these elements are purely aesthetic and not functional, home buyers will pay any affordable price to have such a view.

People, in other words, prefer to live in those environments in which our species evolved over millions of years in Africa. Instinctively, they gravitate toward savanna forest (parkland) and transitional forest, looking out safely over a distance toward reliable sources of food and water. This is by no means an odd connection, if considered as a biological phenomenon. All mobile animal species are guided by instincts that lead them to habitats in which they have a maximum chance for survival and reproduction. It should come as no surprise that during the relatively short span since the beginning of the Neolithic, humanity still feels a residue of that ancient need.

If ever there was a reason for bringing the humanities and science closer together, it is the need to understand the true nature of the human sensory world, as contrasted with that seen by the rest of life. But there is another, even more important reason to move toward consilience among the great branches of learning. Substantial evidence now exists that human social behavior arose genetically by multilevel evolution. If this interpretation is correct, and a growing number of evolutionary biologists and anthropologists believe it is, we can expect a continuing conflict between components of behavior favored by individual selection and those favored by group selection. Selection at the individual level tends to create competitiveness and selfish behavior among group members—in status, mating, and the securing of resources. In opposition, selection between groups tends to create selfless behavior, expressed in greater generosity and altruism, which in turn promote stronger cohesion and strength of the group as a whole.

An inevitable result of the mutually offsetting forces of multilevel selection is permanent ambiguity in the individual human mind, leading to countless scenarios among people in the way they bond, love, affiliate, betray, share, sacrifice, steal, deceive, redeem, punish, appeal, and adjudicate. The struggle endemic to each person's brain, mirrored in the vast superstructure of cultural evolution, is the fountainhead of the humanities. A Shakespeare in the world of ants, untroubled by any such war between honor and treachery, and chained by the rigid commands of instinct to a tiny repertory of feeling, would be able to write only one drama of triumph and one of tragedy. Ordinary people, on the other hand, can invent an endless variety of such stories, and compose an infinite symphony of ambience and mood.

What exactly, then, are the humanities? An earnest effort to define them is to be found in the U.S. congressional statute of 1965, which established the National Endowment for the Humanities and the National Endowment for the Arts:

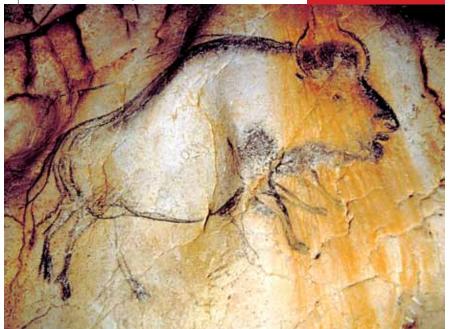
The term "humanities" includes, but is not limited to, the study of the following: language, both modern and classical; linguistics; literature; history; jurisprudence; philosophy; archaeology; comparative religion; ethics; the history, criticism, and theory of the arts; those aspects of social sciences which have humanistic content and employ humanistic methods; and the study and application of the humanities to the human environment with particular attention to reflecting our diverse heritage, traditions, and history and to the relevance of the humanities to the current conditions of national life.

Such may be the scope of the humanities, but it makes no allusion to the understanding of the cognitive processes that bind them all together, nor their relation to hereditary human nature, nor their origin in prehistory. Surely we will never see a full maturing of the humanities until these dimensions are added.

Since the fading of the original Enlightenment during the late eighteenth and early nineteenth centuries, stubborn impasse has existed in the consilience of the humanities and natural sciences. One way to break it is to collate the creative process and writing styles of literature and scientific research. This might not prove so difficult as it first seems. Innovators in both of two domains are basically dreamers and storytellers. In the early stages of creation of both art and science, everything in the mind is a story. There is an imagined denouement, and perhaps a start, and a selection

of bits and pieces that might fit in between. In works of literature and science alike, any part can be changed, causing a ripple among the other parts, some of which are discarded and new ones added. The surviving fragments are variously joined and separated, and moved about as the story forms. One scenario emerges, then another. The scenarios,

A bison, shown in twisted perspective; the doubling of the hindquarters and the extra legs may depict the animal running, or two bison side by side.



whether literary or scientific in nature, compete. Words and sentences (or equations or experiments) are tried. Early on an end to all the imagining is conceived. It seems a wondrous denouement (or scientific breakthrough). But is it the best, is it true? To bring the end safely home is the goal of the creative mind. Whatever that might be, wherever located, however expressed, it begins as a phantom that might up until the last moment fade and be replaced. Inexpressible thoughts flit along the edges. As the best

fragments solidify, they are put in place and moved about, and the story grows and reaches its inspired end. Flannery O'Connor asked, correctly, for all of us, literary authors and scientists, "How can I know what I mean until I see what I say?" The novelist says, "Does that work?," and the scientist says, "Could that possibly be true?"

The successful scientist thinks like a poet but works like a bookkeeper. He writes for peer review in hopes that "statured" scientists, those with achievements and reputations of their own, will accept his discoveries. Science grows in a manner not well appreciated by nonscientists: it is guided as much by peer approval as by the truth of its technical claims. Reputation is the silver and gold of scientific careers. Scientists could say, as did James Cagney upon receiving an Academy Award for lifetime achievement, "In this business you're only as good as the other fellow thinks you are."

But in the long term, a scientific reputation will endure or fall upon credit for authentic discoveries. The conclusions will be tested repeatedly, and they must hold true. Data must not be questionable, or theories crumble. Mistakes uncovered by others can cause a reputation to wither. The punishment for fraud is

nothing less than death—to the reputation, and to the possibility of further career advancement. The equivalent capital crime in literature is plagiarism. But not fraud! In fiction, as in the other creative arts, a free play of imagination is expected. And to the extent it proves aesthetically pleasing, or otherwise evocative, it is celebrated.

The essential difference between literary and scientific style is the use of metaphor. In scientific reports, metaphor is permissible—provided it is chaste, perhaps with just a touch of irony and self-deprecation. For example, the following would be permitted in the introduction or discussion of a technical report: "This result if confirmed will, we believe, open the door to a range of further fruitful investigations." Not permitted is: "We envision this result, which we found extraordinarily hard to obtain, to be a potential watershed from which many streams of new research will surely flow."

What counts in science is the importance of the discovery. What matters in literature is the originality and power of the metaphor. Scientific reports add a tested fragment to our knowledge of the material world. Lyrical expression in literature, on the other hand, is a device to communicate emotional feeling directly from the mind of the writer to the mind of the reader. There is no such goal in scientific reporting, where the purpose of the author is to persuade the reader by evidence and reasoning of

the validity and importance of the discovery. In fiction the stronger the desire to share emotion, the more lyrical the language must be. At the extreme, the statement may be obviously false, because author and reader want it that way. To the poet the sun rises in the east and sets in the west, tracking our diel cycles of activity, symbolizing birth, the high noon of life, death, and rebirth—even though the sun makes no such movement. It is just the way our distant ancestors visualized the celestial sphere and



the starry sky. They linked its mysteries, which were many, to those in their own lives, and wrote them down in sacred script and poetry across the ages. It will be a long time before a similar venerability in literature is acquired by the real solar system, in which Earth is a spinning planet encircling a minor star.

On behalf of this other truth, that special truth sought in literature, E. L. Doctorow asks,

Who would give up the Iliad for the "real" historical record? Of course the writer has a responsibility, whether as solemn interpreter or satirist, to make a composition that serves a revealed truth. But we demand that of all creative artists, of whatever medium. Besides which a reader of fiction who finds, in a novel, a familiar public figure saying and doing things not reported elsewhere knows he is reading fiction. He knows the novelist hopes to lie his way to a greater truth than is possible with factual reportage. The novel is an aesthetic rendering that would portray a public figure interpretively no less than the portrait on an easel. The novel is not read as a newspaper is read; it is read as it is written, in the spirit of freedom.

Picasso expressed the same idea summarily: "Art is the lie that helps us to see the truth."

The creative arts became possible as an evolutionary advance when humans developed the capacity for abstract thought. The human mind could then form a template of a shape, or a kind of object, or an action, and pass a concrete representation of the conception to another mind. Thus was first born true, productive language, constructed from arbitrary words and symbols. Language was followed by visual art, music, dance, and the ceremonies and rituals of religion.

The exact date at which the process leading to authentic creative arts is unknown. As early as 1.7 million years ago, ancestors of modern humans, most likely Homo erectus, were shaping crude teardrop-shaped stone tools. Held in the hand, they were probably used to chop up vegetables and meat. Whether they were also held in the mind as a mental abstraction, rather than merely created by imitation among group members, is unknown.

By 500,000 years ago, in the time of the much brainier Homo heidelbergensis, a species intermediate in age and anatomy between Homo erectus and Homo sapiens, the hand axes had become more sophisticated, and they were joined by carefully crafted stone blades and projectile points. Within another 100,000 years, people were using wooden spears, which must have taken several days and multiple steps to construct. In this period, the Middle Stone

The Lion Panel, with bison (the lions' likely prey), a young mammoth, and rhinoceros Age, the human ancestors began to evolve a technology based on a true, abstraction-based culture.

Next came pierced snail shells

thought to be used as necklaces, along with still more sophisticated tools, including well-designed bone points. Most intriguing are engraved pieces of ocher. One design, 77,000 years old, consists of three scratched lines that connect a row of nine X-shaped marks. The meaning, if any, is unknown, but the abstract nature of the pattern seems clear.

Burials began at least 95,000 years ago, as evidenced by thirty individuals excavated at Qafzeh Cave in Israel. One of the dead, a nine-year-old child, was positioned with its legs bent and a deer antler in its arms. That arrangement alone suggests not just an abstract awareness of death but also some form of existential anxiety. Among today's hunter-gatherers, death is an event managed by ceremony and art.

The beginnings of the creative arts as they are practiced today may stay forever hidden. Yet they were sufficiently established by genetic and cultural evolution for the "creative explosion" that began approximately 35,000 years ago in Europe. From this time on until the Late Paleolithic period over 20,000 years later, cave art flourished. Thousands of figures, mostly of large game animals, have been found in more than two hundred caves distributed through southwestern France and northeastern Spain, on both sides of the Pyrenees. Along with cliffside drawings in other parts of the world, they present a stunning snapshot of life just before the dawn of civilization.

The Louvre of the Paleolithic galleries is at the Grotte Chauvet in the Ardèche region of southern France. The masterpiece among its productions, created by a single artist with red ocher, charcoal, and engraving, is a herd of four horses (a native wild species in Europe at that time) running together. Each of the animals is represented by only its head, but each is individual in character. The herd is tight and oriented obliquely, as though seen from slightly above and to the left. The edges of the muzzles were chiseled into bas relief to bring them into greater prominence. Exact analyses of the figures have found that multiple artists first painted a pair of rhinoceros males in head-to-head combat, then two aurochs (wild cattle) facing away. The two groups were placed to leave a space in the middle. Into the space the single artist stepped to create his little herd of horses.

The rhinos and cattle have been dated to 32,000-30,000 years before the present, and the assumption has been that the horses are that old as well. But the elegance and technology evident in the horses have led some experts to reckon their provenance as dating to the Magdalenian period, which extended from 17,000 to 12,000 years ago. That would align the origin with the great works on the cave walls of Lascaux in France and Altamira in Spain.

Apart from the exact date of the Chauvet herd's antiquity, the important function of the cave art remains uncertain. There is no reason to suppose the caves served as proto-churches, in which bands gathered to pray to the gods. The floors are covered with the remains of hearths, bones of animals, and other evidences of long-term domestic occupation. The first *Homo sapiens* entered central and eastern Europe around 45,000 years ago. Caves in that period obviously served as shelters that allowed people to endure harsh winters on the Mammoth Steppe, the great expanse of grassland that extended below the continental ice sheet across the whole of Eurasia and into the New World.

Perhaps, some writers have argued, the cave paintings were made to conjure sympathetic magic and increase the success of hunters in the field. This supposition is supported by the fact that a great majority of the subjects are large animals. Furthermore, 15 percent of these animal paintings depict animals that have been wounded by spears or arrows.

Additional evidence of a ritualistic content in the European cave art has been provided by the discovery of a painting of what is most likely a shaman with a deer headdress, or possibly a real deer's head. Also preserved are sculptures of three "lion-men," with human bodies and the heads of lions—precursors of the chimeric half-animal-half-gods later to show up in the early history of the Middle East. Admittedly, we have no testable idea of what the shaman did or the lion-men represented.

A contrary view of the role of cave art has been advanced by the wildlife biologist R. Dale Guthrie, whose masterwork *The Nature of Paleolithic Art* is the most thorough on the subject ever published. Almost all of the art, Guthrie argues, can be explained as the representations of everyday Aurignacian and Magdalenian life. The animals depicted belong to the species the cave dwellers regularly hunted (with a few, like lions, that may have hunted

people), so naturally that would be a regular subject for talk and visual communication. There were also more figures of humans or at least parts of the human anatomy that are usually not mentioned in accounts of cave art. These tend to be pedestrian. The inhabitants often made prints by holding their hands on the wall and spewing ocher powder from their mouths, leaving an outline of spread thumb and fingers behind. The size of the hands indicates that it was mostly children who engaged in this activity. A good many graffiti are present as well, with meaningless squiggles and crude representations of male and female genitalia common among them. Sculptures of grotesque obese women are also present and may have been offerings to the spirits or gods to increase fertility—the little bands needed all the members they could generate. On the other hand, the sculptures might as easily have been an exaggerated representation of the plumpness in women desired during the frequent hard times of winter on the Mammoth Steppe.

The utilitarian theory of cave art, that the paintings and scratchings depict ordinary life, is almost certainly partly correct, but not entirely so. Few experts have taken into account that there also occurred, in another wholly different domain, the origin and use of music. This event provides independent evidence that at least some of the paintings and sculptures did have a magical content in the lives of the cave dwellers. A few writers have argued that music had no Darwinian significance, that it sprang from language as a pleasant "auditory cheesecake," as one author once put it. It is true that scant evidence exists of the content of the music itself—just as, remarkably, we have no score and therefore no record of Greek and Roman music, only the instruments. But musical instruments also existed from an early period of the creative explosion. "Flutes," technically better classified as pipes, fashioned from bird bones, have been found that date to 30,000 years or more before the present. At Isturitz in France and other localities some 225 reputed pipes have been so classified, some of which are of certain authenticity. The best among them have fin-

Red bear

ger holes set in an oblique alignment and rotated clockwise to a degree seemingly meant to line up with the fingers of a human hand. The holes are also beveled in a way that allows the tips of the fingers to be sealed against them. A modern flutist, Graeme Lawson, has played a replica made from one of them, albeit of course without a Paleolithic score in hand.

Other artifacts have been found that can plausibly be interpreted as musical instruments. They include thin flint blades that, when hung together and struck, produce pleasant sounds like those from wind chimes. Further, although perhaps just a coincidence, the sections of walls on which cave paintings were made tend to emit arresting echoes of sound in their vicinity.

Was music Darwinian? Did it have survival value for the Paleolithic tribes that practiced it? Examining the customs of contemporary hunter-gatherer cultures from around the world, one can hardly



come to any other conclusion. Songs, usually accompanied by dances, are all but universal. And because Australian aboriginals have been isolated since the arrival of their forebears about 45,000 years ago, and their songs and dances are similar in genre to those of other hunter-gatherer cultures, it is reasonable to suppose that they resemble the ones practiced § by their Paleolithic ancestors.

Anthropologists have paid relatively little attention to contemporary hunter-gatherer music, relegating its study to specialists \( \bar{2} \) on music, as they are also prone to do for linguistics and ethnobotany (the study of plants used \{\frac{1}{6}} by the tribes). Nonetheless, songs and dances are major elements of all hunter-gatherer societies. Furthermore, they are typically com-

munal, and they address an impressive array of life issues. The songs of the well-studied Inuit, Gabon pygmies, and Arnhem Land

aboriginals approach a level of detail and sophistication comparable to those of advanced modern civilizations. The musical compositions of modern hunter-gatherers generally serve basically as tools that invigorate their lives. The subjects within the repertoires include histories and mythologies of the tribe as well as practical knowledge about land, plants, and animals.

Of special importance to the meaning of game animals in the Paleolithic cave art of Europe, the songs and dances of the modern tribes are mostly about hunting. They speak of the various prey; they empower the hunting weapons, including the dogs; they appease the animals they have killed or are about to kill; and they offer homage to the land on which they hunt. They recall and celebrate successful hunts of the past. They honor the dead and ask the favor of the spirits who rule their fates.

It is self-evident that the songs and dances of contemporary hunter-gatherer peoples serve them at both the individual and the group levels. They draw the tribal members together, creating a common knowledge and purpose. They excite passion for action. They are mnemonic, stirring and adding to the memory of information that serves the tribal purpose. Not least, knowledge of the songs and dances gives power to those within the tribe who know them best.

To create and perform music is a human instinct. It is one of the true universals of our species. To take an extreme example, the neuroscientist Aniruddh D. Patel points to the Pirahã, a small tribe in the Brazilian Amazon: "Members of this culture speak a language without numbers or a concept of counting. Their language has no fixed terms for colors. They have no creation myths, and they do not draw, aside from simple stick figures. Yet they have music in abundance, in the form of songs."

Patel has referred to music as a "transformative technology." To the same degree as literacy and language itself, it has changed



One rhinoceros from a group

the way people see the world. Learning to play a musical instrument even alters the structure of the brain, from subcortical circuits that encode sound patterns to neural fibers that connect the two cerebral hemispheres and patterns of gray matter density in certain regions of the cerebral cortex. Music is powerful in its impact on human feeling and on the interpretation of events. It is extraordinarily complex in the neural circuits it employs, appearing to elicit emotion in at least six different brain mechanisms.

Music is closely linked to language in mental development and in some ways appears to be derived from language. The discrimination patterns of melodic ups and downs are similar. But whereas language acquisition in children is fast and largely autonomous, music is acquired more slowly and depends on substantial teaching and practice. There is, moreover, a distinct critical period for learning language during which skills are picked up swiftly and with ease, whereas no such sensitive period is yet known for music. Still, both language and music are syntactical, being arranged as discrete elements—words, notes, and chords. Among persons with congenital defects in perception of music (composing 2 to 4 percent of the population), some 30 percent also suffer disability in pitch contour, a property shared in parallel manner with speech.

Altogether, there is reason to believe that music is a newcomer in human evolution. It might well have arisen as a spin-off of speech. Yet, to assume that much is not also to conclude that music is merely a cultural elaboration of speech. It has at least one feature not shared with speech—beat, which in addition can be synchronized from song to dance.

It is tempting to think that the neural processing of language served a preadaptation to music, and that once music originated it proved sufficiently advantageous to acquire its own genetic predisposition. This is a subject that will greatly reward deeper additional research, including the synthesis of elements from anthropology, psychology, neuroscience, and evolutionary biology.  $\nabla$ 

E.O. Wilson is Pellegrino University Professor emeritus.

# Gertrude of Helfta

Brief life of a female visionary: 1256-c. 1302

by caroline w. bynum

AINT GERTRUDE OF HELFTA, known as "The Great," was given to the German convent of Helfta as a child of five to  $m{\prime}$  be reared as a nun, received her first vision of Christ's "divine sweetness" in 1281 when she was 25, and became a spiritual counselor to whom people flocked for advice. But she was little remembered after her death until the Latin edition of her work was published in 1536 and she began to gain the extraordinary fame in Catholic religious circles that she enjoys to this day. Isidoro Arredondo's late seventeenth-century painting (opposite) faithfully represents the widely diffused stereotype of Gertrude as an isolated figure pleading in eroticized ecstasy before the flaming heart of Jesus offered to her by a male mediator (possibly Saint Augustine).

This image of Gertrude the swooning mystic has been both propagated and criticized for centuries. To early twentieth-century students of the psychology of religion, Gertrude's "absurd and puerile" visions were an example of what William James called "theopathic saintliness." Protestant historians and some recent feminists have either condemned her for the implausibility of such visionary experiences as her alleged exchange of hearts with Jesus, or lauded her for an individualism that claimed direct access to divine grace, bypassing the clergy. Catholic writers have regularly seen in Gertrude and her sister nun Mechtild of Hackeborn the origins of the cult of the Sacred Heart of Jesus that became a popular Catholic devotion only in the seventeenth century.

None of this bears much relation to the historical figure of the Helfta nun. The Gertrude we know from the important work associated with her, the Herald of Divine Love, was not a lone individual, languishing in sickly and sexually sublimated ecstasy. Indeed, as the scholar Anna Harrison has recently emphasized, Gertrude was not so much an individual as a community.

Most of the prayers circulated under her name today are not by Gertrude at all. She wrote only some spiritual exercises and the second book of the Herald, which was supplemented by a first book (written after her death, probably by a fellow nun) and three more books of revelations, some of which appeared to other members of the convent or its secular friends. But if Gertrude was not the "author" of most of the great book attributed to her, she may well have been one of the two nuns who wrote down the other famous book associated with Helfta, the collection of revelations given to Mechtild of Hackeborn and known as The Book of Special Grace.

The fact that an entire community "authored" Gertrude's works undercuts the picture of her as a lone, childishly needy mystic and forms the basis for a necessary reinterpretation of the spiritual teaching of Helfta. Gertrude's visions were often about her community; those around her saw her primarily as teacher and adviser; and the spiritual teaching of book two of the Herald makes clear the priority of service of neighbor over the pleasure of private prayer. The nuns were neither anticlerical nor subconsciously resistant to patriarchy; respect for the clergy is underlined in several visions. Nonetheless, the collected revelations received at Helfta show a female and female-led community in which Gertrude is sometimes understood to take quasi-priestly roles.

Repeatedly, Christ—who appears to her most often as a cheerful baby or a handsome young man, not as the bleeding, agonized figure popularized in fourteenth- and fifteenth-century devotion—assures Gertrude that he will "certainly supply" whatever she promises in his name, even asserting, "I will speak through your mouth." In revelation after revelation, this power is offered to Gertrude not, as William James would have it, to "comfort her undeserving person" but so her sisters might share in what Christ has given to all. Moreover, for all the apparent simplicity of the visions, the Herald evidences at moments an almost postmodern awareness both of the way in which accounts of inner experiences are invariably constructed in highly metaphorical language, not just recorded, and of the danger that a soul might mistake her own desires for God's.

The visionary and communal spirituality found in the Helfta texts represents a turning point in Western culture. For the first time, scholars have enough material written by women to be able to demonstrate, by comparative analysis, that a particular kind of religious sensibility is more common among women than men. They can also document that the devotional emphases found in the visionary texts of female religious houses influenced male writers and practitioners. The years between 1200 and 1400 are thus the first point at which we can be sure that ideas and practices emanating from women's institutions and women's pens changed (for better or for worse) the broader culture.

But it is important to understand the spirituality of these women correctly. Whatever writers and theologians from the sixteenth century on may have made of the revelations of thirteenth-century nuns such as Gertrude, the women themselves espoused a kind of communal identity manifest in their commitment to a service of each other that extended even to writing each others' works. A better image of Gertrude the Great than Arredondo's languishing nun would be the kind of miniature that female scribes often inserted into their own prayer books: small, virtually identical, round-faced, and cheerful sisters gathering as a community around the Virgin Mary, who holds a cheerful and round-faced baby Christ.

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# The Humanities, Digitized

Reconceiving the study of culture

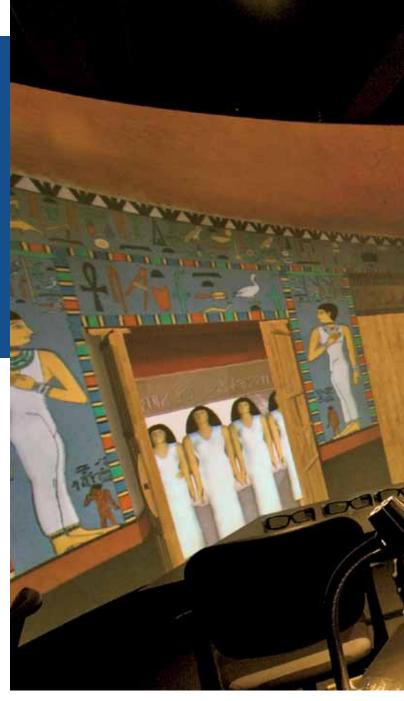
BY JONATHAN SHAW

F YOU FEEL QUEASY, I can turn this off," offers Peter Der Manuelian. At the flight controls of a small aircraft, the King professor of Egyptology is following a line of tall palm trees along a causeway that stretches across the Egyptian desert. We're moving fast and low, vertiginously, just above the treetops. As Manuelian swoops in close to one particularly large palm, his passengers instinctively lift their legs to avoid a collision.

But there is no real danger. The passengers are students seated in a visualization center (built for earthquake simulations and the study of geology, but generously loaned by Dudley professor of structural and economic geology John H. Shaw) in front of a 23-foot-wide, cylindrical wraparound screen on which Manuelian is projecting a virtual world in 3-D. He is taking them on a field trip to the Giza Plateau as it appeared 4,500 years ago, when the pharaoh Khufu died around 2566 B.C.

Manuelian steers over to watch Khufu's funeral ceremony in progress. The pharaoh's mummified body lies in a coffin, surrounded by priests wearing leopard skins and mourners chanting spells. These are avatars: some even have faces re-created from statues of Egyptian officials of that era. Manuelian, prompted by a student question, next plunges down a shaft to a plundered burial chamber that no one has seen in 106 years, since George Reisner, Harvard's first professor of Egyptology, took the detailed photographs that made this re-creation possible. Wood from the damaged coffin and bones litter the floor. The class visits the harbor beside the plateau, then the quarry where limestone blocks are being cut, and views from a distance the great stone outcrop that will eventually become the Sphinx.

What Manuelian has created is a visualization—a teaching and research tool more powerful than a video, which is linear. "When I am asked a question about something at the site, we can navigate over in real time to look at it," he says. "And we can experience the site at various times: when the pyramid is half built, or three-quarters built, or completed." Building a virtual world (as he and his team have done in partnership with Dassault Systèmes, Paris) enhances research, too, he adds: it underscores what isn't



known. "The process raises all sorts of research questions: Was the mummy embalmed in the temple or in some kind of purification tent somewhere else? Should this canopy be in the middle of the courtyard? How many statues were set up in the niches?" Nevertheless, everything from the relationships among buildings to the heights of walls and the locations of statues and funerary objects is based on the best possible archaeological evidence: art objects, glass-plate expedition photo negatives, archaeological drawings, notes, and diaries assembled by Reisner and the Harvard University-Boston Museum of Fine Arts Expedition between 1905 and 1947, during their carefully documented excavations at Giza. Manuelian, who with funding from the Mellon Foundation oversaw the transformation of Reisner's detailed records into a browsable public website (www.gizapyramids.org), has made possible the creation of this immersive, long-ago world.

O MAY - June 2012 Portraits by Jim Harrison



by Dassault Systèmes, Paris. At right, avatars conduct the pharoah Khufu's funeral ceremony.

LIKE PYRAMID-BUILDING itself, the work of the humanities is to create the vessels that store our culture. In this sense, the digitization of archives and collections holds the promise of a grand conclusion: nothing less than the unification of the human cultural record online, representing, in theory, an unprecedented democratization of access to human knowledge. Equally profound is the way that technology could change the way knowledge is created in the humanities. These fields, encompassing the study of languages, literature, history, jurisprudence, philosophy, archaeology, religion, ethics, the arts, and arguably the social sciences, are entering an experimental period of inventiveness and imagination that involves the creation of new kinds of vessels—be they databases, books, ex-

Visit harvardmag.com/ extras to view student videos from Manuelian's class.

hibits, or works of art—to gather, store, interpret, and transmit culture. Pioneering scholars are engaged in knowledge design and new modes of research and expression, as well as fresh reflection and innovation in more traditional modes of scholarly communication: for example, works in print that are in dialogue with online resources.

One way that scholars have sought to come to grips with digitization in the humanities, says Peter K. Bol, Carswell professor of East Asian languages and civilizations, is through the lens of information management, by understanding its impact on the four phases of a typical research cycle: finding, organizing, analyzing, and disseminating information. Scholars traditionally begin projects by figuring out what the good research questions are in a given field, and connecting with others interested in the same topics; they then gather and organize data; then analyze it; and finally, disseminate their findings through teaching or publication.

Scholarship in a digital environment raises questions about every aspect of this process. For example, in gathering and organizing data, "Faculty and students are creating digital collections,

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JAPAN'S 2011 DISASTERS

search the archive

JAPAN'S 2011 DISASTERS

some of which turn out to be extremely valuable, and that don't exist anywhere else," Bol points out. The publication of a book about wild urban plants (see "Off the Shelf," July-August 2010, page 21) might first involve the assembly of a database of plants (it did). In some contexts, that database—because it allows information to be understood in relationship to other kinds of information—may be more valuable than the book.

This raises the question: who will archive these databases? As Bol puts it, "Where do libraries fit within the information-management equation?" That is one kind of question the Harvard Library is busy reimagining and repositioning itself to address, and a question the University's central administration is confronting by assembling an ecosystem of resources, services, and support to aid professors in their teaching and research. But digitization of archives also has the capacity to change the traditional division of labor in humanities scholarship in fundamental ways—for example, by empowering ordinary people to participate in the creation, curation, and interpretation of collections.

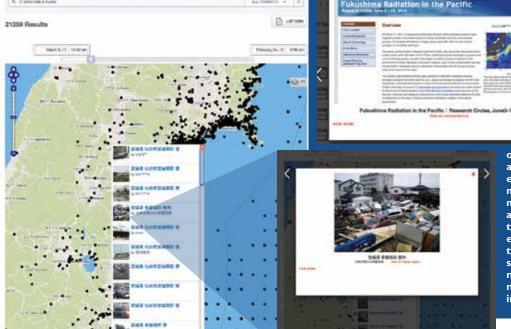
#### Proletarian Voices

FAST FORWARD to January 25, 2011. Just a few miles from the pyramids, a revolution has begun. Protestors jam the streets of Cairo seeking the ouster of Egyptian president Hosni Mubarak. And on the West Coast of the United States, Todd Presner, a professor of Germanic languages, comparative literature, and Jewish studies at UCLA, quickly sets up a means to capture this history as it unfolds. As part of a project called Hypercities, he and his collaborators record voices from Cairo through social media in real time-Twitter feeds from individual eyewitnesses on the ground: "Gun shots heard in our street in Mohandeseen [an upscale neighborhood in Giza] and the army is bringing in tanks." Then, "Tanks on the streets in Cairo."

The tweets, their rough locations pulsing on an accompanying map of the city, allow a user to go back in time and experience this event moment by moment, or to search for keywords.

They record everything

Scholars at the



from concern over what could happen when soldiers encounter demonstrators to the voices of protest organizers: "Tomorrow we meet 9 A.M. in Tahrir [Square]. We

**Reischauer Institute** of Japanese Studies created an online archive of Japan's 2011 disasters as events were unfolding. With partner institutions, they are building a networked, multimedia archive that allows users to participate in curation, create collections of objects, and encounter each other. Clockwise from top: the main search interface, with shortcuts to featured collections; a map of radiation in the Pacific; and a map of tweets from Sendai, with an inset photo of the destruction there.

Professor Jeffrey Schnapp in the metaLAB, a research and teaching collaborative he co-founded to explore "innovative scenarios for the future of knowledge creation and dissemination in the arts and humanities."

will march on Mubarak's presidential palace in Heliopolis. Down with the dictator." Eventually, the tweets make clear that the army will not interfere with the populist uprising: "Protesters are writing 'Down with Mubarak' on all the army tanks near Tahrir Square. Soldiers love it!"; and "Saw one pro-Mubarak supporter who was caught with a gun, arrested by protesters. He sat by army tanks, in tears."

A few weeks later. Presner demonstrated Hypercities Cairo—this

continuing citizen-archive of a revolution in progress—at a symposium at Harvard. He was in Cambridge with other friends and colleagues of Jeffrey Schnapp, a catalyzing force in the digital humanities who joined the Harvard faculty in 2011, serving as a faculty co-director of the Berkman Center for Internet and Society, and directing the metaLAB (at) Harvard, a research and teaching collaborative that charts "innovative scenarios for the future of knowledge creation and dissemination in the arts and humanities" (see "Rewriting the Rules," page 74). Also presenting that day was metaLAB co-founder Jesse Shapins, a lecturer in architecture who was one of three Harvard-affiliated designers of a software program called Zeega. (Originally conceived to create database documentaries, it has become a nonprofit creative technology company.) Zeega software allows the integration of media of all kinds (video, photographs, audio, text) from multiple sources into a single, cohesive interface: a multiformat montage. Audience members found the transformational possibilities of these technologies for scholarship tantalizing.

#### Crowdsourcing a Crisis

CAPTURING THE TWEETS of ordinary people living through extraordinary moments is one approach to assembling a raw record of history. But what would happen to the traditional scholarly research cycle if the experiences of those ordinary people could be leveraged to become active "participants" in gathering and even interpreting archival material? A group of researchers at the Reischauer Institute of Japanese Studies (RIJS) is about to find out.

When the largest tsunami in Japan's recorded history struck in March 2011, wreaking horrific damage up and down the northeastern coast, Folger Fund professor of history Andrew Gordon recalls that he and other Harvard scholars of Japanese culture "had a sense that this was an event that would probably change people's sense of time" in Japan. "The immediate devastation was extraordinary, and compounded by the ensuing nuclear accident. The prime minister called it 'Japan's greatest crisis since World War II,'" notes Gordon, the director of RIJS. Faculty members and students alike



organized fundraisers, sent volunteers to help on the ground (with the assistance of alumni members of the Harvard Club of Japan), and convened events to understand the catastrophe.

But a core group of faculty members also felt obligated to try to capture the ephemeral documentation of the crisis that was appearing on the Internet. The Reischauer Institute had experience with web-archiving; a decade earlier it had begun collecting online materials relating to potential revisions to Japan's constitution. But Gordon soon realized the 2011 crisis was generating two orders of magnitude more archival material than that earlier project. The sheer volume of information, coming from 10,000 websites, was too great—and diverse in format—for Gordon's group to capture by themselves.

Fortunately they were not alone. Other groups and institutions were also collecting data: the Internet Archive (a major American institution devoted to preserving the record of the Internet for posterity), Tohoku University

Visit harvardmag. com/extras to view the Digital Archive of Japan's 2011 Disasters.

in Sendai, Yahoo Japan, All311 Archive (a newly created nonprofit Japanese organization), Japan's National Diet Library, and many others. Much of this material was collected without being catalogued: saved, but not searchable. Metadata—the kind of information professional librarians assign to books as a finding aid—was not always included or in some cases was quite limited. As the RIJS team forged partnerships with other institutions, and the idea of creating a networked archive took shape, they created a common form for the submission of such data with help from the Harvard Library. Harvard now hosts a significant portion of the metadata provided by its partners—the glue that holds this network of archives together which it has indexed, made searchable, and now supplies freely to all the project partners. Most of the raw material in the archive is stored elsewhere.

How to make the archive useful was another question. The materials were not just blogs and listservs, but also government documents, YouTube videos, sound recordings, photo collections, personal testimonials, maps, and social media. Gordon asked Konrad Lawson, a technologically savvy doctoral candidate with a deep knowledge of Japan's history, language, and society, to manage Harvard's role in the complex process of building a networked archive. He also contracted with metaLAB—a place engaged in critical discourse and reflection about the nature of archives in a digital age, among other topics—to help them think about how to develop a networked and dynamic interface. And metaLAB, in turn, partnered with Zeega to design the interface.

The software that runs the resulting Digital Archive of Japan's 2011 Disasters (a test version is available for use now at www.jdarchive.org) is a customized deployment of the Zeega platform. It includes maps with layered geodata from Harvard's Center for Geographic Analysis (directed by Bol), Twitter feeds and geographic information system (GIS) data generously provided by the Hypercities Project, and 50,000 photos from Yahoo Japan; first-person accounts of the events; and thousands of official documents. Much additional content will be integrated into the archive as various partners make it available in coming months. The software searches this vast array of material by making API calls—requests—to partner archives. (Application programming interfaces allow projects and databases to talk to each other in a common programming language). These exchanges, Lawson explains, create solid and bidirectional relationships between archives. Photo sharing and social media companies use public APIs "to embed Twitter feeds into blogs or connect apps with Facebook," he continues. "This is now leaking into the world of archives and the academic world in a big way, and institutions like metaLAB and some of the leading technology companies in Japan" are making this type of interface available and useful for researchers.

Simply as a search tool, the project will have a "much better signal to noise ratio" than Google would for this subject, says Gordon. But a truly distinctive feature is that the archive is interactive: users will be able to add tags (descriptions and keywords) to the material without changing the original, which might be stored on another continent. Those new descriptive entries then become part of an object's metadata. With crowdsourced information like this, "There is a risk that somebody might tag something incorrectly, so it is like Wikipedia in that sense," Gordon acknowledges, "but we think the benefits far outweigh the risks." Users will also be able to enrich the data further by creating, and saving, specialized collections of material, so that other users interested in the same topics—the impact of the disaster on the fishing industry, for example—can access them.

The software allows users to "author multimedia work" explains Jesse Shapins. "Where Zeega offers something unique is in making archives and libraries living, creative places. They become places where information is not only accessed, but where information and knowledge are used and created."

There is also a social element. "In one way it's a collection of items," says Kyle Parry, metaLAB's liaison to the Digital Archive, "but as you move through it, you're not just encountering items—websites and documents and media—you're also encountering fellow archivists through user-generated elements like annotations and curated collections. So in a way, you're becoming part of a community of archivists whom you may never meet in person, but with whom you're collaborating." Adds Shapins, "The Digital Archive of Japan is a genre—an example of a participatory archive."

That is true in the deepest sense, because in the archive they

are building, whenever any participant "touches" an item, "it's going to ripple, if you will, in the system as a whole," explains Parry. "When a person adds something to a collection—a tag, say, or geographic information—or even when an object gets visited a lot, touching it will impact the value of that object. All these interactions will increase the chances that it'll get discovered by somebody else." Such interactions will thus change the way the archive functions by literally changing where an object is filed in the archive. "It becomes an organic thing," he says. Konrad Lawson jokes, "It will be like a Heisenberg archive. You won't be able to be a part of it without affecting it."

These and other features of the Digital Archive of Japan's 2011 Disasters are still being developed, but its creators are already thinking about it as a possible model for crisis-archiving of future momentous events. Such archives might even play a role in the formation of cultural memory, Shapins believes. Already, digital media and networked communication have changed the way crises unfold in a community. "When you have real-time communication connecting people, it changes their response to an event and how they experience it," he says. "It also changes the nature of an archive" by providing an immediacy that didn't exist before.

"Looking back on an event 30 years from now really matters," he continues. But there's also an important process of working through the trauma "in the days, months, and years following an event, for a society locally as well as globally." Thinking through that aspect of an archive "has been a major motivation" in this project, Shapins says. "Storytelling is...a vital part of...understanding this event. There have been a lot of groups in Japan leading the way, going out with recorders, giving people cameras. For us, to be a part of trying to help provide a common interface that allows for that material to be found, to be shared, and those stories to be known, is sort of the mission for the project."

While nonprofit Zeega is focused on developing a platform, what metaLAB provides, says Shapins, is "distance from our hands-on work" that can lead to new forms of thinking—whether about the nature of archives, of books, or of software (see sidebar, page 74). It's "a place for research and critical discourse," he says: "That reflective dimension is where the humanities bring so much value."

#### Mining a Million Texts

Just as empowering crowds in the stewardship of archives has the potential to change the way scholars assemble certain kinds of information, so digital methods of scholarly inquiry could expand both the temporal and intellectual scope of research and publication in a field. Historian Jo Guldi, a junior fellow of the Society of Fellows, has been reflecting on the impact of communication revolutions for some time, and using digital tools such as text-mining and visualization in her research. Her first book, *Roads to Power: Britain Invents the Infrastructure State*, considers how communication revolutions (roads in nineteenth-century Britain, but also, by analogy, digital pathways) can have the unexpected consequence of further widening the divide between rich and poor.

At the University of Chicago, she taught a graduate course in the digital humanities, one of the first of its kind in the United States; the class worked with visual information designers at Google and the IBM visualization lab. "These designers want to show change over time by identifying important events in history or in a person's life" explains (please turn to page 73)



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## Animal Research **Reforms**

DURING THE past half-century, experiments at Harvard Medical School's (HMS) New England Primate Research Center (NEPRC) have yielded a long list of scientific accomplishments, including insights

#### JOHN HARVARD'S JOURNAL

into addiction, HIV, and neurodegenerative disease. But recently, attention has shifted from breakthroughs in biomedical research and focused instead on lapses in the care of NEPRC's more than 2,000 monkeys. In June 2010, a cotton-top tamarin was found dead in a cage that had just been cleaned. A necropsy revealed that the monkey had died of natural causes before the cage went through a sanitizing, high-temperature wash, but staff members had failed to notice the animal.

That incident, a direct violation of federal animal-welfare regulations, spurred a stern warning letter and the threat of possible fines if problems continued. When a Harvard-initiated comprehensive review exposed troubling gaps in basic procedures and supervision last summer, key leadership at the center was replaced, new research was temporarily suspended, and more rigorous checks and balances began to be implemented. University officials acknowledged that NEPRC had veered off course, but stated that the problems were being addressed and corrected. But three more monkeys have died since—drawing the scrutiny of regulators, the ire of animal activists, and unprecedented steps by senior HMS leadership to more fully explain the problems and the steps being taken to address them in order to ensure the safety of the animals and regain public trust.

"The events that have taken place represent totally unacceptable events in the context of our research activities. They are

unacceptable; they are regrettable.... They are going to be fixed," dean Jeffrey S. Flier said in an interview with The Boston Globe in February, shortly after his return from an hours-long visit to the center triggered by the most recent incident: an elderly cotton-top tamarin, found in poor condition in a cage that was lacking a water bottle, had to be euthanized. (Harvard officials took the unusual step of

disclosing the incident right away, even before a U.S. Department of Agriculture [USDA] inspector had visited the facility, and a worker involved in the monkey's care was put on administrative leave.) "My sense is, whatever the procedures are that we put in place, they weren't good enough to prevent this event," Flier added. "So we are going even further with our procedures, to have an attempt to be more fail-safe."

The problems at NEPRC and some of the corrective and disciplinary actions taken to right them have emerged piecemeal, but the first hints of systemic issues



emerged through the probe Harvard initiated after the cage-washing incident. That review revealed a series of troubling gaps and breaks in the basic procedures and supervision that govern animal research. Some procedures were being conducted on animals without the necessary approval of an institutional committee. There was a pattern of incomplete medical records—in-

cluding the absence of tuberculosis tests that are critical to maintaining the health of the colony. The two other fatalities also suggested possible training or procedural problems: last October, a common marmoset that escaped while being transferred for an imaging procedure was caught with a net and underwent imaging, but was later found dead; the day after Christmas, two squirrel monkeys were discovered severely dehydrated—staff members had not noticed a malfunctioning automatic watering system—and one had to be euthanized.

The incidents have sparked a federal investigation that includes the February

2011 death of a monkey (from an overdose of anesthesia) at another HMS primate-research facility, in Boston. "They've had a tough stretch, and it's certainly something that's gotten our attention, and we look forward to them correcting the situation," David Sacks, a USDA spokesman, told the Globe. The department takes the unnecessary death of any animal seriously, he said. Since June 2010, federal inspectors have flagged seven instances at NEPRC of violations directly endangering animals' health or safety, compared to 25 such "direct" noncompliance incidents at research facilities nationwide in fiscal year 2011, according to Sacks. The most recent USDA finding, from a March inspection, concerned the February monkey death, attributed to employee failure to provide a water bottle.



Animal activists reacted to the incidents with anger and dismay, calling on the USDA to levy large fines, and asking the National Institutes of Health (NIH) to investigate whether federal grant money was used in support of research that violated federal animal-welfare regulations. They also questioned whether the relatively simple problems that contributed to some of the incidents revealed shortcomings in procedures, training, and staff. "Even someone who is not well trained in veterinary care of animals...at the least, they should be making sure there's a water bottle on the cage," said Justin Goodman, associate director of the laboratory investigations department at People for the Ethical Treatment of Animals.

The concern over the situation at the primate center rapidly became a priority at the highest levels of Harvard. Flier intervened directly in the situation, and President Drew Faust said in a statement released in March that she was requesting regular progress reports: "This situation is unacceptable. When I was notified of developments at the primate center over the summer, I found them troubling and fully supported a thorough review of procedures and implementation of reforms." After the most recent monkey death, she said, she requested weekly reports "specifying ongoing assessment of the sources of difficulties, proposed solutions, and timetables for plans of action."

Animal research is extremely sensitive; institutions are typically secretive about operations at primate centers, largely from fear of retaliation by extremist animal-rights activists: elsewhere, researchers and facilities have been threatened or bombed. But the secrecy that shrouds the research also tends to fuel animal activists' suspicions, perhaps even bolstering their arguments that such research, even when it is ethically conducted and overseen, should not be done. "Each and every death is unacceptable. We should be doing all that we can to avoid these cases," said Kathleen Conlee, senior director for animal research issues at the Humane Society of the United States. "I think what gets lost in the shuffle, to some degree, is the deaths of animals due to research, not just accidents."

But proponents argue that primate research is necessary—although it should always be held to the highest standards.



## Amanda Claybaugh

Academics sometimes say you can see the seeds of an entire career in a scholar's first book. "I've always felt that's not true about my book," says professor of English Amanda Claybaugh about The Novel of Purpose: Literature and Social Reform in the Anglo-American World, "but that is a question for me: What is the purpose behind literature? Is it enough to be good and meaningful? Should there also be some kind of social good?" After receiving her Ph.D. from Harvard in 2001, Claybaugh moved to Columbia, offering courses in English and comparative literature and earning praise for her teaching, as she had in Cambridge. (Having won two Bok Awards in graduate school, she became the first junior faculty member to win Columbia's Presidential Teaching Prize.) She returned to Harvard in 2010. She's currently at work on two books. One is a study of representations of the expanding federal government in post-Civil War literature: "Our political environment today is troubled by our inability to understand what the federal government does for people," Claybaugh observes, "and if I can get back to the origins of how people thought about it, I hope I can understand our contemporary moment better." The second is a history of a postbellum emancipated slave community on South Carolina's Sea Islands. Her interest springs from wondering, "What is it like to be a slave, and then be free, and then basically be a slave again when Reconstruction's over?" By making use of evidence found in diaries and letters, "I'm telling the story of how these people tried to create a post-Emancipation society." Claybaugh also works extensively with contemporary literature. She's reviewed books for n+1and the London Review of Books, and teaches a class on the contemporary novel: "I find it really exciting," she says, "to be one of the first people to talk about something."

They point to the checks and balances used to ensure that research is undertaken responsibly, and that each experiment is evaluated not only on its scientific merits but also on criteria such as whether the research uses the right species and the fewest possible number of animals, and is designed to cause the least amount of suffering. For certain scientific questions, such as developing a vaccine to prevent HIV or trying to solve major problems in neurodegenerative disease, other animal models are a poor approximation of a human being. Primates are "only used when lower animals won't work, and they're used in some research that's been extraordinarily important to human health," said Deborah Runkle, senior program associate for the American Association for the Advancement of Science.

In the weeks since the February death, NEPRC's interim director, professor of medicine Frederick Wang, resigned after a six-month tenure, even though Faust and Flier credited his leadership for beginning to steer the center in the right direction. William W. Chin, HMS's executive dean for research, is temporarily overseeing the center during the search for a successor. Harvard has made efforts to increase transparency: two new interim leaders gave the Globe a tour of the center, demonstrating firsthand some of the new procedures intended to increase the accountability and oversight of animal care, including afternoon checks of water availability. More supervisors and staff are being hired. And a seven-member, blueribbon panel of experts, including leaders of other primate centers and veterinary specialists, has been created to review the operations, logistics, and staffing at the center.

In a lengthy interview with the *Globe* in mid February, Chin said that incidents would be prevented by better systems and procedures. "Humans do make errors," he pointed out. "Systems are built so you remove the human element of it, so you are less error-prone. I believe that it just takes time for all these things to take hold."

—CAROLYN Y. JOHNSON

Carolyn Y. Johnson is a reporter for The Boston Globe's health and science desk; her extensive reporting on the problems at the primate center is available at www.bostonglobe.com/staff/johnsonc.

## Learning's Leading Edges

THE HARVARD INITIATIVE on Learning and Teaching (HILT), unveiled in October, was inaugurated in a symposium on February 3. More than 300 participants convened from all Harvard's faculties—principally senior professors and deans—plus invited panelists with special expertise in the field. HILT is the fruit of a \$40-million gift from Gustave M. Hauser, J.D. '53, and his wife, Rita E. Hauser, L '58, who attended the symposium and participated actively during the question periods (see "Investing in Learning and Teaching," January-February, page 60).

In her welcoming remarks, President Drew Faust accented the connection between "thinking and making"—foreshadowing a theme of later discussions: how learning deepens when students have hands-on experiences with the material studied. Director of institutional research Erin Driver-Linn, a central organizer of the event, noted that the first year of Hauser support would launch many pilot studies across the University, and that HILT had already received 255 letters of intent to apply for grants.

Cabot professor of social ethics Mahzarin Banaji, facilitator for the first panel, on "The Science of Learning," noted that many common beliefs about learning simply aren't so—for example, that individuals have different ways of learning, so educators should match teaching methods to

each person's characteristic style. There is no evidence, she asserted, supporting the idea that such matching influences learning outcomes.

Nobel laureate in physics Carl Wieman, a pioneer in effective science education and associate director of science at the White House Office of Science and Technology Policy, noted that although much is known (from cognitive psychology, brain science, and college classroom studies) about thinking and learning, this knowledge is almost never applied to teaching techniques. He cited a few research results that are well established:

- trying to teach anything to someone whose attention is divided will impair learning;
- unnecessary cognitive overload (jargon, complex figures) impedes the learning process;
- covering a topic, testing, then considering the job done may not result in retention of what was learned; and
- telling something to listeners who don't process the information in some way will not create long-lasting knowledge.

Roddy Roediger, McDonnell Distinguished University Professor at Washington University, described some of his research on college students (whom he called "the *Drosophila* of my field"). "You learn a lot more from exams than from reading material," he said. Professors and students dislike tests, but frequent assessments outpace more study time as a way

**Having winnowed** the 255 applications for Hauser Fund grants by more than half, a faculty selection committee met again during the week of March 19 to make final selection recommendations to President Faust and Provost Alan Garber. The finalists will be announced on April 16.

The Harvard Initiative on Learning and Teaching (HILT) program has created a Learning and Teaching Consortium to provide a forum for pedagogical discussion and problem-solving across the University. It includes two representatives from each faculty or organization (e.g., libraries, museums): one representative familiar with the substantive teaching and learning issues under scrutiny, the other (an academic technical manager) responsible for implementing initiative results. Ian Lapp, associate dean for strategic educational initiatives at the School of Public Health, and Katie Vale, director of the academic technology group within the Faculty of Arts and Sciences, co-chair the consortium, which will include about 25 members and begin meeting in April to address both short- and long-term HILT goals.

One first-year goal is the creation of a virtual repository for learning and teaching materials on HILT's website. Another task is to implement and assess the Hauser grants being awarded—to make sure they have real-world traction and to maximize their impact across the University. And within a few weeks, edited video footage from the February 3 symposium will be posted to the HILT website, including highlights from the breakout sessions and plenary forums.



to retain information. "You need to practice retrieval," he asserted. "There's a huge benefit in doing this."

THE SESSION ON "Innovation in Higher Education" was facilitated by John Palfrey VII, Ess librarian and professor of law. Cizik professor of business administration Clayton Christensen opened with a question: "Why is success so hard to sustain?" In industry after industry, he pointed out, established companies like General Motors are dethroned by "someone who comes in at the bottom of the market with a simple, affordable product that people can afford, and then they move up." (He noted that Toyota, for example, began not with the Lexus, but the Corona.) Given the power of online teaching, "now, higher education has a technological core, and so it is now disruptible" by low-end competition (see "Colleges in Crisis," July-August 2011, page 40). The University of Phoenix, he said, could show his lectures to 135,000 M.B.A. students, and was "spending \$200 million per year to make teaching better."

Cathy Davidson, Franklin Humanities Institute professor of interdisciplinary studies at Duke, explained that "disruptive things happen as reactions to the status quo, but we don't see the status quo it's like the air we breathe." Universities are "doing a fine job of training students for the twentieth century"—but in the twenty-first century, even high-level distinctions among natural and social sciences and humanities "make very little sense. It takes disruption to break through those silos." Returning to the theme of technology, she declared, "If we can be replaced by a computer screen, we should be."

AFTER LUNCH, five concurrent sessions divided participants into smaller groups to explore "Improving Learning through Innovation in Practice: Demonstrations and Ideas." In one session, Thomas Kelly, Knafel professor of music, delivered a condensed version of his multimedia lecture on the 1913 Paris premiere of Le sacre du printemps from his celebrated "First Nights" course. Jennifer Leaning, Bagnoud professor of the practice of health and human rights at Harvard School of Public Health, followed with vivid photographs documenting the human suffering in Dar-

fur. Michael Hays, Noyes professor of architectural theory at the Graduate School of Design, discussed form, concept, signifier, and sign, along with photographs

contrasting, for example, Renaissance and Baroque styles. And Balkanski professor of physics and applied physics Eric

Visit harvardmag. com/HILT for complete coverage of the symposium.

Mazur demonstrated his practice of peer instruction, posing a physics question that evoked three different answers from the audience, and asking participants to discuss the reasons for their choices with each other (see "Twilight of the Lecture," March-April, page 23).

Provost Alan Garber facilitated the final symposium, "Looking to the Future: An Interactive Discussion with Attendees." "Experimentation," he declared, "is something we'd like to see much more of at Harvard."

David professor of business administration Youngme Moon-who as the Business School's senior associate dean for the M.B.A. program has led the creation of the new experience-oriented field course that sent students around the world in January—advocated changing "not what great looks like, but what aver-

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age looks like" as a way to "shift the entire distribution to the right."

Former Tufts University president Lawrence Bacow, now a member of the Harvard Corporation, cited a faculty proverb—"We all teach for free but we get paid to grade"—and speculated that innovation in learning will eventually mean "[release] from the tedium that comes with grading." But he also cautioned that "any program looks good if you only look at its benefits and not its costs. All ways of improving

the teaching/learning environment will only add costs to our system. That can't go on forever."

Bass professor of government Michael Sandel, after musing "We might all go the way of the Hummer," asked, "What is the importance of presence of teacher to student, and of students to each other?" The Internet makes possible certain types of global classroom; a video of one version of Sandel's "Justice" course showed students from China, Japan, and Harvard address-

ing the same moral questions. But given lag time, he said, "videoconferencing won't work that well" as a way to realize global classrooms. "You have to enable students to see each other."

In the subsequent discussion, Mazur raised the question of how to get the faculty as a whole to innovate in teaching. Garber had one answer: "When people see success, they want to emulate it. The challenge to the innovators in the room is how to be evangelists among your colleagues."

## The Libraries' Rocky Transition



The evolving information landscape makes change in Harvard libraries—together, the world's preeminent academic research library—inevitable. To ready the organization for the challenges of the digital and online era (pursuant to plans announced in December 2010; see www.harvardmag.com/library-10), the Harvard Library board in February approved a new organizational structure in which many functions, including preservation and digital imaging, information and technical services, and access services (such as circulation) will be shared. The aim is both to reduce duplication of effort across what had been 73 separate libraries, and to coordinate strategic initiatives going forward, particularly in digital collections and digitization of existing holdings, where the library needs to catch up with prevailing scholarly practices.

But the path toward implementation has not been entirely smooth. One immediate consequence, as Harvard Library executive director Helen Shenton explained at a town-hall meeting with library employees in January, is that "the Library workforce will be smaller than it is now." Absent further details at those meetings—notably, how much smaller, and what specific jobs would entail once services begin to be delivered on a shared basis—the news caused understandable consternation among staff members, eventually leading to protests by both librarians and students sympathetic to their cause. The latter at one point

staged a weeklong occupation of Lamont Library (which is open 24 hours a day).

In a message sent to the Harvard community on February 10, Provost Alan Garber, who chairs the Library Board, emphasized that forthcoming changes to the University's library system are "essential" to bring consistency, improve users' experience, and bring the libraries smoothly into the twenty-first century. His message followed a community e-mail from President Drew Faust, disseminated on February 8, on the same subjects.

The nature and extent of any possible staff reductions were not clear as this magazine went to press. In early February, as part of the reorganization, Harvard offered a voluntary early-retirement package to 275 of 930 current full-time library employees—those 55 or older who have worked for the libraries for at least 10 years. Library officials expected to know in early April how many eligible employees had accepted the package. Layoffs may follow, depending on the response to the retirement offer.

In a March 27 faculty meeting, at which some professors expressed concern about how the transition was being implemented, Faust acknowledged that the Library, which underwent layoffs in 2009, had still not determined what its staffing levels should be under the reorganization. Knowing that is contingent on the analysis of new needs. It also depends, Garber added, on the level of shared services that the centralized part of the Harvard Library will provide to individual libraries, now being discussed with librarians, faculty, and administrators within the graduate and professional schools.

In the meantime, with the management structure taking shape (see www.harvardmag.com/library-II), newly appointed heads of the five new "affinity groups"—library clusters for the professional schools; physical and life sciences; humanities and social sciences; fine arts; and archives and special collections—began meeting to coordinate collection development across the University and with external institutions. New positions, such as "head of electronic resources and serials" and "head of metadata creation" were posted; and the Library and the Harvard Union of Clerical and Technical Workers formed joint councils to discuss possible staff reductions in the shared-services organization in the months ahead.

### Focus on the Future

PONDERING ITS PROSPECTS during Harvard's 375th anniversary year, the Faculty of Arts and Sciences (FAS) held two latewinter panel discussions about "The Future of the Present"-opportunities for designated professors to examine, respectively, how research and teaching might change in the next quarter-century, and what present strengths and values they hoped would endure as the enterprise evolves.

Moderator Maya Jasanoff, professor of history, began the initial conversation, on February 16, by looking back two decades to her freshman year at Harvard, when iPhones, iPads, Google, Wikipedia, and Twitter didn't exist and even e-mail was rarely used. Looking ahead to 2036, she encouraged her colleagues to speculate on "how the digital revolution is changing what we do as scholars and teachers, and what we can do in response to it." Among the highlights of their presentations:

Professor of astronomy David Charbonneau addressed "the exponential increase in data, and the ways we collect data." The robotic telescopes he uses to search for extrasolar planets already collect 10 to 20 gigabytes of material per night, and new devices will collect orders of magnitude more—requiring data management and analysis skills alongside physics or astronomy training. Researchers in the field are generating 7,000 papers monthly, posing obvious problems in keeping up with the torrent of discovery.

Such discovery, of course, does not come cheap. Professor of biogeochemistry Ann Pearson noted that "minor instrumentation" in her field is "anything that costs less than \$2 million"—and naturally, all scientists clamor for the latest, fastest, most powerful devices, to keep pace with peers.

ties, but only slowly," according to Martin Puchner, Wien professor of drama and of English and comparative literature. He described how a Google-assisted search enabled him to locate more than 100 examples of "extremely obscure plays" in

which Socrates

Illustration by Mark Steele

### Yesterday's News

From the pages of the Harvard Alumni Bulletin and Harvard Magazine

1917 The Crimson endorses wartime prohibition; Harvard Alumni Association officials advise against serving liquor at reunions.

1922 Despite the belief of many alumni that "one does not advertise one's mother," the Associated Harvard Clubs Policy in Publicity committee advises repeal of the rule forbidding photographers in the Yard on Commencement day and encourages use of "the moving picture as a medium for pictorial record and current information" about Harvard.

1927 As the Weeks Bridge is dedicated and the Fogg Museum opens, debate rages over the planned construction of the \$1-million Memorial Church. Alumni write to complain that they would rather have a memorial swimming pool.

1942 Undergraduate dinner conversation includes "the sugar rationing system, the bicycle shortage, and the cuffless-trousers-for-victory campaign."

> 947 The faculty discusses extending wartime rules that let some Radcliffe students take classes at Harvard. The New York Times calls it "one more step in the emancipation of the female, who was long considered above or beneath the need for higher education."

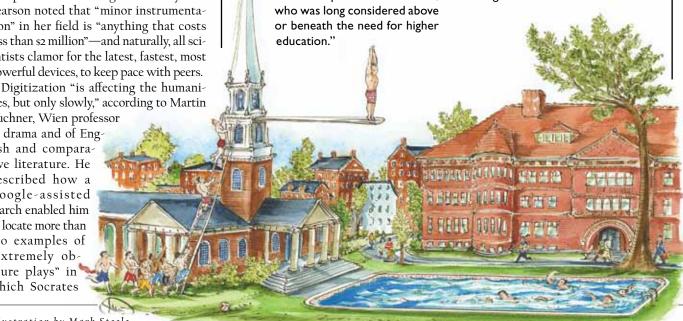
1952 More than a thousand people gather in Harvard Square to welcome "Pogo" cartoonist Walt Kelly to Harvard for a lecture and "Pogo for president" rally. When Kelly is delayed, some in the crowd begin blocking traffic. Cambridge police move in, and by evening's end, 28 undergraduates have been arrested.

1957 The Faculty of Arts and Sciences endorses the creation of a visual arts center and of a theater, because of a "lively resurgence of undergraduate interest in the dramatic arts since World War II." John L. Loeb '24 contributes \$1 million toward the theater a week later.

1967 Radcliffe president Mary Bunting prohibits cigar smoking in Hilles Library.

1977 Under a new agreement, Harvard and Radcliffe will maintain a coordinate relationship: Radcliffe will retain its institutional independence but delegate responsibility for undergraduate affairs and instruction to Harvard.

1982 Kermit the Frog addresses graduating seniors in Sanders Theatre, telling them, "As you set sail on the great vacation of life, think of Harvard as your travel agent."



Agassiz professor of zoology Hopi Hoekstra focused on the classroom, today "a sea of laptops" and perhaps tomorrow an empty venue as students take in lectures (if those are still given) from bed. Underscoring what some of her colleagues than (in 2036) working at internships or on their start-up ventures.

Were her projections tantalizing or frightening? Jasanoff asked. colleagues that day to and Robert Wood

tease out those attributes of academic life—classroom interactions, scholarly disciplines, liberal-arts verities—that might persist in decades to come, when students would have to adapt continuously, collabo-

rate, and hone their skills in interpreting information across geographic distances, disciplines, and stages of life.

Claudine Gay, professor of government and African and African American studies,

asked, "What function should the Harvard campus serve when virtual classrooms reach across the world?" She said her "nostalgia for the present" might make her seem a Luddite, but she felt strongly that place matters for education, just as citizens' social and economic contexts shape their voting behavior and political beliefs. Much as "citizens are not unmoored social isolates," it is virtually "axiomatic" that a physical campus matters to students and scholars. "Discovery," she said, "is not possible without dialogue"—and a campus is "the only place where the caravans meet."



From left: Maya Jasanoff, Martin Puchner, Ann Pearson, Hopi Hoekstra, and David Charbonneau

had said, she noted, "Now, students are analyzing a lot of data, and are spending less time in the lab gathering data."

JASANOFF TOOK UP these themes at the March 7 session, propounding an almost dystopian view of Harvard at its four-hundredth anniversary looking back to 2012: an era when "Widener was full of books. People checked them out" even though they were "chunky, heavy things" and—perhaps even more remarkably—when professors still wrote books and students attended classes between 10 A.M. to 4 P.M., rather

### Decanal Duo

Jones professor of American studies Lizabeth Cohen, interim dean of the Radcliffe Institute for Advanced Study since last July, has been appointed dean. In a March 8 announcement, President

Drew Faust cited her dedication to the "pursuit of new ideas and collaborations across the academic disciplines, the professions, and the creative arts." Cohen, an American social and political historian, called



Lizabeth Cohen

Radcliffe "Harvard's front door—open and welcoming to all who seek intellectual nourishment and creative inspiration."

On March 30, Faust appointed David N. Hempton, McDonald Family professor of Evangelical theological studies, the dean of Harvard Divinity School, succeeding William A. Graham, who steps down

on June 30. Hempton joined the faculty in 2007. He said he welcomed "the opportunity to engage with colleagues... across the University to improve Harvard's approach to the study of religion."



David N. Hempton



Then she called on her From left: Matthew Nock, Claudine Gay, Parimal Patil,

Professor of psychology Matthew Nock, echoing Charbonneau, said that 1.5 million new journal articles a year meant researchers were ever more dependent on the disciplines and processes of peer review to "organize and navigate that information" and help separate science from "nonscience." Online tools might speed such reviews and subject the underlying data to greater transparency, but the process of peer vetting must remain intact.

In an interdisciplinary era, said associate professor of electrical engineering Robert Wood-who collaborates on an enormous

Visit harvardmaa.com/ conversations 12 to read more about the professors' predictions.

project to design microrobots, with eleven principal investigators—classical disciplinary training remains essential. Engineering is, in that sense, "an inherently historical discipline."

Support for that view came from an utterly different direction, from professor of religion and Indian philosophy Parimal Patil, who studies those subjects as they arose in classical Sanskrit texts. Making the case for the liberal arts, Patil cited two core intellectual values: "the value of slow academics" (of deep analysis—in text, laboratory experiments, or the formulation and testing of hypotheses—driven by curiosity, rather than for any instrumental purposes); and "the importance of talking to all the wrong people" (from other disciplines, who can challenge one's assumptions through "genuine, heated, but intellectually productive conversations"). To that end, he advocated that professors "take each other's courses."

It was a vivid way of illustrating the value of a physical campus, of chance encounters and personal interaction—even as an era of digitally assisted, global research and teaching unfolds. As Jasanoff summed up, the panels themselves had proven several speakers' point about "the value-added of getting people into the same room, across disciplines, in unusual combinations."

### College Costs, Admissions

The Harvard College term bill for next academic year will be \$54,496—up \$1,844 (3.5 percent) from 2011-2012. Undergraduate financial aid will be budgeted at \$172 million, an increase of \$6 million. Sepa-

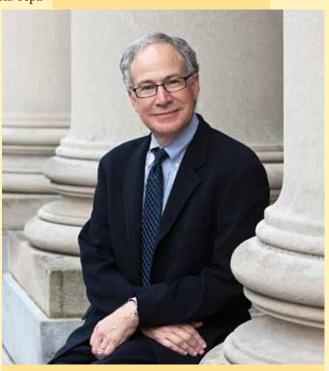
rately, the College admitted 2,032 prospective freshmen to the class of 2016, entering this August-5.9 percent of 34,302 applicants. (The admissions rate last year was 6.2 percent, with 2,158 offers of admission extended to 34,950 applicants.) The lower rate (despite fewer applicants) reflects the effect of early-action admissions; those candidates who were admitted are expected to enroll in very high numbers.

### **Veterans Day Academics**

At the Faculty of Arts and Sciences (FAS) meeting on March 6—one year and two days after the heralded signing of an agreement to bring the Reserve Officers Training Corps (ROTC) program back to campus—professors heard a plan to make sufficient course time within the new academic calendar (with exams before Christmas) by scheduling classes on Veterans Day. Assuming an FAS vote approving the change, teachers and students will conduct regularly scheduled classes then—as is already the practice at the Law School.

### On Other Campuses

The renovation and expansion of the Yale University Art Gallery—with eight classrooms on the premises and exhibition space increased nearly 75 percent, to 70,000 square feet—is nearing completion, with reopening scheduled in December. The \$135-million project was funded entirely by gifts. (The Harvard Art Museums now expect to reopen at the renovated Fogg site late in 2014; see page 45.)...A faculty-led "Study of Undergraduate EduBrevia



DECANAL DEPARTURE: Allan M. Brandt, dean of the Graduate School of Arts and Sciences (GSAS) since January 2008, stepped down in mid February to address a health issue requiring immediate treatment, according to an announcement by Faculty of Arts and Sciences dean Michael D. Smith. During the financial crisis, Brandt reduced admissions while sustaining stipends for students already enrolled and those entering Harvard. He also pioneered a teaching-training program (students work with professors to create new undergraduate general education courses and then serve as teaching fellows for the classes), and made significant progress in diversifying GSAS admissions. Richard J. Tarrant, Pope professor of the Latin language and literature, is serving as interim dean while Smith launches a search for Brandt's successor. For a full report, see www.harvardmag.com/brandt.

cation at Stanford University" was presented to that institution's faculty senate in late January (www.stanford. edu/dept/undergrad/sues/report.html). It emphasizes developing student skills in aesthetic and interpretive inquiry, social inquiry, scientific analysis, quantitative reasoning, engaging difference, moral reasoning, and creative expression. A new first-year curriculum would incorporate lectures, discussions, and seminars. The report also recommends changes in residential life, international

experiences, service learning, and extracurricular activities. An underlying theme is "adaptive learning": integrating established and new knowledge to meet new challenges.

#### **Nota Bene**

FEWER FACULTY MEETINGS. The Faculty of Arts and Sciences on March 27 adopted a rule change to make regular faculty meetings fall more predictably, on the first Tuesday of each month from October through May (excepting January). That schedule will reduce the number of such meetings from eight to seven, theoretically cutting the number of occasions to conduct business or air faculty members' views on important questions. In fact, meetings are frequently canceled for lack of business.

SUPPORTING SOCIAL ENTREPRE-NEURS. President Drew Faust on February 15 announced the President's Challenge—an invitation to undergraduate- and graduate-student-led teams to compete for seed funding for solutions to social problems. Ten semifinalist teams will receive \$5,000 awards to develop their ideas, with a finalist and three runners-up (chosen after a demonstration on May 17) to share a \$100,000 prize and working space and support at the Harvard Innovation Lab (see http://ilab.harvard.edu/ presidents-challenge and "Introducing the i-Lab," January-

February, page 55).

Upgrading the education doctorate. Harvard Graduate School of Education (HGSE) is collaborating with the Faculty of Arts and Sciences (FAS) on the seventeenth interfaculty Ph.D. program, a successor to HGSE's current Ed.D. training for future scholars of education. The new degree outlines three interdisciplinary tracks: in human development, learning, and teaching (with roots in psychology); culture, society, and institutions (sociol-



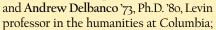
LAWYERS' LAIR: Harvard Law School's tripartite Wasserstein Hall-Caspersen Student Center-Clinical Wing complex, scheduled to be formally dedicated on April 20, is now in use, providing additional classrooms and space for the multiple

clinical programs and student services (the registrar, career advising and placement, and so on). It was designed by Robert A.M. Stern Architects, LLP.

ogy); or education policy and program evaluation (economics). For more details, see www.harvardmag.com/hgse-phd.

Harvard arts medalist. Actor Tommy Lee Jones '69 was scheduled to receive the Harvard Arts Medal on April 26. He won an Oscar for best supporting actor for his role in *The Fugitive*. See www.harvardmag.com/jones-12 for a 1994 *Harvard Magazine* profile.

HUMANITIES AND ARTS HONORANDS. President Barack Obama in February conferred the National Humanities Medal on faculty members Robert Darnton, Pforzheimer University Professor and University Librarian, and Amartya Sen, Lamont University Professor, economist, philosopher, and Nobel laureate. Other recipients included alumni John Ashbery '49, Litt.D. '01, the poet,





Emily Rauh Pulitizer



Robert Darnton



Amartya Sen

and former faculty member Kwame Anthony Appiah, a moral philosopher now at Princeton, and pianist and music scholar Charles Rosen, the Charles Eliot Norton lecturer at Harvard in 1980-81. Overseer Emily Rauh Pulitzer, A.M. '63, a scholar and supporter of contemporary art—and a lead benefactor in the renovation of the Fogg Art Museum (to which she gave \$45 million and 31 works of modern and contemporary art in 2008)—received the National Medal of Arts.

COMMON ROOMS BY THE COLLEGE. As the College begins renewal of the undergraduate Houses (renovation of Old Quincy starts this June), basement spaces will be transformed into practice rooms, social areas, and a "smart" classroom eliminating summer-storage space. Administrators announced in February that the College will provide furniture for students' common rooms as each House is renovated, sparing undergraduates from making such purchases—and reducing the volume of possessions stored each summer. Remaining needs will be met by contracting with vendors for off-site storage at discounted bulk rates.

Engineers elevated. Two faculty members have been elected to the National Academy of Engineering: George M. Church, professor of genetics and director of the Lipper Center for Computational Genetics at Harvard Medical School, for work on technologies for sequencing the human genome and discoveries in DNA synthesis and assembly; and William W. George, professor of management practice at Harvard Business

School, for applying engineering principles to manufacturing in healthcare (he was chairman and CEO of Medtronic). Church's work was profiled in "DNA as Data" (January-February 2004, page 44) and "Life: The Edited Version" (November-December 2001, page 14). George was featured in "An Education in Ethics" (September-October 2006, page 42).

Miscellany. Three Harvard affiliates won National Book Critics Circle awards on March 8: Maya Jasanoff, professor of history (see page 51), in general nonfiction for Liberty's Exiles: American Loyalists in the Revolutionary World; Edith Pearlman '57, a distinguished writer of short stories, in fiction for her newest collection, Binocular Vision: New and Selected Stories; and Robert B. Silvers, Litt.D. '07, founding editor of The New York Review of Books, who received a lifetime achievement award....The National Science Foundation has conferred its Waterman Award, for outstanding researchers under the age of 35, on associate professor of electrical engineering Robert Wood (see page 52); it comes with a \$1-million, five-year grant to support his work on microrobotics, featured in "Tinker, Tailor, Robot, Fly" (January-February 2008, page 8)....Professor of law and of computer science Jonathan Zittrain, codirector of the Berkman Center for Internet & Society, will become Harvard Law School's vice-dean of library and information resources.

### Meta-journalism

For most of the twentieth century, newspapers were a relatively stable industry. Many operated essentially as local monopolies, so just standing pat they could make lots of money—e.g., a 20 to 30 percent profit margin from advertising sales and circulation, "even without having legendary business people in charge," says Joshua Benton, director of the Nieman Journalism Lab. "Then the Internet came along and changed all that." Since the 1990s, the entire news and journalism business has been in turmoil. Amid this chaos, in 2008, Benton launched the Lab, based at Harvard's Nieman Foundation; it's an online vehicle that's "85 percent newsroom, 15 percent think tank," he says. "We try to contribute to a discussion of how journalism is going to move through this disrup-

Many have joined the conversation: last fall, the lab's website (www.niemanLab.org) welcomed its five-millionth page-view. Visitors can learn how the St. Louis Beacon recently used a new Apple app, iBooks Author, to compile its articles, photographs, and video on 2011's record floods into Meandering Mississippi, a new e-book. Or trace the way Mignon Fogarty, a science and technical writer, had an epiphany in a beachfront café in Santa Cruz, California, and parlayed her hobby-producing weekly Grammar Girl podcasts on usage and syntax—into a growing media network. They can access a detailed analysis of how Oslo-based Schibsted, the world's eighth-largest news organization (just behind the New York Times Company), operates in 28 countries and extracts 36 percent of its revenue from digital sources-more than three times the rate of an average newspaper. The latter concludes a three-part series by Ken Doctor on European business models for the digital news industry, which in some ways are far ahead of those of North America.

"I run an online news site about online news sites," says Benton, though in truth, the lab also covers many stories on journalistic innovation: new developments in data visualization; emerging business prototypes; novel advertising formats; the growing role of mobile devices in both consuming and producing journalism; the impact of Twitter, Facebook, and the



ways news gets shared online. "We try to focus on: 'What innovations are we seeing?" Benton says. "What are people trying, what is working, and what can we learn from it? It's all aimed at trying to figure out a path forward for journalism."

During the lab's three-plus years, it has published more than 2,600 articles by more than 100 authors. It attracts more than 250,000 page views per month, and 75,000 follow the lab on Twitter. Its readership comes largely through referrals. "If you look at most large news sites, 50 to 60 percent of the traffic will start at their home page—someone typing, say, 'nytimes.com' into their browser," Benton explains. "For us, the comparable number is less than 10 percent, because much more of our traffic comes from people sharing our stories on their blogs, or on Twitter, or through social media, or e-mailing them to colleagues, or whatever else. So we have a much larger share of people coming in through that 'side door,' as it's sometimes called. That means, I think, that our readers, when they finish a story, say, 'Hey, I want to share this with people I know.' Which is heartening."

The lab has a rare status: a news operation running within the University that is not devoted to Harvard news. Typically that happens at universities with journalism schools—which Harvard is not. But it does have the 75-year-old Nieman Founda-

tion, which enables working journalists to take a fellowship year in academia. The Nieman endowment funds most of the lab's budget; it has also received grants from the Knight Foundation and the Carnegie Corporation. Such support allows the lab to operate as a news site sans ads, meaning "We don't have to artificially pump up page-view numbers to try to squeeze a little more money out of advertisers," Benton says.

THE LAB GERMINATED in the mind of former Nieman curator Bob Giles in 2006, when he began thinking that the foundation "needed to become a significant par-

ticipant in the emerging conversation on the future of news. We were getting fellows who wanted to know what their future was." The



Fuego resource.

foundation's advisory board agreed with that premise and, working with him, came up with the idea of a website.

The timing was good for Benton, who completed his own Nieman year in 2008. (He had been a reporter for the *Dallas Morning News* for several years before; in college at Yale, he was an early blogger and earned "pizza and beer" money designing websites.) Benton started work in July 2008 and had the site up and running by October. "In a very short time, Josh got

Photograph by Stu Rosner Harvard Magazine 55

authoritative people to write for it," Giles recalls, "and made it the go-to site if you wanted to know about how serious journalism is evolving. The lab continues to get an enormous amount of recognition and attention—it's widely respected. Josh is the perfect guy for this enterprise: he has great ideas, a deep understanding of the digital world, and he's very well networked."

Globally so: Benton also travels a good deal to get the word out, giving talks around the United States and in places like São Paulo, Berlin, Paris, and Hong Kong in recent years. The lab keeps in touch with cognate entities like the Shorenstein Center for the Press, Politics, and Public Policy at Harvard Kennedy School and MIT's Center for Civic Media. It hosts monthly happy hours that bring together "the nerdiest elements" of Boston's journalism community, says Benton, with a grin.

Three staff writers, plus many freelancers, do the lab's reporting, posting new material five days a week; the day's first tweet goes out around 9 A.M. Users also can access its aggregation project, Fuego ("fire" in Spanish), launched last year—a "heat-seeking Twitter bot." Fuego algorithmically determines what part of the Twitter world is talking about the future of journalism, and tracks and ranks the stories that these people are discussing every 30 minutes.

Fuego is one way to cope with the waning gatekeeper function of editors, Benton explains, describing a world in which "the power to publish is no longer limited to people who have a broadcast tower or who buy ink by the barrel. While some may not like the cacophony of voices that can sometimes produce, I think it's inarguable that this has enabled some very smart people to produce some very good work that they wouldn't have been able to do in a pre-Internet world."

The cyber-landscape also means that a YouTube video can go viral without *any* gatekeeper involved: Web users simply share it laterally. That's true for information generally, he adds, so "People are sifting for editorial gold but don't have time to do all the work" of winnowing through the tweets, blogs, and posts out there. Fuego attempts to cut through the noise to help those prospecting for knowledge.

The lab scrutinizes how newspapers and broadcast outlets are adapting to the changed environment, while also paying attention to the new generation of "online natives" with "different business models, and in many cases more sustainable business models," Benton says. Such natives are news operations that began online, like ProPublica, the Pulitzer Prize-winning news site; other examples include political sites like Talking Points Memo and Politico—which has a print component but was online from the start.

Older companies are experiencing certain characteristic problems due to the digital world's disruption of their monopolies on advertising and readers' attention. "I don't quite subscribe to this metaphor," Benton says, "but some people compare

it to the dinosaurs versus mammals: the dinosaurs were huge and powerful, but then they got disrupted. The next stage of evolution was lots of small, furry creatures who weren't all that impressive scurrying around."

Whatever the imagery, structural dislocation clearly prevails, and in Benton's estimate, a theorist of business disruption, Cizik professor of business administration Clayton Christensen, is "probably the most influential thinker about business issues in this media world." References to Christensen's ideas frequently turn up in the lab's reports; his biggest single impact on the media field was Newspaper Next, a report that the American Press Institute paid him and his consulting firm to produce in 2006.

For the practicing journalist, work is now harder in some ways and easier in others. "The ability to find that background information more quickly is a great boon," says Benton, "but you're probably going to have to tweet your story and share it on Facebook and take more responsibility for [its] marketing and promotion than you might have before. If someone asks you a question about your story on Twitter, you have the opportunity to respond and, depending on where you work, you might have the responsibility to respond. All that is amplified by the fact that a lot of these organizations are having financial difficulties, so there are fewer people to produce the product. And there are more products. It's a stressful but invigorating time to be a journalist."

### THE UNDERGRADUATE

## Looking Forward, Looking Back

by KATHERINE XUE '13

YVE HAD a lot of long conversations recently. Chance moments—lazy evenings or weekend mornings spent lingering in the dining hall; the common room late at night, with all my roommates joining in. Conversations about big things, like priorities and life plans, friends

and relationships, work-family balance. Little things that turn into big things: Are you taking the GRE this spring? Where will you be this summer?

I've heard these conversations have come early. We're only (only?) juniors. One year is a comfortable buffer before the end of college; my wall calendar can't yet show my entrance into the real world. Still, Harvard students are nothing if not overachievers, and I've started to feel some premature separation anxiety. Away from the familiar structure of classes and extracurriculars, life seems bewilderingly open.

I'm not the only one restless and undecided. Two summers ago there was a popular *New York Times* article, "What Is It About 20-Somethings?" It described a generation caught in emerging adulthood—still in a period of flux, experimenting with jobs and relationships, curious and reluctant to settle down. A Harvard education, a recently graduated friend told me, means being able to take risks, screw up, and still land on your feet.

We are undoubtedly lucky; young, well educated, with no shortage of opportunity. But the future still feels intimidating. The perpetual cycle of applications for internships and fellowships is a reminder of small, unconscious choices and big decisions looming ahead. Recently I've heard from friends who worry about finding a job they love, or who wonder if there's any single thing they like enough to do for the rest of their lives. Many people enter Harvard with varied interests, and are afraid that having a job and being out in the real world will mean less time for hobbies and exploration. Less discussed, but still wondered about, are questions about friendships and relationships—how long they will last, and how to maintain them.

I sometimes have a feeling of dread, thinking about graduation as an end. College is the best time of your life, I've heard people say, and graduation can mean the end of a unique experience and unique opportunities. But there is also the aspect of commencement, and a sense of beginning. Many of your most important decisions will be made in your twenties, my friend's parent told him. Recently I've had the feeling of being dormant, waiting for life to begin.

I GUESS I'M ONE to seek out guidance and advice. In the pages of the red books, reunion reports from Harvard alumni, are hundreds of paths and perspectives laid end to end. I've been reading these stories with an eye turned toward my own future. (Ever a student, I'd like a textbook in life lessons as well.)

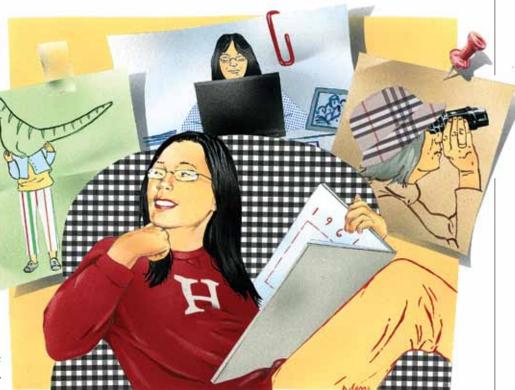
It's jarring to see things through the eyes of a different cohort. Reading through the progression of reports—the fifth, tenth, twenty-fifth, and finally fiftieth reunion—I see people's focuses and concerns evolve and change. The early reports are short

but familiar, dominated by descriptions of jobs and work. Children, far from my current concern, dominate the twentieth and twenty-fifth.

But I've been especially interested in reports from the fiftieth-reunion classes. The alumni are asked to answer a survey about their views, habits, accomplishments, and regrets, and to write about events that have affected their lives, important accomplishments, reflections on the past. Reading these reflections, told later in full and vibrant lives, I'm able to situate myself, perhaps foresee how things will probably change and develop, gain some kind of glimpse into the future.

The class of 1961 graduated in a time when all Harvard students were male, with a smaller population of Radcliffe women, with a student body less economically and ethnically diverse than it

itous path, its direction visible only in hindsight. In even the best-planned lives, unforeseen opportunities often appear, taking people to surprising places. More than a third of those who replied to the class survey said they had made a significant switch in professions, sometimes more than once, and the same proportion admitted to having changed "a lot" over the years. One woman became an Episcopal priest; her ordination would have been impossible when she graduated. One man who'd written in his high-school yearbook that he planned to be an engineer is one still, more than 50 years later, but he wrote in his reunion report that he nevertheless "had no idea where the world would be going, how I would interface with it, or of the many people I would meet and work with and who would befriend and teach me."



is today. In the half-century since their graduation, the class has witnessed cultural and social revolutions, a smattering of wars, immense technological progress. Of course, each successive graduating class enters a slightly different world, but some experiences are nevertheless shared.

Here are some things I've learned from the class of '61.

Life often takes a winding and circu-

The capacity for change never ends. The class reports are full of inspiring examples of people who have reinvented themselves. One man began his entrepreneurial career at the age of 52 and wrote that he'd be creating another start-up between the writing of the report and the actual reunion. Another decided in his sixties to follow his passion for art and writing; since then, he has illustrated several children's books

HARVARD MAGAZINE

Illustration by Lisa Adams

and written a few novels of his own.

Opportunities like these are partly a matter of luck and privilege, and it is no coincidence that a third of the Harvard men from that class (though only about half as many Radcliffe women) report an annual family income of \$250,000 or more. And there is also selection bias in the reports: the entries came only from class members who were alive and reasonably well (and communicative). But at the same time, many alumni wrote of past and present battles with illness, or loss of close family members or friends—events whose chances we 20-somethings vastly underestimate. Still, the alumni are happy. More than three-quarters rank their lives as 8 or above on a 10-point scale (with 10 representing "the best possible life"), compared to 53 percent in a Gallup poll of the general population.

The reports speak to the possibility inherent in a forward-looking, daring mind-set. Though past the usual age of retirement, many members of the class prefer to be active with hobbies or careers, old and new. One woman climbed Mount Kilimanjaro with her son at the age of 71. "I have no plans to retire," wrote an alumnus. "That's because I have no plans: opportunities arise and I choose whether or not to follow them. I'm happy to have lived an unexamined, spontaneous life. No regrets."

As Antoine de Saint-Exupéry wrote in The Little Prince, "All grown-ups were children first. (But few of them remember it.)" One day I happened upon a yearbook of the class of 2011. In the rows of portraits of graduating seniors, I was reminded of the photographs in the reunion reports I'd been reading earlier that day, another kind of senior picture. It's rare that I speak to adults, particularly much older ones, as peers, but in the reunion reports, I read words meant for classmates. It's enough to catch a glimpse of the student or child who once was. I'm reminded of something I often forget, that this is what growing up really means—not a state you enter when you reach a certain age, or receive a diploma; no secrets revealed to mysterious grandes personnes. Just people who are, at the core, like me—sometimes worried, sometimes confused. Sometimes hopeful.

"To my surprise," wrote one alumnus, "I'm less and less the cynic and pessimist I once was. Too many good things have befallen me"

I've been thinking back to myself as a child (already it's becoming hard to remember). I've been thinking about what I imagined for myself, growing up. I wanted to be, in sequence, a paleontologist, a geologist, an author, an artist, a mathematician. Asking classmates, I've heard things like policeman, teacher, firefighter, president. It's funny how our priorities and interests have changed as we draw closer to the real world (though I'm still uncommonly fond of dinosaurs). I still try to catch on to some of that childlike sense of things, absent the worries about money and security.

I've also been thinking back two and a half years, to the beginning of college. I'm amazed how much my friends have changed, even some of the most seemingly certain and focused. There's been a lot of exploration of interests, ideas, and directions for the future. I've seen people switch concentrations multiple times, fall in and out of religion, discover new passions and hobbies, develop existing ones. Become discouraged and try something new; become discouraged and try again. No doubt it will continue. No doubt the long conversations will as well. And the late evenings, with worries and fears given voice in darkness, whiling away the night, giving way to sunrise.

Berta Greenwald Ledecky Undergraduate Fellow Katherine Xue '13 wants to be a Tyrannosaurus rex when she grows up.

### SPORTS

### Queen of the Hill

Pitcher Rachel Brown fans batters in unprecedented numbers.

HE FACT that a softball diamond is so much smaller than a baseball field has radical effects. It means a faster game, for one thing. Softball bases are 60 feet apart, not 90, making for a much quicker trip between them. In baseball, a batter usually has to hit the ball into the outfield to make a single. In softball, though, even with bases empty, you'll often see third basemen playing well in to defend against a bunt. That's because bunts, cue shots,

Baltimore chops, little nubbers, and other infield hits are all promising ways to reach first, especially with a speedy runner at the plate. "About 80 percent of the teams have a 'slapper' for a leadoff hitter," says Harvard pitching ace Rachel Brown '12. "If you have a girl who can barely touch the ball, but can beat the throw to first base, that's a huge asset. Softball is about moving runners up and manufacturing runs."

In contrast to one classic baseball formula, "a bloop and a blast"—a fluke hit

followed by a long ball—look in softball for an infield single, a bunt that moves the runner to second, then a runscoring line drive into the outfield. The first line of defense, naturally, is keeping runners off the bases, and few do this better than Brown, whose strategy is simply





striking them out in vast numbers. Last year she set a new Ivy League record for strikeouts in a season (299, eclipsing the 258 fanned by Princeton's Erin Snyder in 2006), while posting Crimson records for strikeouts per game (11.4, with seven-inning games) and wins (21, bettering the 18 victories Tasha Cupp '98 recorded in 1997; Brown's record was 21-7). She also led the Ivies in earned-run average (1.90) and opponents' batting average (.181). To no one's great surprise, she was the unanimous choice for Ivy League Pitcher of the Year and chosen for the all-Ivy first team from Harvard's Ivy League-champion squad.

Power pitchers in the big leagues throw fastballs in the 90-plus-miles-per-hour range, with the hardest throwers topping out around 100 mph. In softball, pitching underhand, the fastballers work in the 60-plus-mph range, topping out around 70. But again, the smaller dimensions of the softball diamond factor in. In baseball, the pitching rubber is 60 feet, six inches from home plate; in softball, it is only 43

feet away, so the batter's reaction time is far briefer: a 65-mph fastball may look like a 95-mph heater would in hardball. Although Brown notes that "every pitch is a variation on the fastball," and she warms up by throwing fastballs, she says, "I can't remember the last fastball I threw in a game. Mine doesn't move—it's too straight."

Indeed, there isn't much that's straight about Brown's pitches. One of her lethal weapons is the rise ball, which doesn't exist in hardball. Thrown fast, with tremendous backspin, the pitch counteracts gravity to some degree and rises as it reaches the plate. Brown has superb control and can locate her rise in different parts of the strike zone. "There aren't too many, across the country, who can throw a low rise," says head softball coach Jenny Allard, but Brown can fire a rise ball at the knees that breaks up a few inches into the strike zone—and above the bat of a swinging hitter. Her other "out" pitch is a baffling change-up that comes in at around 45 mph but is delivered with a motion identical to

her other pitches. "It's very hard to read as it comes out of her hand," Allard says. "Very deceiving."

Swing-and-miss strikes are the result—Brown's K's (the scoring symbol for strikeout) generally come not from called strikes, but flailing batters. "My strength is keeping the hitter off-balance," the psychology concentrator explains. "I'm comfortable throwing any pitch [she also has a dropping curve and a screwball] for a strike—I'll throw a change on a full count. The trick is to make balls look like strikes and strikes look like balls. The main goal is to trick the batter." Allard, now in her

eighteenth season at Harvard, adds, "Rachel is so effective at zoning in on a hitter's weakness—with one swing, she knows where she

Visit harvardmag.com/

Visit harvardmag.com/ extras to see a video of Brown explaining the art of softball pitching.

needs to put the ball. She's the craftiest pitcher I've ever coached."

Brown honed her craft in southern California, where year-round sunny weather and an intense softball culture combine

to create the country's premier incubator of talent in the game. She began pitching at age eight, played ball "every month except December" with high-school and club teams, and as a senior at Scripps Ranch High School set a new San Diego record with 400 strikeouts. She and younger sister Meredith, a freshman pitcher for Princeton's softball team, might have faced each other when the Crimson met the Tigers, an historic rival, on March 31; instead, Rachel won the first game, 6-5, whiffing 12, while Meredith pitched two innings of relief in the nightcap, an 8-0 rout by Harvard.

Either sister might have thrown in both games. The underhand motion stresses the shoulder and arm far less than overhand pitching, so the recovery period is much shorter; Brown has often started the first game of a doubleheader and pitched

some innings of relief in the nightcap. And she will keep on pitching this summer: a day after Commencement, she'll fly to Sweden to play for four months for the Skövde Saints, one of five semipro softball teams in that country. She might feel right at home there: last year the Saints, like Harvard, were league champions.

∼CRAIG LAMBERT

### One for the Books

For only the second time in history and the first time since 1946, Harvard sent a team to the Big Dance—the NCAA basketball tournament—this year. The Crimson earned the Ivy League's NCAA slot with their second consecutive league championship season—after having posted no titles since the Ancient Eight's incarnation in 1956. In 2011, Harvard shared the Ivy laurels with Princeton, which won a one-game playoff for the NCAA bid by one point, but this year, Harvard secured the title outright on the strength of a 12-2 conference record, one game ahead of Penn's 11-3. Harvard's 26-5 overall mark set a Crimson record for victories in a season. The squad also attained the first national ranking in program history, rising as high as #22 in the AP poll and #21 in the ESPN/USA Today Coaches poll.

Seeded #12 in the NCAA's East Region, the Crimson flew to Albuquerque to face Vanderbilt, the #5 seed. Early on, Harvard opened a three-point lead at 20-17, but Vanderbilt responded with a 13-3 run and sank a trey at the halftime buzzer for a 33-23 edge. The Commodores continued their hot outside shooting to build an 18-point second-half lead, threatening a blowout. But Harvard's defense clamped down, and with seven minutes left, the comeback started when Kyle Casey followed

a dunk with a three-pointer to cut the margin to 12. Offensively, Laurent Rivard '14 sizzled, netting a team-high 20 points on 6-of-7 shooting beyond the arc. The Crimson doggedly fought back to 70-65 with 1:51 to play, but could draw no closer; the final was 79-70. The Boston Globe's Bob Ryan summed it all up as "the greatest season in Harvard basketball history....They have gone where no Harvard men have gone before. They should 



THE ALUMNI

## Playing with Health

A computer programmer turns his attention to making wellness fun.

This is how most people view managing their health. But if Americans are to truly thrive, they must be convinced that health-promoting behavior can be *fun*, says Adam Bosworth '76. He has built a company around doing just that.

Keas, headquartered in San Francisco, runs a Web-based wellness program that uses social networking and gaming to boost excitement about improving one's health (http://keas.com). It is currently available only to corporate clients, not individuals; participants form teams with co-workers and set personal goals, earn-

ing points as the goals are reached. They choose from dozens of options—increasing fruit and vegetable intake, exercising more often, taking "mindfulness breaks" for activities such as journaling, to name a few—selecting those that will be easiest or most fun for them, while still contributing to better health. "We are as undictatorial as possible," reports Bosworth, an Internet entrepreneur who has also launched major products at Microsoft and Google.

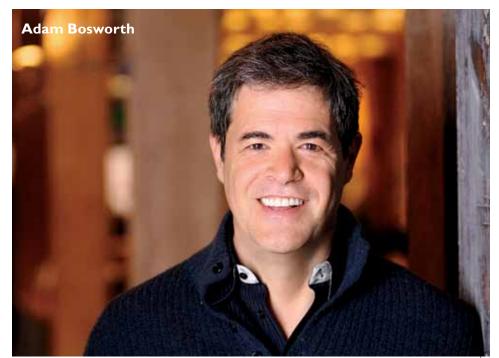
That may seem counterintuitive—surely it would be more productive to force people to choose those objectives that would *most* benefit their health, even if reaching them is difficult. Bosworth says this tough-love approach only works in theory. In reality, users who choose overly

hard challenges are more likely to drop out. "We understand that a wellness program that isn't being used has zero chance of success," the company's website asserts. "Keas is designed to engage employees first, and *then* make them healthy."

The company's current product represents a 180-degree turnaround from Bosworth's initial idea: "The only thing that's identical," he says, "is our goal." Frustrated with the healthcare field's slow adoption of new technology for communicating with patients and tracking and giving them access to their own information, he founded Keas (named for a species of parrot he encountered during travels in New Zealand) in 2008 with the idea that it could become a Mint.com for the industry. (Mint enables users to analyze their finances by consolidating information for multiple bank, loan, and credit accounts in one place. The site also offers budgeting tools, financial alerts, and advice, and allows users to set savings goals and track different expense categories.)

His initial vision was that Keas would be a repository for users' health data that could send reminders based on individual conditions (a user with hypertension might be alerted to take medication as scheduled; an overweight user might get prompts to exercise). He forged alliances with two big players in the medical field: Quest Diagnostics and Pfizer pharmaceuticals, tentatively paving the way for a tool that would contain users' medical-test and prescription information if they authorized it. He envisioned spending ample time lobbying in the 24 states that forbade sharing health information even with a patient's permission. He was girding for battle two years ago when it became clear that the Keas product in use at the time simply wasn't working: of the 40,000 users who had signed up, only a small percentage returned to the site week after week.

So Bosworth and his team of 20 examined the features that seemed to attract the users who were most engaged. They redesigned the product completely, with crucial guidance from a summer intern with a background in behavioral psychology. (The company has since made a point of hiring others with knowledge of psychology.) Enrollment was restricted to employees of client companies because the team-based format capitalizes on people's cooperative and competitive instincts, and on preexist-



ing social relationships in the workplace; based on small-group dynamics theory, team size is limited to 6 people. Keas used to offer lengthy articles on health topics, but now it breaks the information into small chunks and makes it interactive by presenting it in quiz form. Topics include nutrition, stress reduction, depression, CPR, and cutting cholesterol intake. The quizzes have been wildly popular: Keas posted 60 of them for a 12-week pilot, assuming one per workday would suffice, but many users completed the full complement in a single week. (The site now has "hundreds and hundreds," Bosworth reports: so many that users "essentially can't run out" during the 12-week period.)

As part of the overhaul, Keas also did away with critical feedback. Instead of receiving a notice that they've gained weight, users now receive only congratulatory notes when they shed pounds. Bosworth says he realized that "giving people negative information is a good way to ensure that they're gone in 60 seconds. And if they're gone in 60 seconds, you can't help them."

The revamped product plays up the social-networking element with a Facebook-like interface that users can access via desktop, tablet, or smartphone. In addition to tallying up their points in private, users can post (and get an instant virtual pat on the back) for going for a lunchtime walk or choosing water instead of soda. Keas also borrows elements from Four-

Square: users can earn badges and elevated status within the game's universe, and see how they rank against other players and other teams. The company's website proclaims, "The world's most precocious bird, the kea solves problems through play and social learning. So do we."

People like to have choices, and this, too, is reflected in the new model: users earn more points for more difficult goals. They can, for instance, set a goal of eating only healthy snacks for an entire week, or choose the more easily attainable goal of five days a week for a smaller point total.

Bosworth knew the new format was working when, on Thanksgiving Day 2010, 30 percent of enrollees went online to report what they were doing to stay healthy. Since then, not a single week has passed without a third or more of the employees in each of the client companies logging in and posting something. Most weeks, in most companies, the numbers are closer to 40 or 50 percent.

Thus far, Keas has done very little marketing or promotion, letting companies find it through word of mouth instead. Many clients are themselves from the health and wellness fields (Quest and Pfizer, Bosworth's early partners, are among them). Bosworth notes that these firms' employees are not necessarily more fit and health-conscious than the average American; he says the companies have been drawn to Keas because of the discrepancy between the image they desire to project

and their staff members' actual health. To date, more than 100,000 people from 35 companies have completed the 12-week program (clients pay \$12 per participating employee). Keas has begun enrolling some companies for a second 12-week stint; Bosworth and colleagues are hard at work devising ways to keep the experience fun and novel for repeat visitors.

The product is constantly changing—Keas releases updates two or three times a day—and relies heavily on user feedback, letting the crowd decide which features stay and which go. One change is that the program now limits users to setting three goals; habit creation is sufficiently difficult that when there are too many things to focus on, none of them takes.

After noticing that there was no difference in participation between companies that offered cash prizes to the winning team and those that didn't, Bosworth stopped recommending that companies pony up. "To be honest," he says, "Keas is nothing but a series of psychological surprises to me."

Before Bosworth turned his attention to solving problems of health, he spent three decades solving problems of technology. His previous work experience includes leading the design of the Microsoft Access database management system; co-leading a team to redesign the Internet Explorer browser; and overseeing the rollout of Google's Webbased spreadsheet, document, calendar, and photo-sharing programs. But he is best

known as one of the pioneers of XML, a set of rules for how information is shared between computers (and the basis for frameworks such as RSS, as well as common software such as Microsoft Office).

During what he calls a "classic midlife crisis," Bosworth realized he didn't want technological innovation to be his only legacy apart from his children. (Son Alex, 29, has a start-up building smartphone apps in Beijing; daughter Allison, 23, is finishing premedical courses at Washington University; and Zeke, his son with his second wife, is one and a half.)

In 2006, while still at Google, he sought permission to pursue a project of his own design. The result was Google Health, an online health information repository much like his original vision for Keas. But he says the product was not a high priority for the company and he had trouble getting resources allocated, so he left to try it on his own. (Google officially deactivated the service on January 1, citing a low usage rate.)

One gets the sense that Bosworth is almost happier with failures than successes, for the lessons they provide and the problems to solve. Describing his first start-up, a company he founded with friends in 1982 to help people and companies manage data (a precursor to database software), he says it failed because it didn't include a way for users to customize and add functions that weren't part of the standard software. "It was a fatal flaw," he notes, "and very interesting."

At Harvard, he studied history. He sees continuity between his interests then and now: "History teaches you to take data and look for patterns. That's very much what I do in my job." But in some ways, his college years were a time apart. Bosworth grew up in New York City, but spent summers in Vermont, and fondly remembers how he and a sister close to his age spent their time reading voraciously and "running riot" in the woods.

At school, he was no less free. He attended Saint Ann's School in Brooklyn, where his father, Stanley, was the inaugural headmaster. Under his leadership, Saint Ann's became an elite school known for its "freeform approach to education," according to Stanley Bosworth's *New York Times* obituary. "The school didn't push you," Adam Bosworth recalls. "You moved at the pace you wanted to move based on the courses that interested you. That worked well for me."

Harvard, on the other hand, "was very much about telling people what to do." He feels he got in "by accident": "I'm very good at test-taking so I appeared smarter than I was." He is dyslexic and says he doesn't deal well with theoretical constructs: "I have to form pictures in my head and work backwards." Surrounded by people with methodical, traditional study skills, this non-traditional learner found the culture stifling.

He found relief in spending the summers programming (projects included rewriting the code that powered off-track betting ticket-printing terminals). He says he likes building things; he once aspired to become an architect, but realized the mathematics involved wouldn't come easily for him. Programming did—and still does. A new Keas "console" screen that allows human-resources representatives at client companies to track the employees' progress was programmed by Bosworth himself.

HE STILL WISHES for change on the doctors-and-hospitals side of medicine, so that providers, insurers, drug companies, and testing labs could share information freely if a patient authorized it. But he no longer believes that he is in a position to drive that transformation. Because of the way payments to providers are structured, "There is absolutely zero financial incentive" for making these changes, even if they would increase efficiency and patient satisfaction. "For most of healthcare," he says, "it's as if the Internet never existed."

### Comings and Goings

**Harvard clubs** offer a variety of social and intellectual events around the country. For information on future programs, contact your local club directly; call the HAA at 617-495-3070; or visit www.haa.harvard.edu. Below is a partial list of spring happenings.

On May 15, members of the Harvard Club of Oregon explore "Spin and Spectacle: The Changing Role of Media in Politics" with Timothy McCarthy, history and literature lecturer, adjunct lecturer on public policy, and director of the human rights and social movements program at the Carr Center for Human Rights Policy. McCarthy also appears at the Harvard Club of San Francisco on May 18 to discuss "Was the Obama Campaign a Social Movement?"

On June 3, the Harvard Club of St. Louis learns about "Higher Ambition: How Great Leaders Create Economic and Social Value" with Michael Beer, Cahners-Rabb professor of business administration. On June 8, Boas professor of international economics Richard Cooper appears at the Harvard Club of Cape Cod for a discussion on "Global Economic Prospects: A Glimpse at 2030." On June 11, Harry Lewis, McKay professor of computer science, lectures on "Life, Liberty, and Happiness after the Digital Explosion" at the Harvard Club in Concord (Massachusetts).

Instead, he is approaching health from the level of the individual, and Keas brings substance as well as fun. At Chilton Memorial Hospital in Connecticut, for example, 114 participants reported losing weight during the 12-week session—1,230 pounds in all. At Pfizer,

Vote Now

This spring, alumni vote for five new Harvard Overseers and six new elected directors of the Harvard Alumni Association (HAA). Ballots, mailed by April 1, must be received back in Cambridge by noon on May 18 to be counted. The results are announced at the HAA's annual meeting on the afternoon of Commencement day, May 24. All Harvard de-

gree-holders, except Corporation members and officers of instruction and government, may vote for Overseer can-

Visit harvardmag.com/ commencement on Commencement Day for the election results.

didates. The election for HAA directors is open to all Harvard degree-holders.

For Overseer (six-year term):

Scott A. Abell '72, Boston. Retired chair and CEO. Abell & Associates Inc.

James E. Johnson '83, J.D. '86, Montclair, New Jersey. Partner, Debevoise & Plimpton LLP.

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

Tracy P. Palandjian '93, M.B.A. '97, Belmont, Massachusetts. CEO and co-founder, Social Finance Inc.

Swati A. Piramal, M.P.H. '70, Mumbai, India. Director, Piramal Healthcare Limited.

Stephen R. Quazzo '82, M.B.A. '86, Chicago. CEO and co-founder, Pearlmark Real Estate Partners.

William H. Rastetter, A.M. '72, Ph.D. '75, Rancho Santa Fe, California. Partner, Venrock.

Kathryn A. Taylor '80, San Francisco. Co-chair, One PacificCoast Bank Board of Directors.

For elected director (three-year term):

John F. Bowman '80, M.B.A. '85, Santa Monica. Executive producer, Disney Company.

the percentage of participants who exercised for 45 minutes at least five times a week rose from 45 to 74 percent, and the percentage who ate at least five servings of fruits or vegetables daily doubled (from 36 percent to 72). Says Bosworth, "We're getting major changes in health behavior."

∼ELIZABETH GUDRAIS



Scott A.



lames E. **Johnson** 



Michael M. Lynton



Tracy P. Palandjian



**Piramal** 



Stephen R. Quazzo



Wiliam H Rastetter

Yvonne E. Campos, J.D.

John H. Jackson, Ed.M. '98, Ed.D. '01, Cambridge.

President and CEO, The

Schott Foundation for Public

Michael T. Kerr '81, M.B.A.

'85, Canyon Country, Califor-

nia. Portfolio counselor and

senior vice president, Capital

Sabrina Fung '93, Hong

Kong. Executive director and

brand managing director,

Susanna Shore Le Boutil-

lier '86, Larchmont, New

York. Director, corporate

communications, Colgate-

E. Scott Mead '77, London.

Brian Melendez '86, J.D. '90,

Fine-art photographer and fi-

M.T.S. '91, Minneapolis. Partner, Faegre Baker Daniels LLP. Loulan J. Pitre Jr. '83, J.D.

'86, New Orleans. Attorney,

Gordon, Arata, McCollam, Duplantis & Eagan, LLC.

Research Company.

'88. San Diego. Superior Court Judge, State of California.



Kathryn A. **Taylor** 

OVERSEER

DIRECTOR





Yvonne E. Campos



John H. lackson





Sabrina Fung



Susanna Shore Le **Boutillier** 



E. Scott Mead



Melendez



Loulan I. Pitre Jr.

Abell

Education.

Trinity Ltd.

Palmolive Co.

nancial adviser.





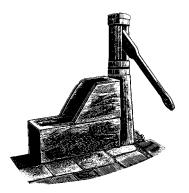


Michael T. Kerr



Brian

# Salute Flag and Shack!



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

RIMUS waves stars and stripes to celebrate Flag Day, June 14.

John Fitzhugh Millar '66 commissioned this modern copy of what he believes is the earliest known version of the American flag to include stars. He found the original engraved on a powder horn made in Boston in March and April 1776 for Massachusetts soldier Barnabas Webb. (See the horn yourself in an article by Gregory LeFever in the October 2011 number of Early American Life and in the book Powder Horns: Documents of History, by Tom Grinslade.)

Millar is an independent scholar interested in both architecture and ships; when studying the harbor scene engraved on the horn, he saw a flag of this design flying atop a fort and notified the Flag Research Center in Winchester, Massachusetts, of his discovery. The engraving was not large enough to let him discern whether the 13

stars on the flag had five points or six; he chose five for this recreation, which he now displays at Newport House Bed & Breakfast, an elegant establishment that he and his wife, Cathy,

run in Williamsburg, Virginia.

The official American flag in 1776 was the Grand Union, Millar reminds us. It had

the British union in the upper left canton and 13 stripes in the fly—no stars. Congress authorized a new flag on June 14, 1777, with 13 stars arranged in a circle. Millar is amazed that the existence of the flag he found depicted some 15 months earlier should have gone unnoticed for so long in a country so interested in its flags.

Powder horns can repay close scrutiny. Millar also saw on this one a schooner that was "setting a sail (gaff-fore-topsail) that no one knew had been invented as early as the eighteenth century." He knows from sails. In 1969-70, he caused to be built a copy of the 24-gun Revolutionary War frigate *Rose* and captained it out of Newport, Rhode Island, to help celebrate the nation's bicentennial. (Some 30 years later, under new ownership, she co-starred with Russell Crowe in *Master and Commander: The Far Side of the World.*)

Should your summer travels take you to historic Williamsburg, stop by the B&B to look at the flag and say hello to the Millars' pet rabbit, Josephine Bunnyparts. Napoleon Bunnyparts, her predecessor, has gone to his reward.



HOT MOTIF. L.M. Vincent '73, M.D., calls himself "an outsider to all things mari-

time." He grew up in Kansas. He saw his first live lobster in a tank at a steak house when he was 12 and was suspicious of it because it wasn't red. He has never caught a fish. He has been on sail-

boats but with trepidation, not from fear of drowning but rather "the anxiety that I will be assigned tasks that involve ropes."



How, then, did he come to write an entire book about a fish shack in Rockport, Massachusetts?

Vincent's day job is instructor in radiology at Harvard Medical School and attending physician at Brigham and Women's Hospital. He lives north of Boston near the coast. A cousin recommended that he visit Rockport to see Motif No. 1. "What is Motif No. 1?" asked Vincent. "You'll see," said the cousin. The heavily illustrated *In Search of Motif No.* 1: The History of a Fish Shack proves he did.

The iconic structure sits at the end of a stone pier in Rockport Harbor. At a nearby souvenir shop, Vincent found a coffee cup with an image of the shed and an inscription: "Once just an old fishing shack in Rockport, this little red shed became a popular subject of local artists, hence the name Motif No. 1. Visitors the world over have made it the most photographed and painted building in the world."

Who would argue with a coffee cup? The ubiquity of Motif No. 1 is such that it appeared in this cigarette ad from 1960.

Should summer travels take you to Rock-port, tip your hat to Motif No. 1. ~PRIMUS V

#### THE HUMANITIES, DIGITIZED

(continued from page 44)

Guldi—to figure out, for example, "not only what was the most frequently cited event in a revolution like the Arab Spring uprising, but what was the most important. Which one influenced the others? That," she says, "is a historian's question." Google can't count tweets or textual references numerically to find the answer, but "maybe there is some other way to show those associations. To write an algorithm that could show such a thing, the designers need the kinds of thinking—how to define an 'event' according to Hegel's philosophy of history, for instancethat humanists are trained in."

At a recent meeting of the American Historical Association, Guldi proposed that the power of digital tools in research would expand the focus of dissertations from the 20-year span that has been "the hallmark of historical scholarship over

the last three decades" to 150 years. She herself is at work on a world history of land reform from 1860 to the present, and sees the ambitious project as a way of proving or disproving—to the extent it is successful—the power of digital methods of scholarly research. She displays on her computer a visualization that demonstrates a cultural "turn"—a shift in a corpus of texts about land reform—by mapping textual references to particular subjects through time. Color-coding these references by country and region, she can show how land reform began in developed countries and then spread, eventually reaching Africa and Latin America. The product is evidence of a kind (it could become a figure in a book), but she is using it instead as a tool to guide her research.

"There has never been a world history of land reform, and it happened everywhere in the nineteenth and twentieth centuries," she says. The question of who controls land and who is being evicted is tied to events like cultural revolutions, she explains: "It happens in every Latin American country in the 1960s and '70s, often with U.S. involvement."

Looking at the visualization, Guldi can "see the moment when suddenly Africa and Latin America enter the conversation....The moment is 1950. And then the reason becomes clear: the founding of the Food and Agriculture Organization of the United Nations, which becomes an arm of U.S. foreign policy and embraces land reform on the British model as a means for creating a peaceful path to prosperity." The visualization tells her where she needs to read more about this key moment in the history of her subject.

Guldi makes use as well of geoparsing, a kind of text mining that grabs place names—from antebellum American novels, for example—and, using a gazetteer, sites them on a map to provide a sense of landscape as it existed in the American imagination at that time. "Then you can ask all sorts of comparative questions," she says. Did the concept change after the Civil War? Did it change differently in the South than in the North? But Guldi also cautions that, like the digital timeline, the changing shape of the American imagination in novels is "merely suggestive": it gives scholars "more justification for choosing certain places" to do deeper reading.

The ability to analyze a vast body of texts also implies a dra-



Historian Jo Guldi in her office at the Society of Fellows. She uses visualizations like the one above to aid her research; for a world history of land reform, she assembled a timeline of references to the subject, color-coding them according to geography. This exercise let her "see" the moment around 1950 when Africa and Latin America "enter the conversation."

matic expansion of the field of questions humanities scholars can ask. Professor of Romance languages and literatures and comparative literature Jeffrey Schnapp, the faculty director of metaLAB, says, "Most literary historians work on a small corpus of texts where their expertise is manifest through the finesse with which they can demonstrate certain features of that corpus. Those noble skill sets are not about to disappear with a wave of the digital magic wand. On the other hand," he explains, "there are really exciting research questions on the scale of, 'How does the socioeconomic history of publishing as an industry relate to the production of certain literary genres?' And when you start to operate on that scale, of course your data set has suddenly expanded: no human being can possibly read the one million books on the shelf that might document that history." The use of computational and statistical methods becomes mandatory. "Where does that put us?" he asks. "Well, it puts

us at a place where the boundary line between what we have traditionally called the humanities and what we have traditionally called the social sciences becomes awfully porous. For me that's an expansion and enhancement of the humanities of the most creative and best sort."

### Rewriting the Rules

THERE are highly significant changes afoot in the humanities, but the idea that there is a revolution underway is "sometimes overstated," Schnapp says. "I have been involved in experiments with this sort of work going back to the early '80s, but I would argue that the true transformational moments still lie in the future. The reality is that game-changing research, solutions to the richest, most challenging disciplinary questions, and major breakthroughs develop as a result of deep and long traditions of inquiry. Tools and technologies may vastly expand the compass of research and alter the basic conditions of knowledge production. But, in and of themselves, they don't pose or answer interesting research questions. That's what people do."

Many areas of the humanities have always been engaged with fundamental issues that have reemerged as central to the digital humanities, he says, such as "the relationship between text and image, the analysis of cultural networks, or the very multiplicity of print itself as an instrument for communicating and conveying knowledge, everything from typography and book design to systems of distribution."

Schnapp is in a profound sense a designer himself: of exhibitions, of books, of communities, of interfaces, and of appliances for teaching and learning. "Design means everything from typography to design in the abstract, the cognitive sense of how you conceptualize something, thinking about the ways in which art, or sound, or tactile environments operate separately or together," he says. "What can you do on a screen that you can't do in a physical environment and vice versa?" And it means thinking also about the traditional publishing model—where research ends with a stable artifact, like a book—versus one that is itera-

### An Interpretive Artist of Urban Space

JESSE SHAPINS helped create Zeega, a software program conceived to create database documentaries, but he is not a programmer. The lecturer in architecture might better be called an interpretive artist of urban space.

One of his first projects, Colors of Berlin, paired a Pantone color swatch (used to specify colors in print publishing) with a photograph of a place in Berlin where that color appeared. "The idea was to draw attention to things that we normally don't pay attention to" in urban environments, he says: a garden hose, a trash can, a cat in a window. He envisioned that simple idea finding expression in multiple media: a print artifact (a book), a "modest" website, and an exhibition "that would bring [the idea] to life in space and allow audiences to come experience it" together. "I began to think about how to design a structure for the proj-

ect that would allow it to take shape in different ways specific to those media," drawing from an underlying database—a little ocean of expression that can rise up and coalesce into different forms.

"Designing a database is not just a technical project," in his view. "At the beginning, it is a set of rules, and setting those rules is itself a creative research process. Then all these different manifestations can follow." In fact, none of the creators of Zeega—neither journalist Kara

Oehler (a 2011-12 Radcliffe-Film Study Center Fellow), nor then economics graduate student James Burns, Ph.D. '11—had been

Jesse Shapins created Colors of Berlin (left), an innovative visual guide to the city that uses color swatches to draw attention to specific objects. He is also a creator of "Mapping Main Street" (right), a database documentary that expands popular perceptions of what "Main Street" means in America.

trained in writing code when they undertook a joint project called Mapping Main Street. The project is a self-sustaining online documentary narrative of what "Main Street" means in the United States, as seen through its creators' eyes and those of citizen-participants. The result is surprising—in one town near the Mexican border, there's a Main Street that serves as a major point of entry into this country; a Main Street elsewhere is the domain of streetwalkers—a sharp





tive, is disseminated in multiple forms, and generates continual feedback, unifying the linear stages of the traditional research cycle into one ongoing parallel process. For Schnapp, devising new models of scholarly publishing that enhance academic study is a design question—an urgent one. As he puts it, "When you move from a universe where the rules with respect to a scholarly essay or monograph have been fully codified, to a universe of experimentation in which the rules have yet to be written, characterized by shifting toolkits and skillsets, in which genres of scholarship are undergoing constant redefinition, you become by necessity a knowledge designer."



counterpoint to the imagined landscape of white picket fences frequently invoked by politicians and the media. (Pilot funding for Mapping Main Street came from an experimental initiative of the Corporation for Public Broadcasting, the Association of Inde-

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extras to view a video

across the country as

well as a video on the

history of Revere Beach.

exploring "Main Streets"

pendents in Radio, and the support of Harvard's Berkman Center for Internet & Society; the project also appeared as a program of the same name on National Public Radio in 2000.)

Every week, people from all over the country still contribute to Mapping Main Street, Shapins reports. "The website operates on its

own. In fact, it becomes a generative platform," a framework that can accommodate all this public participation "because you have defined the boundaries and built a narrative structure."

Mapping Main Street led to the idea of developing a set of tools that anybody could use to create such a project. "That's where Zeega came from," Shapins says. He, Oehler, and Burns are now working with French philosopher of science Bruno Latour to turn a notebook of his thoughts on philosophy, collected over a lifetime, into a database.

"I think it is really important for us to take agency in relation to technology," says Shapins, who teaches a class on "Media Archaeology of Place" (to see a sample student multimedia project, "Revere Double Exposure," visit www.harvardmagazine.com). Students understand that best when they realize that "somebody like themselves is writing the code that is setting terms for a project. And those terms...could be different."

Schnapp remains passionate about print. One of his goals is to figure out ways to "reimagine print culture," and so metaLAB is experimenting with new publishing models, print as well as digital. In 2013, the lab will publish a series with Harvard University Press (then celebrating its hundredth anniversary) called metaLAB Projects, dedicated to exploring what a scholarly book might look like in an era where knowledge is being produced in digital forms from the outset. Schnapp is writing about "the library after the book," for example (a deliberately provocative title); Manuelian is writing about the translation of archaeological knowledge into simulations.

Among the experimental models of "print-plus" publishing Schnapp is exploring is the creation of augmented online editions of printed books—adding audio, for instance, so students can "hear the ferocity of a debate on a contested question"—or engaging a community of contemporary scholars to "remix" traditional scholarly books. "For instance, I started out as a Dante scholar," he says, "and once worked principally with fourteenth-century Italian literary culture. What if I could use my expert knowledge to remix one of the most important critical works in my field that was written 50 years ago...adding layers of multimedia commentary that brought it into the present? A lot has hap-

Communities of scholars have always been integral to the history of research, he continues, "but it's typically been difficult to perceive this collective dimension. We can now imagine vastly expanded forms of virtual assembly and collaboration on the Web." Exactly how they might give rise to breakthroughs in scholarship remains unclear,

"but one of the missions of metaLAB is to serve as a place where experimentation of this kind occurs at a high level, and as an incubator for innovative models that can establish new standards of excellence."

pened in those 50 years."

The changes afoot in the humanities are about expanding the compass, the quality, and the reach of scholarship, Schnapp maintains. "Which means, first of all, not a monolithic model of knowledge production. There is no such thing as 'The Digital Humanities'; there are multiple emerging domains of experimental practice that fall under this capacious umbrella. Second," he continues, "some of these domains of practice imply novel sorts of research questions and results; but others involve reviving forms of scholarship—like critical editions and commentaries—that were killed off by market constraints within university publishing. A lot of spaces that have been closed down are being reopened, thanks to the digital turn. And third, research tools and methodologies necessarily evolve and the humanities are no exception.

"Our ability to access and analyze information has created possibilities unimaginable only a few generations ago," he says. "I think the quality of scholarship that can be produced, working with vastly expanded cultural corpora, and speaking in contemporary language to expanded audiences, represents one of the great promises of our era. So for me, this is a uniquely exciting moment for the humanities, comparable to the Copernican revolution or the discovery of the New World."

Jonathan Shaw '89 is managing editor of this magazine.

# Voluptuous Sunday

Exhibitionist lilacs



HEY RAVISH the eye. They intoxicate the nose. For more than a century, susceptible folk have come in mid May to a "Lilac Sunday" festival at the Arnold Arboretum to revel in one of North America's oldest and largest collections of lilacs. (The ladies at right are taking them in in 1926.) Grouped together today are more than 375 lilac bushes of 180 kinds. They include both pure species and nearly 140 cultivars, plants selected and named because of certain horticultural merits—color, scent, flower size, or habit of growth.

Although lilacs have adorned the American landscape for many years—George Washington and Thomas Jefferson write of planting them—like most of us they are not native here. Of the 20-plus species, two come from Europe, the rest from Asia. The common lilac, Syringa vulgaris, is an East European. It was so energetically grown

and selected by French nurserymen that that country earned a reputation for fine lilacs, the so-called French hybrids. Now Russian, American, and Canadian hybridizers have joined the party.

In 1978, John H. Alexander III, plant propagator of the Arnold Arboretum, searched a list of seed offered for sharing by the Botanical Garden of the Chinese Botanical Academy in Beijing. On it was a lilac; it was of uncertain identity, but Alexander wanted to grow it anyway. He sent for the seed and planted it in Boston the next year. Eighteen seeds germinated. One of the resulting plants turned out to be exceptional, and he introduced it as Syringa x chinensis 'Lilac Sunday'. "With the number of lilac cultivars approaching a thousand," he wrote in a 1997 issue of the arboretum's magazine Arnoldia (available online), "the decision to add yet another can't be taken lightly, even though...S. x chinensis can claim less than 20 cultivars."

> Alexander selected 'Lilac Sunday' for its fragrance, color, abundance of flower, and especially its growth habit: it produces flower panicles not only at the branch tips, like the common lilac,

but along the stems, weighing the arching branches down with blossom. 'Lilac Sunday' struts its stuff above left. Get the full impact—scheduled this year for Mother's Day, May 13—at the one-hundred-and-fourth Lilac Sunday.



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