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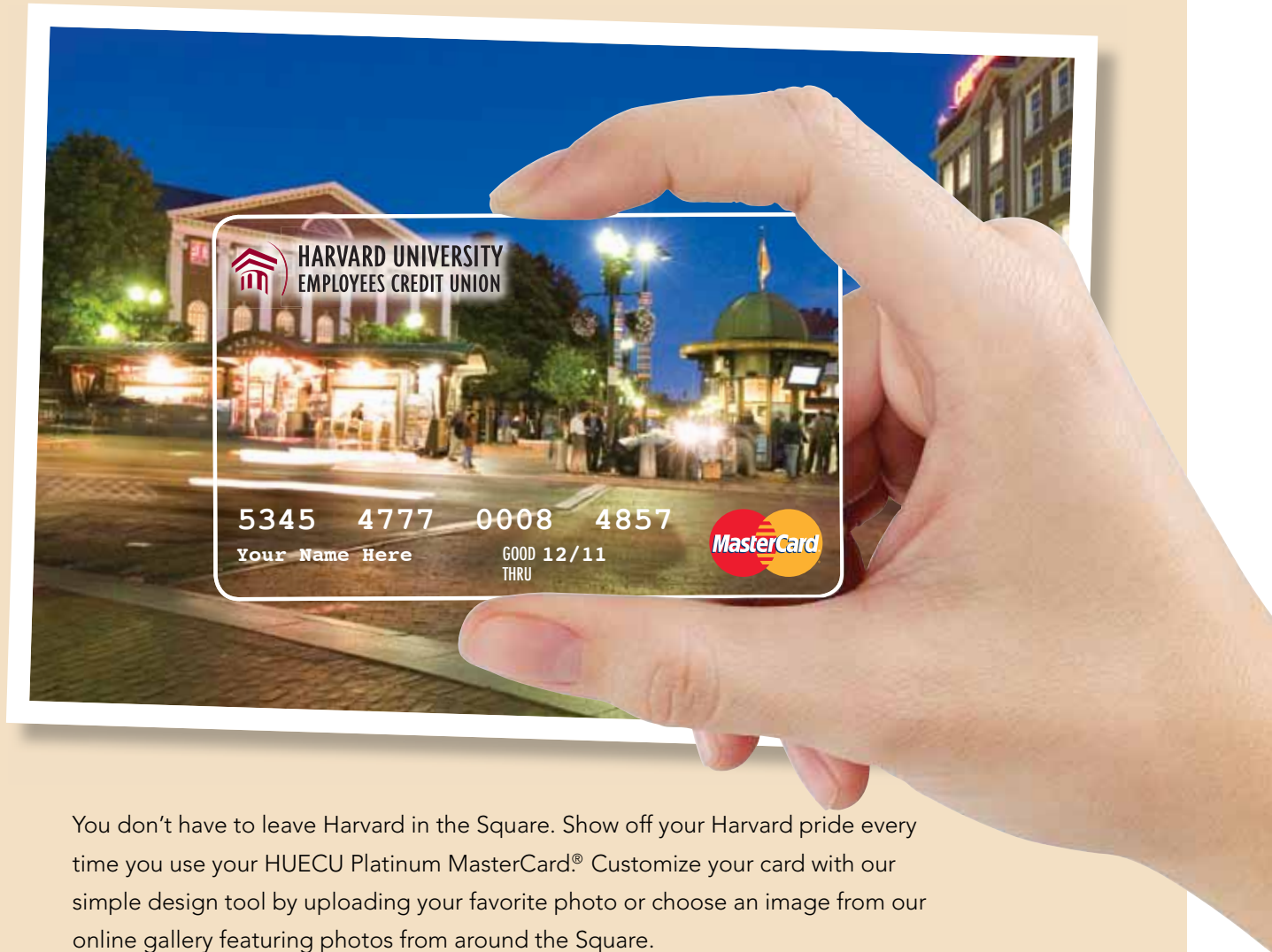
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The Surprising Skull

Evolutionary
biologist
Daniel Lieberman



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The Corporation initiates significant changes in the structure and conduct of University governance, squash coach’s secrets, women in the professoriate—and gaps in the junior-faculty ranks, imagining a universal digital library, when movies came to the Square, financial results *sans* surprises, the Fogg Art Museum stripped to its shell, the Undergraduate and her mom both hit the books, distinguished contributors honored, and a convincing victory in The Game highlights a second-place football season

Cambridge 02138

The psyche, kindergarten, more mushroom verse

OBAMA'S DEMOCRACY

BY SELECTING favorable evidence and ignoring other sources, you can prove almost anything. That's what James T. Kloppenberg did in his biased glorification of President Obama ("A Nation Arguing with Its Conscience," November-December 2010, page 34). Additionally, phrases like "the philosophy of pragmatism" and "deliberative democracy" are coarse food for intelligent readers. If you insist on publishing such obvious propaganda, you should at least balance it with an opposing piece.

CHARLES BLOCK, A.M. '52
Greenwich, Conn.



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Beyond the current magazine and 15 years of back issues, beyond the steady stream of online news dispatches, harvardmagazine.com has increasingly enriched its presentation of multimedia features: original audio and video recordings, readings by featured authors, slide shows, and more. The new website design makes it more convenient to find this material and to enhance your exploration and enjoyment of the doings of Harvard people worldwide, from nearby studios to athletic venues to remote health clinics in rural Africa.

A brief guide to some of these new features appears in this issue, on pages 18-19. But the best guide is harvardmagazine.com itself; we believe you will find it easy and intuitive to use. We hope you find it rewarding to do so. And of course we welcome your comments and suggestions, as we work to serve you, in print and online, as effectively as possible.

~The Editors



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LETTERS

PROFESSOR James Kloppenberg explains that in understanding the thought of James Madison and other founders, many scholars in recent decades have rejected the emphasis on “realist pluralism” and noted the importance to the founders of “democratic deliberation.” Among recent scholars named, Kloppenberg might have included the late Harvard professor Samuel Beer. Madison’s emphasis on “government by discussion” was a theme of Beer’s *To Make a Nation: The Rediscovery of American Federalism* (1993). But Beer added another dimension. He pointed out that Madison and other founders envisioned the Constitution not only as a restraint, but also as having affirmative objectives in promoting the general good, including prosperity and security. Highlighting the founders’ emphasis on democratic deliberation also expands our understanding of American ideas about justice. In *Justice: What’s the Right Thing to Do?* (2009), Bass professor of government Michael Sandel suggests three approaches to justice: free choice, utility, and reasoning together about the common good. In conceiving of democracy in terms of deliberation, or what Beer called government by discussion to promote the general good, the founders brought together these three ideas of justice.

PAUL JOFFE ’69
Washington, D.C.

I PRESUME you are aware that “Obama’s Democracy” is a red flag to most Americans. His “democracy” is not ours. In accordance with *Harvard Magazine’s* policy of fairness, are you planning to have a replying article in the next issue even though it will be after the election?

It astounds to me that you would include the article immediately before a national election. That is a violation of your ethical obligation and I strenuously object on behalf of a majority of Americans.

GEORGE BURDITT ’44, LL.B. ’48
Chicago

Editor’s note: The article was designated a “Forum,” the magazine’s category for faculty-written essays expressing views on contemporary issues, based on their research. The timing of the excerpt was determined by the book’s publication, over which the magazine exercises no control. It was chosen for excerpting as an interesting, thought-provoking intel-

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lectual-historical analysis, not as a partisan article, in keeping with the magazine's standards.

IT DIDN'T take me long to find disagreement with James Kloppenberg's piece. That's probably because he gauges President Obama based on Obama's writings and speeches. I gauge him by what he does or what he says when the teleprompter is off.

So, when Kloppenberg writes that Obama "insists that all propositions, positions, and policies must be subjected to continuing critical scrutiny," I ask: how does that square with Obama during the healthcare debate, when he insisted on rapid passage of a 2,000-plus page bill that lawmakers hadn't even read?

Kloppenberg goes on to laud Obama as "very much an intellectual" for his "well-informed" and "sophisticated" thinking on political philosophy. But how intellectually sophisticated is the philosophy, articulated by Obama impromptu when responding to a question by the now-famous Joe the Plumber, of "spread the wealth around"?

Obama is no deep thinker; he only pretends to be because he knows intellectuals will lap it up. Kloppenberg certainly has.

DAVID MCKENNA, M.L.A. '85
Marietta, Ga.

I NOTICED a significant omission in Professor Kloppenberg's list of "deeply flawed institutional structures put in place by the Constitution." The flaws he lists as "most serious" were two: the "failure to address the outrageous practice of slavery," and "the second antidemocratic feature...was the provision of electing two senators from each state."

It seems to me that there was a third major flaw: the failure to provide anywhere in the Constitution until 1920 for the existence of women in the United States, and the role they might play in its government. It might be argued that the role of women in government was far beyond the thinking of the time, but that isn't the case at all. The framers of the Constitution were very much aware that women could even be heads of state, such as Queens Elizabeth I and Anne of England, Empress Catherine the Great of Russia, etc. In [their] thrust to democ-

racy, without any provision for women's participation, they deprived women of the opportunity of having any governing power in the United States for well over a century. Perhaps we need not only historians, but Freudian psychologists as well, to provide us with deeper insights into the Constitution and its framers.

FRANK R. TANGHERLINI '48
San Diego

PSYCHIC POSTURES

AS A LEG-CROSSING woman psychologist I was, at first, dismayed to learn that this pose marks me as a "low-power" type (see page 52 within "The Psyche On Automatic," November-December 2010, page 48). Good thing I already have a job, or I'd be at risk competing with one of those wide-stance men. Fortunately, before the dol-drums hit, I turned the page and—lo and behold—there was low-power Drew Faust conversing with Charlie Gibson, both of them crossing their legs and smiling warmly at each other (page 54). Whew!

MARIAN KAPLUN SHAPIRO, Ed.D. '78
Lexington, Mass.

I REALLY ENJOYED Craig Lambert's article on Amy Cuddy's research into first impressions. In fact, I've shared the article with others as part of my work coaching executives. Cuddy's work reinforces the guidance I've long given high-ranking leaders: to spend more time focusing on sustained eye contact with their audience members rather than worrying about the precise words they use in an important presentation. Anecdotally, the results have been powerful time and again.

The thing I found fascinating, perhaps even ironic, about the story was Cuddy's cover photo, where she appears to assume a "low power posture" with closed arms, a position Cuddy herself has observed to be much more likely found in women than men. Lifelong habits and ingrained culture can be hard to change, even with knowledge and awareness.

GRACE MIGLIACCIO, M.B.A. '89
New Hope, Pa.

I READ with great interest the article about Amy Cuddy's findings on the dimensions of how one perceives others. She suggests that those seen as both competent and warm are well liked—in fact, admired. She also mentions the "mommy

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LETTERS

penalty" phenomenon, whereby there is a seeming contradiction along the two dimensions. If you are seen as embracing motherhood, you are seen as nice but your perceived level of competence is decreased!

I submit that there is yet another variable among women that works against how they are seen in the workplace. It has been my observation that my competence has been fully appreciated and esteemed by male interviewers and older females, but not among same-age, female peers. Could it be that females of the same age feel envy or contempt for women who seem too smart or too invested in successful outcomes on tasks? This would be a great inquiry!

MANDY STERN, Ed.M. '96
Beverly Hills, Calif.

MONETIZING KINDERGARTEN

"KINDERGARTEN MATTERS" (November-December 2010, page 13) presents Raj Chetty's thesis that "those who had the best kindergarten teachers make more money." My granddaughter attends kindergarten at a public school in Eugene, Oregon. Her teacher, Polly Moak (who graduated Harvard Divinity as Polly Anderson), has a different goal in mind. Polly visited in the homes of all 23 children in her class before school began. She told them they are all writers. They begin making wavy lines and hash marks (from left to right) and soon are forming letters and numbers. I believe Polly's students will learn to write and love doing it. That will enrich their lives whether or not they realize "a gain of \$1,000 a year" in adult life.

THE REVEREND FRED FENDON '58
Concord, Calif.

TORTURE

ON THE LETTERS (November-December 2010, page 2) with, to my eye, torturous justifications for torture: do we ever see a suggestion that the energy that goes into torture requires a sadistic attitude?

SPEAK UP, PLEASE

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There's no question that, unconscious or conscious, belligerence and the desire to hurt is common among humans. Academic and lawyerly euphemisms don't deal with that. For that matter, why do we devote so much to preparing and waging war, and so pitifully little to waging peace? Oh, we must be always on our guard and have an excellent "defense." War is much more fun and certainly more lucrative.

TOM BLANDY '54, M.Arch. '60
Troy, N.Y.

ADDENDUM AND ERRATUM

SUSAN MEISELAS ("A Lens on History," November-December 2010, page 41) reports that the documentary *Pictures from a Revolution* was a collaborative effort involving both her filmmaking partner, Alfred Guzzetti (now Hooker professor of visual arts), and Richard Rogers '67, Ed.M. '70. In addition, a comment by one of her Nicaraguan interviewees was misreported in our article. The text should have read: "...things were little better under the Sandinistas than under Somoza, especially with the rise of the Contras—who, said one man, Justo, had cut off the *alas*, the wings, of the revolution." We regret the error.

AMANITA ENCORE

"DON'T Eat Amanitas" (September-October 2010, page 72) put me in mind of a poem I wrote years ago.

ALAN L. BOEGEHOLD, Ph.D. '58
Providence, R.I.

Who Made Up All Those Names Anyway?
Crepidula fornicata, lovely name,
coracle shell on a glinting strand,
edible all
except for a small
indigestible ball
of teeth.

Amanita phalloides, deadly bane,
fleshy thrust from autumn duff,
Heaven, my friend,
from you forfend
the downward trend
of a bite.

Amanita vaginata, blushing dame,
No hurtful herbs in her dear cup,
only be sure
when tasting her
you're not with Sir
Look-Alike.

Right Now

The expanding Harvard universe

MAN AND MACHINE

Virus-Sized Transistors

IMAGINE BEING ABLE to signal an immune cell to generate antibodies that would fight bacteria or even cancer. That fictional possibility is now a step closer to reality with the development of a bio-compatible transistor the size of a virus. Hyman professor of chemistry Charles Lieber and his colleagues used nanowires to create a transistor so small that it can be used to enter and probe cells without disrupting the intracellular machinery. These nanoscale semiconductor switches could even be used to enable two-way communication with individual cells.

Lieber has worked for the past decade on the de-

sign and synthesis of nanoscale parts that will enable him to build tiny electronic devices (see "Liquid Computing," November-December 2001, page 20). Devising a biological interface, in which a nanoscale

device can actually communicate with a living organism, has been an explicit goal from the beginning, but has proven tricky. At its simplest, the problem was inserting a transistor constructed on a flat plane (think of the surface of a computer chip) into a three-dimensional object: a cell perhaps 10 microns in size. Merely piercing the cell was not enough, because transistors need a source wire from which electrons flow and a drain wire through which they are discharged.

The key, Lieber says, was figuring out how to introduce two 120-degree bends into a linear wire in order to create a "V" or hairpin configuration, with the transistor near the tip. Getting the entire structure off the surface on which it had been created was easier: Lieber integrated the nanowire probes with a pair of bi-metal, layered interconnects. Joined strips of two different metals that expand at different rates have been used in thermostats for years—when the temperature changes, one metal swells or contracts more than the other, bending the thermostat to the opposite side to accommodate the expansion. Lieber used this principle to lift the transistor up and out of the flat plane on which it was created.

When he finally engineered the tiny device and tried to insert it into a cell, however, he had no luck: pressing hard enough to disrupt the

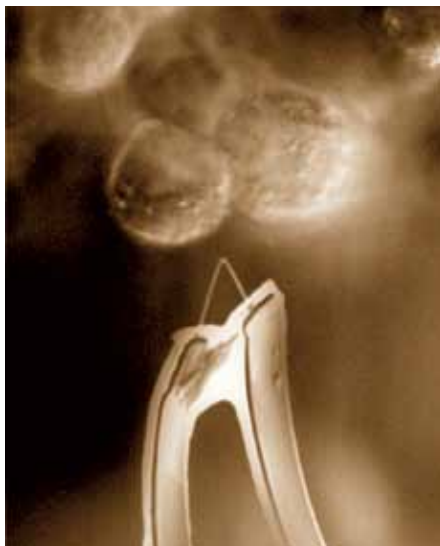


Hyman professor of chemistry Charles Lieber has created a transistor so small it can be used to penetrate cell membranes and probe their interiors, without disrupting function. The transistor (yellow) sits near the bend in a hairpin-shaped, lipid-coated silicon nanowire. Its scale is similar to that of intracellular structures such as organelles (pink and blue orbs) and actin filaments (pink strand).

RIGHT NOW

cell membrane, he reports, killed the cell “pretty quickly.” But when his team coated the hairpin nanowire with a fatty lipid layer (the same substance cell membranes are made of), the device was easily pulled into the cell via membrane fusion, a process related to the one cells use to engulf viruses and bacteria. This innovation is important, Lieber explains, because it indicates that when a man-made structure is as small as a virus or bacteria, it can behave the way biological structures do.

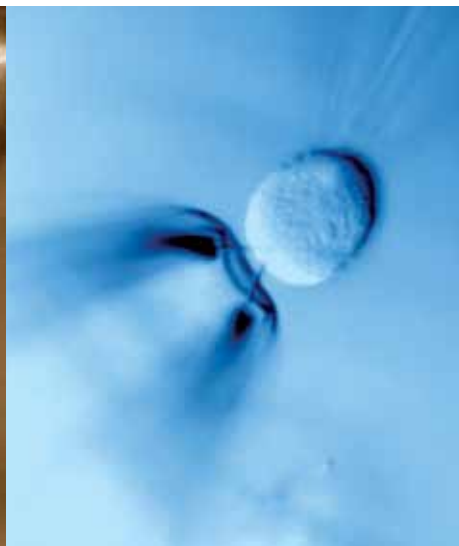
Tests of the device indicate that it could be used not only to measure activity within neurons, heart cells, and muscle fibers, for example, but also to measure two distinct signals within a single cell simultaneously—perhaps even the workings of intracellular organelles, the functional units within cells that generate energy, fold proteins, process sugars, and perform other critical functions. (When those processes stop working, the breakdown can lead to diseases such as diabetes, heart disease, or Tay-Sachs.) And because a transistor also allows the application of a voltage pulse, such devices might one day provide hybrid



A V-shaped silicon nanowire (above) is attached to bimetal connectors that lift the entire structure up out of the horizontal plane on which it is made, to facilitate penetration of three-dimensional structures such as cells (above right).

biological-digital computation, or deep-brain stimulation for Parkinson's patients, or serve as an interface for a prosthetic that requires information processing at the point where it attaches to its owner.

“Digital electronics are so powerful



B. TIAN AND C. M. LIEBER, HARVARD UNIVERSITY

that they dominate our daily lives,” Lieber points out. “When scaled down, the difference between digital and living systems blurs, so that you have an opportunity to do things that sound like science fiction—things that people have only dreamed about.”

—JONATHAN SHAW

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Irina Kuksin, Acting Publisher

QUALITATIVE MEASURES

Who Is Poor?

IF POVERTY means more than just the weight of a wallet, the world's poor may be more numerous than previously believed. World Bank estimates put the population of global poor at 1.44 billion people—but a recent poverty index based on the work of Nobel laureate Amartya Sen, Lamont University Professor and professor of economics and philosophy, raises that number to 1.71 billion.

The differences lie in how poverty is measured. The Multidimensional Poverty Index (MPI), published in July by researchers from the United Nations Development Program (UNDP) and Oxford University's Poverty and Human Development Initiative, factors in living standards ranging from sanitation and the composition of household flooring (dirt, sand, or dung) to child mortality and years of schooling. The MPI asks how

far a person has to walk for clean drinking water, while the World Bank's measure is based solely on income, defining anyone who earns less than \$1.25 a day as poor. By the World Bank standard, for example, only 39 percent of the population of Ethiopia would be considered poor; by MPI calculations, the figure is 90 percent. Conversely, 46 percent of Uzbekistan's population would be classified as poor using the \$1.25-a-day measure, but only 2 percent meet the criteria under the MPI. A change in how the poor are counted could vastly improve the effectiveness of international aid organizations as they allocate resources among impoverished people globally.

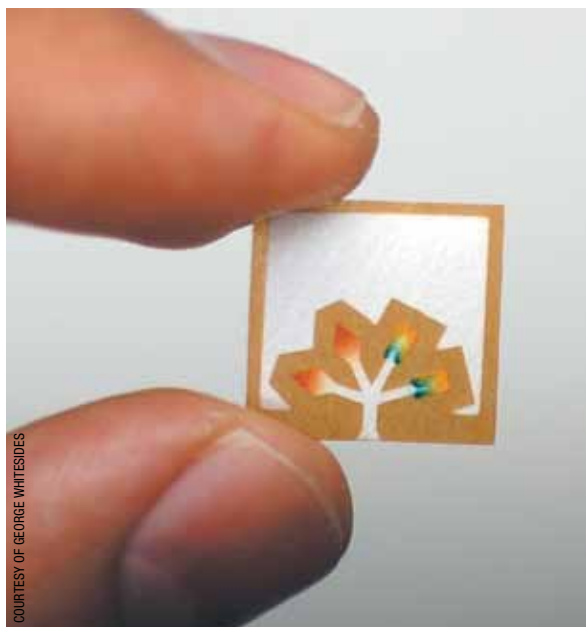
"This dollar-a-day measure doesn't take into account many variations that influence the conversion of income into good living," Sen points out. He offers the ex-

ample of the victims of the recent floods in Pakistan: their reduced income would be noted, but the difficulties they face during resettlement, he says—the deleterious effects on education and on the availability of proper medical care—"would not be captured in an income measure like GDP per capita" (the metric commonly used by economists). "All these *would* be captured in a properly multidimensional measure."

An important watershed in the definition of poverty occurred this year when the MPI was included as one of three new indices in the UNDP's *Human Development Report 2010*, all three serving as a complement to its Human Development Index (HDI), a highly influential measure focused on health, education, and standard of living that is used by policymakers charged with the allocation of aid. The annual report, which celebrated its twentieth anniversary last year, included an introduction by Sen, who is credited with playing an integral role in assembling the original HDI.

Sen's interest in alternative poverty measures began in the late 1950s at the

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When poverty is defined as living on \$1.25 or less a day, about 40 percent of both Ethiopians and Uzbekistanis are considered poor. But by multidimensional measures that capture living standards, almost 90 percent of Ethiopians live in poverty, while only a small percentage of Uzbekistanis do.

University of Cambridge, when he and fellow student Mahbub ul Haq (later a policy director at the World Bank and Pakistan's minister of finance) began discussing an alternative to the GDP per capita benchmark. Haq argued for the usefulness of a simple, easy number, but Sen saw that as coarse. "What you need," Haq told him, "is something as vulgar as GDP except concentrated on something meaningful like human life." Their conversations laid the groundwork for what would become the HDI. "It was never intended to be a substitute for all the multitude of tables that the *Human Development Report* presents," says Sen. "It's a kind of appetizer and, indeed, a general alternative view in a highly simple form—to indicate that, in order to concentrate on human life, you do not have to get into such complexity that people go back to using GDP unalloyed."

Although income-based measures like GDP and per capita income can still dominate discussions of poverty measurement, there are signs that the kinds of multidimensional models that Sen has long advocated are beginning to gain influence. The MPI's Oxford developers credit Sen's work as their foundation, and other researchers are following his lead; governments have

begun to institute the measures on a national level. In 2009, Mexico instituted a multidimensional measurement of poverty levels, to better formulate national policy. A year earlier, French president Nicolas Sarkozy commissioned Sen and fellow Nobel laureate Joseph Stiglitz to define measures for a survey of his fellow citizens' general well-being. (The resulting report, released last fall, suggested that the French government should adopt a multidimensional approach that focused not solely on income, but on a range of quality-of-life measures.)

Even though there are now dimensions of poverty that didn't exist to the same extent when Sen was crafting the HDI in the



late 1980s—for example, the effect of terrorism on personal security—he believes the index has stood the test of time. Findings from a long-term study of HDI results included in the recent *Human Development Report* revealed broad improvements across most developing countries. Sen is happy with these successes, but he says much work still remains to ensure that such gains not only continue, but spread across a wider spectrum of criteria that improve human quality of life around the globe.

—DAN MORRELL

AMARTYA SEN WEBSITE:

www.fas.harvard.edu/~phildept/sen.html

COOL HAND

Gaming the Emotions

VIDEO GAMES may have a reputation for being violent and overly stimulating, but in a new study led by Harvard psychiatry professors, one video game appears to help kids with severe anger problems gain control of their emotions.

The pilot study at Children's Hospital Boston tests an intervention that features a video game based on the 1980s arcade favorite *Space Invaders*. Players shoot down space aliens, but with an important modi-

fication: they wear a monitor on one pinkie that tracks heart rate as they play. If that indicator rises above resting levels—signaling that they're overexcited—players lose the ability to shoot.

The study subjects are patients in Children's inpatient psychiatric unit. "These are kids who have high levels of anger and hostility, often with explosive behavior," explains assistant professor of psychiatry Joseph Gonzalez-Heydrich. They commonly resist psychotherapy, and usually

don't want to try anger-management techniques such as relaxation, "yet they will spend hours trying to master a computer game," Gonzalez-Heydrich continues. Succeeding at the game, known as RAGE Control (Regulate and Gain Emotional Control), is a careful balancing act. "You need to learn how to control your level of arousal," he says, "but just enough that you can still react rapidly and make quick decisions."

Participants play during sessions with Peter Ducharme, a licensed clinical social worker who has adapted traditional anger-management therapy to complement

to experiment to see which strategies aid their game play.

Gonzalez-Heydrich developed the game with Jason Kahn, a software developer and postdoctoral fellow at Children's, hoping that it would both engage kids and allow them to practice these skills in ways that translate into other areas of life. Typical anger-management therapy teaches patients to step away from difficult situations and use techniques such as visualization to imagine themselves in a calm setting. In contrast, RAGE Control requires patients to soothe themselves *in the midst* of a high-pressure activity while

hypothesis that children with severe anger problems have what amounts to a learning disability, triggered by flaws in portions of the prefrontal cortex responsible for emotional regulation. Over time, the game may strengthen these brain areas in the same way that physical therapy helps a stroke patient regain use of a limb. "We're giving that part of the cerebral cortex and the network that connects it a way of getting exercise," Gonzalez-Heydrich says. "Our theory is that this will help these kids improve."

The researchers are less than halfway through this small pilot study led by assistant professor of psychiatry Elizabeth Wharff. Although it's too soon for definitive conclusions, patients so far have enjoyed the game, and "their heart rates during the game have shown improvements with each round, which indicates their ability to learn self-regulation with targeted practice," Ducharme says.

The team plans to apply for funding to



Visit harvardmag.com/ extras for a video of the anger management game in action.

If their heart rates rise above resting levels—signaling that they are overexcited—players lose the ability to shoot.

the game. During the course of five hour-long sessions, he teaches kids strategies to regulate their emotional states—including deep breathing and progressive muscle relaxation—and then encourages them

simultaneously exercising key executive functions, such as the ability to "inhibit," or stop shooting, when friendly spacecraft swoop across the screen.

This study is based on a long-standing

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launch a longer controlled trial eventually at Boston's Manville School, which serves children with emotional and behavioral disabilities. They're also developing a multiplayer version of the game for family therapy, which may help address the dynamics that contribute to angry outbursts. The entire family will wear heart-rate monitors, and if anyone's pulse escalates, everyone loses the ability to shoot. "The trick is to not only get yourself calm, but also promote emotional regulation in your family members," Gonzalez-Heydrich says. "The usual response of these kids would be to yell at their mothers, which makes Mom's heart rate go even higher. We hope kids will learn that

the right approach is to say something supportive." Many parents, he adds, will benefit from the emotion-regulation practice as well.

The enthusiastic response from patients, parents, and therapists gives Gon-



zalez-Heydrich hope that RAGE Control may eventually offer an alternative to the powerful psychotropic medications often used to treat these children. He concedes that a shooting game is a surprising way to address anger disorders, but points out that RAGE Control lacks the "graphic reality" of many current video games. "We have to meet these kids where they are," he stresses. "If we had a game where they were, say, picking

daisies in a field, these kids just wouldn't be interested."

~ERIN O'DONNELL

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Dark Beauty

A tense thriller, with ballerinas

by CRAIG LAMBERT

IN THE NEW FILM *Black Swan*, Natalie Portman '03 plays Nina, a prima ballerina in New York who dances the Swan Queen in Tchaikovsky's *Swan Lake* as her first starring role. That means portraying both a White Swan who radiates innocence, sweetness, and light, and a darker Black Swan—seductive, dangerous, and evil. An overprotected, driven perfectionist, Nina readily takes to the white swan, but must endure a kind of personal purgatory to claim the dark side of both the ballet role and her personality.

Lily (Mila Kunis), another beautiful dancer who becomes Nina's friend and rival, catalyzes this metamorphosis. In the hands of tenebrous film director Darren Aronofsky '91 (*The Wrestler*, *Requiem for a Dream*), the story becomes one of almost unrelieved tension, a thriller that probes psychological, artistic, and even spiritual allegories as Nina finds herself in the midst of what is tantamount to a nervous breakdown. *Black Swan*'s most characteristic shot is a close-up of Portman's captivating face, her eyes flickering with anxiety. Even the final scene sends the au-

dience home with unresolved questions to ponder.

Aronofsky began to consider this story 15 years ago. In fact, "It all started with my sister, who was a ballet dancer when I was a kid," he says; he witnessed her grueling training regime. When he completed his M.F.A. at the American Film Institute Conservatory, he was already thinking about making two companion films, one set in the world of pro wrestling, one in that of professional ballet. "Some call wrestling the lowest of art forms, and some call ballet the highest of art forms, yet there is something elementally

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Natalie Portman dances as the White Swan in *Swan Lake* (far left), and the sensuous Black Swan (left). Above: a scene with actor Vincent Cassel, who plays the company's artistic director.



Left: Fox Music president Robert Kraft, at the piano, works with film director Darren Aronofsky. Above: Aronofsky directing Casel on the ballet-studio set.

it at the elite level. Every small gesture has to be so specific and so full of lightness and grace."

At the start of the film, Nina is a "bun-head"—dancers' unflattering term for a ballerina so obsessively devoted to her art that she has no life outside it. A Signet Society member and psychology concentrator at Harvard, Portman saw Nina as "being caught in a cycle of obsession and compulsion. The positive side of that for artists and dancers is that by focusing so hard you can become a virtuoso, but then there's a much darker side, an unhealthy side, in which you can become completely lost. That's where I had to take Nina."

Nina must endure a personal purgatory to claim the dark side of the role and of her personality.

the same," Aronofsky explains. "Mickey Rourke as a wrestler was going through something very similar to Natalie Portman as a ballerina. They're both artists who use their bodies to express themselves and they're both threatened by physical injury, because their bodies are the only tools they have for expression. What was interesting for me was to find these two connected stories in what might appear to be unconnected worlds." In *Black Swan*, "We wanted to be tense, and to make a thriller," he explains. "To have the horrific elements contrasting with the beauty and sexuality of ballet made for an interesting construction."

Long before the screenplay was ready, Aronofsky had decided that Portman was the right actress for the lead. The two had met for coffee in Times Square more than 10 years ago to talk about the idea. Portman studied ballet as a child and has continued to dance to stay in shape; she told the director that she had always wanted to play a dancer. To prepare for the film, she undertook 10 months of intense physical training that consumed five hours a day, including swimming, weight lifting, and other cross-training, as well as intensive dance work with choreographer Benjamin Millepied, a principal dancer with the New York City Ballet; in the end,

she danced 90 percent of the film's ballet scenes herself. (American Ballet Theatre soloist Sarah Lane performed some exacting point work and turns as Portman's double.) "It's incredibly challenging, trying to pick up ballet at 28," Portman says. "Even if you've taken dance lessons before, you just don't realize how much goes into

Chapter & Verse

Correspondence on not-so-famous lost words

J.P. Akins requests the complete text of a poem he remembers from his youth about the Harvard-Yale game and the way it "releases us, changed and changeless, into the November evening." He thinks it may be the work of the late David McCord '21, L.H.D. '56.

From our archives, here are more as-yet-unsourced phrases and aphorisms, in hopes that a reappearance, in print and online, will yield identifications.

"Whereas the music of Beethoven aspires to heaven, the music of Mozart was written from there."

"...and rain, that graybeard sing..."

"...easier to imagine the weather putting something off because of Miss"

"...like one of the seven deadly sins wrapped up in the cloak of the other six."

"Alas, we would no longer be able to listen to the music of Mozart."

"Cynicism is the fruit of disappointed hopes that were never well justified to begin with."

"Lust is the lamp that lifts the gloom./ Lust is the light that fills the room."

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

Music figures heavily in establishing *Black Swan*'s atmosphere of foreboding. "It became clear that this was a tremendously musical film," says Robert Kraft '76, president of Fox Music, who was involved in the relevant decisions for the Fox Searchlight Pictures release. "You have Tchaikovsky's incredible ballet music and a fantastic original underscore written by [English composer] Clint Mansell. I was in London with Darren for every minute of the orchestral recording.

It was glorious. It sounded as beautiful as I had dreamed." Mansell explains that he wanted the *Swan Lake* music to haunt Nina during her stormy passage. "Tchaikovsky's score is so wonderfully complex," he says. "It tells the story in every note. But modern film scores are more subdued, more minimalist if you will, so I had to almost deconstruct the ballet." Aronofsky adds, "Clint took Tchaikovsky's masterpiece and turned it into scary movie music."

The dark beauty of the Russian master's

score infuses *Black Swan* with its magic. Filled with themes of ego and alter ego, images of mirrors, and paradoxes of the psyche, *Black Swan* itself explores aspects of the art that created it. "There are lots of ideas about the artistic process in the film," Aronofsky says. "There's a struggle between control and letting go. In any craft, you have to learn to do both."



Visit harvardmag.com/ extras to see a clip from the film *Black Swan*.

Storytelling with Sondheim

Librettist John Weidman writes books for the best.

ACT I: John Weidman '68 spends the first 13 years of his life in Westport, Connecticut, where he plays Little League baseball and dreams of turning pro. Then he realizes: "There are no major league players from Westport." His revised attitude about the future: "Wait and see."

Act II, Scene 1: Weidman (WIDE-man) at Harvard. His father is a writer (the novelist and dramatist Jerome Weidman, author of *I Can Get It for You Wholesale*), so it's only natural that he befriends Timothy Crouse '68, the son of playwright Russel Crouse, who coauthored the book for *The Sound of Music*. In 1966, on a lark, they write the Hasty Pudding show *A Hit and a Myth*. ("Nothing seemed at stake. And we got to go to Bermuda.")

Act II, Scene 2: Weidman graduates. He extends his "Wait and see" credo by applying to law school. Facing the draft, he chooses not to attend Yale immediately, and instead teaches for a few years at a New York public school. Then he heads to New Haven to join Clarence Thomas in the Yale Law class of 1974.

Certain that the law is not for him, Weidman writes two letters, seeking an internship. The first goes to Bowie Kuhn, commissioner of Major League Baseball, who blows him off. The second—with a

postscript: "I have an idea for a play about the opening of Japan; can we talk about it?"—goes to Broadway producer-director Hal Prince. Weidman: "At Harvard, I majored in East Asian history—I thought I knew something no one else did. I had no ambition to write a play. I had no training. I just thought: I can do this while I'm at Yale."

Act II, Scene 3: Prince meets with Weidman for 15 minutes before giving him a contract (and \$500) to write the play. In the summer of 1973, Weidman completes a draft of *Pacific Overtures*. Prince decides it needs to be a musical—and convinces Stephen Sondheim to turn the play into one. Weidman: "It was so surreal I didn't stop—at least not too often—to think



Composer Stephen Sondheim (left) and librettist John Weidman in 2010. The copies of *Playbill* showcase two of their collaborations, *Pacific Overtures* (1976) and *Assassins* (1990).

O P E N B O O K

A Story Curled Inside

motion: The Experience of Travel (Knopf, \$26.95), follows by many years—and generations of enabling, distracting technology—his *The Experience of Place* (and his beloved *New Yorker* railroad wanderings, with Rogers E. M. Whitaker, collected as *All Aboard with E. M. Frimbo*). From the beginning of chapter I, “Deep Travel,” a revelation outside the front door:

Although I was only leaving the house for a few minutes and only to run a few errands (mail a couple of bills; pick up an iced coffee at the local bagel shop), and although it was a perfectly ordinary day, like hundreds of others that unfold in any year, year after year, something was no longer the same. Before the door had even closed behind me, the familiar world outside immediately seemed—unexplored. That comes closest to describing the unexpected sensation that had arrived. “Fresh” and “new” were part of it, but only a part, even though there were undoubtedly now some things present that hadn’t ever previously appeared on my block, such as the particular play of light on the buildings across the street, and the array of zig-zaggy clouds in the sky overhead, and the patterns formed by the various groups of people walking by.

But it was the familiar objects, the ones that were still what they had always been, that seemed the most transformed. It wasn’t as if they had changed shape or color, but they now seemed charged with purpose, beckoning, calling out, and almost glowing or shimmering, with each detail etched in the sharpest kind

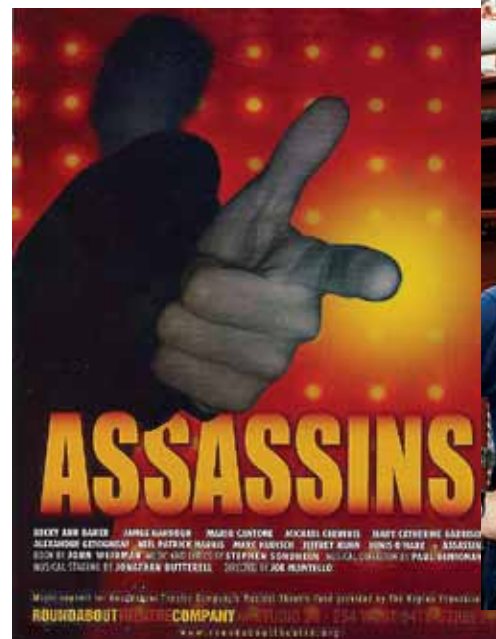
of focus. Each thing I looked at seemed now to have a story curled inside it, and to represent something that many people from many places and times had thought about over long periods and with great care and deliberation and a kind of intelligence that takes generations to accumulate and then get sifted through and refined and pared down. The corner mailbox, for instance. I live in Greenwich Village, in New York City—have done so for most of my life—and the corner mailbox has been there for as long as I can remember.

Battered, blue, durable, unprepossessing—already obsolete some might say. Square on the bottom with a rounded top and a squeaky pull-down handle that needs a certain decisiveness to

open and close, it was something I’ve often used but had never at any time given the kind of close examination that it in fact—what? needed; deserved; wanted? *Wanted*—that seemed as close to it as anything. I was at the moment wide-awake in a way that reached out in all directions. Awareness and attention had been intensified, reorganized, redeployed, and I was abruptly eager to know more.



In an era of headphone-wearing, smart-phone-watching pedestrians, utterly unattuned to their surroundings, Tony Hiss ’63 makes the case for mindful, aware attention to one’s environs—even the most ordinary ones. His new manifesto, *In Motion*:



that I was working with two giants of the theater.” *Pacific Overtures* opens in 1976. Reviews are mixed. But the marquee says it all: *Prince. Sondheim. Weidman*.

Act III, Scene 1: Weidman writes for the *National Lampoon*, which leads to several years of screenwriting. In 1978, he marries a Yale classmate, Lila Coleburn, who soon abandons law herself for clinical psychology. Two children follow. Watching *Sesame Street* with his daughter, he decides that working there would be honest labor, and he begins to write sketches for the show.

Act III, Scene 2: In the mid 1980s, Anna Crouse, Russel’s widow, decides that the reason there has been no first-class production of her late husband’s *Anything Goes* since 1934 is that the book isn’t good enough. (Howard Lindsay and Crouse rewrote the P.G. Wodehouse/Guy Bolton book for the Cole Porter musical.) For \$1,000 each, she hires Weidman and her son to rewrite it. Despite a mixed review in the *New York Times* from Frank Rich ’71 (“The corny, sporadically amusing one-liners...give the script the collegiate air of a Harvard Hasty Pudding show”), the show is a hit and runs for two years.

Act III, Scene 3: Along the way, Weidman and Sondheim become friends. Periodically, they meet to kick around ideas. In the late ’80s, Sondheim mentions his interest in the men who have tried to kill a U.S. president.



Visit harvardmag.com/ extras to see interview clips with John Weidman and clips from *Assassins* and *Sesame Street*



Above: Weidman, Sondheim, and Frank Rich '71 (at right) meet for a 1976 television interview in Sondheim's study. From left, clockwise: a *Road Show* CD cover; a souvenir program for *Contact*; a 2004 *Assassins* poster; and four New York firefighters with Weidman and Sesame Street character Elmo in 2001.



Weidman is equally intrigued; their

collaboration becomes *Assassins*. Weidman: "I was a Camelot kid. After Kennedy was shot, I went to Washington and stood on the sidewalk as his cortege passed by. And I thought—as Steve did—how can one small man cause so much grief? We opened at Playwrights Horizons and were mostly vilified, but I've never enjoyed anything as much as working with Steve on that."

Sondheim: "Ordinarily, I start reading the librettist's work after he has written one or two scenes, but John never offered to show them to me. I assumed that his reluctance to show me anything came from uncertainty. I should have known better from the man who wrote *Pacific Overtures*. Within five minutes of reading, I knew the reason for John's hesitation in showing me what he was writing: far from uncertainty, he knew exactly what he was doing, and he was on a white-hot roll."

Act III, Scene 4: *Assassins* (1990) polarizes reviewers, as does *Road Show* (2008), his third collaboration with Sondheim. Other shows provoke no ambivalence. He is

a 2000 Tony for the dance musical *Contact*. For his *Sesame Street* work, he wins a dozen Emmys. And, for a decade, he's president of the Dramatists Guild. He is one of only three writers to have had several collaborations with the great Sondheim.

The Critic's Turn: In March, *Anything Goes* will be revived on Broadway, with Joel Grey and Sutton Foster—in a theater named for Stephen Sondheim. Completes

nominated for the Tony Award for best book for a musical three times (*Pacific Overtures*, *Big*, and *Contact*), and wins

a circle, doesn't it? Weidman shrugs it off; unlike many theater people, he seems to have no ego, no urgent drive, no need to be noticed. From his 2008 Harvard class report: "The success my career has afforded me, both psychic and material, has not been spectacular, but it has been substantial and, more importantly, enough for me." *Unspectacular*? "That's the first time I wrote intimately about myself—ever. And it's not false modesty. That's an entirely accurate description of how I feel." Then what's the payoff? "I like writing dialogue. I like the solitary part. I like collaborating. I just really enjoy the work."

~JESSE KORNBLUTH

American Ratification

The great experiment in constitution-making

by JACK RAKOVE

IMAGINE THAT, a few years from now, Americans are suddenly plunged into a constitutional crisis. Imagine an economy still muddling in recession; a government rendered inept by the complete collapse of the Senate as a serious institution of deliberation or a continued division between House and Senate; a conservative Supreme Court gripped

by a passion to restore the pre-New Deal version of the Commerce Clause (which treated commerce merely as the physical movement of goods across state lines); a militant Tea Party movement convinced

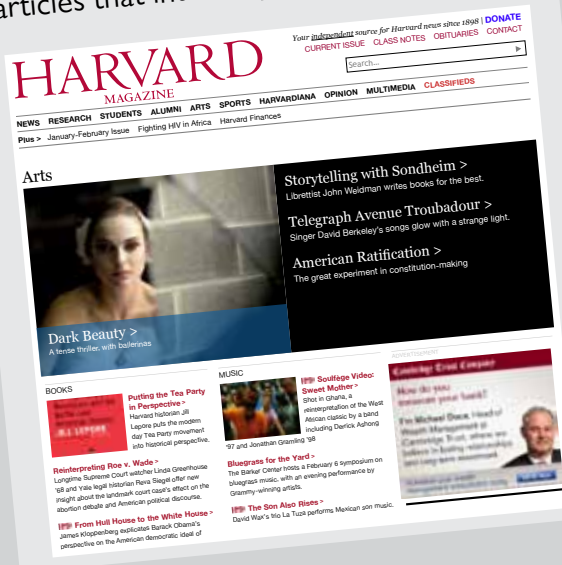
Pauline Maier '60, Ph.D. '68, *Ratification: The People Debate the Constitution, 1787-1788* (Simon and Schuster, \$30.)



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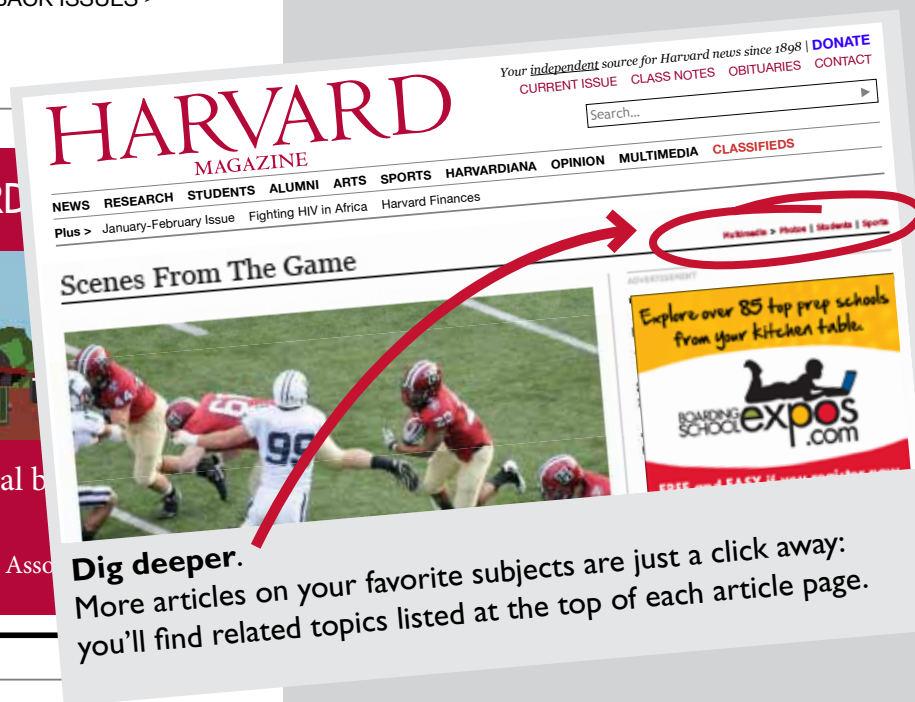
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your own comment.

that the Tenth Amendment imposes real limits on the lawmaking power of Congress, and is not simply a hollow “truism” saying that Congress can only do what it is constitutionally empowered to do. These days, conjuring up such a vision is not so hard. Imagine that somehow the belief took hold that what the Constitution needed was not a revision here or there, but wholesale replacement.

How would such an act of constitutional change, a modern-day invocation of the people’s fundamental right “to alter and abolish governments,” actually occur? Numerous scholars have written about the changes they would favor. But explaining how those changes would be adopted, either by a drafting convention or the popular ratification to follow, remains a terribly daunting task, not to mention a downright scary prospect.

The prospect grows even more distressing when we contrast our own vexed politics with the one splendid example from our history of how an old system can be rejected and a new constitutional regime established. Histories of the framing of the Constitution in 1787 continue to be written (three in the last eight years). Yet our accounts of this process have always tilted in one direction, toward the debates of the 55 framers at Philadelphia, and away from the 11 months of popular deliberation required to get the Constitution ratified. That story of what the people did with the Constitution has never received the full attention it deserved. True, several collections of scholarly essays came out during the Bicentennial of the 1980s, and numerous articles interpret the rival viewpoints of the Constitution’s Federalist supporters and Anti-Federalist opponents. But save for a lone volume by Robert Rutland, a former journalist turned historian, the idea of making ratification its own proper story has never received the attention it deserves.

All that has now changed with Pau-

line Maier’s much-awaited study of ratification, a book that finally enlarges and completes our understanding of how Americans adopted the Constitution. Her earlier work *American Scripture: Making the Declaration of Independence* illuminated this country’s other founding document, and similarly emphasized the way in which the Declaration revealed not only the quirks of Thomas Jefferson’s mind, but the concerns and contributions of Americans in communities across the country. In her new book, Maier—’60, Ph.D. ’68, now Kenan professor of American history at MIT—pays special attention to the four populous states of Pennsylvania, Massachusetts, Virginia, and New York, where the debates ran hot and partisan maneuvering proved fierce. The last three states get two well-developed chapters each, and Maier repeatedly asks readers to consider how the debate took the course it did.

Maier conceived her project as a book for the serious general reader, and in many ways *Ratification* is just that. Yet she is also just too good a historian, with too keen an eye for the complexity of the subject, not to allow her curiosity to take her where it



Amos Doolittle cheekily depicted the passions over ratification in this 1787 engraving with watercolor, with “Federalists” (business interests), left, and agrarian “Antifederalists,” right, differing over currency and Connecticut’s debts: a mired wagon being pulled in opposite directions.

needs to go. The result is a story that reveals how seriously Americans took the constitutional project, and how hard each of the state conventions had to work to determine exactly how its own discussion of the Constitution should proceed. The idea of submitting the Constitution to the people marked a momentous innovation in the practice of constitutional government and the very meaning of the Constitution itself. Yet this was a development for which neither history nor political theory offered any helpful guides. True, one critical precedent was set in 1779-1780, when Massachusetts became the first state to adopt a constitution drawn up by a specially appointed convention and then submit the finished text (mostly the work of John Adams) to the towns for ratification. But pursuing a similar task within a compressed period among the nine states that the Constitution required

Off the Shelf

Recent books with Harvard connections

Daniel Patrick Moynihan: A Portrait in Letters of an American Visionary, edited by Steven R. Weisman (PublicAffairs, \$35). The scholar (former professor of education and urban politics), adviser, ambassador, bow-tie wearer, and U.S. senator, LL.D. '02, was also a prolific correspondent and memo writer. This rich selection (with a succinct biography by the editor, a former *New York Times* man) includes many Harvardians, and is studded with characteristic detonations. On aid to India, for example, in 1974: "The more we do for them, the more they will hate us. Can one not accept this? It is a democracy. Democracies behave that way."

What Is Mental Illness? by Richard J. McNally, professor of psychology (Harvard, \$27.95). "Madness, it seems, is rampant in America," the author notes—but what does that mean? As an adviser on phobia and posttraumatic stress disorder for the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders—IV*, he is in position to offer a lucid meditation on the sources, definition, and impact of mental illness.

Blessed and Beautiful, by Robert Kiely, professor of English emeritus (Yale, \$40). Why is a critic of modernist fiction suddenly immersing himself in the subject of "Picturing the Saints" (the subtitle)—as they were so repeatedly depicted in Renaissance painting? No matter: his time at Villa I Tatti was well spent, and the result is lushly gorgeous.

A Historian Looks Back, by Judith V. Grabiner, Ph.D. '66 (Mathematical Association of America, \$62.95). Of course historians look back—but here,

to "The Calculus as Algebra and Selected Writings." The author, Pitzer professor of mathematics at Pitzer College, is a prizewinner in her field. Through all the inevitable formulas, she aims "to reclaim the

context of mathematics from the hardware store with the rest of the tools and bring it back to the university"—and to the history of Western thought.

Seeing Patients: Unconscious Bias in Health Care, by Augustus A. White III and David Chanoff (Harvard, \$27.95). The lead author, Gordon Distinguished Professor of medical education, an orthopedic surgeon, and the first African-American department chief at a Harvard teaching hospital, grew up in Jim Crow Memphis. He speaks directly and personally about disparities in care.

American Grace: How Religion Divides and Unites Us, by Robert D. Putnam, Malkin professor of public policy, and David E. Campbell (Simon & Schuster, \$30). Putnam (of *Bowling Alone* fame) and Notre Dame's Campbell undertake a data-filled survey of faith and conclude that devotion and tolerance of religious diversity happily coexist—the latter to a degree "far more expansive than anything imagined by the Founders."

God-Fearing and Free, by Jason W. Stevens, assistant professor of English (Harvard, \$39.95). A scholarly "spiritual history" of the Cold War, employing motifs such as original sin to interpret the democratic struggle with internal self-doubt and external, totalitarian threats.

Overlook, by Stephen Sandy, Ph.D. '63 (Louisiana State University, \$19.95 paper). In this twelfth collection of spare poems, the author reflects on persons,

scenes, histories, works of art, and his Vermont environs. From "Ladybug": "But look at them now. Octoberd/they wait to revive in sunlight./No longer in orbit they sit as if/on verandas; grow grayish, scarce/awake until their papery bodies/white now and flightless roll away/not fit to give color to the world."

Outrageous Fortunes, by Daniel Altman '96, Ph.D. '00 (Times Books, \$25). The economics columnist and consultant peeks ahead at 12 global trends and suggests, inter alia, that a hierarchical China "will get richer, and then it will get poorer again," and that the European Union is, as an economic entity, toast.

Moneymakers, by Ben Tarnoff '07 (Penguin, \$27.95). The title is literal: Tarnoff vividly recounts "The Wicked Lives and Surprising Adventures of Three Notorious Counterfeiters" in early America, before financial fraud assumed its modern, credit-default-swap mantle.

Wisconsin's Own, by M. Caren Connolly, M.L.A. '82, and Louis Wasserman, M.Arch. '74 (Wisconsin Historical Society Press, \$45). A remarkable coffee-table celebration of 20 Wisconsin homes, built between 1854 and 1939, ranging from a fabulous lakeside Queen Anne painted lady to Frank Lloyd Wright's Wingspread. The authors run an architectural practice based in Milwaukee.

Hidden Mark: Exploring Christianity's Heretical Gospel, by John Killinger, B.D. '59 (Mercer University Press, \$18). A well-traveled, much-published minister and academic theologian offers a Gnostic interpretation.

Alone Together, by Sherry Turkle '69, Ph.D. '76 (Basic, \$28.95). As its subtitle suggests ("Why We Expect More from Technology and Less from Each Other"), this third volume in a trilogy (after *The Second Self* and *Life on the Screen*), a couple of decades into the computer revolution, finds the author still a professor at MIT, but more skeptical about what personal technology is doing to persons and their real-world relationships with one another.



Sassetta, *The Ecstasy of Saint Francis*, 1437-44, Villa I Tatti, Settignano. From *Blessed and Beautiful*, by Robert Kiely.

for approval proved far more challenging.

The entire process got off to a rocky start, Maier explains, because of Pennsylvania, the first state where the Constitution was seriously debated. Pennsylvania was also the most bitterly divided state politically, primarily because of continuing controversy over its radical state constitution of 1776. That earlier constitution's critics also led the state's Federalist movement, and they treated this new debate as a convenient opportunity to humiliate their opponents. With a two-to-one majority in the state convention, the Federalists did everything they could to prevent Anti-Federalist views from receiving a fair hearing or even reaching the public. As Maier carefully explains, the resulting suspicions of Federalist purposes and tactics set the uncertain legacy that other states worked hard to avoid.

What worked in Pennsylvania, however, would never do in the three crucial states where nervous Federalists struggled uphill to achieve their ends. In Mas-

sachusetts and Virginia, Anti-Federalists enjoyed near or potential majorities, and they were in outright control in New York. In Massachusetts, the Constitution's opponents lacked effective leadership, a factor that enabled the state's popular but gout-ridden governor, John Hancock, to intervene decisively when the outcome was still in doubt by endorsing the Constitution and a limited set of proposed amendments. In the other two key states, however, the opponents could rally around the soaring, attack-on-every-front rhetoric of Patrick Henry in Virginia and the political cohesion of Governor George Clinton's political machine in New York.

Any number of our Constitution's provisions could sensibly be improved.

Tracing the shifting strategies in the different states and explaining how rules of procedure and key speeches shaped debate, Maier provides a remarkably patient, clear-eyed, and deeply balanced account of this great experimental year of constitutional politics. She is the first historian to take full advantage of the massive *Documentary History of the Ratification of the Constitution* (21 fat volumes published already, with another eight to go). Most commentators treat the Anti-Federalists with an under-

lying skepticism, as "men of little faith" who could never fully grasp, much less answer, the compelling political science of the Federalists—whose intellectual champions, after all, were James Madison and Alexander Hamilton. Not Maier. She refuses to call the Constitution's opponents Anti-Federalists, a disparaging label imposed by the other camp. She carefully reconstructs the debates within the states, not merely to illustrate their special concerns, but also to demonstrate the difficulties they faced in struggling to decide exactly how the Constitution was to be judged.

But Maier is not merely a careful student of these remarkable debates. She brings alive the participants as well. One striking feature of her treatment is the emphasis she gives to George Washington. Most accounts of Federalist politics give greater attention to Madison and Hamilton, the main coauthors of *The Federalist*, and the leading tacticians in Virginia and New York. By placing Washington at the center of the Federalist movement, Maier reminds us how much this constitutional moment belonged to those who best knew, from their wartime experience, why a national government working independently of the states had to be created (a fundamental point that our current political debates strangely ignore). But numerous lesser lights appear as well, some more cranky than intelligent, but all illuminating what it meant to turn the Constitution over to the people's delegates for debate.



Pauline Maier

COURTESY OF PAULINE MAIER

satisfactory resolution. Inadvertently or not, Maier's account of what was actually said explains why latter-day originalists like Justices Antonin Scalia and Clarence Thomas, who treat the final text of the ratified document as sacrosanct, reveal so little serious or sustained interest in the actual debates that

adopted the Constitution—indeed, why "originalists" now prefer to play language games about what the Constitution must have meant to ordinary readers rather than reconstruct how it was actually framed and debated.

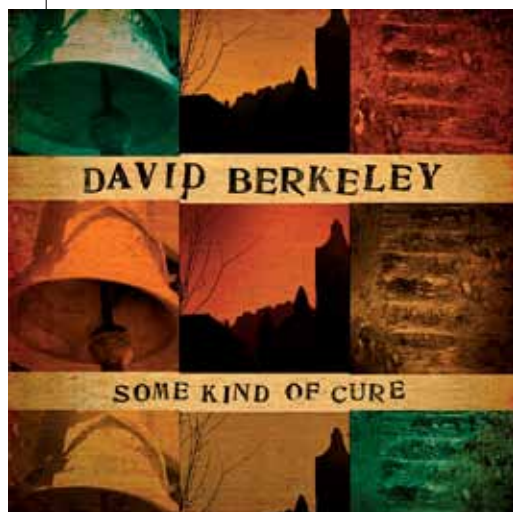
Yet in the second place, one finally comes away from Maier's story with a profound respect for the political enterprise and intellectual commitment that made ratification a sublime inaugural moment of American democratic politics. By any standard, what the first generation of our national citizenry accomplished in framing and ratifying the Constitution in little more than a year was remarkable. That does not mean that every decision they took was correct, or should remain secure from our criticism. Our Constitution is riddled with problems and defects, and any of a number of its provisions could be sensibly improved. If I were the lawgiver, I would abolish the equal state vote in the Senate tomorrow, and the Electoral College the week after that. Yet whether our contemporary politics could sustain the task of constitutional revision is an idea we very sensibly doubt. Maier's account of ratification thus explains not only what happened back then; it also makes clear why this episode merits the brilliant treatment it has finally received.

Jack Rakove, Ph.D. '75, is Coe professor of history and American studies, professor of political science, and professor of law at Stanford. He is the author of *Revolutionaries: A New History of the Invention of America*; *The Annotated U.S. Constitution and Declaration of Independence* (Harvard University Press); and the Pulitzer Prize-winning *Original Meanings: Politics and Ideas in the Making of the Constitution* (1996).

Telegraph Avenue Troubadour

Singer David Berkeley's songs glow with a strange light.

THE GROOM PLANNED a surprise for his fiancée: a slideshow during the rehearsal dinner. A mix of songs accompanied images of their time together. The last song was one of her favorites: "High Heels and All," by David Berkeley '99. As it played, Berkeley himself entered and finished the song live. The bride-to-be loved it.



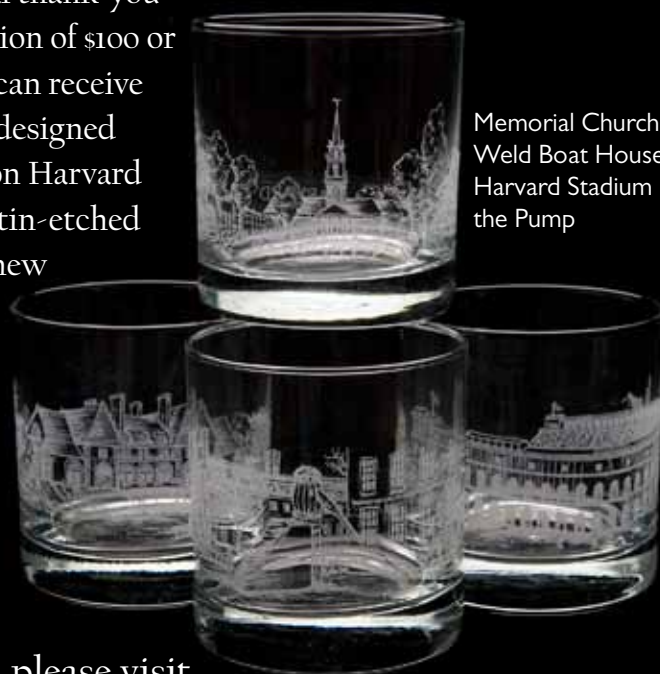
The cover of David Berkeley's newest CD, *Some Kind of Cure*.

An established indie folk artist, Berkeley (www.davidberkeley.com) savors private concerts, but most of them aren't serenades—they're birthday, anniversary, and engagement parties, or intimate shows in museums, churches, and temples. "At a club, people quickly put the music into predefined boxes," he says. "In some atypical performance spaces, you catch people without their walls up. They feel my songs more fully."

Berkeley is about to release his fourth studio album exploring love, struggle, places, and moments. He has toured many times in the United States, the United

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David Berkeley

MATTHEW WASHBURN

“At this moment I’ve said all that I’ve had to say,” Berkeley says. “It’s a great feeling.”

Kingdom, and France. His “lustrous, melancholy voice” invokes shades of the late British and American singer-songwriters Nick Drake and Tim Buckley, wrote Jon Pareles of the *New York Times*. “As his melodies ascend to benedictions and consolations, the music shimmers and peals.”

Berkeley’s velvety tenor at times can leap cleanly into falsetto. In “George Square,” for example, from his forthcoming CD, he sings: “She was walking quite slowly all alone/All the lights in the windows were aglow/But the statues they were so silent/With the rain splashing their heads/How bad she wanted to hear them tell her which way was best.” Then he sings the first word of the chorus in falsetto: “Oh girl, don’t change your dress for me now/I am on your side.” The flash of falsetto heightens the desperation of the plea. Berkeley says it’s not a move he always plans, though he does like choruses to “lift” with energy: “There’s an inherent willingness to be vulnerable that allows me to do it. It’s not objectively flattering, and it certainly isn’t ‘manly.’ I do believe that it carries a different realm of emotions—softer, sadder, more humble, more pleading.”

Harvard classmates know him as David Friedland; Berkeley is his middle name. “My parents lived in Berkeley [California] before I was born in the ‘60s,” he says. “They named me David Berkeley as a pledge to move back after having moved to New Jersey.” His parents *did* move back and, after five moves and two children in



TORIAS PRASSE

seven years, Berkeley and his wife, Sarah Davis ’99, have, too.

Berkeley began performing young—singing door-to-door with his babysitter, an Avon saleswoman—but he never studied music. At Harvard, he concentrated in literature, performed sometimes with the band of Tyler Gibbons ’99, and busked in alleyways. Managing Gibbons’s band led him into the music business. Today he performs solo, in a duo with trumpet and banjo player Jordan Katz, or in a trio.

He’s just finished a book, *144 Goats and a Guitar*, a collection of essays exploring the roots of songs on his new record, *Some Kind of Cure*. In it, he describes his writing process: “Songs begin as lines jotted into a book I carry. Often they start from something quite small: a strange or uncomfortable story or situation, perhaps just a mood or a hope—a wish for escape, a need for comfort, an overwhelming surge of love for my family, a burning desire to make things in their lives okay.”



Visit harvardmag.com/
extras to download a
track by David Berkeley.

A big break came when he was hired to write his song “Fire Sign” to fit the climactic moment in an episode of the CBS series *Without a Trace*. The layering of Berkeley’s delicate finger picking over a horrifying onscreen situation—a hanging boy, his feet still kicking—added suspense, and Berkeley’s slow, sorrowful tenor haunted the scene. The dramatic placement of the song propelled his music into the mainstream. Though he wasn’t credited, viewers discovered that he was the singer-songwriter and bought 500 CDs that night.

Berkeley has independently produced and released five albums, most recently *Strange Light*. *Some Kind of Cure* is due out in January. “At this moment I’ve said all that I’ve had to say,” he says. “It’s a great feeling. I’ve never had that before.” Still, he won’t stomach being called successful. “If I were looking for money and some sort of conventionally measurable level of success, I’d be an idiot to do what I’m doing.”

His fans have bought more than 30,000 CDs, and donated at his website to defray the production costs of the new album. And Berkeley gives back—in personal answering-machine messages, phone serenades, and cover songs. And in private concerts.

—ELIZA WILMERDING

New England

REGIONAL SECTION



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THEATER

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Visit the website for specific show times.

- January 15 through February 5
R. Buckminster Fuller: The History (and Mystery) of the Universe, written and directed by D.W. Jacobs. Actor Thomas Derah takes the audience on an adventure through Fuller's life and times.
- February 12 through March 12
Ajax. A new translation of Sophocles's play reveals that modern-day grappling with violence and war is nothing new.
- February 25 through March 25
Prometheus Bound. A new rock-musical version of this Aeschylus classic, directed by Diane Paulus, illustrates one man's struggles against a ruthless dictator.

MUSIC

- February 18 at 8 P.M.
www.harvardclub.com; 617-536-1260
374 Commonwealth Avenue, Boston
The Harvard Club of Boston Jazz Combo Festival showcases student ensembles. Free and open to the public.

DANCE

<http://ofa.fas.harvard.edu/dance>
617-495-8683; Harvard Dance Center
60 Garden Street

- February 18 at 7 P.M.
The **Boston Ballet Dance Talks** series features that company's artistic director, Mikko Nissinen, and performances by its dancers. Free and open to the public.

EXHIBITIONS

Carpenter Center for the Arts

www.ves.fas.harvard.edu
617-495-9400/2317

- January 27 through February 20. Opening night reception with the artists.

VES Alumni Exhibition

Alumnae Liz Glynn '03, Amy Lien '09, Meredith James '04, and Xiaowei Wang '08 will discuss their work and life after VES. The exhibit includes video, drawings, and a reconstruction, made from detritus gathered from the renovation of the Fogg Museum, of Le Corbusier's iconic furniture.

Harvard Art Museums

www.harvardartmuseum.org; 617-495-9400

- Continuing: **Brush and Ink Reconsid-**

ered: Contemporary Chinese Landscapes.

- Continuing: **I Was Not Waving but Drowning** features 14 photographs that capture Indian artist Atul Bhalla's submergence in the Yamuna River.
- Continuing: **"Re-View."** More than 600 objects from the collections of the Fogg, Busch-Reisinger, and Sackler museums.

Peabody Museum of Archaeology and Ethnology

www.peabody.harvard.edu; 617-496-1027

- Opening March 2, reception from 5 P.M. to 7 P.M.

House of Love: Photographic Fiction, Dayanita Singh explores the human condition through images—linked to poetry and prose—shot mostly in India. A book of Singh's work will be published in February by the Peabody Museum Press.

- Continuing: The museum's "Visible Language" series offers lectures on the origins of Maya writing, responses to literacy, and more. Visit the website for details.

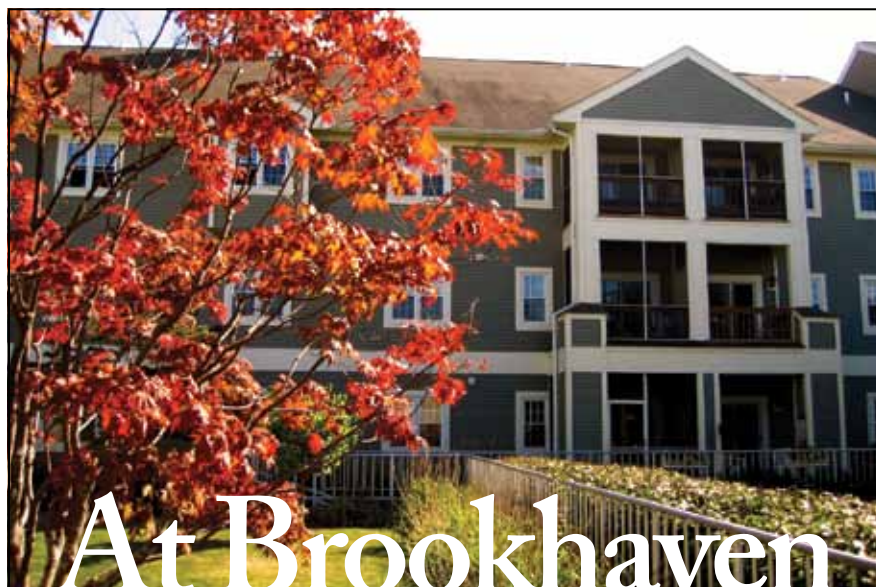
Harvard Museum of Natural History

www.hmnh.harvard.edu; 617-495-3045
26 Oxford Street

- January 27 at 6 P.M.
"Head's Up! How and Why the Amazing Human Head Evolved to Be the Way It Is" launches the "Evolution Matters" lecture

From left to right: The Harvard Museum of Natural History reopens its Africa Gallery; students perform at the 2010 Harvard Club Jazz Festival (from left, Greg Johnston '13, Alex Rezzo '10, and Carl Pillott '12); CoExist by Roberto Mighty is displayed at the Arnold Arboretum.

FROM LEFT: DAVID FOX/HARVARD MUSEUM OF NATURAL HISTORY; HARVARD CLUB; ROBERTO MIGHTY/ARNOLD ARBORETUM



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NEW ENGLAND REGIONAL SECTION

series with professor of human evolutionary biology Daniel Lieberman, author of the new book, *The Evolution of the Human Head* (see page 25). Free and open to the public.

• Continuing: *Headgear: The Natural History of Horns and Antlers*

Discover why and how these protuberances developed, and what roles they play in various cultures.

NATURE AND SCIENCE

The Arnold Arboretum

www.arboretum.harvard.edu; 617-495-2439

• Opening January 22, reception 1:30 to 3:30 P.M.

Trees of My City: Photography by Roberto Mighty explores the forms and purposes of dormant, dead, and decaying trees.

• January 19, 6:30 P.M.-9:30 P.M.

The Buzz on Beekeeping, with Nancy Bentley Mangion, owner of the Beekeepers' Warehouse. A \$45 fee and registration are required.

• February 1, 7 P.M. TO 8:30 P.M.

Working with Stone: Creating a Connection with the Spirit of Place, with master dry-stone mason Dan Snow, highlights the uniquely artful character of stone. At Trinity Church, Boston. Fee and registration required; contact the arboretum for details.

The Harvard-Smithsonian Center for Astrophysics

www.cfa.harvard.edu/events.html

617-495-7461; 60 Garden Street

• January 20 and February 17 at 7:30 P.M. Skywatching, weather permitting, and lectures. Free and open to the public.

FILM

The Harvard Film Archive

<http://hcl.harvard.edu/hfa>; 617-495-4700

Visit the website for listings.

Schlesinger Library Movie Night

www.radcliffe.edu/schles/movie_night.aspx; 617-495-8647

10 Garden Street, Radcliffe Yard

• February 2 at 6 P.M.

The Heart of the Sea: Kapolioka'ehukai (2002), by Lisa Denker and Charlotte Largarde, tells the story of Hawaiian legend Rell Sun, a pioneer of women's surfing.

Events listings also appear in the *University Gazette*, accessible via this magazine's website, www.harvardmagazine.com.



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CAMBRIDGE, MA
Off Brattle St - Beautifully renovated & splendid 11-room Queen Anne, c. 1886. 32' living room w/ bow window & fireplace; library w/ fireplace & window seat; 21' Dining room w/ fireplace; amazing 30' eat-in-kitchen/family room w/ granite counters, Viking stove & Sub Zero. Garage + parking. \$2,975,000



CAMBRIDGE, MA
The Yerxa-Field house, c. 1888. A beautifully preserved, magnificent & celebrated 14-room landmark Shingle-Style residence. The home features a wealth of unparalleled detail, southern exposure, a 2-story carriage house & rests on 3/5 of an acre at the crest of Avon Hill. \$3,550,000



ARLINGTON, MA
Charming & historic Colonial Farm House, c. 1850, not far from Arlington Center. Features a renovated eat-in-kitchen, 5 beds, 2 baths, 2 fireplaces, built-ins & garage. Lovely grounds with a large brick patio & views of Spy Pond & the Boston skyline. \$699,000



CAMBRIDGE, MA
With panoramic views of the river & Boston skyline, this exquisitely renovated 2 bed, 2 bath co-op with a balcony is in a full service elevator building close to Harvard Sq. It features high end finishes, mahogany floors, custom built-ins, kitchen with granite & stainless & spa baths. Garage parking. \$1,165,000



CAMBRIDGE, MA
With panoramic views of the Charles River & Boston skyline, this 2 bed, 2 bath co-op is in a full service elevator building close to Harvard Sq. 27' living/dining w/ 2 sets of sliding glass doors to a 25' v-shaped balcony; pristine parquet floors & great built-ins. C/A; garage. \$950,000



CAMBRIDGE, MA
Mid-Cambridge. Spectacular condo w/ southern exposure in a classic brick building. 16' entry foyer, 18' living/dining room w/ crown molding; 1 bed + a study; tiled bath & hardwood floors. Close to Harvard, Central & Inman Squares, shops, restaurants & the T. \$339,000



Radcliffe - This penthouse condo is located in a professionally managed brick Harlow building. 16' living room w/ crown molding & fireplace; dining room w/ French doors & built-in cabinet; study area w/ built-in desk, shelves & drawers; 2 beds; in-unit laundry hookups. Near Harvard & Porter & the shops & restaurants of Mass Ave. \$475,000



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Work in the Key of Life

Third-agers seek deeper meaning and social contribution • by Nell Porter Brown



But she persevered, knowing it was the right path for her. “The thing I heard at my last class reunion was that we are all probably living longer than our parents did,” she says. “We can do lots of things in life and it’s important to remain open to different things at different times.”

Piltch has created what’s increasingly known as a “Third Age” or “encore” career. The Third Age concept, which originated in France and is popular in Europe, refers to that expanding period in the human life cycle after middle age and before old age. In the United States, that stage is currently populated by the baby boomers, many of whom, surveys show, intend never to “retire” as their parents did.

Instead, many are seeking more meaningful occupations later in life, says career/life coach Margaret Newhouse, M.A.T. ’65, a pioneer in the field of “Third-Age life crafting” and founder of the Life Planning

Network. At a time when life’s traditional goals have been reached—children are grown, mortgages are paid, career duties have lessened, and the pressures of worldly accomplishment have receded—there is more flexibility for people to explore what else life has to offer, and what else they can offer of themselves. “You have more freedom in an actual sense,” Newhouse adds. “But more importantly, I think, is a psychological freedom that comes with age—having a greater perspective on what’s important in life and a willingness to just be that person—without regard to what other people think. For many, there is a newfound spiritual element involved.

“IF ANYONE HAD told me that I was going to become a reiki master teacher,” says Cynthia Ann Piltch ’74, “I would have said, ‘There’s a better chance of the pope becoming Jewish.’ I am a scientist. The idea of healing arts was just so alien to me.”

Most of Piltch’s working life was spent as a public-health researcher, first in the upper levels of the U.S. Department of Health and Human Services, and later as a specialist in women’s health, the topic of her doctorate. But in 2005, at the age of 52, Piltch made the decision to curtail that

Above: Massage is among the healing arts Cynthia Ann Piltch studied for a new career.

career and focus on integrative mind-body therapies.

She now spends her days performing many forms of massage on clients, along with reflexology, craniosacral therapy, myofascial release, and reiki, a Japanese form of hands-on energy healing, which she also teaches. “I withstood a lot of challenges when I went back to school for massage therapy [in 1999],” says the Lexington, Massachusetts, resident. “People actually said things like, ‘You have such a fine mind, why don’t you want to use it?’ One person’s reaction was, ‘You will be the most educated prostitute I know.’ It was extremely hard to hear those things.”

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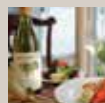
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You're likely to be much less egoistic."

For encore-career participants, money is less of a motivator than enjoyment, "staying active and productive," and a desire to contribute to society, according to a recently published study by the Families and Work Institute in Manhattan and the Sloan Center on Aging and Work at Boston College. The number of older workers is also on the rise; the study found that 75 percent of workers who are 50 or older expect to have "retirement jobs" in the future.

Civic Ventures, a San Francisco think-and-do tank that promotes encore careers for the social good, found in a 2008 survey that 9.5 percent of people between 44 and 70 were already engaged in such work—and another 44.7 percent were interested in it. "That's about 40 million people," half the roughly 80 million baby boomers, says Civic Ventures executive vice president Jim Emerman '72. "Our belief is that if we can provide the work that this group wants, then we are talking about a huge infusion of talent to address social problems."

Civic Ventures defines encore careers as those that combine "continued income, personal meaning, and social impact." In addition to conducting research on the topic, the organization has a fellows program, started in 2009 and expanding nicely, through which former corporate employees are paid a stipend and matched for a year with nonprofits in need of their expertise. The interest in this, from both potential fellows and nonprofits, is far beyond what Civic Ventures can currently provide, and Emerman says there is hope of finding ways to scale up the program.

For now, he says the goal is to expand to include 150 to 200 fellows by the end of 2011. This effort might soon include a Boston component run by Discover What's Next, a Newton, Massachusetts-based organization also focused on third-age occupations. "We're looking at the largest demographic in society, in terms of the boomers," Emerman adds, "and if even a small portion of those people decide to use this period of time to work on issues that are important to them—working with youth, in education, community outreach, or healthcare—instead of seeking freedom from work, then it's a huge wind-fall for society."

FOR THOSE seeking change in their third-age work lives, the inevitable risks and rewards are often impossible to foretell. "What's fun about the process of deciding what else you want to do in life is when people really discover new pieces of themselves—or pieces that have been dormant for a long time," says Cambridge career counselor Phyllis R. Stein '63, Ed.M. '70.

She specializes in career changes and has helped Piltch, whom she first met as an undergraduate, at various transitions along the way. "This is an exciting thing to do," adds Stein, who made her own difficult decision, at 55, to leave her post as director of the Radcliffe Career Services Office after 21 years to open a solo practice. "It can also be scary and challenging. Making these changes at later ages takes a lot of motivation and persistence."

Anita P. Hoffer '61, Ph.D. '69, describes her own moves—out of academia, and then corporate business development—to her longstanding passion as "a leap of faith." "I was afraid of failing, of crashing and burning, of social disapproval, of burning bridges in my professional life and not being able to go back," she says. "Those are the risks." With a background as a scientific researcher at Harvard Medical School, she had most recently been negotiating multimillion-dollar contracts between university researchers and pharmaceutical companies. "It was fascinating to be working with brilliant scientists and sponsoring important research, but it gets awfully dry and contentious," Hoffer says. "We are a litigious society and we express our worry about outcomes through thinking about where the comma should go in a contract. But finally I decided life was too short to do that anymore."

At 67, the Brookline, Massachusetts, resident went back to school to get a doctorate in sexology. She now lectures on sexual behavior, attitudes, and literacy, runs women's workshops, and counsels private clients, with a special focus on older women. She also continues to conduct research, recently surveying Radcliffe alumnae for a forthcoming paper on "The Sexuality Profiles of Women between 60 and 75." "I've never looked back—lord, no!" she says of her decision to change occupations later in life. "I am



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NEW ENGLAND REGIONAL SECTION

so much more alive now than I was. And I am giving back; I can't tell you how many people thank me for helping them!"

Hoffer sees her change as a return to a

longstanding interest in sex and reproduction; her first doctorate is in anatomy, her thesis adviser was a spermatology specialist, and for years she ran a lab that

did research on male infertility in order to find a way to develop a male birth-control pill—"For political and legal reasons, I can tell you it ain't going to happen," she quips—before she "got siphoned off" into the corporate world.

But it took internal strength to build on her original interest and earn another advanced degree from what she calls a "non-traditional, non-Harvard program" at the Institute for the Advanced Study of Human Sexuality in California. "For me, it was about courage and daring to take a chance," she says. "It was not your typical career pursuit, so I worried about people raising eyebrows—and some have. But they have come around because they see that I love what I am doing—I'm enough of a rebel to be drawn to this topic—and I'm helping people with a topic that many consider taboo."

Many resources, including professional support, exist for what can seem a monumental decision (see sidebar). Numerous books are published on the specific topic

GUIDES TO THE THIRD AGE

Becoming a Life Change Artist: *Seven Creative Skills That Can Transform Your Life*, by Fred Mandell

Chapters: *Mastering Change in Life and Work*, by Candice Carpenter

Composing a Further Life: *The Age of Active Wisdom*, by Mary Catherine Bateson

Flow: *The Psychology of Optimal Experience*, by Mihaly Csikszentmihalyi

Getting Unstuck, by Timothy Butler

In The Third Chapter: *Passion, Risk, and Adventure in the 25 Years After 50*, by Sara Lawrence-Lightfoot

Opening the Eight Gates of Wisdom, by Angela Arrien

Slow Love: *How I Lost My Job, Put on My Pajamas, and Found Happiness*, by Dominique Browning

The 4-Hour Workweek, by Timothy Ferriss

The Mature Mind: *The Positive Power of an Aging Brain*, by Gene Cohen

The Pleasures and Sorrows of Work, by Alain de Botton

Your Life as Art, by Robert Fritz

WEBSITES

Harvard Business School: www.advancedleadership.harvard.edu

Civic Ventures: www.civicventures.org and www.encore.org

University of Connecticut: http://continuingstudies.uconn.edu/professional/non-profit/emerging_leaders/instructors-el.html

Discovering What's Next: www.discoveringwhatsnext.com

Margaret Newhouse: www.passionand-purpose.com and www.lifeplanningnet-work.org




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of later-life occupations, and workplace psychologists, such as Timothy Butler, director of career development programs at Harvard Business School (and author of *Getting Unstuck*), offer assessment tools (www.careerleader.com). The University also runs the interdisciplinary Advanced Leadership Initiative, which was begun in 2009 and is chaired by Arbuckle professor of business administration Rosabeth Moss Kanter. The fellowship program prepares seasoned leaders in their third age to take on new challenges in the public social sector.

Newhouse and Stein, along with Kit Harrington Hayes, author of *Managing Career Transitions*, take a holistic approach to helping older people find work that's aligned with new or long-buried values. For Hoffer, the possibility of this third-age career entailed "generativity and finding my voice." No career choices should be made in a vacuum, Newhouse says, especially those in later life. "Deal with all

facets of your life: health, relationships, finances, and how other passions relate to work—or not," she advises. "Some people jump into wanting a job without doing this other piece of soul-searching first. The primary lens through which to look at this time in life is really possibility, not loss or challenge," but it's also critical to keep in mind that "Life is short and getting shorter the older I get!"

EVEN AFTER soul-searching has helped someone determine that a career switch is desirable, and ideas about what field or job to pursue are in play, serious obstacles can arise: particularly the weak economy and age discrimination. "I'm not discouraging people from trying to make a career change; I just want them to be very realistic about what it's going to take on their part," Stein says. "Competition is incredible."

In a tight job market, when employees are expected to do more with less, employers are less willing to take a chance on

newcomers to a field, or on those whose skill sets do not precisely match their criteria, Stein says. "People over 50 need to understand the concerns of employers—that older employees are going to cost more, be sick more, not going to be as up to date with technology, not learn as fast," she says. "It behooves career-changers to address these fears in their presentations." Meanwhile, those who decide to hang out a shingle face their own set of challenges.

Stein encourages people to identify what's truly motivating them. "What does a career change really mean about your life? What do you want from working? Is this the aspect of life to change, or is something else making you unhappy?" she asks. Examine everything you have done in life and analyze carefully what brought fulfillment and why. "Look for a thread, if there is one," she advises. "It's important to identify what you want work to give you. Whether you do this thinking intuitively or methodically, it has to be a planful process."

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For both Piltch and Hoffer, third-age careers are outgrowths of their primary careers and of long-standing interests that they felt freer to pursue later in life. "We have focused our attention on a subset of what we were doing," Piltch points out. She wrote her dissertation on gender and workplace stress, for example, and had always been interested in the mind-body connection. But she did not seriously discover the deep benefits of massage therapy until a car accident in 1995 left her severely injured, unable even to sit down for six months. It was a painful, often discouraging recovery period, but she emerged more open to the possibilities of alternative modes of healing not only for herself, but for others. One of her main career goals now is to try to figure out how to better bring complementary medicine to those who cannot afford it. In a way, she is still engaged in public health: "I'm promoting individual and community wellness."

Piltch founded the Radcliffe Mentor Program in 1983 and still advocates finding fellow alumnae and alumni who are doing what you want to do and talking with them, or even shadowing them at work. She also cautions people to be realistic about time commitments and financial needs. "My husband jokes with me that he thought I could never find anything more downwardly mobile than public health—but I did!" she says, with a laugh. "To be totally honest, I don't know if I would be doing what I do if I were living solo." (But she is quick to add that she feels wealthy whenever she is helping someone regain function or teaching others about tools that support wellness.)

Hoffer says her finances were sufficiently stable for her to return to school and pursue her passion, though "I'm never going to get rich doing it." But that doesn't seem to matter. "My favorite quote is from Anaïs Nin," she says: "And the day came when the risk it took to remain tight inside the bud was more painful than the risk it took to blossom." I didn't know," she adds, "that making a change would deepen my understanding of myself and also free me up to help women. I was aware of the risks that come with change—but these are the joys." ♥

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Warm colors and innovative culinary combinations in Inman Square

EAST BY NORTHEAST is not a typical Chinese restaurant. Rather, the intimate Inman Square eatery serves “seasonally driven Chinese-inspired cuisine” that pleases the palate—and tickles the intellect. Owner and chef Phillip Tang is a *thoughtful* cook who magically merges Asian comfort food, in the form of hand-rolled noodles, bread, and dumplings, with an intricate mix of textures and flavors in dishes that defy pigeonholing.

Take the salad of Asian pear, pink beets, scallions, cashews, and slabs of silky tofu (\$7). It’s cold and spicy, crunchy and slick...*and* sweet and sharp. Or consider that dainty yellow floret of cauliflower served with the “duo of buns” (a variation of the standard Chinese steamed buns): the floret, tart and tender with a bergamot-like flavor, deftly sets off the minimeaty treats of pulled pork and smoked ham (\$8). And that earthy purée beneath the succulent pork dumplings

spiced just right with scallion slivers? It’s a blend of apple and onion essence. Tang, who studied East Asia and studio art in college before heading to culinary school, engages the mind as much as the mouth.

Everything is fresh; the meat comes from sustainable farms and the winter menu reflects locally grown produce like celery root, rutabaga, carrots, parsnips, and apples. Everything is served tapas-style, encouraging sharing and tucking into much of what’s on the short but satisfying menu.

This communal feel is accentuated by the dining room, which seats 24 people, at most, plus four at high-backed stools at the bar. Carefully selected wines and beers are served, along with refreshing home-made sodas with flavors like lemony ginger and cilantro with lime. The walls are rich saffron and blood-red, reminiscent of Tibetan monks’ robes, and the lighting is nicely dim.

An opening in the back wall offers entertaining views of the kitchen; torsos

and forearms in sturdy kitchen whites bustle about amid vats and steam.

Tang worked at other Cambridge “real food” favorites—T.W. Foods and the Hungry Mother—before envisioning his own place, which has drawn excited attention among food-lovers and recently earned him the title “Best Up-and-Coming Chef” in *Boston Magazine*.

We started with the napa cabbage salad (\$6), which a companion deemed “skunky” in the best sense: crisp and pungent, with thin radishes and scallions and wet chunks of pink grapefruit dressed in a honey-pepper vinaigrette. An ascetic, almost astringent concoction, it was interesting to contemplate—and to look at, with its pale greens and florid fruit. It was also the perfect foil for the hot pork ragout over thick noodles with a poached egg on top (\$11), a rich mélange of juicy, salty, filling food with a spicy kick.

The salad also came in handy as a complement to the incredible rice croquettes (\$7). Crispy-fried on the outside, with a risotto-like texture inside, these treats were “meaty” *and* vegetarian. The scallion pancakes (\$7) amplified with bits of other vegetables were also terrific: not at all greasy, and served with a bold, roasted-garlic-and-chili dipping sauce. Try all forms of the noodles—the long wide ones and the stubby ones—with the range of meats and sauces; we loved the lamb with chunks of carrots and delicate squash (\$12). Above all, don’t neglect those tricky veggies, Brussels sprouts (\$7). Never have they tasted this good: Tang serves up this chewy roughage infused with garlic, thick bits of hand-cured bacon, lemon zest, and spiced rutabaga relish.

East By Northeast serves a small complimentary dessert, which varies. One night, it was a cube of basil- and lime-infused coconut panna cotta over crispy rice; a fittingly novel end to this “Chinese-inspired” meal.

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HEAD

TO

Daniel Lieberman tracks the evolution of the human head.

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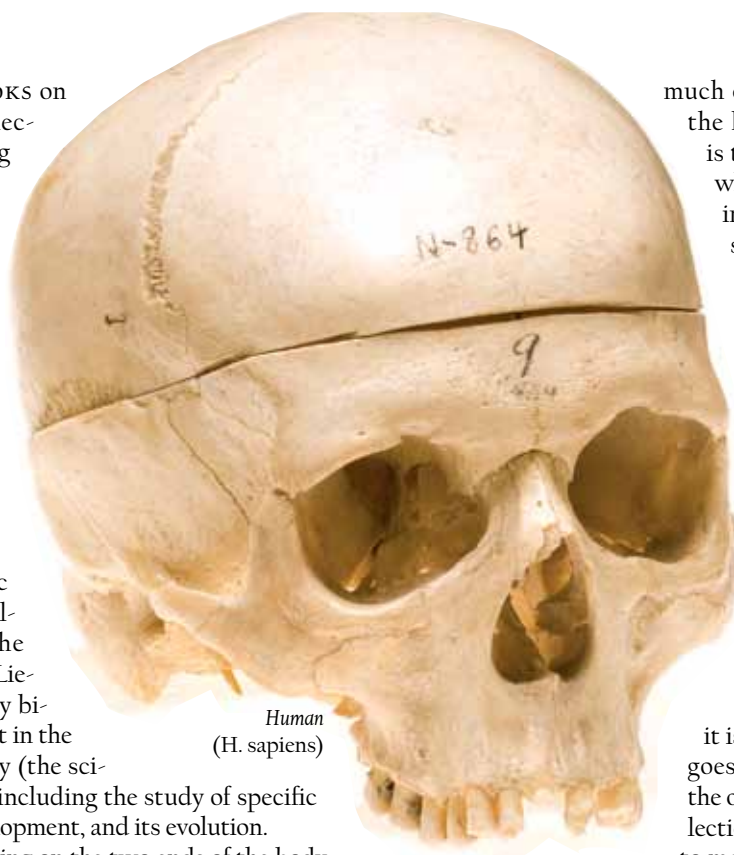
by JONATHAN SHAW

BENEATH SHELVES OF BOOKS on the biology of bone, a collection of skulls and running shoes lies in a jumble on a countertop. The skulls come in a range of sizes and shapes, from the tiny and sharp-toothed, with large orbits for the eyes, to the hefty and humanoid. The shoes are likewise varied, from brightly colored Nikes, to fluorescent ASICS, to slipper-like Vibram FiveFingers™ with separated toes—like a glove—intended to mimic barefoot running. These collections neatly bracket the research interests of Daniel Lieberman, human evolutionary biologist: a head-to-toe interest in the human body, its morphology (the science of an organism's form, including the study of specific structural features), its development, and its evolution.

"I do seem to end up working on the two ends of the body, and not so much in between," he muses. "I never thought that would happen in my career. It's bizarre."

But the apparent dichotomy is bizarre only in the abstract, because Lieberman's interest in feet—and human endurance running—began with his interest in heads. The two subjects are deeply linked. The theory that humans evolved to become endurance runners so talented that a team of barefoot hunters on a hot African savanna could actually run a large antelope to ground is based in part on skeletal evidence from the head—a subject about which Lieberman has just published a weighty book, 15 years in the making.

"Many of the things we value most—our big brains, speech,



Human
(H. sapiens)

much of our sensory biology—are in the head," Lieberman explains. "It is the size of a soccer ball, and think what it does": seeing, hearing, tasting, smelling, balancing, thinking, speaking, chewing, swallowing, breathing, and regulating body temperature. Lieberman's book considers in detail how each of these functions works from a biomechanical perspective, and then theorizes how each evolved, simultaneously with the others, as part of an integrated whole.

"The head presents an interesting evolutionary paradox," explains Lieberman, chair of the new department of human evolutionary biology, "because on the one hand it is so complicated that if anything goes wrong, the organism dies. On the other hand, it is where natural selection can and has acted powerfully to make us what we are." Everything is closely connected. For example, the

roof of the orbits is the floor of the brain—if one changes, they both do.

"How is it," he asks, "that something so complicated and so vital can also be so evolvable?" One explanation involves modularity and integration. Not only do heads contain many modules (instructions for building an eye to see, for example, or an ear to listen), but each module is itself "intensely integrated in terms of development, structure, and function....Changes to the size, the shape, or the relative timing of development of each of the head's many modules offer a variety of opportunities for change." Studying the head's modules, Lieberman writes, may help us under-

A skull session with human evolutionary biologist Daniel Lieberman in the fossil room at the Peabody Museum. Millions of years of natural selection have shaped the human head. From left to right: a Neanderthal; *Homo erectus*; *Homo habilis*; *Australopithecus africanus*; *Pan troglodytes* (common chimpanzee); *Homo sapiens* (human). "Gonzo," a Neanderthal skeleton, stands in the back.



"How is it that something so complicated and so vital can also be so evolvable?"

stand why "the human head has changed substantially since our lineage diverged from the chimpanzee's lineage." It also provides an opportunity for "exploring how nature tinkers with development in ways that affect function and permit the evolution of complex structures."

THOUGH WRITTEN so anyone can read it, *The Evolution of the Human Head* (Harvard University Press) "is not meant to be a bestseller," he avers. Nevertheless, Lieberman takes up all sorts of interesting questions, such as why humans have big noses (there is a link to running), chins (nobody really knows), small faces that are tucked under the brain, and teeth that are suitable only for eating processed food. In short: Why does the head look the way it does?

To probe such mysteries, Lieberman uses a variety of techniques. (The book draws on the expertise of many scholars as well as his own work.) Experimental biomechanics is one. About nine years ago, while contemplating why human faces have become smaller in the brief span of recorded history—too short a time for evolution to explain—Lieberman wondered whether the modern diet of soft food might be a contributing factor. As bones grow, their size and shape respond to biomechanical stresses, so he decided to study the effects of chewing

hard versus soft food on the growth and development of the skull in various animal species. In one experiment, he fed soft food to one group of pigs, hard food to another. The stresses of chewing made the upper and lower jaws of the pigs eating hard food grow larger. The study suggested that there is a link between smaller jaws and regularly chewing very high-quality soft food. And humans, he points out, have never had greater access to high-energy processed food than they do now. "I think many people today never have to actually chew anything all day long," he says. "You can see the effects of that shift in our heads now in terms of molar impactions"—small faces and jaws leave too little room for teeth.

Recently he has been probing that shift by feeding humans raw versus cooked goat—a tough, game-like meat—and measuring the activity of their chewing muscles using electrodes. "We want to know how humans managed to eat meat before cooking was invented," he says, "and we want to know how cooking and tenderizing changed how much we use our chewing muscles."

Another recent biomechanical experiment, on the effects of shoes on skeletal growth, employed sheep. Putting shoes on sheep "sounds kind of crazy," Lieberman admits, "but people wearing high heels change the angles of their joints. We wanted to see how that would affect how the joints develop," so his team put plastic booties on the sheep and fitted them with balsawood lifts to simulate high heels.

"We soon discovered that the sheep were much better off wearing socks with their shoes." A smile plays across Lieberman's face at the thought. "A wonderful postdoc of mine with a degree in veterinary science developed this method where the sheep would lie down in his lap and then he would put the socks on them and then the shoes." The sheep then spent the day wearing the shoes on their front feet and running on a treadmill. "We tried to get them to wear them at night, but they always kicked them off. In the morning you would come in and there would be shoes all over the place."

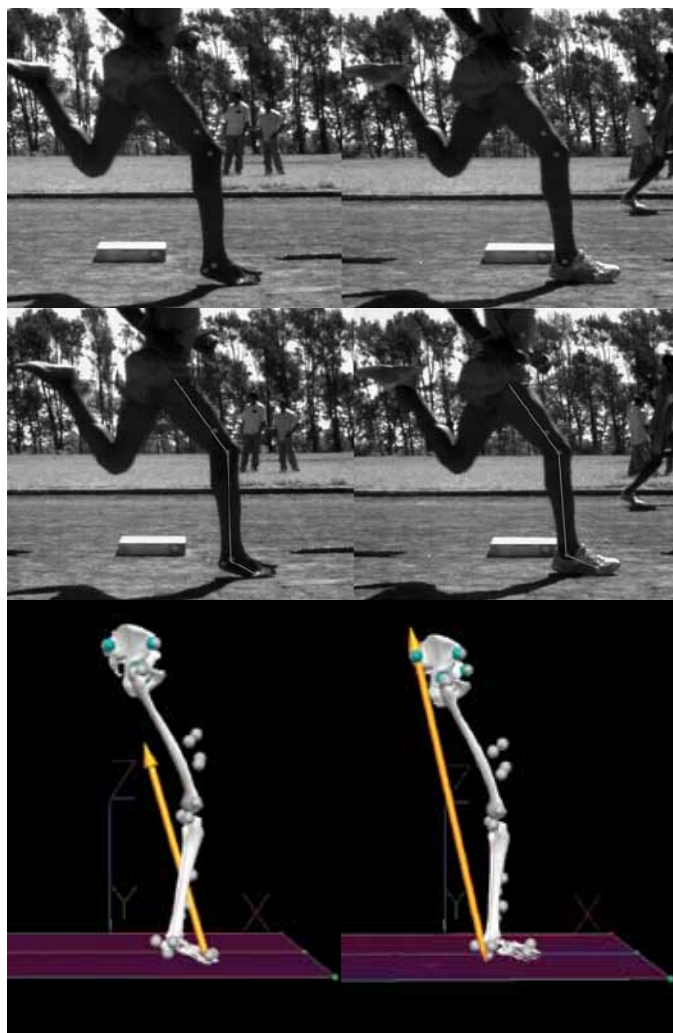
After a few months, the researchers were able to measure the growth rate of the shod sheep using computed axial tomography (CT) scans.

"We will be able to extrapolate the effect of wearing shoes from that," he says, though analysis of the data is not yet complete.

BACK IN HIS OFFICE in the Peabody Museum, Lieberman uses comparative morphology and modeling to complement the biomechanical research. Computerized scans of skulls and other bones let him study their shapes in three dimensions, and easily compare the volume or size of a structure within an ape's skull, for example, to that of a modern human (in which the temporal lobe is about 25 percent larger, relatively) in order to ask ques-



Neanderthal
(La Ferrassie)



Top: An elite Kenyan athlete who grew up running barefoot strikes the ground with the forefoot when unshod, but with the midfoot when wearing shoes. Middle: The positioning of legs and feet is identical in both cases; the shoes alone affect how the runner's foot strikes the ground. Bottom: A comparison of barefoot runners shows that the magnitude and direction of impact in a forefoot strike originates under the ball of the foot, rather than under the heel, and involves much less force.

COURTESY OF DANIEL LIEBERMAN



Common chimpanzee
(*Pan troglodytes*)

tions about human evolution. CT scans of fetal human skulls at progressively later stages of growth let him pose developmental questions focusing on trade-offs in the expansion of one part of the skull as opposed to another.

In a nearby laboratory, a treadmill that measures

the force of impact when a runner's foot strikes the ground allows Lieberman to test models of how bones work and develop. "We might test a model that asks, 'How is a bone like a beam?'" he explains. "We can then measure the strains that apply to that beam and see how they affect the growth of the bone." When the treadmill data are combined with imagery from high-speed infrared video cameras that can calculate their own precise location in space, and that track infrared fluorescent markers attached at a runner's joints, the apparatus allows Lieberman to calculate the forces on joints all the way up to the hips. He can do the same with a chewing jaw. "We can tie forces in biomechanics and function to development and anatomy. And ultimately, to evolution," he explains, because skeletons have changed. "We can't measure how an australopithecine or *Homo habilis* or *Homo erectus* behaved, but the same principles of biomechanics and Newtonian physics apply to them and us, so we can estimate the bite force of *Homo erectus* by testing a model in *Homo sapiens*." A second treadmill fitted with a full-face respirator for measuring oxygen use allows Lieberman to measure running economy. "It turns out barefoot runners are about 5 percent more economical than shod runners,

There are notable differences between skulls of humans and of Neanderthals. The human cranial vault is rounded, rather than lemon-shaped. Human faces are small and retracted and include chins. Neanderthals have large, protruding faces, with brow ridges and no chins.



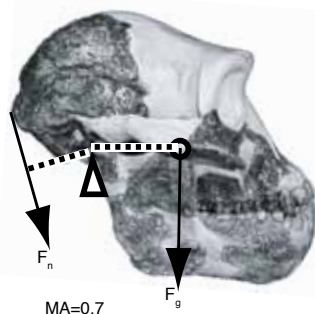
Early Modern Human
(Zhoudoudian 101)



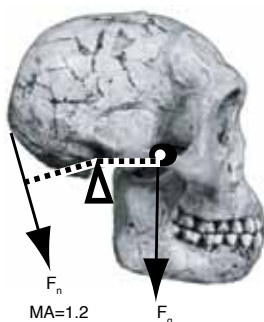
Neanderthal
(La Ferrassie)

COURTESY OF DANIEL LIEBERMAN

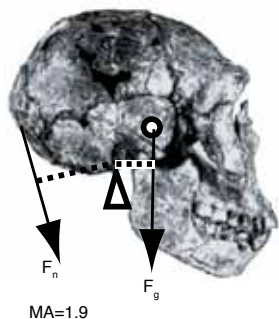
Au. afarensis (Hadar reconstruction)



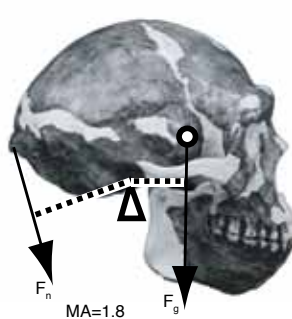
H. habilis (KNM-ER 1813 & OH 13)



H. erectus (KNM-WT 15000)



H. erectus (Zhoukoudian reconstruction)



even after you account for the weight of the shoe," he reports. "We are trying to figure out why."

Lieberman's interest in running began with his research on the head in conjunction with Dennis Bramble from the University of Utah. Alone among apes, humans have a

special ligament at the nape of the neck, attached at the back of the skull, that apparently helps the head to remain stable during running. Humans also have external noses combined with short inner nasal cavities that create turbulence in several ways during breathing, adaptations that may increase the ability to humidify incoming air, or dehumidify exhaled air, in arid climates. "We can also see in the fossil record when human heads develop larger organs of balance [the semicircular canals] that are better able to sense the rapid pitching motions caused by running," Lieberman says. This was about two million years ago,

Differences of form lead to differences in function. Biomechanical analyses of inertial forces show that the three *Homo* specimens would have had a much easier time balancing the head while walking or running than would *Australopithecus*.

when humans began eating meat. These changes in the ears, neck, and nose, along with more balanced heads, may all be features that allowed early human endurance hunters to chase prey until it collapsed from heat stroke.

He devotes a chapter of his new book to the pharynx, of which the nose is the most charismatic part.

"It's just a tube," he says, "but wow! What a tube. It is so dizzyingly complicated"—the book describes the elaborate interplay of dozens of muscles—"and involved in so much: speech, swallowing, breathing, and thermoregulation. All of those things are incredibly important and yet that one tube has to do all of it. If you study the pharynx just from the perspective of language



Visit harvardmag.com/
extras to watch videos
about skulls and shoes.

COURTESY OF DANIEL LIEBERMAN

Putting shoes on sheep “sounds kind of crazy, but people wearing high heels change the angles of their joints. We wanted to see how that would affect how the joints develop.”

or thermoregulation you will miss part of the whole story.”

He explains the advantages of this holistic approach by using the evolution of speech as an example. “Close human relatives like Neanderthals probably had a vocal tract that was capable of fairly impressive speech, but probably not as articulate as ours,” he notes. “But you have to put probabilities around that inference, and you do that by thinking about the vocal tract not just in terms of speech, but also in terms of swallowing and respiration and development, and all the other things that a vocal tract must do in order for a person merely to live.” When writing the book, he employed this strategy to engage in a thought experiment, using models of all the life-supporting systems located in the head to limit or constrain the possibilities for the development of speech. Such models allowed him to toy with the evolutionary possibilities—and create a hypothetical australopithecine head that meets all the necessary conditions.

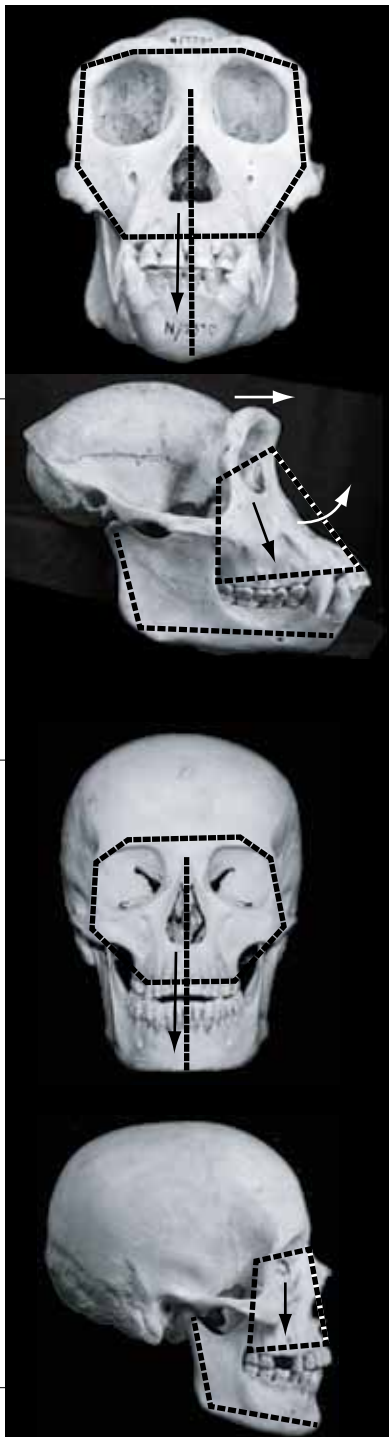
The fact that humans have smaller, more retracted faces than other hominins* is another way of unpacking the notion of interconnectedness in the head. Having a small face affects the pharynx; the amount of turbulence during respiration and thermoregulation; speech (because it shortens the vocal tract); and how we chew (because it makes human jaws more efficient at producing force). “The fun challenge of facial reduction is that it is a chicken-and-egg problem,” says Lieberman. “It is very hard to say that one change preceded another; in the head, everything happens in conjunction with everything else.”

FOR THE MOST PART, Lieberman confines the discussion in his new book to the complex developmental, functional, and evolutionary relationships among different modules in the head. But in the final pages, he allows himself to speculate about the most important drivers of human evolutionary change: energy,

*Hominin, a human or human ancestor, is now used in place of *hominid*, following recent molecular studies of chimpanzees, gorillas, and orangutans that led to a reorganization of the Hominoid family by placing orangutans in their own subfamily.

COURTESY OF DANIEL LIEBERMAN

Front and side views of adult chimpanzee and human skulls highlight differences in patterns of facial growth. In both species, faces grow wider and taller, but chimp faces grow out and up to become more projecting, while the smaller human face remains tucked under the cranium.



climate change, open habitat, and speech.

Energy is the most interesting of these, he says, because humans are “bizarre creatures energetically. For example, most big-bodied animals eat low-quality food. We’re big-bodied animals that eat really high-quality food and we make it even higher in quality by processing it and cooking it. A chimpanzee spends half its day eating because it has to chew raw, tough food, while an undergraduate could go all day eating everything through a straw.”

Humans are also unusual in energy expenditure: thrifty in regard to locomotion, extravagant in brain function and reproduction. The *Homo sapiens* brain draws as much as 15 percent of the blood and 25 percent of the body’s essential energy supply at any moment—“incredibly expensive. The brain has to have that constantly,” Lieberman points out. And no other great ape is as fecund. “A chimpanzee mother has babies every six years. Human hunter-gatherers have them every three years. Now, we can have them every single year.”

Energetic abilities, such as endurance running, are another distinctive human feature: “There are very few animals that will willingly run five to 10 miles, let alone a marathon,” he says. Most humans are good at endurance, but pathetic at speed: “My dog is faster than I am—but my dog could never run a marathon.”

To power these extraordinary capacities, he continues, humans need reservoirs of stored energy for reproduction and endurance. Not surprisingly, therefore, we are a fat species. “Even the thin amongst us—a typical hunter-gatherer has 10 to 15 percent body fat—are fat compared to other primates.

“You simply can’t understand human evolution unless you think about energy,” Lieberman believes. “I think that is something you see in the head in terms of the costs of the tissues: the fact that the brain uses so much energy has ramifications for the whole body. The fact that our teeth are designed for eating processed food signals an energy shift. Our heads don’t even grow properly because of cooking,” he stresses. “The origins of bipedalism, of hunting and gathering, of projectile technology, of cooking, and of reproductive shifts—I think a lot of human evolution was about new ways to get energy and new ways to use energy.” Pausing in his train of thoughts, Lieberman says with a laugh, “You’ve got to have some fun speculating, right?”



Homo erectus

Jonathan Shaw ’89 is managing editor of this magazine.

Kermit Roosevelt

Brief life of a Harvard conspirator: 1916-2000

by GWEN KINKEAD

CRISSCROSSING the Middle East, assessing governments and plotting coups over lime rickeys and tennis, “Kim” Roosevelt ’38 led the CIA overthrow of Iran’s first semi-democratic government. Few Americans know this, and that’s how Roosevelt wanted it. The United States is still haunted by the consequences.

In 1953, President Eisenhower had just taken office, pledging to contain Communism. The enemy had seized eastern Europe, won China, invaded South Korea, and exploded an A-bomb. The Central Intelligence Agency was faltering against the Soviet menace.

Roosevelt was its Middle East expert. He spoke neither Arabic nor Farsi, but Theodore Roosevelt’s 37-year-old grandson befriended kings, tribal leaders, and heads of state as easily as he dined at the White House with cousin Franklin and Winston Churchill. He had served in the Office of Strategic Services (the CIA’s World War II predecessor) in Cairo before participating in the Allied invasion of Italy; he also visited the Levant and Iran. Postwar experience in the region led to a book, *Arabs, Oil, and History*. When he joined the CIA in 1950, his task was to damage the Soviet sphere of influence.

Opportunity arose in Iran. Prime minister Mohammed Mossadegh, an elderly lawyer with ulcers who often conducted business in his pajamas and wept in public, was a secular democrat who had nationalized Iran’s oil industry in 1951. The infuriated British government—whose entrepreneurs had located and developed the oil reserves, then the world’s largest—drew up plans to invade.

Britain also sought U.S. help for a coup, warning that Iran could fall to the Communists. In the Cold War atmosphere, U.S. policymakers ignored a national intelligence estimate that concluded that Iran’s fractious Communist party was incapable of a takeover in the near term. (“The American intelligence in the field got it right, but as the intelligence moved up the ladder, officials read into it what they wanted to justify a coup,” says the historian Maziar Behrooz.) Secretary of State John Foster Dulles called Mossadegh a “madman” who had to go in order to safeguard the Persian Gulf for oil exports and prevent a Communist takeover.

Initially, Eisenhower disagreed and declared Mossadegh “the only hope for the West in Iran.” But as British operatives laid the groundwork for a coup, bribing key Mossadegh allies, arranging the murder of Tehran’s police chief, and fomenting riots to create the appearance of rising unrest, the president approved a joint U.K.-U.S. coup—the U.S. government’s first regime change.

Roosevelt slipped back into Iran in July 1953. He meshed Britain’s networks with his own and manipulated public opinion: local newspapers soon accused the Iranian leader of being corrupt and pro-Communist. CIA-paid rioters demanded his resignation. To induce Mohammad Reza Shah Pahlavi to dismiss Mossadegh, Roo-

sevelt had himself smuggled into the royal palace for midnight talks. A CIA colleague who spent hours watching Roosevelt persuade governments and Arab agents to take risks for the United States throughout the Middle East recalled, “He spoke as if he’d just had a conversation with the [U.S.] president.” Historian Ervand Abrahamian says, “Roosevelt told the shah the U.S. would support a new government....He believed Roosevelt. Why? He was a Roosevelt.”

Still, the shah dallied while the usually confident Roosevelt sweated it out in hiding—smoking, swimming, and listening to “Luck Be A Lady.” When the shah finally did order Mossadegh’s removal, the plot leaked and the shah fled Iran.

Roosevelt then improvised a new coup, bribing army officers with hundreds of thousands of dollars, as he gleefully recounted in his memoir, *Countercoup*. He helped circulate a story that the shah had fled because Mossadegh tried to seize his throne. When Roosevelt’s Iranian agents called a second coup attempt too dangerous, he used bribery and death threats to gain their obedience. CIA money may have attracted even the religious leader Ayatollah Kashani, a former Mossadegh ally and speaker of the assembly. After two days of street battles, tank units defeated the troops protecting Mossadegh. Several hundred people died in the turmoil. On August 22, the shah reclaimed power: “the beginning of a 10-year period in which the U.S. undertook to remake Iran and place it firmly in the Western camp in the Cold War,” says a leading scholar of the coup, Mark Gasiorowski. In 1954, Eisenhower secretly awarded Roosevelt the National Security Medal. With the coup, the United States gained 40 percent of Iran’s oil production and leadership in the Middle East for a quarter-century, until the blowback: the 1979 revolution that toppled the shah.

Roosevelt’s encores met mixed success: the CIA aided Egypt’s Gamal Abdel Nasser, then plotted to overthrow him; a coup Roosevelt fomented in Syria in 1957, led by another agent, failed spectacularly. He left the CIA in 1958 to work for American oil and defense firms, often visiting former operatives, and the shah, in Iran.

The U.S. government didn’t acknowledge the coup until the year Roosevelt died. Just before the *New York Times* published a leaked CIA history in April 2000, Secretary of State Madeleine Albright admitted: “The coup was clearly a setback for Iran’s political development. And it is easy to see why many Iranians continue to resent the intervention by America in their internal affairs.” Roosevelt had already provided an assessment of his own for his fiftieth-reunion report: “I have had a satisfactory, often exciting life, of which I am appropriately proud.”

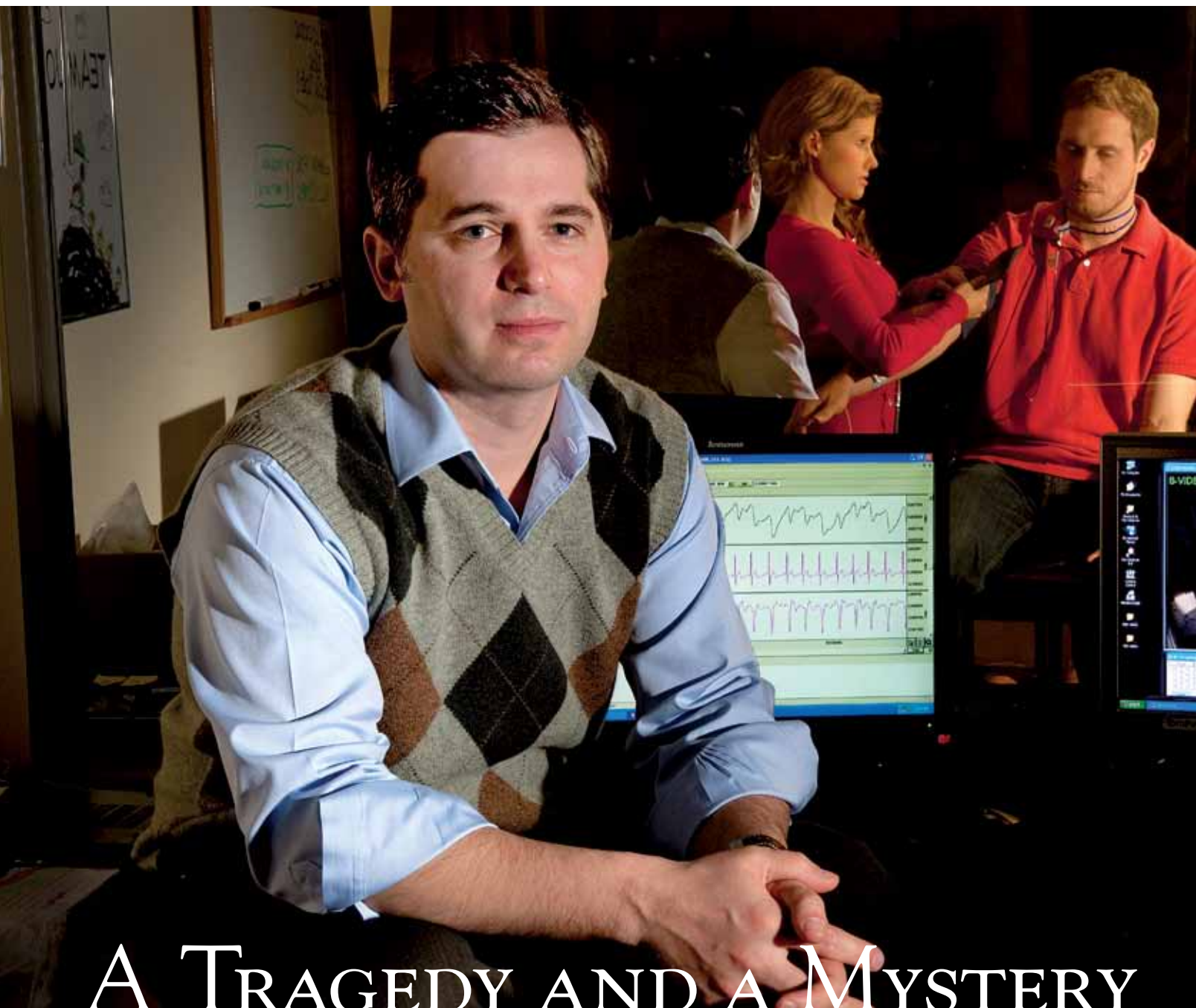
Gwen Kinkad ’73, co-winner of a George Polk Award, is working on a book about twentieth-century international history.

ALL PHOTOGRAPHS FROM ASSOCIATED PRESS WITH THE EXCEPTION OF REZA PAHLAVI (GETTY IMAGES)



Kim Roosevelt in 1950.
At right (from top): Loyal troops guard the victorious shah's palace; equipment from a Communist newspaper burns in a Tehran street; Mohammed Mossadegh; Mohammad Reza Pahlavi reviews troops; pro-shah rioters tear down the Iran Party sign from its headquarters. At far right: Supporters of the shah march in Tehran.





A TRAGEDY AND A MYSTERY

UNDERSTANDING SUICIDE AND SELF-INJURY

BY ELIZABETH GUDRAIS

A SOLDIER who's just returned from Iraq, unable to shake depression and violent flashbacks, ends his own life. A young mother, sleep-deprived and stressed by the emotional demands placed on her, harbors persistent thoughts of suicide. A 19-year-old college student, referred to a clinical psychologist after her roommate walks in to find her cutting at her wrists with a pocket knife, refuses to see the therapist, saying that cutting provides more emotional relief than counseling ever has.

What drives people to harm themselves, and how best to dissuade them from doing so, remains a mystery, says professor of psychology Matthew Nock. "More people die by their own hand than by someone else's"—suicide is more common than homicide. "It's a huge societal problem, a huge clinical problem, a huge research problem, and we know so little about it."

The desire to unravel the mysteries of suicide and self-injury drives Nock's work, which investigates the roles played by genes,



Matthew Nock sits in his lab's control room, where researchers record subjects' behavioral and physiological responses during experiments. For example, they might measure whether people who engage in self-injury show greater emotional distress, in response to frustrating tasks, than people who do not. (Nock's lab manager and a postdoctoral fellow are seen in the adjoining room through one-way glass.)

environmental stressors, and momentary physiological experiences. He examines factors, such as gender, culture, and age, that affect suicide risk, and asks why certain populations (members of the U.S. Army, for one) are especially vulnerable. He aims to improve on existing treatments for suicidal and self-injurious thoughts and behavior, and to bring treatments that are already known to work to a larger number of patients.

His research involves a population that is inherently difficult to study, but Nock has viewed this challenge as an opportunity to innovate: to develop new methods and test novel applications for old ones. Work in his lab integrates methods from psychology, neurobiology, and epidemiology toward the goal of alleviating suffering and preventing the needless and devastating loss of life that suicide represents. It spans basic methodological research, inquiries into the nature and contributing factors of suicide and self-injury, and assessments of treatment effectiveness. This is what makes his work unique, says Jack Shonkoff, who directs Harvard's Center on the Developing Child, where Nock is part of a working group on translating mental-health research to policy. For someone "at the forefront of knowledge generation," such an interest in translation is rare, says Shonkoff, but Nock brings "an intellectual flexibility and sense of adventure" that are "refreshing and energizing."

ABOUT 12 PERCENT of Americans report having had suicidal thoughts at some point in their

lives. Suicide itself often follows months or years of impaired productivity and quality of life, of strained relations with family members, as a person struggles with mental-health issues such as anxiety, depression, or substance abuse. Over the course of a lifetime, 5 percent of people attempt suicide, and about 1.4 percent of the U.S. population die this way.

Among people with suicidal thoughts, about one-third will make an attempt. To try to predict *which* third, Nock first looked to a population whose high risk was obvious: those who have already attempted suicide. (Two-fifths of those who kill themselves have tried before.)

For this purpose, Nock has adapted two computerized tests, both of which have been used for other purposes to detect sub-

conscious thoughts and prejudices. The Stroop test, used in psychology since the 1930s, tests attention by asking subjects to override their most immediate thought processes and use higher-order thinking to identify the ink color of the printed name of a different color—for instance, to say "red" when the word "green" appears in red ink. Nock has used this test—measuring subjects' speed at naming the ink colors of suicide-related words—and has found that with each millisecond of increase in the time it takes to respond to such words (indicating greater attention toward the words) came a 1 percent increase in the odds of the subject's making a suicide attempt within the next six months.

Nock also adapted the Implicit Association Test—developed by Cabot professor of social ethics Mahzarin Banaji to measure people's subconscious prejudices against various groups, including the overweight, the disabled, Arabs, and the elderly—for use in detecting whether people are predisposed to attempting suicide. When taking his test, those who are thinking about suicide respond more quickly when asked to pair suicide-related words with personally relevant words (e.g., "self") than with non-personally relevant words (e.g., "them"). These tests are not ready for widespread use yet—for one thing, their predictive validity has not been proven for people who have not previously attempted suicide—but Nock is hopeful that one day they will be part of psychologists' toolbox for assessing suicide risk in distressed patients.

Acknowledging Nock's expertise in understanding who is at risk for suicide, a new partner recently called on his research team for help: the U.S. Army. The number of suicides in that branch of the military set new records in 2007, 2008, and 2009 (topping out at 162, up from 106 four years earlier). In June 2010 alone, the branch had 32 suspected suicides. If accidental death through risky behavior—such as drinking and driving, or drug overdose—is included, more soldiers now die by their own hands than die in combat. (From 2004 to 2007, the number of deaths in Iraq and Afghanistan across all military branches regularly approached or exceeded 100 per month, but the number of combat deaths has lessened in recent years.)

The researchers believe accidental deaths are rightly considered related to suicide, because such deaths often reflect soldiers' mental health and indicate problems that accompany suicidal thinking and behavior. "Alcoholics get into more accidents," says Ronald Kessler, a professor of healthcare policy at Harvard Medical School who is also part of the research team (see *Harvard Portrait*, November-December 2005, page 59). "It's an accident, but there's something systematic about it." Traditionally, the military suicide rate has been below that of the general population, Kessler points out: "People in the military are screened very heavily" for mental-health problems. But that balance has switched: at Fort Hood, Texas, the largest army base in the United States, the suicide rate is four times the national average.

Alarmed by these statistics, the army is giving researchers from the University of Michigan, Columbia, and the Uniformed Services University of the Health Sciences, as well as Nock and Kessler, unprecedented access to the data it collects on soldiers. The army keeps records on "virtually every aspect of a soldier's life," says Nock; those records will be used to see what can be learned about suicides that have already occurred. In some cases, researchers will even examine brain sections of soldiers who committed suicide.



Visit harvardmag.com/ extras to learn more about how these tests work and see examples.

IF ACCIDENTAL DEATH THROUGH RISKY BEHAVIOR IS INCLUDED, MORE ARMY SOLDIERS NOW DIE BY THEIR OWN HANDS THAN DIE IN COMBAT.

Beginning this month, they will also gather new data: they will invite 90,000 active-duty soldiers and all new recruits—80,000 to 120,000 per year—to volunteer biological data (e.g., information on genetic risk and protective factors gleaned from blood samples) and to grant access to their psychological histories and survey responses. The researchers will consider each soldier's history of deployment and exposure to combat and trauma; family stability and childhood adversity; relationship problems and other sources of stress in the recent past; social support; and personality traits and temperament, as well as demographic characteristics.

The initial term of the study is five years, though there is potential to extend it and follow the soldiers longer. Given the robustness of the data and the potential for long-term analysis, the researchers believe this study's impact could rival that of the famous Framingham Heart Study, which monitored thousands of residents of Framingham, Massachusetts, for decades and shed light on risk factors for heart attack and stroke, implicating hypertension, high cholesterol, and lifestyle factors.

That study, notes Kessler, "had to wait an awfully long time for people to have heart attacks. We don't have to wait a long time. We're hopeful that we're going to be able to make not only important discoveries, but relatively rapid discoveries." As results emerge, they will be used promptly to develop interventions; Nock notes that the army is already adding cognitive-skills training for soldiers, making a statement about the importance of mental and emotional, as well as physical, fitness. He and his colleagues will be able to evaluate army interventions and suggest improvements, based on their own studies' emerging results, even as data collection continues.

MUCH REMAINS unknown about suicide, and Nock admits that

it is an inherently difficult phenomenon to study: "It's not like depression, where people may experience the condition consistently for months or years at a time," and thus can more easily participate in studies that aim to understand the condition. "Suicide happens quickly and unexpectedly."

For this reason, and because the overall incidence is so low, most countries lack sound statistics. To try to understand more about differences among countries, Nock directs the suicide workgroup for the World Health Organization's World Mental Health Survey (which Kessler leads). That study—the first large-scale, cross-national study of suicidal behavior—has thus far compiled data from 28 countries, many of which never gathered such statistics before. The study is especially valuable because it includes *thousands* of people who have attempted suicide; often, studies include so few suicide attempters that it is almost impossible to obtain statistically significant results.

The data already gathered have revealed striking country-to-country differences whose explanations are not well understood: the United States ranks in the middle when it comes to suicide rate, but it is among the highest (along with New Zealand, surprisingly) in the number of people who *contemplate* suicide. China and Italy are among the countries with the lowest rates of both suicidal thinking and suicide attempts. In most countries where statistics have been collected, women are more likely to attempt suicide, but men are more likely to succeed—typically by a ratio of 4:1—except in China, where more women than men take their own lives.

And the study has already yielded one finding that overturned conventional wisdom. Because there is a strong association between

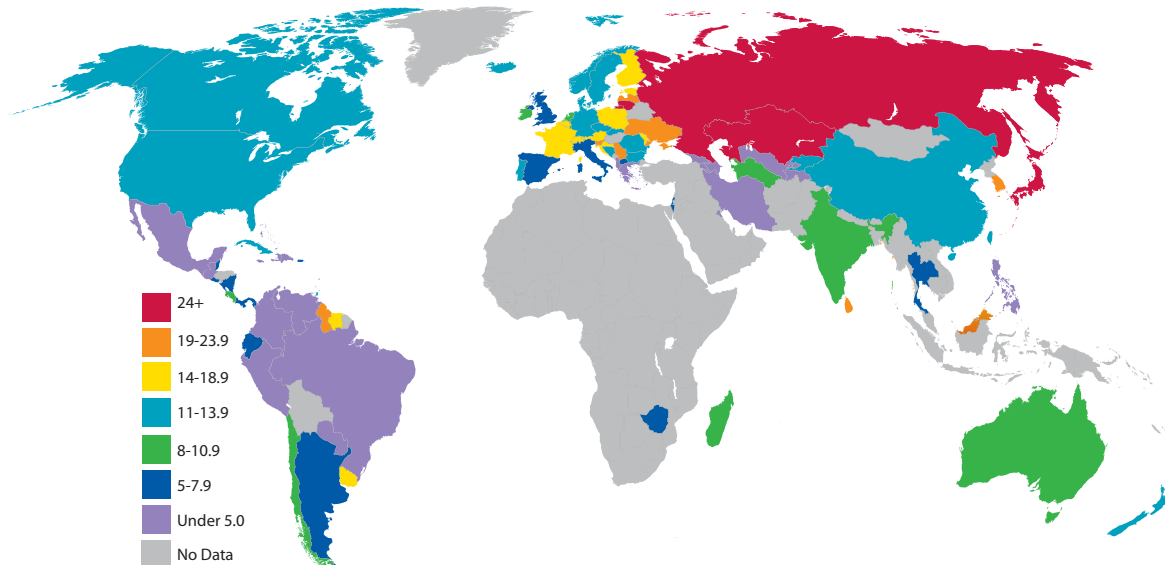
depression and suicidal thinking, the psychology community assumed that depression would also be associated with suicide itself. Instead, Nock and his colleagues found that among people who are thinking about suicide, those who were depressed were no more likely to make an attempt than the others; rather, the factors that predisposed to attempting suicide were anxiety, agitation, poor impulse control, and use of alcohol and other substances. This pattern held true in all 21 countries examined. "In hindsight,



Visit harvardmag.com/ extras to read an in-depth feature article on suicide from a 1983 issue of *Harvard Magazine*.

MAPPING SUICIDE

Annual suicide rate per 100,000 population. Data shown are for the most recent year available, ranging from 1990 to 2008. The World Health Organization compiles data that countries provide; country-to-country differences may be due to actual variation in suicide rate, or to differences in reporting (e.g., where cultural taboos discourage talking about suicide), Matthew Nock warns.



SOURCE: WORLD HEALTH ORGANIZATION

STUDYING SELF-INJURY

IF MANY QUESTIONS about suicide remain unanswered, even less is known about nonsuicidal self-injury. In the United States, an estimated 4 percent of adults and 21 percent of adolescents engage in such behavior; its incidence has not been well studied in other countries. Research has not yet revealed a treatment approach that works reliably. Self-injury is under consideration for inclusion as a phenomenon in the next edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, but, says professor of psychology Matthew Nock, “There’s no agreement right now on the threshold”—in terms of frequency or severity of self-injury—“that requires treatment.”

People who engage in self-injury report feeling relief afterward, but little is understood about the physiological effects of such behavior. It is assumed that there is some sort of endorphin rush related to the body’s survival response, similar to what people experience after non-self-inflicted injury, but that is only a hypothesis.

Work in Nock’s lab has shown that people who engage in self-injury have higher pain thresholds: when their hands are compressed in a vise, it takes them longer to experience pain, and they have higher pain tolerance. And this tolerance is not related to the length of time they have been engaging in self-injury, or the frequency—suggesting, says Nock, that the heightened pain threshold “is not a consequence of self-injury, but a precursor.”

Studying people *at the moment* of self-injury—for a detailed analysis of the biological markers it triggers—is difficult, but Nock is trying. He and Wendy Berry Mendes (formerly an associate professor at Harvard, now at the University of California, San Francisco) are measuring what happens in the bodies of adults who engage in self-injury by using an ambulatory

monitoring device called the LifeShirt, a mesh vest (worn beneath clothing) that records vital signs so the researchers can compare physiological changes to the subjects’ reports of their own mental states and behavior.

Childhood adversity is known to be a risk factor for self-injury; to investigate this link, Nock designed a study that examined parents’ style of talking about their children. “We brought parents into the lab and asked each to talk about his or her child for five minutes,” he explains. “That’s essentially the only instruction we gave them.” The parents of children who engaged in self-injury “were *much* more hostile and critical in the way they talked about their children,” he says, suggesting that children may internalize this hostility and criticism and inflict it on themselves physically.

As recently as three years ago, there was no standardized form for interviewing patients about self-injurious thoughts and behavior. Nock developed one; since its 2007 publication, it has been downloaded thousands of times and translated into languages including Swedish, German, and Japanese. Nock edited the 2009 volume *Understanding Nonsuicidal Self-Injury*; now, researchers in his lab are studying whether self-injury has a social and communicative, as well as a physiological, function: whether it replaces verbal communication as an outlet in people who have poor verbal skills or whose family and friends are not receptive to communicating about emotions.

Although self-injury accompanies other mental-health disorders—such as anxiety and depression—Nock believes it is not just a symptom of these other disorders, but worth studying, understanding, and treating in and of itself. For one thing, he says, “We know that engaging in self-injury significantly increases the likelihood that someone will make a suicide attempt.”



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it makes perfect sense,” Nock says. “Being depressed, being sad, ruminating on negative thoughts—it makes sense that that would get somebody *thinking* about suicide, but not necessarily acting.”

ALTHOUGH THE SUICIDE RATE in the United States has not budged in the last hundred years, that is not because effective treatments don’t exist, Nock says. Two specific approaches—cognitive behavioral therapy (which focuses on changing patterns of negative thinking) and dialectical behavioral therapy (which is similar, but incorporates a focus on accepting and tolerating difficult emotions)—have been shown to diminish the rate of suicide attempts among people who have already tried to kill themselves. The first has been in use since the 1960s, although its effectiveness with suicidal patients was shown only in 2005; the second was proved effective nearly two decades ago. But Nock says that “the majority of practicing psychologists aren’t using these treatments.”

Nock believes that all psychologists who treat suicidal patients should use these approaches, which are laid out, specifically and clearly, in manuals that set forth what to do in each treatment session. In his effort to bring the treatments into wider use, he is starting with children, through his affiliation with the Cen-

ter on the Developing Child. Avenues for possible action may involve working to change accreditation standards for training programs; amend licensing exams for clinical psychologists; and alter insurance reimbursement policies. Nock hopes this work on behalf of suicidal children will eventually translate into similar work for adults.

He once thought he would be practicing such treatments himself. “I wanted to learn about suicide because I thought it was probably the most difficult thing I would face as a clinician,” he recalls. He expected to find research dull, but once he realized he enjoyed it, he changed course. “Seeing a patient in my office for one hour once a week, I can certainly have an impact—I can observe it immediately—but the impact is not going to be as deep or as broad,” he says. (He did see patients for seven years, but gave up his clinical practice in 2005.) Nock first embarked on research to develop and evaluate treatments, but soon turned to more basic investigations of *why* people resort to suicide and self-injury. “If we can understand the behavior and develop better ways of detecting it and assessing it and preventing it and treating it,” he says, “we can help people all over the world.”

Elizabeth Gudrais '01 is associate editor of this magazine.



Models—and Mud— in Amazonia

Students grapple with the fate
of the rainforest in a changing climate.

by JONATHAN SHAW

ROBERT NEWELL CLIMBED carefully, hand over hand, up the side of a 14-story meteorological tower in the middle of the Amazon jungle. A pulley at the top had jammed. For more than an hour he'd been clambering up and down the metal structure, installing flexible plastic tubing at heights of 5, 10, 20, 30, and 40 meters—part of the preparations for an experiment that would begin sampling atmospheric carbon dioxide (CO₂) and gathering weather data that evening. He and some of the other students enrolled in Earth and Planetary Sciences 74 (“Field Experiences”) were scheduled to stay awake all night to do the work.

The plan had been to monitor the respiration of the forest, using a weather balloon to measure CO₂ and record meteorological conditions. But in a series of mishaps, a lightweight analyzer for measuring the gas had failed to clear Brazilian customs, and its replacement—an older, heavier version of the equipment—weighed too much for the weather balloon to lift. Hence the need to move the gas-sampling portion of the experiment to the tower while launching the balloon and its weather instrumentation from the nearby road. Newell, a junior concentrating in evolutionary biology (who at that moment might have been contemplating why humans hadn't adapted better to climbing), focused



Scenes from the Amazon, left to right: Bernardo Flores, Rafael Tapajós, and Hannah Horowitz '11 learn how to analyze data gathered from a weather balloon under the supervision of Professor Steven Wofsy; Robert Newell '12 climbs the 42-meter tower at ZF-2; the sleeping quarters at Ducke, the main camp; Lissandra Souza at Ducke—even without Internet access, computers are vital field-research tools.

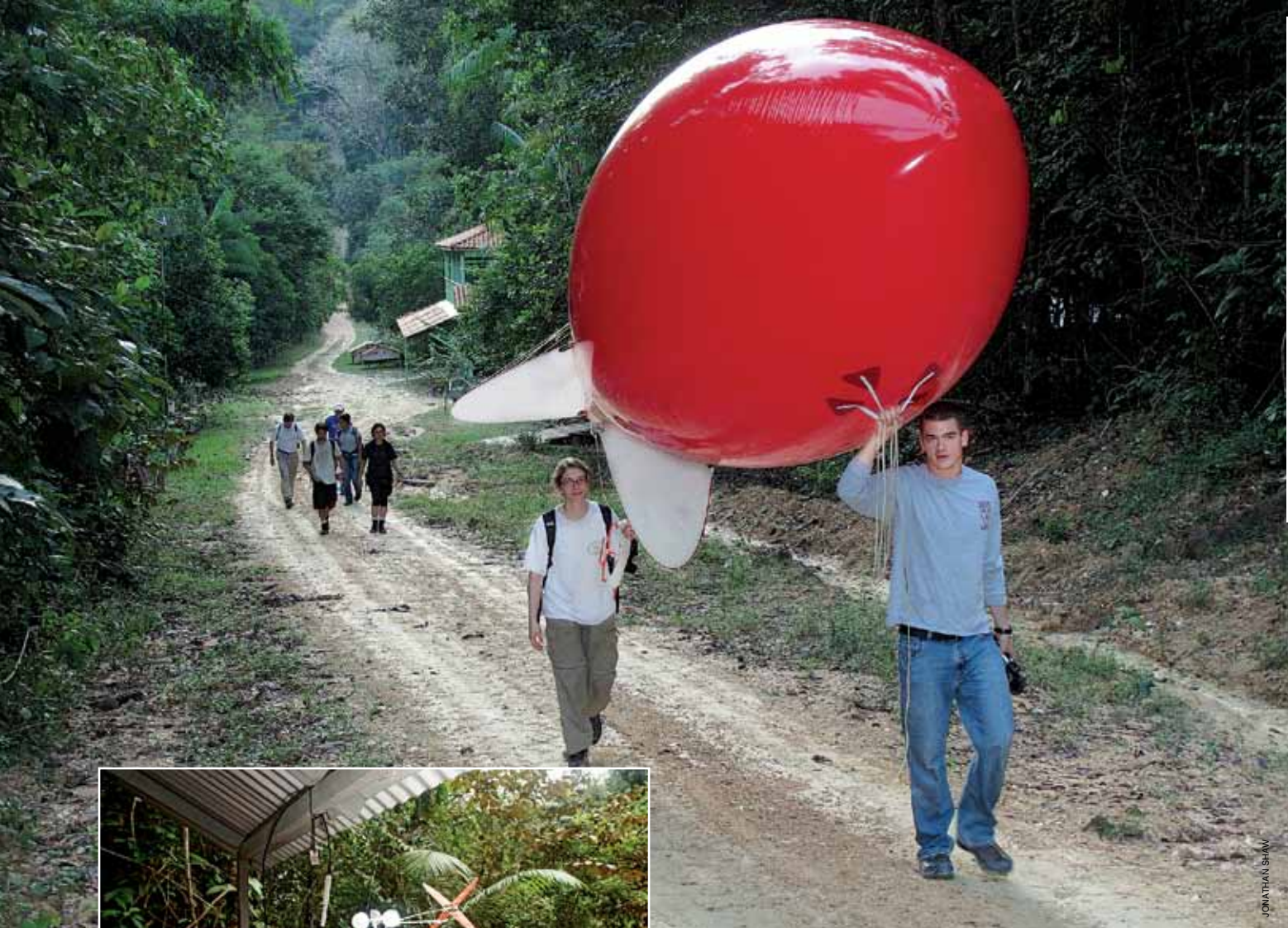
on the pulley, which was critical for raising the tubing to the right heights on the tower. Beneath the midday equatorial sun, he had already become slightly dehydrated, and his arms were tiring from clinging so long to the tower's skeletal metal frame. He proceeded carefully, alternately clipping and unclipping a pair of carabiners attached to his body harness, as he had been trained to do. Finally he reached the pulley and freed the rope. The air above the rainforest canopy was still, but, he recalled recently, "The tower shook a little whenever I moved."

NEWELL AND HIS FELLOW STUDENTS—in all, two undergraduates and 18 graduate students from several American and Brazilian universities, working with scientists from both countries—were experiencing firsthand the gritty practical challenges, large and small, of doing science in the field. Their research, meanwhile, was demonstrating how getting the small things right can bear profoundly on a huge problem: understanding how global climate change will affect the Amazon.

Just getting to the research station—in the central Amazon basin about two hours' drive from the city of Manaus—had not been

easy. Eleven days earlier, after visa complications forced him off one flight, Newell had flown from Denver to Atlanta to meet the other American students and instructors in the field course. From Atlanta, they flew to Manaus, a city of two million with few roads connecting it to the rest of Brazil—the one unbroken highway leads north to Caracas, Venezuela, more than a thousand miles away. The practical way in or out is by boat—a 900-mile trip on the Amazon River—or by plane. The students landed after midnight, withdrawing Brazilian reals from airport ATMs so they could purchase mosquito netting and hammocks (*redes*, pronounced “hedgies” in Brazilian Portuguese) at the local market the next day.

Once in the jungle, the students would have no use for cash. From Manaus, the group was driven about 30 kilometers to the Ducke base camp, a rainforest research reserve run by an agency of the Brazilian government. There they spent a hands-on week learning field-research methods: for example, how to operate the scientific instruments that gather data on the complexities of gas exchange among plants, the soil, and the atmosphere. Language



JONATHAN SHAW



Clockwise from left: a sonde for gathering weather data—and a spare—under shelter at ZF-2; Newell and Horowitz walk the weather balloon to the launch site; Flores, Tapajós, and Rosa Maria Nascimento dos Santos attach a tether to the balloon prior to launch; after an all-night experiment, dawn illuminates the balloon while the students take a final set of measurements.

barriers didn't hamper communication much: the Americans learned the rudiments of *português brasileiro*, while their hosts got a chance to practice English.

In the second week, they split into four groups, each focused on its own project. Marcos Longo, a Harvard graduate student from Brazil who typically works with mathematical models of ecosystems, joined a group that left for a patch of intact forest surrounded by abandoned pasture, to study differences in emissions of volatile organic compounds between plants growing at the rainforest's edges and those found at its center. "For me, the Amazon was a bunch of numbers on a computer screen," he said, when thinking back on his relationship to his subject before the course. "This was a great opportunity because it raised questions about things that make sense on your computer, but that—when you get to the forest—make you realize, 'Well, it is not quite like that.'" A second group studied differences in the photosynthetic capacity of two species of understory palms around Ducke: one

common in deeply shaded lowlands, the other more prevalent in montane habitat. Harvard graduate student Matthew Hayek, an atmospheric scientist originally trained in physics, joined the third group, measuring the natural rate of emission of the powerful greenhouse gas nitrous oxide from rainforest soil in order to establish a baseline that would help researchers distinguish anthropogenic sources of the gas. The fourth group, including Newell and Hannah Horowitz '11, a concentrator in earth and planetary sciences, set out for research site ZF-2 to learn how to measure the rainforest's uptake and release of carbon, and how to link information about forest growth to meteorological data.

The students soon learned that researchers in the Amazon must contend with much more than high humidity and heat. Travel on local access roads can be tricky: their clay surfaces are slick when wet, so professional drivers in four-wheel-drive vehicles handled transportation. And because the forest itself is dynamic—trees grow and die rapidly—it is not uncommon to find a vine-shrouded trunk in the way that must be cleared with ax and machete.

As a precaution, the students were required to be immunized

JONATHAN SHAW



“Measurements don’t always work out the way you expect. In fact, they usually don’t.”

for decades, and in the Amazon for more than 20 years, though, he is well versed in the likely hazards, as are the other instructors, who work hard to mitigate them. “I’m proud of our safety record,” he says. “This is not a classroom study. It exposes the students to different cultures and environments and ways of doing things, because people are an inescapable part of the system. The course combines those experiences with a scientific, knowledge-seeking framework.”

The students, enrolled at Harvard, the University of Arizona, the Universidade de São Paulo, the Universidade Estadual de Campinas, and the Universidade Federal do Oeste do Pará, had come from the United States, Mexico, the United Kingdom, and Brazil as part of a U.S. National Science Foundation- and Brazilian government-funded Partnership in International Research and Education (PIRE) program. PIRE projects are designed to train and educate students in international research collaborations. This one, now in its third year, is organized by the University of Arizona and run jointly with Harvard to focus on a very important question: what will become of the Amazon rainforest under climate change?

Wofsy showed the students at ZF-2 how to make vertical profiles of the atmosphere below and above the forest canopy: measuring temperature, humidity, pressure, wind speed and direction, as well as the concentration of atmospheric CO₂. Such measurements allow scientists to link meteorological conditions to rates of respiration and long-term plant growth.

Because the students would be collecting data all night, they spent the day in preparation. While Newell worked on the CO₂ measuring equipment on the tower, the other students—Horowitz and Brazilians Kenia Wiedemann, Tapajós, and Bernardo Flores—learned to calibrate and operate the sonde suspended beneath the balloon. (Like an instrumented weather vane, the sonde gathers meteorological data and beams it wirelessly to a computer at the base of the tower.) Raising the balloon right next to the tower would allow them to integrate the weather and CO₂ measurements. The students tested the winch that raised and lowered the balloon, running numerous practice flights; small mistakes were made, such as forgetting to turn on the sonde’s power or the light that lets the researchers keep track of the balloon in the darkness. They also had to monitor the wind speed above the forest canopy carefully. Although there is little or no breeze at ground level in the rainforest, above the treetops the night winds can blow briskly at five or more meters per second; the lightweight weather balloon could easily be blown into the nearby trees, ending the experiment before it had even begun. Before nightfall was the time to iron out potential problems.

Fieldwork requires real versatility—careful preparation, the creativity to solve problems of all kinds, doggedness, and the will to work long hours. The wilting heat made everything harder. During the day, little had moved except the researchers: a blood-sucking leech inching across the road, a meter-long earthworm writhing nearby, and army ants streaming by busily in double rows. By late afternoon, when the students

against typhoid, yellow fever and hepatitis. They carried anti-malaria medications and doused themselves in insect repellent to avoid getting mosquito-borne dengue fever (for which there is no vaccine) and leishmaniasis (a potentially disfiguring disease carried by the local sandflies). Snakes are common in the forest and also turn up in camp—a venomous one was killed by members of the camp staff outside Horowitz’s cabin one morning—so everyone was instructed to wear ankle-to-knee snake gaiters. They dusted their ankles with sulfur dioxide to deter pesky chiggers, and trod carefully to

avoid stepping on tarantulas, centipedes, or scorpions. Newell, who at first had trouble sleeping in a hammock, awoke on his mattress on the floor one night to the sensation of stinging in his back: he was covered with ants. (He got used to the hammock.) He also spotted a wild boar, larger than a pony, one day on a side path, while out walking at ZF-2 with Rafael Tapajós, one of the Brazilian students. Such boars frequently travel in packs, trampling everything in their path. This one, fortunately, was alone and tuskless. The camp dog was less lucky: he’d lost an eye to a jaguar the month before.

“FIELD WORK can be dangerous,” acknowledges Rotch professor of atmospheric science Steven Wofsy, a leader of the course and one of the world’s foremost gatherers of empirical data about how the biosphere and the atmosphere interact. After conducting research at sites around the world

finally finished their first set of tasks, their day was still not over: there was an entire suite of additional technical skills to master—necessary for handling the data, which was gathered on floppy disks (almost a Stone Age technology to these young students)—as well as the next day to plan. During a break, Wofsy taught them the rudiments of “R,” a programming language in which he quickly wrote a script to extract the data from the floppies.

At 6:15 P.M., just past sundown, the bats came out. Tapajós raised the balloon to 60 meters, then 80, then 100. From the base of the tower, Horowitz called out the wind speed: “Four meters per second, 4.5, 5.2.” After all the preparations, there was excitement in the students’ voices. “Relative humidity 87 percent, temperature 24.81 C, pressure 990 millibars.” After taking CO₂ measurements at 8 P.M., the group broke for dinner, returning at 10, when the air was hazy and thick with moisture. Lightning flashed on the horizon. They took more CO₂ measurements at 11 and midnight. But the next reading was negative—an impossibility that indicated the equipment was no longer working properly. Then the device shut off completely. Unable to do anything about that, they continued the meteorological observations with the balloon. Around 1, the atmosphere cleared, and the star formations of the Southern Hemisphere appeared, a breathtaking sight. Under Wofsy’s supervision, the students passed the time between readings laughing and joking, making lots of noise to frighten off wild animals. Wofsy told of how a low-flying plane had once passed under one of his balloons, narrowly avoiding the wire tether. He later learned that the pilot had reported seeing a UFO.

By 4 A.M., half the students were dozing in plastic chairs brought up from the camp; excitement had ebbed into exhaustion. Around 5 A.M., the screams of howler monkeys, rising and falling in eerie unison, sounded in the distance. Then, a half-hour before sunrise, the instruments recorded an imperceptible rise in the temperature. Infrared radiation from the sun bounces off the atmosphere to heat the ground even before the visible light arrives, Wofsy explained. Finally, at sunrise, with their work done and not a few feet dragging, everyone loped down the hill for breakfast. “That balloon launch was my favorite part of the course,” said Horowitz later. “All the little steps we had to take to get there, and seeing everyone so excited, even though we had to change our plans midstream—that happens a lot.”

“Measurements don’t always work out the way you expect,” said Wofsy during an interview back in Cambridge. “In fact, they usually don’t.” This is one of the lessons of a field experience in which “students are challenged to make measurements and then actually do something with them.” Furthermore, he noted, “Never having had an experience of people in other cultures, or of working in their environment, is a big disadvantage for students who wish to do science—or anything else.”

“The pedagogy of science is critical,” he continued. “We are trying to provide the students an education which ranges from the experiential to learning how to use statistical applications to learning about instrumentation and how to make their own direct measurements. And then they have to try to figure out what they can make out of those data, with all their imperfections. It covers a whole range, it is a lot to do in two and half weeks, and I think it was quite successful.”

WOFSY HIMSELF has been doing fieldwork since the 1970s, when as an associate professor he studied greenhouse-gas sources in aquatic systems, visiting the Delaware and Potomac rivers—outfalls of urban Newark, Philadelphia, and Washington, D.C. His first trip to the Amazon, in 1983 aboard Jacques Cousteau’s *Calypso*, involved a similar program of study. He now runs several research sites that have tracked carbon uptake in forests around the world for two decades. (The biosphere sequesters about a quarter of all human-generated CO₂ emissions, mostly in mid-latitude forests). The Amazon is of particular interest because recent climate-model simulations have predicted that this tropical rainforest ecosystem—home to the greatest variety of living things on the planet—may collapse by the middle of this century and be replaced by grasslands, taking its extraordinary biodiversity with it.

Transformation of the rainforest into a savanna would not only lead to the extinction of tens of thousands of species of plants and animals that exist nowhere else, but also severely harm the Brazilian economy: the Andes-Amazon region is the world’s largest river basin, and the source of one-fifth of the earth’s fresh water, providing hydroelectric power to coastal cities like São Paulo and water for irrigation to the vast agricultural region of Mato Grosso. (Brazil is the world’s largest exporter of soybeans, and the second-largest exporter of beef.) Loss of the rainforest might even dry out the entire South American continent significantly. Training the next generation of scientists to help figure out what is happening in the Amazon is therefore of great importance.

The predictions of potentially catastrophic drought have drawn the attention of the Gordon and Betty Moore Foundation, which runs an Andes-Amazon initiative seeking to maintain the ecological function and representative biodiversity of the Amazon basin. The foundation has spent millions acquiring biodiversity hotspots in the region to prevent them from being deforested (mainly by cattle ranchers), but even that strategy will fail if the climate-change predictions for the region are accurate—and so the foundation began pondering the stark possibility that the Amazon basin might dry up.

Two years ago, the foundation turned to Wofsy’s colleague Paul Moorcroft, professor of organismic and evolutionary biology, an ecologist, and asked him to determine if the most widely used climate-change model’s predictions of Amazonian savannization were correct. Moorcroft studies the long-term dynamics of terrestrial ecosystems: working with empirical data painstakingly.



ingly collected from small-scale, intensively studied ecosystem sites, he plugs the data describing what is known about how different types of plants grow and compete with each other under various environmental conditions into a model. Then he uses mathematical approaches to formally scale up this information, both in time and space, in order to describe the behavior of entire large-scale ecosystems across decades or even centuries.

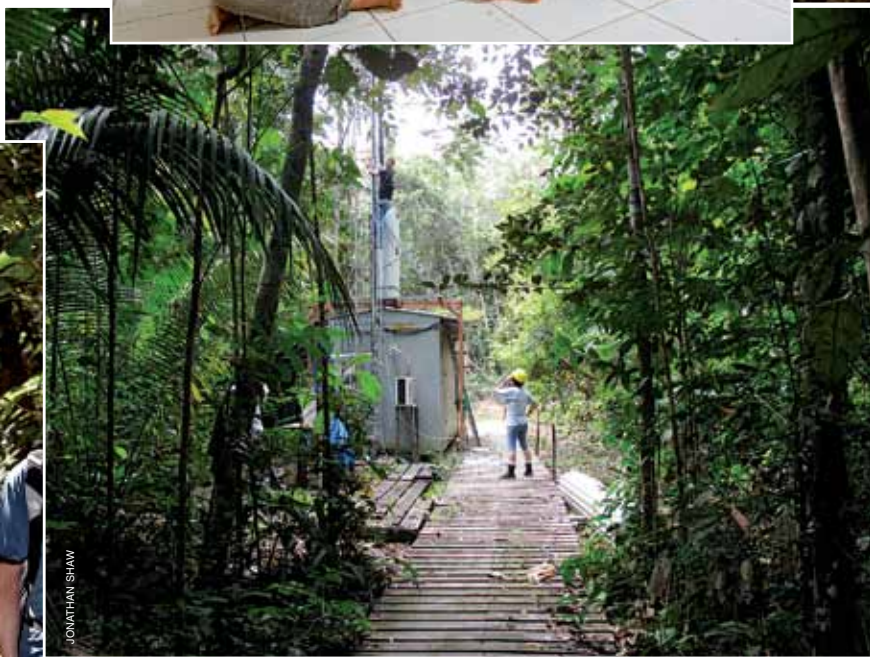
This approach is very different from how ecosystems are represented in current climate-change models (which originated with global-scale computer models of the weather first developed in the 1980s). The latter represent ecosystems by dividing the earth into grid cells that typically cover two degrees of longitude by two degrees of latitude—equivalent to tens of thousands of square kilometers—and treat everything within that area as a single plant. It is these older, so-called big-leaf models that predict the drying out of the Amazon rainforest by the middle of the century. But as Marcos Longo, a graduate student working with both Moorcroft and Wofsy, points out, “When you treat

a complex ecosystem like the Amazon as though it were a large green carpet, heterogeneities are lost.” Furthermore, big-leaf models can’t easily be linked to actual, detailed data—about forest growth, carbon uptake, and local weather—of the kind that Wofsy has gathered for decades.

Moorcroft has worked extensively with Wofsy’s data from northern temperate forests and developed an “ecosystem dynamics” model that accurately predicts forest growth not only at the site for which it was developed, but also at other sites in North America with different mixes of conifers and hard- and softwood trees. Although he does most of his modeling work at Harvard, Moorcroft frequently visits the Amazon and other rainforests, where he has begun setting up meteorological data-gathering stations. Field-course director Scott Saleska, a Wofsy postdoctoral fellow before moving to the University of Arizona, invited Moorcroft to Duke to speak to the students about how his modeling work can be used to improve the analysis and collection of empirical data.

The reasoning behind the big-leaf climate models’ predictions of drought for the region is relatively straightforward, Moorcroft explained to the students. In the Amazon, as much as half the rainfall derives directly from the local biosphere: when the

Facing page: Veteran field course instructor Scott C. Stark, a graduate student at the University of Arizona, explains the use of equipment for measuring photosynthesis. Clockwise from bottom: Newell descends the tower while Kenia Weidemann acts as spotter; during a break at Ducke, Flavia Durgante, Horowitz, Harvard graduate student Matthew Hayek, and Henrique Oliveira discuss plant identification; Professor Paul Moorcroft measures photosynthesis in an understory palm.



multitude of plants “breathe” (transpire) during photosynthesis, they release moisture into the atmosphere, which then falls back to earth as rain. But higher levels of atmospheric CO₂ threaten to disrupt this cycle because plants no longer have to keep their stomata (the tiny gas-exchange holes found mostly on the undersides of leaves) open as long to obtain the CO₂ they need for photosynthesis. Closed stomata prevent moisture from escaping

Recent climate-model simulations have predicted that this tropical rainforest ecosystem—home to the greatest variety of living things on the planet—may collapse by the middle of this century and be replaced by grasslands, taking its extraordinary biodiversity with it.

from plants, thereby drying the atmosphere, which can in turn produce a feedback effect—the plants close their stomata even more in response to the stress of drought. So the big question, Moorcroft pointed out to these scientists-in-training, is whether actual forests are going to respond in the way that current climate-change models suggest. Because a hectare (about 2.5 acres) of Amazonian rainforest is about 100 times more diverse than a hectare of northern temperate forest, he explained, “Among the thousands of species here, some might survive or even thrive in drought conditions, which could mean that the forest may survive, albeit with a markedly altered composition and structure.” In either case, Moorcroft suspects that the CO₂ emissions to the atmosphere “will be substantial.” But the impact of the loss of this ecosystem on plants, animals, and humans, he asserted, would be “unparalleled.”

Moorcroft showed the students how his ecosystem dynamics model, calibrated using just two years of species data from the Harvard Forest, could accurately predict a decade of growth in several different mid-latitude forests, when observed meteorological data (e.g., rainfall, sunshine, temperature) were plugged in. His model can approximate forest growth from Connecticut to Canada—but can he develop one that describes the ecosystem dynamics of the Amazon?

Perhaps 25 species of trees live in a northern temperate forest: most are deciduous, with a few conifers, all clustering in favorite habitats. The ecosystems of the Amazon basin are vastly more diverse and the trees have different characteristics than their northern counterparts. The soils are poor, with most of the nutrients in the living ecosystem rather than in the soil. The seasonality alternates between wet and dry, rather than hot and cold. And under current climate conditions, moisture is not a major limiting factor on plant growth.

In order to develop a credible prediction for the Amazon's fate, Moorcroft explained that he needs to know how different species within the forest react to a given change in the environment—a drought, for example. To that end, he told the students, he is incorporating data from a two-year-long experiment that excluded water from a hectare-sized research site in the Tapajós National Forest near Santarem, Brazil—using an elaborate system of panels, gutters, and drains to prevent rainfall from reaching the ground—to see how the forest responds. During the next two years, his team will use the measurements from

the site to construct a quantitative model that describes how the rainforest's behavior and composition change under these experimentally imposed drought conditions, and then test the model against data from an eight-year drought experiment at another tropical forest site several hundred kilometers to the north. They will then use the calibrated model to gauge the likely regional-scale impacts of drought stress in the Amazon during the coming decades.

“In general, many scientists who make measurements are inherently suspicious of models, but you can't do experiments on the climate,” Moorcroft pointed out during the ride to Ducke, “so you *have* to use models. We have shown that the formal scaling approaches we are using in our ecosystem model work better than the big-leaf models

at capturing the ecosystem dynamics observed under current climate. This gives us good reason to think that our approaches should also be better than the big-leaf models at capturing the range of possible outcomes for a forest under different climate-change scenarios.” Fundamentally, this is because they connect more directly to actual measurements of how plants grow and respond to their environment. “By bringing models and data together,” he emphasized, “we can slowly but surely get the big picture, and get it right”—so he stressed to the students the importance of empirical work: “We need more meteorological data, and we need good data on forest composition across the Amazon basin.”

INCLUDING ecosystem models in a field course exposed the students to an important scientific tool. As Wofsy has said in the past (see “The Great Global Experiment,” November–December 2002, page 34), the usual paradigm—in which a scientist makes a hypothesis and then devises an experiment to test it—doesn't hold in the field of climate science: because there is a lot of natural fluctuation in the system, researchers would need to subject multiple earths to greenhouse gases and leave several others alone as controls. The models also allowed the students to translate their empirical observations into “an inference of long-term, large-scale ecosystem responses,” Moorcroft later reflected. “I think letting students see and understand how the piece of the jigsaw puzzle that they are working on is part of a larger picture is important and transcends national origins.”

“The models took the work to another level,” said Newell. At the same time, they underlined the fact that future climate impacts in the United States are expected to be much less severe than in Brazil. “Brazilians have more on the line than we do,” he said. “Climate change is a global problem, but the Amazon is their backyard.” Still, meeting the Brazilians made him feel more optimistic about the odds of addressing that challenge. “It was great to meet so many smart people who care about the same things.” ▢



Visit harvardmag.com/amazon for an ATV ride through the rainforest, a panoramic view from the top of a 14-story tower, a time-lapse sequence of a balloon launch, a meter-long earthworm, a tailless whip scorpion, and more.

Support from a generous gift for international reporting enabled managing editor Jonathan Shaw '89 to travel to Brazil to research this article.

JOHN HARVARD'S JOURNAL



President Drew Faust and Senior Fellow Robert D. Reischauer discussing the governance changes on December 5

The Corporation's 360-Year Tune-Up

THE HARVARD Corporation's self-review of its operations and organization—begun in 2009 and first disclosed to the community that December 15 by President Drew Faust—has culminated in a series of measures to modernize and, in part, refocus the work of the University's senior governing board (formally, the President and Fellows of Harvard College). The changes, discussed with the Board of Overseers during the review and then aired and adopted jointly in a series of votes on December 4, are outlined in a five-page "Report to the University Community" by the Harvard Corporation Governance Review Committee, released on December 6.

- Membership on the Corporation will increase from the University's president and treasurer plus five Fellows (as constituted ever since the Charter of 1650), to a 13-member group (the president and 12

others, including the treasurer). The appointments required to fill out the new membership are expected to be made within the next two to three years.

It has been long assumed that any such change in governance would require approval by the Massachusetts legislature. But according to Senior Fellow Robert D. Reischauer '63, "We have reviewed the matter thoroughly, both internally and with outside counsel, and have deter-

mined that the University has full authority to make the changes voted this weekend by the governing boards. Harvard has also conferred with the Office of the Attorney General for the Commonwealth of Massachusetts, which saw no reason why the University could not exercise its authority to adopt these changes."

- Term limits. There will be a presumption of terms of service ("[W]e envision that ordinarily members will serve for six years, with the prospect of their service being extended for up to six years").

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This is a modification of open-ended appointments and of the informal recent practice that Corporation members have tended to step down after a decade or so, or at or about age 70. (Although the report does not say so, the enlarged membership, the expectation of limited terms, and some specialization—see below—may in combination make Corporation service feasible for a broader range of candidates, at different stages of their careers.)

- **Formal, substantive committees.** The newly enlarged Corporation will form standing, substantive committees (as opposed to acting almost exclusively as a committee of the whole), including: a Committee on Finance; a Committee on Facilities and Capital Planning; and a Committee on Governance, chaired by the Senior Fellow, to address “matters of trusteeship,” ensure a smooth flow of work between and among the Corporation and its committees, and assure “periodic future assessments of the Corporation’s operations.”

Significantly, the first two committees will consist “principally” of Corporation members, but each “may also enlist the service of others with especially helpful professional expertise, drawn from among accomplished alumni, including current or former Overseers, and others.”

- **Alumni affairs and development.** With the Overseers, the Corporation will form a new Joint Committee on Alumni Affairs and Development. (It will exist alongside three already existing joint committees: on Inspection, which is the audit and risk-management committee; on Appointments; and, in an advisory capacity, on Honorary Degrees.)

As to practices, the report outlines several subtle, but significant, reforms.

- **A lead trustee.** The Senior Fellow will act as “a lead player within the board,” who will be “expected to take a more active part in framing Corporation agendas and setting priorities for its work,” a role that has heretofore been the president’s (as discussed in a *Harvard Magazine* roundtable, “Governing Harvard” May-June 2006, page 25). The Senior Fellow will, moreover, be chosen for the role by fellow Corporation members, rather than merely inheriting it through longevity; and will chair the new governance committee.

- **Outreach and communications.** The Corporation and its members “will engage more with a broader range of University

constituents, in both formal and informal settings”—an effort to improve its access to information and diverse views—and will through the president or Senior Fellow “report to the community at least four times” annually on its work.

- **Strategic planning.** In conducting its work, the Corporation will endeavor increasingly to “focus its attention on strategic priorities and plans, high-level policy matters, and core fiduciary concerns.” Among those identified are “ways in which the different parts of the University can not only flourish individually, but draw still greater strength from one another.”

In a December 5 conversation about the changes, Senior Fellow Reischauer characterized the Corporation-Overseers meeting of the prior day as “a historic gathering in many respects.” President Faust, who is an historian, amplified, noting that the participants were “exhilarated”—fully aware that on the verge of the University’s 375th anniversary (next year), they were modifying a set of procedures, put in place in the 1650 Charter, to better “situate us for the next 375 years.” Reischauer, a former Overseer, said that the package of reforms was but “one step among many that we’ve taken” in the past few years that will lead to a closer relationship between the two governing boards. In voting to enact the changes (the two boards had *never* before observed each other casting votes), the appointed Fellows and elected Overseers sensed they were “all part of doing something they wanted to do for the best interests of Harvard, together.”

Fundamental to the success of the review, Faust said, was focused consideration of the simple but difficult question: “What is the work of the Corporation?” As Harvard has changed, in a world itself changed by closer international connections, information technology, and other factors, that question drove much of the thinking about changes in organization and processes. “Once we began our self-examination,” Reischauer added, “the nature of the agendas at the Corporation meetings began to shift”—toward strategic considerations bearing on the Univer-

sity five and 10 years hence.

Faust said that Richard P. Chait, research professor of higher education at the Graduate School of Higher Education—an expert on higher-education governance and leadership who served as a counselor to the review committee (and was also a participant in this magazine’s 2006 roundtable)—had spoken memorably of boards’ role as a source of “insight” and “foresight,” as well as “oversight.” Reischauer said that establishing committees focused on some of the Corporation’s foremost fiduciary obligations—groups that could “drill deeper” into financial and capital-planning issues, and distill information and provide options to the other members—would enhance “immeasurably” the Fellows’ capacity to deal with strategic priorities and longer-term issues.

Overall, Faust said, the Corporation-Overseers discussion of the changes had resonated with “the spirit of consequentiality and possibility” for Harvard. Reischauer said the formal changes in governance were of a piece with enormous changes within the central administration in the past few years—“in the capacity of the center to do good for the rest of the University” in spheres ranging from information technology to capital planning to enhanced “rationality” in the budgeting process. All of those improvements, he said, were important to the University’s core educational, research, and academic mission. In this sense, Faust said, “Strengthening the Corporation strengthens the context in which to undertake those activities” at the heart of Harvard.

The Rationale for the Review

IN ITS REPORT, the Governance Review Committee (the Corporation members plus Frances D. Fergusson, Ph.D. ’73, president emerita of Vassar College and Overseers president in 2007-2008; Robert N. Shapiro ’72, J.D. ’78, a former president of the Harvard Alumni Association and now chair of the Overseers Committee on Institutional Policy; and Seth P. Waxman ’73, a former U.S. Solicitor General and current Overseers president) stressed the Corporation’s “principal fiduciary responsibility for Harvard’s institutional well-being” and noted that the review “focused on assuring its capacity to fulfill its role as effectively as possible.”

When she first broached the subject



Visit harvardmag.com/governance for more extensive coverage of the changes in governance, including historical context and links to the committee report and letter from President Faust and Senior Fellow Reischauer.

publicly, at a Faculty of Arts and Sciences meeting in December 2009, President Faust suggested that the review would encompass processes and procedures: the Corporation's agendas and use of its meetings, its access to information and interaction with University constituencies, its relations with the central administration and the Board of Overseers, and its use of advice made available to it. In a conversation last September, she said the review would encompass what Corporation members and those with whom they consulted thought needed to be done in order to address "what the absences or omissions have been."

The timing for the review was right, according to the report, as a matter of routine good practice; because the financial crisis had prompted all parts of the University to examine their roles and operations (and therefore, Faust said on December 5, it was fitting for the Corporation to model the same discipline itself); and because "the past decade has been a time of unusual challenge, growing complexity, and consequential change both for Harvard and for higher education at large."

According to the report, changes in Corporation structure and operations are based on several premises.

- **Capacity.** The Corporation's "collective capacity needs to be commensurate with the University's scale, scope, and complexity"—suggesting that a body comprising the president, treasurer, and five Fellows is too small and too limited in expertise to fulfill its responsibilities relative to the twenty-first-century research university.

Note that the review did *not* recommend something wholly different. It concerned the Corporation, not Harvard governance or administration overall. The review did not call for a single, larger board of trustees superseding both the Corporation and the Board of Overseers, with or without elections for some or all of those trustees. Reischauser observed on December 5 that the dual board structure "is a strength of Harvard," and has the potential to become even more so, given the boards' different memberships, sizes (the Board of Overseers has 30 members, plus the president and treasurer), and skills.

Although the Corporation will grow, the "collegiality and the ability to have frank discussions" that characterize its operations will not be compromised, he said. In the meantime, the enlarged num-

HARVARD PORTRAIT



Mike Way

As a young man in Nottingham, England ("Robin Hood country"), Mike Way was obsessed with two stringed instruments: the squash racquet and the classical guitar. Now, at age 56, he plays guitar rarely and, he says, "badly," but he has become one of the world's top squash coaches. This fall he took over Harvard's program. As an athlete, "I did everything wrong that you could possibly do wrong," he recalls, then adds, grinning, "That stood me in good stead as a coach." In his twenties he became the fourteenth-ranked player in England, and rose as high as number five in Canada, where he moved in 1981 to accept a six-month coaching job at a Toronto club. He stuck around, becoming head pro at venues like the Toronto Racquet Club, home of Canada's National Squash Training Centre, which he helped found in the 1990s. "If I'm going to be a coach, why not be a bloody good one?" he thought. "I was like a sponge—I learned from anyone and everyone." Way's way is to distill the common elements from the games of top pro players. He strives for "depth" in coaching—the duration of ball contact with strings, the feel and sound of a shot. He developed a raft of Canadian juniors and coached Jonathon Power, who became squash's world champion in 1998. Way also loves working with coaches and has produced four coaching DVDs. For years, college squash's juggernaut has been Trinity College, where recruiting and admissions policies, and other guidelines, differ drastically from the Ivy League's. "We need to accept that, recruit the best we can, and help our athletes develop their squash games," says Way. (His significant other, Beth Zeitlin, an assistant squash coach, trains the squads in fitness.) Though he claims kiteboarding as his sole addiction, teaching might be another: "If you're an interested player, I'm there with bells on."



Visit harvardmag.com/ extras for a lesson on the drop shot with Mike Way

ber of Fellows will “allow us to augment the Corporation with some specific skills and backgrounds and experiences that maybe we don’t have.”

- **Fiduciary responsibilities**, broadly defined. Given its statutory responsibility, and its self-understanding, as the University’s “principal fiduciary body” (as the new governance review puts it), the Corporation places “special emphasis on the stewardship and development of the institution’s financial and physical resources” and on matters of “organizational design and dynamics.” Reiterating the point, the review says that fulfilling the institution’s core academic purposes “depends integrally on securing and maintaining the resources entrusted to us, and on continually seeking a proper balance between serving immediate needs and assuring the institution’s long-term health.”

The latter responsibility is a familiar one: stewardship of the endowment through the Harvard Management Company’s investment activities, and determining the funds to be distributed in support of current operations.

The other role, of “securing” resources, differs from past perceptions of the Corporation’s work. Some presidents have lamented that Fellows and Overseers have not, or not sufficiently, engaged in fundraising. The new report, in discussing the new Joint Committee on Alumni Affairs and Development, refers explicitly to preparations to “mount an ambitious University-wide campaign.”

In light of recent financial reverses and current ambitions, it is understandable that the Corporation might want to be more clearly organized for and involved in fundraising—and more directly supportive of the president, on whom the enormous task of raising billions of dollars ultimately falls. On the other hand, as Professor Chait has pointed out, a great strength of Harvard’s governing boards is that they have managed to separate “governance and philanthropy” to a degree unique among nonprofit institutions. “Most other boards that deal with governance are...warped by issues of philanthropy,” he said in 2006, with donors gaining board seats for their wealth and generosity, not for the expertise and experience they might bring to governance. The Corporation, counseled by Chait, surely appreciates and intends to main-

tain the separation he identified, while simultaneously building bridges to important alumni and donor constituents through the new joint committee, which will comprise Fellows, Overseers, and “selected others.”

- **Strategic vision.** Fiduciary matters and attending to “pressing issues of the moment” aside, the governance review reports, it is “imperative” that the Corporation make time to “weigh the major strategic challenges and opportunities facing Harvard.” The Corporation must be vigilant against paying too much attention to “matters transactional, transient, or tactical.”

- **Governance.** Consistent with these views of its responsibilities, the Corporation is “fundamentally a governing board, not a management committee.” Governance can “monitor, guide, and enable sound management, without conflating the two.”

This issue has arisen repeatedly in recent Harvard history. Faust said that President Neil L. Rudenstine described the Corporation functioning as a “plural executive” during his administration, meeting frequently and engaging in all sorts of transactional and other matters. She said that during the past few years, that “collective-executive” role had lessened, in her experience, as the Corporation appropriately prepares to undertake a different, more strategic, kind of work.

- **Managing risk.** Following a decade in which Harvard propounded ambitious visions for growth, but suffered when it discovered it had assumed unrecognized risks (notably, financial risks), the Corporation restated its need to be “attentive not only to opportunity but also to risk.” Accordingly, “ambition and innovation must go hand in hand with carefully calibrating and managing risk, especially as the University navigates a more constrained and volatile economic environment and faces rising outside scrutiny of higher education.”

- **A mutual opening-up.** Finally, the Corporation took note of “the desire on the part of many members of our community to understand better” what the board is and does, and of “the value the Corporation derives from its members’ opportunities to hear and learn directly from people across the Harvard community.”

A principal idea emerging from this magazine’s roundtable on governance was that

the Corporation ought to routinely overcome the “warping effects of opacity” (in Chait’s term) by issuing statements on its activities, briefing the community on its operations and priorities, or otherwise instituting regular channels of outreach.

Implications

IN ONE SENSE, the Corporation review is an exercise in modernization. Instituting committees dedicated to finances and to facilities and capital planning is a sound practice for a fiduciary board of trustees—all the more so after the jarring financial experiences of the past two years. Moreover, these committees align with improvements in Harvard’s administration of the sort that Senior Fellow Robert Reischauer mentioned. A University-level Financial Management Committee now coordinates budgeting, financial planning, cash management, and Harvard Management Company’s investment operations. And as reported, executive vice president Katie Lapp has made creating a capital-planning and -budgeting process one of her highest priorities (see “No Surprises” page 50). These steps, in the central administration and on the Corporation, should make uncoordinated or especially risky construction and financing decisions less likely than in the past; put positively, the University should be in a better position to identify and pursue some of its highest priorities for critical facilities and other investments, come what financial circumstances may.

Turning to the present, the Corporation is emphasizing the importance of a large capital campaign—both because Harvard’s last campaign concluded in 1999, and because current circumstances (the reduced endowment, increased scholarship support, and the likely pressure on federal sponsored-research funds) make it urgent.

The arrival of new Fellows, in short order, could be energizing for the Corporation, while the cycling off of current members in future years would create a more standardized, understood sequence of succession and renewal, Reischauer said. As new members arrive and acclimate themselves to the Corporation, their perspectives and questions might naturally help the board keep itself and its practices fresh. (The new membership and renewal processes will also assure some Corporation continuity between presidential ad-

ministrations, while affording each president the opportunity to be involved in recruiting and appointing some Fellows.)

What today seems perhaps the fuzziest of the Corporation's professed new aims—the commitment to “weigh the major strategic challenges and opportunities facing Harvard”—may, in time, become the most important outcome of this self-examination. The University president is *always* enormously busy—all the more so as students, scholars, and alumni are active around the world, and particularly during preparations for and the subsequent launch of a major capital campaign. Harvard remains highly decentralized academically. There is rarely enough time for administrators to undertake thoughtful, deliberate strategic planning.

The University has much to gain from the president and administration engaging broadly in such strategic planning, too, above and beyond whatever work is done to identify immediate priorities for a capital campaign. The Corporation is organizing itself to look forward strategically. And the Overseers have progressively broadened their oversight visits from focusing on individual departments and schools to examining overarching subjects, such as the libraries, the College, the social sciences, the natural sciences, and so on.

Looking Ahead

LOOKING FURTHER AHEAD, the Harvard of 2020 will likely be still more international than it is today, its libraries more digital and accessible, its departments and disciplines both deeper and more collaborative. The University may have made tangible progress in realizing Faust's vision for extensive growth in a wide range of creative and performing arts within the curriculum. And it may be on the verge of identifying wholly new priorities as well.

How well it pursues those opportunities depends of course on the caliber of its faculty members, the engagement of its students, and the size of its purse. But those outcomes also depend on successful governance. After a period of “introspection and review,” Reischauer said, the governing boards are now in a stronger position to help the president and other Harvard leaders. Together, the governing entities should be “better able to meet the needs of the University as they evolve and change over time.”

Where the Women Are—and Aren't

WOMEN NOW HOLD 27 percent of the assistant, associate, and full professorships in Harvard's faculties—a new high. And 22 percent of tenured (full) professors are female—also a new high, up about one percentage point each two academic years from 18 percent in 2003-2004. The proportion of junior-faculty members who are women, currently 36 percent, is slightly below the 2008-2009 peak. Asian and Pacific professors make up about 12 percent of the total faculty—but blacks, Latinos, and Native Americans make up less than 7 percent. These data, among others, come from the 2010 annual report of the senior vice provost for faculty development and diversity, Judith D. Singer (see www.faculty.harvard.edu).

In an interview, Singer noted “steady progress” in diversifying the faculty, but acknowledged that the pace is slow because “95 percent” of the professors present in any one year were at Harvard the prior year. More than two-thirds of the University's faculty members are tenured; given a fulfilling profession and place to work, retirements are scant (see “Retiring

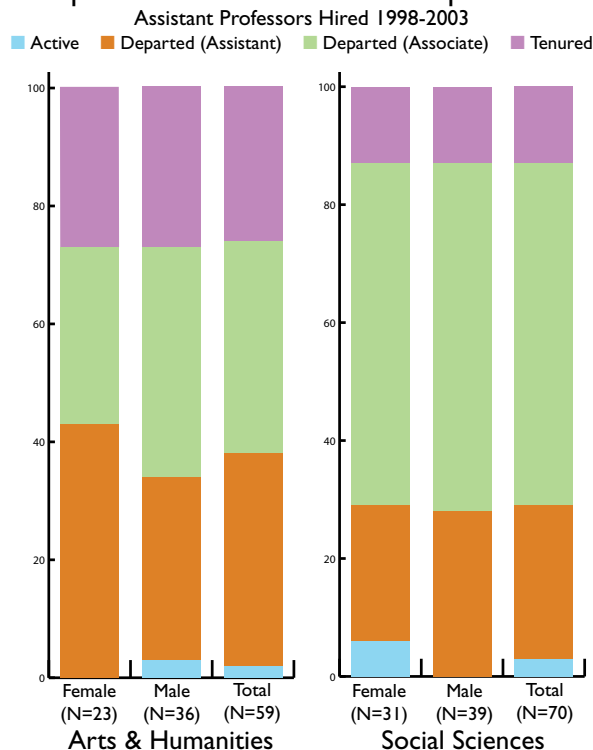


from the Ranks,” page 48). Most departures in any period are from the far more diverse junior ranks, complicating efforts to broaden the faculties' composition.

The effects of that attrition were made vividly clear within the Faculty of Arts and Sciences (FAS) during an October 19 presentation by professor of biology Elena Kramer, chair of its Standing Committee on Women. In two divisions accounting for about 60 percent of FAS's ranks, attrition for those junior-faculty members hired between 1998 and 2003 totaled 72 percent (arts and humanities) and 85 percent (social sciences). Even though a tenure track for assistant and associate professors, introduced in 2005, is becoming a reality (after decades of external recruiting for full professors as the norm), structural issues affecting employment in those fields, and cultural issues within Harvard's departments, Kramer suggested, still make a major difference in translating junior appointments into successful ascents up the faculty ladder.

Kramer told her colleagues that “most tenure-track faculty” in FAS's non-science divisions from the years studied “simply

Up or Out: Promotions and Departures



SOURCE: FAS STANDING COMMITTEE ON WOMEN

did not stay through to the tenure review. Given that the gender balance is so much better at the tenure-track level in these divisions, that's unfortunate." In contrast, she noted that junior-faculty members within the sciences division and School of Engineering and Applied Sciences (SEAS) for the most part remained at Harvard and gained tenure.

The "pipeline" data—the proportion of doctorates being awarded to women—largely align with the representation of women among assistant professors in arts and humanities and SEAS. But in social sciences and in science, the female junior-fac-

ulty representation is well below the share of doctoral degrees women are earning.

Looking at individual units within social sciences, the history department's junior appointments in the past half-decade track well compared to the share of doctorates earned by women, but the large government and economics departments have lagged behind. In the arts and humanities, within both English and philosophy, tenure-track women were significantly underrepresented compared to the pipelines for each field. In fact, in those four departments, Harvard ranked nearly at the bottom (or absolutely so) among

peer institutions' departments in junior-faculty gender balance.

What accounts for the loss of junior-faculty appointees in some fields but not others, and for the highlighted departments' weak relative standing on this measure of diversity?

In a subsequent conversation at her office in the Biological Labs complex, Kramer outlined several factors that may explain some of the differences. In the sciences, she noted, individual faculty members are rooted by their facilities (it is not unusual to spend \$1 million to fit up the space and equipment for a new appointee) and their research teams of postdocs and graduate students. Both the junior faculty and the schools make their decisions about an appointment carefully, in light of these costs, and both are loath to have a performing faculty member depart. These frictional forces are much less significant in the humanities and social sciences.

Moreover, Kramer pointed out, the research record for scientists and engineers—who typically serve as postdocs for some years before their first faculty position—is gradual and accretive (in a series of published papers), and typically far more extensive than that of a young scholar in humanities (where a single book may take years to prepare). The social scientists publish more papers, but their track records, too, are shorter than the scientists', and they are being evaluated earlier.

There are also sharp differences in job markets. In science-related fields, Kramer said, a good young researcher can pick among multiple offers. In humanities and social sciences, there are far more candidates than job openings, so prospective faculty members have a strong incentive to accept Harvard's offer—and then, even as associates (who are *not* tenured at Harvard), to accept recruitment to tenured positions at other institutions. To the extent that Harvard loses these people, it is writing down a long investment (perhaps two years for a search and recruiting, and six years of assistant and associate professorship) to zero.

The result, Kramer said, is a sort of self-fulfilling prophecy: "Departments with a functional tenure track have much more success in recruiting, retention, and tenuring." Those with no record of internal promotion to tenure have less success in persuading their junior members to wait

Retiring from the Ranks

Of the 176 senior professors in the Faculty of Arts and Sciences (FAS) and four professional schools who were offered a retirement program in December 2009, 46—or 26 percent—have enrolled.

FAS had the greatest stake in the retirement program: 127 of its approximately 720 faculty members met the criteria (age 65 by September 1, and at least 10 years of Harvard service). The program allowed them to choose to retire after one, two, or four years, with various teaching and service requirements during those periods and commensurately stepped-down salaries (but with pension contributions intact). Thirty-two FAS professors accepted the offers—25 percent of those eligible. Fourteen of 49 eligible faculty members in the schools of divinity, education, medicine, and public health decided to participate. The results of their decisions were published on November 15 in the 2010 annual report of the senior vice provost for faculty development and diversity.

During the past five years, according to Nina Zipser, dean for faculty affairs and planning within FAS, an average of seven FAS professors have retired annually; a bit less than 1 percent of the total population. (Under the retirement program, that rate will tick up to about 10 annually.)

Senior vice provost Judith D. Singer noted that the program was experimental: since the legal abolition of mandatory retirement for professors in 1994, only the Business School has offered a regular retirement program for faculty. Given the

response to this pilot offering, FAS and the divinity and public-health schools have already made plans to unveil continuing retirement programs for their professors, beginning in December 2010. (FAS's program, unveiled December 1 and available "for the foreseeable future," offers professors aged 65 to 72 two- and four-year phased retirement options. Older faculty members can avail themselves of a half-time transition to retirement.)

Singer noted that the median age of those who accepted a retirement option was 70, and that those who enrolled primarily chose the longer-term plans: more than half elected the two-year path, and another one-third selected the four-year path. The self-selection, she said, was "good for the faculty and good for the institution."

Her annual report notes that 40 of the 46 participants (87 percent) are white males, four are white women, and two are minorities—proportions roughly equal to the demographic composition of tenured professors in the eligible age cohort.

The retirements thus may have some small effect on the affected faculties' diversity. During the past academic year, the annual report says, Harvard hired 64 new faculty members externally: 44 assistant professors, 7 associate professors, and 13 full professors. Of that cohort, Singer said, 30 are white males (47 percent), 22 are women, and 21 are members of identified minorities (4 blacks, 4 Latinos, 12 Asians, and one dual-counted under current standards)—clearly, more diverse than the retirees. But not all will win tenure.

it out at Harvard. “Why would you stay?” Kramer asked. Some departments have made *no* internal promotions to tenure within living memory.

“It’s a real disparity across the divisions,” she observed. Indeed, even before the tenure track was created five years ago, the fierce competition in many of the science departments for the best colleagues resulted in successful appointments of junior colleagues who were expected to do well, and did—overwhelmingly realizing full professorships.

Elsewhere, “It’s just a very different mindset,” she said—resulting in a culture, a job market, and a tradition that will have to be changed over time before the more-diverse junior-faculty cohorts make an impact on those humanities and social-sciences departments (which are especially heavily weighted toward tenured professorships). That makes it more important, Kramer said, that Judith Singer’s efforts to “educate departments on how to search, how to retain, and how to promote” pay off. And it explains Singer’s realism: even as Harvard makes its tenure track more effective, and becomes more systematic about offering retirement options for senior professors, she said, progress on the path toward a more diverse faculty “is all at the margins.”

A Digital Public Library?

THE DREAM OF CREATING a national digital library, free to all, began to seem much less like a fantasy in early October. In a private meeting convened by Pforzheimer University Professor Robert Darnton—arranged by the Radcliffe Institute for Advanced Study, and funded by a private foundation—42 leaders of research libraries, major foundations, and national cultural institutions met in Cambridge to discuss how to work together toward the creation of a Digital Public Library of America.

“I was amazed by the response,” says Darnton, who is director of the Harvard University Library, but was acting as a public intellectual and longtime champion of the idea, rather than in his official capacity. “Everyone I asked said instantly, ‘This is a great idea, we’ll be there.’” As Darnton declared in his welcoming remarks, the library would be “the digital

Yesterday’s News

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

1911 The College Library expects to be without money to buy new books for the next several months.

1926 Construction under way includes Straus Hall, the Fogg Art Museum, McKinlock Hall (a freshman residence fronting the Charles), and the Business School complex, a gift of George F. Baker.

* * *

The first movie theater in Cambridge is about to open across from the Yard.

1931 The masters of Adams, Kirkland, Leverett, Eliot, and Winthrop, the five new Houses, have joined the masters of Dunster and Lowell in apportioning a cross-section of current sophomores and juniors to each House for the coming year. The *Bulletin* reports that the proportion of public-school graduates is approximately the same in all the Houses, as is the distribution of students from different sections of the country.

* * *

The Corporation declines a Boston lawyer’s bequest of \$25,000 for a lectureship designed to prove that the “modern feminist movement...[impairs] the family as a basis of civilization and its advance....”

1936 Harvard has established a laboratory at Glen Cove, Long Island, to study the origin, spread, and eradication of various plant diseases, especially Dutch elm disease.

1951 A survey of *Bulletin* readers finds that only one in four subscribers owns a television set.

* * *

President Conant urges passage of the Universal Military Service and Training Bill, partly because “the U.S. monopoly of the bomb has ended [and] Soviet allies have shown a readiness to gain their ends by force.”

1961 President-elect John F. Kennedy ’40, LL.D. ’56, is mobbed by enthusiastic Harvard students as he arrives to attend a meeting of the Board of Overseers.

1966 The Cambridge City Council approves Harvard’s request to construct, at its own expense, a six-lane underpass at the western end of Cambridge Street, north of the Yard.

* * *

Linda McVeigh ’67 becomes the first female managing editor of the *Crimson*.

1986 Backed by Alumni Against Apartheid, John Plotz ’69, Gay Seidman ’78 (the first woman president of the *Crimson*), and Kenneth Simmons ’54 collect enough signatures to run as petition candidates for the Board of Overseers, seeking to press Harvard to divest its holdings in companies doing business in South Africa.



equivalent of the Library of Congress... bringing millions of books and digitized material in other media within clicking distance of public libraries, high schools, colleges, universities, retirement communities, and any individual with access to the Internet."

Darnton has argued in the past that a "united front of foundations," if persuaded that creating a digital library would be in the interests of the American people, could overcome any financial hurdles to launching such a resource. That intuition was correct. "The very first session concerned costs," he reports. Even though estimates ranged widely, depending on what the library would hold (and in particular the cost of digital preservation: see "Gutenberg 2.0," May-June 2010, page 36), "everyone agreed that it is a feasible project and the funding is not the major obstacle." For example, a project to digitize all books in the public domain (no longer in copyright) as well as so-called orphan books (those published between 1923 and 1964 for which no copyright owner can be found) might cost \$1 billion, Darnton says. Given a coalition of foundations, each contributing a share across five years, he says, "There is no question but that we could afford it."

Mary Lee Kennedy, executive director of the Business School's Baker Library, presented research on the national digitization efforts of 21 countries, with particular emphasis on models in Norway and the Netherlands. The ambition of the Dutch, for example, is to digitize every Dutch book, newspaper, and pamphlet from 1470 to the present. Interestingly, their national library, which began

the project in 1996, has entered into a partnership with Google to digitize more than 160,000 public-domain books from the eighteenth and nineteenth centuries, with Google paying for the cost of digitization. Among the lessons learned from the Dutch, Kennedy said, is that preservation costs are difficult to predict, and that copyright issues are a significant challenge.

Experts on copyright also made presentations. Darnton hopes that bipartisan support in Congress may eventually lead to some sort of accommodation or change to copyright laws that would allow more books still in copyright to become part of the digital library. Innovative technological solutions that enable limiting the number of loaned copies of books in digital form may also play a role in facilitating a digital public lending library. Darnton imagines "a core which you could think of as a huge digital database that would expand indefinitely over time." Other resources might be added later, such as the database of newspapers from all 50 states already digitized by the Library of Congress.

Such details will doubtless be worked out at subsequent meetings. For now, the group has come up with what Darnton calls "the beginnings of a strategy." Two follow-up conferences are planned: one of foundation leaders, in order to organize their support; and a second, much larger, public conference in Washington, D.C., this spring intended to organize support among the great cultural institutions in the nation's capital. Of the Harvard gathering, Darnton said, "We just provided an occasion to get things started."

No Surprises

THE *Harvard University Financial Report* for the fiscal year ended last June 30 appears to fulfill administrators' hopes: it conveys essentially no surprises. In this, the mid-October report contrasts sharply with the fiscal 2009 version, which disclosed nearly \$3 billion of previously unreported losses sustained from investing Harvard's cash reserves alongside the endowment and from unwinding interest-rate swaps intended to buttress financing for future campus construction in Allston. (The swaps backfired badly, given the recession and record-low interest rates; see "Further Financial Fallout," January-February 2010, page 45.)

Nonetheless, the 2010 report outlines a new state of University financial affairs. Operating revenue *declined* to \$3.72 billion, down from \$3.81 billion in 2009, and operating expenses were modestly lower, too: \$3.73 billion, down from \$3.76 billion. During the five fiscal years from 2005 to 2009, revenues had *risen* by more than a billion dollars (from \$2.80 billion to \$3.81 billion), and spending had kept pace (climbing from \$2.76 billion to \$3.76 billion). The days of an 8 percent compound annual growth rate in spending—of \$200-million increases in annual outlays—are over.

Fiscal 2010's 2.2 percent decrease in revenue is a surprisingly good result. The Corporation had directed an 8 percent reduction in the endowment funds distributed for operations during the year—the source of 38 percent of operating revenues in fiscal 2009. The fiscal 2010 report indicates that the actual reduction came in at 7 percent (\$1.32 billion, down from \$1.42 billion); the slight difference reflects the buffering effect of distributions on new gifts to the endowment. "Decapitalizations" of endowment principal remained nearly level, at \$237.4 million in fiscal 2010; the "administrative assessment"—formerly called the "strategic infrastructure fund," a half-percent annual levy on the endowment for University expenses associated with Allston campus development—apparently declined to about \$130 million from fiscal 2009's \$176 million. But there were offsetting pockets of strength: tuition income from graduate- and professional-degree programs rose a robust \$23 million, and nearly \$15 million from continuing-education and executive programs; and federal support for sponsored

Unifying Harvard's Libraries

After "exhaustive analysis," an implementation work group of the Task Force on University Libraries has recommended creating a coordinated management structure for the entire University library system (see "Libraries on the Edge," January-February 2010, page 41). A new position, executive director of the University library, will report to a board of directors, chaired by Provost Steven Hyman, comprising Pforzheimer University Professor Robert Darnton, currently director of the Harvard University Library, and deans (or their designates) and faculty members from Harvard's schools. This new administrative structure seeks to preserve local autonomy—by serving scholarly interests within specialized areas of study such as business or medicine—while facilitating the "global strategic, administrative, and business processes" of the library system as a whole.



Is the book an endangered species? Visit harvardmag.com/whybooks to read about a Radcliffe Institute conference on the history and future of the book.

B-School Building Boomlet

Although other University construction in Allston has been suspended, Harvard Business School (HBS) announced on October 14 that it would build a large new executive-education facility on the lawn at the eastern edge of campus facing Soldiers Field Road. Dean Nitin Nohria and Boston mayor Thomas M. Menino were joined by Ratan Tata, a 1975 graduate of the school's Advanced Management Program and chairman of Tata Sons Ltd., whose \$50-million naming gift (the largest from an international donor in HBS history) will underwrite about half of the projected cost; construction may begin next spring, for occupancy in 2013. Simultaneously, Nohria announced that HBS would invest \$15

million to \$20 million to convert the vacant WGBH building, on Western Avenue, into the Harvard Innovation Lab, serving entrepreneurial professors and students from throughout Harvard, and ultimately, members of the wider community in Boston.



Ratan Tata

Stellar Scholars

Seniors Zachary M. Frankel (of Brooklyn and Quincy House, a physics and mathematics concentrator); Daniel E. Lage (of Miami and Winthrop House, a history of science concentrator who expects to earn his A.B. and A.M. degrees in May); and Baltazar A. Zavala (of El Paso and Kirkland House, an engineering sciences and neurobiology concentrator) have been awarded Rhodes Scholarships. Zavala, a four-year walk-on football player for the Crimson, flew from Houston, the site of his Rhodes interview, the morning of Saturday, November 20, and dashed from Logan Airport to the Stadium to suit up for The Game, arriv-

Brevia



FOGG FACADE. The Fogg Art Museum renovation, seen in December, has now reduced the building to a three-sided shell, into which Renzo Piano's new design for expanded facilities will be fitted.



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ing at halftime. Ursinus College alumnus Aakash K. Shah (of Cliffside Park, New Jersey, now a first-year Harvard Medical School student), also won a Rhodes Scholarship. Seniors Kenzie Bok (of Boston and Pforzheimer House), a history concentrator, and Jonathan Walsh (of Bloomfield Hills, Michigan, and Lowell House), a government concentrator, have been awarded Marshall Scholarships.

Primary-Care Physicians

Harvard Medical School has established a Center for Primary Care, following the recommendations of an academic advisory group and receipt of a \$30-million anonymous gift. The center will assure that all students are better educated about primary-care systems, and support those who aim to pursue practice or research in the field. A director, who

will hold an endowed chair—based in either the school's department of health care policy or of global health and social medicine, with a secondary appointment in an affiliated hospital—will oversee efforts to convene experts worldwide

to advance primary care. The center will also coordinate funding for scholarship on healthcare policy and innovation in systems of delivering primary care.

Studying "Institutional Corruption"

The Edmond J. Safra Center for Ethics announced in mid October that it had secured permanent funding for its graduate fellowships, and the resources necessary to underwrite the first five-year research project undertaken by its new Lab, under professor of law Lawrence Lessig, who became center director in 2009. A gift of \$12.3 million from Lily Safra, who has continued Edmond Safra's philanthropies since his death in 1999, enables the researchers to explore what Lessig calls "the causes and consequences of institutional corruption": not violation of norms of right and wrong, but the effect on public institutions (Congress, auditing authorities, pharmaceutical regulators, medical educators) of depending on money from sources affected by their work.



Lily Safra

Ivies' Aid "Arms Race"

Inside Higher Education reported a "New Tactic in the Aid Arms Race": Cornell has offered students admitted for next fall, who are also admitted to Harvard, financial support that matches the packages extended by Harvard (or any other Ivy); and Dartmouth athletics has posted a letter to football supporters promising to "eliminate the differential" in aid

offers when an admitted athletic recruit is wooed with “a more favorable projection from an Ivy competitor.”

Nota Bene

SENIOR SOCIAL SCIENTIST. Peter V. Marsden, Geisinger professor of sociology and a Harvard College Professor, has been named dean of social science—one of the substantive, divisional deanships within the Faculty of Arts and Sciences—effective January 1. A member of the faculty since 1987, he has twice chaired the sociology department. Marsden succeeds Lindsley professor of psychology Stephen M. Kosslyn, who has become director of Stanford’s Center for Advanced Study in the Behavioral Sciences.

LIBRARY LEADERS. Ann Baird White-side has been appointed librarian of the Graduate School of Design’s Loeb Library and assistant dean for information resources. Matthew J. Sheehy has been appointed director of the Harvard Depository, where more than one-third of the University’s 16 million library books reside. He had been acting director for reference and research services at the New York Public Library, where he oversaw that institution’s off-site storage facility (shared with Columbia and Princeton).

BGLT TASK FORCE. Harvard College dean Evelyn M. Hammonds in early October formed a working group on bisexual, gay, lesbian, and transgender student life. The group was charged with recommending ways “to address the needs of BGLT students in a more systematic

fashion” and is to review support for students who experience familial, peer, or cultural challenges resulting from their sexual orientation and/or gender identity. It is expected to make recommendations to the dean during the spring.

KNOWLES ACKNOWLEDGED. In recognition of Jeremy R. Knowles, the eminent chemist and late dean of the Faculty of Arts and Sciences, a seminar room at Wadham College, at Oxford University, was named in his honor in a ceremony held on September 30, 2010. Knowles was a fellow at Wadham from 1962 to 1974, and then an honorary fellow.

SPECIAL SCIENTISTS: Six senior faculty members have won Transformative Research Project Awards from the National Institutes of Health, recognizing their “truly daring” approaches to advancing innovative science: Mallinckrodt professor of chemistry and chemical biology Sunney Xie and professor of chemistry and chemical biology and of physics Xiaowei Zhuang, for work on protein function in the cell (see “Shedding Light on Life,” May-June 2008, page 40); assistant professor of stem cell and regenerative biology and of surgery Paola Arlotta, associate professor of pathology J. Keith Joung, and Junior Fellow Feng Zhang, for work on nervous-system regeneration; and assistant professor of pediatrics Simon Dove, for work on nanoRNAs. Separately, New Innovators Awards, which support junior scientists early in their careers, were conferred



COURTESY XIAOWEI ZHUANG

Xiaowei Zhuang

on assistant professor of chemistry and chemical biology and of physics Adam Cohen; assistant professor of systems biology Peng Yin; assistant professor of neurobiology Sandeep Robert Datta; instructor in surgery Nathalie Agar; and instructor in dermatology Conor Evans.



COURTESY SIMON DOVE

Simon Dove

MISCELLANY. Ted Mayer, who became director of dining services in 1997, has been promoted to assistant vice president for hospitality and dining services. He oversees 14 undergraduate dining halls, a dozen retail-dining units, catering, and the Faculty Club...Jeffrey R. Williams '78, M.B.A. '82, who was president of the Shenzhen Development Bank from 2004 to 2006, has been named executive director of the Harvard Center Shanghai (see “Global Reach,” May-June 2010, page 51). There, he will oversee Business School executive-education partnerships, faculty research, student internships, and Harvard China Fund ventures....The Committee on African Studies (www.africa.harvard.edu) has been recognized as a national resource center by the U.S. Department of Education; it is eligible for \$2.5 million to support travel, programs, and outreach during the next four years....The Radcliffe Institute has appointed Alison Franklin '90 director of communications. A former press secretary and political-campaign veteran, she was most recently director of communications for City Year....Anthony P. Monaco, Ph.D. '88, M.D. '88, a neuroscientist and geneticist who is pro-vice-chancellor at the University of Oxford, has been named the thirteenth president of Tufts University, effective next summer.

CRÉDIT EST MORT



Les Mauvais Payeurs Sont Tués.

DEATH TO DEBT. As the nation labors under trillions of dollars of excessive leverage, Harvard Business School’s Baker Library has mounted an exhibition entitled *Buy Now, Pay Later: A History of Personal Credit*. As the catalog observes, seeking credit was often seen in the pre-industrial West as “a sign of moral weakness,” and making a business of credit was “an enterprise suited only to the greedy and predatory.” Among the recurrent themes in early prints and engravings is “the death of credit,” sometimes depicted as a corpse. Here, “Crédit est Mort,” an early nineteenth-century French print, showing an artist, a musician, and a soldier (three “bad payers”) who have killed a fourth man, representing credit. The image stems from postings dating back to the Middle Ages—a warning from shop-, tavern-, and lodging-keepers that they discouraged customer requests for credit. The exhibition remains on display through June 3, and online at www.library.hb.edu/hc/credit.

research—augmented by national stimulus appropriations—soared 11 percent, increasing almost \$62 million.

The report breaks out expenses in a new way. The 1 percent decline in *total* spending reflects the 8 percent *increase* in direct sponsored spending and a 2 percent *decline* in “non-sponsored outlays.” In their section of the report, vice president for finance Daniel S. Shore (Harvard’s chief financial officer), and University treasurer James F. Rothenberg characterize the latter as “more squarely within the University’s control, and...demonstrat[ing] progress made in planned cost reductions.” Excluding “certain costs that tend to be fixed in the near term (i.e., tenured faculty compensation, financial aid, depreciation, and interest)” and adjusting for one-time items in both fiscal years (\$59 million of fiscal 2009 expenses for retirement incentives and severance and benefits costs associated with layoffs; and a \$52-million item in fiscal 2010, discussed below), Harvard’s “controllable non-sponsored operating expenses decreased by 6 percent,” from \$2.30 billion to \$2.17 billion. In other words, expense reductions valued at \$130 million were realized during the year—not an easy feat after routine increases in spending. Among the salient details:

- Given workforce reductions and a fiscal 2010 salary freeze for faculty and nonunion staff members, non-sponsored salaries and wages declined 3 percent, or \$31 million.

- Sharp savings were effected in discretionary expenses, with non-sponsored costs for supplies and equipment, utilities and building maintenance, travel, and purchased services reduced by \$88 million. The University did most of its budget dieting here, rather than in permanent changes in the workforce. Accordingly, it is now notably more challenging to add employees or to fill vacancies (the term of art is “position control”).

But other expenses rose. Total interest expense increased 26 percent, to \$265 million (accounting for more than 7 percent of the University’s spending in the year). Total indebtedness, \$2.85 billion in fiscal 2005, climbed steadily in subsequent years before ballooning to \$5.98 billion in fiscal 2009, when Harvard placed \$2.5 billion of new debt issues to restore its impaired liquidity, refinance variable-rate debt, and unwind some of the costly interest-rate swaps. Interest expenses *not* associated with specific capital projects rose to \$89.4 million in fiscal 2010, up from \$56.6 million in the prior year (and just \$13.3 million in fiscal 2008), reflecting the burden of servicing these new University-level obligations. Bonds and notes payable at the end of fiscal 2010 increased modestly, to a total of \$6.28 billion, reflecting new issues, principally to pay for construction projects such as the Law School’s Northwest Corner building.

During the year, capital spending was

essentially cut in half, to \$324 million. Although work continues at the Law School and on renovations of the Fogg Art Museum and the Fairchild Biochemistry Building (to outfit it for stem-cell researchers), the \$1.4-billion Allston science complex has been suspended. For the foreseeable future, these projects and renovation of the physical plant seem likely to be the major capital initiatives. A new capital-planning process, overseen by executive vice president Katie Lapp and meant to provide a University-wide, five-year building program, will shape future commitments Harvard will make; there will surely be pressure to restrict new debt financing, despite current low interest rates (see “Back to the Bond Market,” below).

(To manage the process, Mark R. Johnson has been appointed vice president for capital planning and project management. His planning responsibilities span Cambridge, the Longwood Medical Area, and Allston, and he will direct the resulting construction projects—all within Harvard’s financial resources. Johnson has worked at Harvard since 2002, managing in turn the Business School’s Baker Library/Bloomberg Center project and now the Northwest Corner building under construction at the Law School, where he has also led campus master planning and a five-year capital plan.)

Among other items of interest, during fiscal 2010, the University entered into \$695.5 million of additional swap agreements, all designed to offset *existing* swaps and so to reduce further long-term risk of loss if interest rates stay low or decline even more. It did so without laying out additional cash, by agreeing to new contracts that offset the terms of the original ones—but giving up the opportunity to recover past losses should rates increase over the life of the original contracts. To the extent possible, the University is getting out of the business of bearing interest-rate risk for those past contracts.

Continuing the emphasis on enhancing liquidity that was announced last year, the General Operating Account (GOA)—Harvard’s cash and operating funds—is now relatively less heavily invested along-



Mark R. Johnson

KRIS SNIBB/HARVARD NEWS OFFICE

Back to the Bond Market

The University issued \$601 million of tax-exempt bonds and \$300 million of taxable bonds in early November. Because the former issues refinance existing debt and long-term borrowing under Harvard’s commercial-paper program, total debt outstanding rose to \$6.6 billion from \$6.3 billion at the end of the last fiscal year (June 30). The refinancing may enable the University to reduce higher rates incurred earlier, to fix the rates on variable-rate obligations that could rise in the future, or both. Harvard initially filed to sell about \$741 million in the refinancing, but the market deteriorated by the time the offering was made. Interest expense increased 26 percent, to \$265 million, during fiscal 2010.

The \$300-million sale of new bonds will finance various capital projects, including the wholesale reconstruction of the Fogg Art Museum. It is the first such financing since Harvard borrowed \$480 million last January, in part to pay for construction of Harvard Law School’s Northwest Corner project. The two projects, with a combined cost estimated at more than \$600 million, each attracted major gifts, but required external financing as well. They are, presumably, among the last projects of their size for which the University intends to resort to significant debt financing.

Moody’s Investors Service rated both bond offerings Aaa. That indicates that Harvard’s financial adjustments since the sharp decline in the value of the endowment, and other losses, in 2008 have enabled it to retain its top-tier credit rating.

side the endowment. Of its current net asset value of \$3.75 billion, liquid assets held outside the University's General Investment Account have risen to approximately \$1 billion; two years ago, when the GOA totaled \$6.57 billion, the cash portion was \$300 million. The "de-risking," as it is called, will continue: gaining liquidity, at the cost of lower potential returns.

Finally, a review of the "fair value" of investment assets in the footnotes suggests that the portfolio as a whole (for endowment and other holdings) is more oriented to liquid holdings. At the same time, the portfolio managers are redeploying funds into certain areas that they deem attractive—notably certain kinds of new real estate, commodities, and natural-resources holdings.

IN ALL, said Shore in a conversation, fiscal 2010 was "a good year." Harvard set out to make progress in addressing controllable expenses, and did so, relatively quickly. He also pointed to the improved risk profile of financial resources, especially in light of the University's debt load. And the growth in tuition and sponsored-funding revenues demonstrated, he said, that Harvard is "quite resilient" in its core operations, teaching and research.

The current year poses new challenges. Employee benefit costs are still rising, the salary and wage freeze has ended, and a further reduction in endowment distributions for operations will subtract \$130 million or more from revenues.

Two factors will offset about half that apparent gap. First, fiscal 2010 expenses are inflated by a one-time \$52-million charge associated with restructuring the Broad Institute, a genomics-research center, into an independent entity. Second, the sponsored-funding awards under the federal stimulus program should provide an additional \$20 million in revenue this year.

Dealing with the rest, Shore suggested, requires further "administrative aggregations" of functions (from human resources and communications to information technology) to effect longer-term expense savings. Savings in fiscal 2009 and 2010 were realized principally within each school and unit; the current opportunities, he suggested, lie in identifying better ways to work between and among those autonomous units and the central adminis-

tration. Realizing such savings will take time; the Faculty of Arts and Sciences, he noted, is on a two-year path to eliminate its remaining budget deficit, using reserves to fund the work in the interim. (Retirements may help; see page 48.)

For the foreseeable future, Shore said,

there is too much uncertainty about all sources of revenue—tuition net of financial aid, endowment investment income, and federal research funding—to relax any efforts to identify and pursue efficiencies. That is the University's financial outlook, and priority, for the next few years.

THE UNDERGRADUATE

Comparing Notes

by MADELEINE SCHWARTZ '12

LAST JUNE, as we were both preparing for our summer internships, my mother and I traded fashion advice. We had each gone shopping for the first day of work (I at a weekly magazine, she in a judge's chambers), and now we were comparing outfits in the living room. My skirt and blouse were quickly assessed ("Needs ironing") and hung back in the closet. But my mother walked around the living room shrugging her gray suit on her shoulders. My words of encouragement—"You look professional!"—seemed to have little effect. "Should I really wear this? Are you sure it doesn't look too square?"

My mother started law school at the same time I started college, and because hers is a four-year night program, our school schedules are synched. We take our exams during the same busy weeks and experience similar relief at the end of December and May. Last spring, we compared notes on cover letters and interviews for our job applications. We will probably graduate within days of each other.

As students, we've shared study habits (take notes by hand), general truths (You can't avoid having a few bad professors), and encouraging platitudes (It's okay! No one will care how you did on your "Science of Cooking"/"Constitutional Law" midterm!). Where she's listened to my complaints about freshman-year roommates and dining-hall food, I've helped her buy textbooks online and wished her luck in moot-court practice. Occasionally, we've even studied together. When mom came to

visit during Freshman Parents Weekend, I swiped her into Lamont on the pretext that she was touring the library. Instead, we sat side by side in the big, open room on the first floor—she diligently taking notes on a huge red volume that she had lugged from New York City on the train, I casually reading about Greek myths. Eventually I left to meet friends, and she stayed at the wide desk alone, papers spread out.

I ASKED my friend Erika Pierson, a junior history and literature concentrator in Lowell House, what it's been like seeing her mother get a master's in costume design while she's been at college. "My mom didn't have a set career when I was growing up," she told me, "so I had never seen her do something she was really passionate about." Now her mother drives around San Diego taking measurements and buying fabric, and Erika is thrilled at how enthusiastic her mom is: "It's been an inspiration because it's an unconventional career. And it's been a great support system. She knows college better than most people." The only inconvenience? "When I left, she took over my desk as a sewing station. I'll go home for vacations, and my house looks like a scene from *Project Runway*. The closet in my bedroom is full of princess costumes."

It's true that a parent in school can bring certain advising advantages. I know that my mother has felt the frustration of a paper that won't write and the excitement of mastering a difficult topic. I don't need to explain my elaborate theory that I am a "bad test-taker"—she's said the same thing about herself. And talking with her

is a good way to get perspective on those occasional hurdles that crop up in college. Although we are both taking a substantial course load, Mom is also working a full-time job in the financial industry.

Sometimes, though, I wonder whether we are a little *too* enmeshed in each other's scholastic lives. This usually occurs to me about twice a year, when my mother calls to inform me of her grades. Once, she reached me in the middle of a date ("I got my first A! Aren't you going to congratulate me?"), and often, when the news has been disappointing, I haven't known how to respond. Last fall, I was chastised for passing along a speculative tidbit I had heard in the Kirkland

dining hall—that, because of grade inflation, GPAs once considered good might be viewed with new scrutiny. "Madeleine has informed me that 'B is the new F,'" Mom announced at Thanksgiving. The *Harvard College Handbook for Students*, which is quite verbose on the subject of grades, is conspicuously silent on how to counsel parents about them.

CHANGING careers later in life is no longer a rarity, so it is not uncommon for students and their parents to be toying with big decisions at the same time. Neither the Office of Career Services (OCS) nor the Harvard Alumni Association has concrete data on how often Harvard graduates change jobs or when they go back to school. Class surveys, though, indicate that the majority of Harvard alumni have shifted directions when it comes to their careers. With the financial collapse of 2008, such shifts have become more widespread. "That mindset of a flexible career is even more prevalent today than among students five or 10 years ago," says Robin Mount, director of career, research, and international opportunities at OCS. "Students have seen



their family members lose jobs or change them. Gone is the time when you start out at a company and work there for the rest of your life."

Freshman Week, in one of the welcoming speeches, our Yard dean mentioned that many of us might have grown up thinking that "doctor, teacher, lawyer" were our only options. The dean told us how important it was to follow our passions—even if they led us to unexpected places. A spirit of adventure, she suggested, was key to making the most out of college. The talk made its mark on my pre-med roommate. "I actually did think those were the only options," she told me as we walked out of the Science Center.

But talking about passions is one thing—actually following them is another. By the time I started to think about what professional directions I might want to take, I had heard "The average American changes careers seven times" so often that it was hard not to become numb to its message. The last thing that an enthusiastic Harvard student wants to do is to imagine flitting from job to job until she lands somewhere by chance, *especially* when the economy is so uncertain. Despite

her interest in history, my roommate is still pre-med: in part, she told me, "because I really like the idea of knowing the next step." I am sure that others have had similar gut reactions when told how common it is to be undecided: "I'm *not* the average American. I'm Madeleine Schwartz!"

I admire the dedication of someone who follows a dream, even when doing so is challenging. When Mom decided that she wanted to go back to school, she called up the pre-law tutor in her old House, Dunster. One law school required a dean's letter, which would be difficult to obtain, she explained, because her dean had been dead for several years. The scene struck me particularly acutely because it came around the time that I was look-

ing for my own letters of recommendation for college. *Wherever you end up*, I remember thinking, *make sure you put your letters on file*. And this kind of frustration is routine for older students, who have to learn how to study all over again. Mom once described the experience of taking classes with students half her age after 30 years in the workforce: "What's most challenging is that you come in to class knowing how to make a soufflé—but you're all there to make omelets."

HARVARD offers many resources for students who want to figure out where their future lies. Advisers, tutors, and OCS keep their doors open to help undergraduates embark on this kind of discovery. It seems that every day I get another invitation to talk about "the next step" with a Harvard affiliate. The people who are actually useful, though, are those who offer thoughtful conversation and don't just dispense advice. One can't find one's passions in a booklet on summer internships or a list of possible career paths. It's a gradual process that involves sharing thoughts and then coming back to them; a discussion that doesn't

always have its end goal in mind. In the course of my time at Harvard, it has been just such a give-and-take—with professors, with friends, and with my mother—that has slowly shaped my ideas of who I might want to be.

Though sometimes a quick bit of advice is all one really needs. A few weeks ago, I found myself caught in a familiar pattern: a difficult essay and a long day ahead, the kind of situation that always seems to bring up the question, “And what am I going to do with my life anyway?” “What am I supposed to do now?!” I despaired in an impassioned voicemail to my mother. Her response came via text message: “In class. Can’t talk. Don’t worry. Be happy.” From anyone else, the answer might have seemed trite or silly. But I took her at her word, shut down my computer, and walked down to the Kirkland courtyard to see what might be happening there.

*Berta Greenwald Ledecy Undergraduate Fellow
Madeleine Schwartz '12 wishes it were still warm
enough to sit in the Kirkland courtyard.*

With Warm Thanks

The editors proudly recognize three superb contributors to *Harvard Magazine* during 2010, awarding each a \$1,000 honorarium for distinguished service to readers.

The McCord Writing Prize (named for David T.W. McCord '21, A.M. '22, L.H.D. '56) recalls his fresh prose and verse composed for this magazine and for the Harvard College Fund. Phoebe Kosman '05, a former Ledecy Undergraduate Fellow at this magazine recently promoted to associate publicity manager at Harvard University Press, showed that the rigors of employment have not dulled her spirited take on College life. We celebrate her funny, pointed “Great Trepidations,” on fifth-reunion anxiety, from the May-June 2010 Commencement & Reunion Guide.



Illustrator Miguel Davilla, who created the memorable cover and inside illustration for “After Our Bubble” (July-August), vividly depicted the anxieties and problems associated with the contemporary American economy in its global context—the subject of managing editor Jonathan Shaw’s feature on Harvard economists’ analysis of our current dilemmas.

Among other challenging assignments, Stu Rosner—one of the magazine’s regular photographers—did particularly distinguished work this year in conveying the activities of hyperkinetic students (“Nonstop,” by deputy editor Craig Lambert, March-April) and the research of equally active faculty scholars who investigate social networks (“Networked,” by associate editor Elizabeth Gudrais, May-June). We warmly thank all three for their invaluable work in these pages.



SPORTS

Four in a Row

A spectacular kickoff return inspires another triumph over Yale.

IANNUZZI’S RUNBACK. If you witnessed it, you know. If you didn’t, be advised that Marco Iannuzzi’s 84-yard kick return in the 2010 Harvard-Yale game will stand as another high moment in the fabled series, as memorable as Bob Cochran’s juggling catch in the 1954 game, Mike Lynch’s fluttery field goal in 1975, or Clifton Dawson’s end-zone rush at dusk in the triple-overtime thriller of 2005.

Unlike those late-game heroics, Iannuzzi’s runback came with 30 minutes to play. But it turned the tide of a game that Yale had controlled from the outset, igniting a second-half rally that put the Crimson on top, 28-21. The victory was Harvard’s fourth straight over Yale, and its ninth in the last 10 meetings between the archrivals.

This year the teams met as also-rans. Beset by injuries to key players, Harvard had lost its Ivy League opener to Brown, and had paid dearly for special-teams misplays in a 34-14 loss to league-leading Penn. Yale had lost to Penn by a single touchdown and had defeated its other Ivy opponents.

For two periods at the Stadium on November 20, Yale’s hour seemed to have come round at last. The Blue looked unstoppable. Yale ran twice as many plays as did Harvard, and its aggressive defense held the Crimson to three first downs and 15 yards rushing. Yale had a 14-7 lead at halftime, and seemed certain to widen it.

Harvard’s only score had come late in the first quarter, on a trick play that had quarterback Collier Winters flipping the

ball to receiver Adam Chrissis, Chrissis tossing it back to Winters, and Winters throwing a 46-yard pass to Iannuzzi. That set up a short-yardage touchdown by Gino Gordon, the team’s all-Ivy running back.

Iannuzzi was on the field again after breaking a collarbone in the season’s third game. With a four-inch plate screwed to his clavicle, he’d been cleared to play just two days earlier. Resuming his role as the team’s ranking kick-return specialist, he fielded the second-half kickoff at his own 16-yard line, cut toward the Harvard sideline, and ran 84 yards for a touchdown. “All I saw were red jerseys,” he said later. “That’s a good feeling for a kick returner.”

Iannuzzi’s run dazzled the capacity crowd and pumped up his team. On Yale’s second possession of the half, tackle Josué Ortiz threw Eli quarterback Patrick Witt for a 12-yard loss and then blocked an attempted punt. Harvard took over at Yale’s 23-yard line and scored a go-ahead touchdown six plays later, with Gordon slicing into the end zone from two yards out. In the final quarter, a weak Yale punt allowed Harvard to score again, this time on a 12-yard pass from Winters to receiver Alex Sarkisian. Harvard now led, 28-14.

Ortiz and his defensive linemates repeatedly broke into the Eli backfield, sacking quarterback Witt twice in the first half and four times in the second. Linebacker Nick Hasselberg was in on 20 tackles, tying a Harvard single-game record. Yale's only second-half score came late in the game, when end Tom McCarthy recovered a fumble inside the Harvard 20-yard line and back Alex Thomas went in for his third short-field touchdown of the afternoon.

Though Harvard was victorious, the game was statistically one-sided. The Blue led in total offense, 337 yards to 178; controlled the clock for 37 minutes and 42 seconds; and ran 81 plays to Harvard's 48. "We had to make the most of very few plays," said head coach Tim Murphy afterward. "It was uphill all day." He praised Iannuzzi as "the epitome of a difference-maker. They are hard to find, and he made a difference today."

Iannuzzi came to Harvard from Calgary, Alberta, and was the team's senior figure—24 years old and married, with a two-year-old daughter. Quick feet, good hands, and tenacity are his most conspicuous attributes. He applied to Harvard three times before being accepted, and had three surgeries in four years of varsity football. His final season had begun convincingly, with touchdown catches against Holy Cross and Brown, and a 95-yard kickoff runback for a second touchdown at Brown. He bows out as Harvard's career leader in kickoff returns, averaging 26.5 yards per kickoff. He expects to take his degree in architecture and environmental sciences.

Determined to get into The Game, Iannuzzi arranged for more than 50 Canadian family members and friends to attend. They got their money's worth.

INJURIES WERE ENDEMIC in Ivy League football this year, and especially so at



Quarterback Collier Winters completed 13 of 16 passes against Yale. His longest throw, a 46-yard pass to receiver Marco Iannuzzi, set up Harvard's first score of the day. Back in action after breaking a collarbone in the season's third game, Iannuzzi returned the second-half kickoff for a game-changing touchdown.

quarterback. By midseason, six of the league's eight teams had lost a starting signal-caller.

Harvard was hard hit. Junior Collier Winters, a second-team all-Ivy quarterback in 2009, tore hip and groin muscles in the squad's first practice session, and appeared to be lost for the season. He was replaced by senior Andrew Hatch, a transfer from Louisiana State University (see "A Man for One Season," November-December 2010, page 71). Hatch made his debut in the opener against Holy Cross, completing 20 of 25 passes, three of them for touchdowns, in a 34-6 rout. But a helmet-to-helmet collision at Brown a week later cut short what might have been a scintillating coda to Hatch's college football career.

The hit occurred on Harvard's first series of the game, and although Hatch stayed on the field, his play was affected.

Harvard fell behind early and Brown prevailed, 29-14. Postgame testing revealed that Hatch had received a concussion.

Watching film to prep for his team's upcoming game with Harvard, Lafayette coach Frank Tavani was taken aback. "That shot was one of the worst helmet-to-helmet hits I've ever seen on videotape,"

Tavani would say later. "I ran it back maybe 20 times. I couldn't believe it wasn't a penalty—and I couldn't believe he got up."

Sophomore Colton Chapple took over for Hatch and did creditably, directing the offense in one-sided victories over Lafayette and Cornell. But the injury list was growing. Three games into the season, Harvard had lost Iannuzzi, senior receiver Chris Lorditch, and three starters from the defensive secondary. "There's no moaning about it, there's no use even discussing it," said coach Murphy. "[Others] are going to step up, and we're going to find out what we're made of."

Chapple's third start was a 21-19 loss to Lehigh, the eventual Patriot League champion. With high winds gusting through the Stadium, a 17-0 lead went by the board as the Mountain Hawks scored three passing touchdowns in the third period.

Hatch received medical clearance to start at Princeton a week later, but he was sometimes out of sync with his receivers and was intercepted twice in the first half. With

Final Ivy League Standings

Ivy and overall records / Points for/against

Penn	7-0	9-1	290	145
Harvard	5-2	7-3	273	187
Yale	5-2	7-3	224	211
Brown	5-2	6-4	247	210
Dartmouth	3-4	6-4	264	212
Columbia	2-5	4-6	222	228
Cornell	1-6	2-8	124	274
Princeton	0-7	1-9	165	334

Harvard holding an uncertain 21-14 lead, coach Murphy made a surprise move and sent Winters out to start the second half.

Working intensively with the team's trainers, Winters had made an unexpectedly quick recovery, and he came through with two touchdown passes—one of them on his first throw of the day—as Harvard struck back with 24 points to defeat the win-hungry Tigers, 45-28. Hatch, who had also suffered a concussion at LSU, was not cleared to play again after the Princeton game.

The return of Winters lifted the team. "He basically willed himself back to the playing field," Murphy would tell the *Boston Globe*. "He was rusty against Princeton, but

receiver Mike Cook connected on a 31-yard pass that Cook wrestled away from a Penn defender. The kick-return team could have used Iannuzzi in this one: Penn's outpouring of points in a 34-14 run-away had the Quakers kicking off seven times.

Penn dispatched Cornell, 31-7, a week later, to win the Ivy title outright for the second straight year. Harvard (5-2 Ivy, 7-3 overall) tied with Yale (5-2, 7-3) and Brown (5-2, 6-4) for second place in the league standings.

TIDBITS: Harvard leads Yale, 30-24-1, in games played since the formalization of Ivy League play in 1956. The Blue's only success of the past decade was a 34-13 win at the Stadium in 2006....The seniors on the 2010 team were the first in Harvard annals to defeat Yale, Princeton, and Dartmouth over a four-year stretch.

First things first: One senior was late to The Game. Baltazar (Zar) Zavala, a reserve receiver from El Paso, Texas, had gone to Houston for a Rhodes Scholarship interview. He took an early-morning flight back to Boston, reached the field at half-time, and found out after the game that he was one of four Harvard Rhodes-winners (see page 51). An engineering sciences and neurobiology concentrator, Zavala will study neuroscience at Oxford.

GG: Senior Gino Gordon, the team's top ground-gainer, ran for more than 100 yards in six of the team's games, scored a 74-yard touchdown at Lafayette, and had a 204-yard day at Princeton. He rushed for 1,059 yards and 10 touchdowns, and received the Crocker Award as the team's most valuable player. His career average of 5.3 yards per carry is Harvard's all-time best....Yale held Gordon to 36 yards, but couldn't keep him out of the end zone: he scored both the team's rushing touchdowns. He left the game after a helmet-to-helmet hit in the final quarter.

Strong arm: Quarterback Collier Winters was spot-on in the Yale game, completing 13 of 16 pass attempts for 124 yards and a touchdown. In the five games he played, Winters had a completion rate of 61 percent, tops among Ivy passers.

For the record: Until Marco Iannuzzi did

The 2010 Football Season

Holy Cross	W	34-6
at Brown	L	14-29
at Lafayette	W	35-10
Cornell	W	31-17
Lehigh	L	19-21
at Princeton	W	45-28
at Dartmouth	W	42-21
Columbia	W	23-7
at Penn	L	14-34
Yale	W	28-21

it, no Harvard player had returned two kick-offs for touchdowns in a single season....A blocked-punt touchdown at Princeton was the Crimson's first since 1992....Harvard hasn't lost at Dartmouth's Memorial Field since 1993.

G W T W: High winds were a factor in Lehigh's 21-19 win at the Stadium.

The Mountain Hawks scored the winning touchdown after a Harvard punt got caught in the jet stream, took a Lehigh bounce after falling to earth, and rolled back to the line of scrimmage.

All-Ivies: Three Harvard players—running back Gino Gordon, tackle Josué Ortiz '12, and defensive back and captain Collin Zych '11—made first-team all-Ivy. Ortiz led the league in quarterback sacks and tackles for loss, while Zych tied for the team lead in tackles with 79. Gordon and Zych were first-team selections in 2009....Linebacker Alex Gedeon, of Hudson, Ohio, and Lowell House, will captain next fall's team. He made 49 tackles in 2010, and was one of eight Crimson players named to the all-Ivy second team.

Attendance records: Paul I. Lee '46, on hand for his sixty-eighth Harvard-Yale game, was presented with a replica of the Little Red Flag. From 1950 to 2000, the original flag went to the alumnus who had seen the most Yale games. The custom lapsed, but a self-appointed committee led by Spencer Ervin '54 has resurrected it (see "Football Flag," November-December 2010, page 6)....Yale was the four-hundredth consecutive home game at the Stadium for John H. Norton, a Concord, Massachusetts, resident who attended Dean College. He saw his first one, a 13-0 defeat of Amherst in October 1940, as a toddler. Norton has viewed games not only as a spectator but also as an usher, program-seller, spotter, and statistician. He still keeps archival records of each season.

...and counting: Tim Murphy is now 12-5 against Yale. No previous Harvard coach has posted more than 10 wins over the Eli.

~"CLEAT"



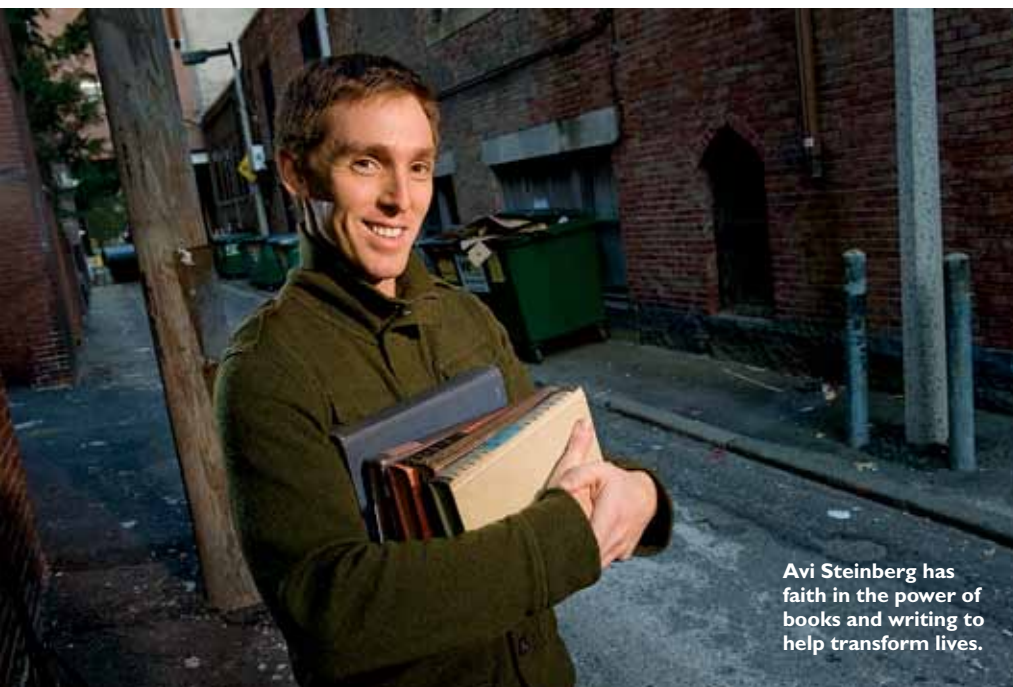
Saturday's hero: Marco Iannuzzi and his family before The Game. Left to right, his wife, Jenn, his parents, Tony and Cathy, and his two-year-old daughter, Isla.

against Dartmouth [the next weekend] he really increased our synchronicity, tempo, and just our overall confidence as an offensive football team." Winters played the entire game at Dartmouth, scoring twice on short-yardage keeper plays and throwing a touchdown pass in a solid 30-14 victory.

A 23-7 win over Columbia, with Winters hitting on 25 of 38 pass attempts, gave Harvard a clean sweep against the Ivy League's second-tier teams. But a Penn squad that would finish unbeaten in league play presented a stiffer challenge, and hopes of forcing a share of the Ivy title expired at Franklin Field on November 13. Misplays by the Crimson's punting and field-goal units helped Penn to a 17-point lead, and two third-period touchdowns on consecutive possessions put the game out of reach. Harvard was unable to score until the fourth quarter, when Winters and senior



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The Game 2010.



Avi Steinberg has faith in the power of books and writing to help transform lives.

ALUMNI

Books behind Bars

Avi Steinberg's memoir of life as a prison librarian

AN “EARNEST YESHIVA BOY,” Avi Steinberg ’02 never thought he’d spend his days in prison. But in 2005, when offered the post of librarian at the Suffolk County House of Correction in Boston, he took it, glad to trade writing obituaries for the *Boston Globe* as a freelancer for a more secure job with dental insurance and a surplus of live, albeit caged, bodies. He was eagerly unaware of what was in store. “I knew this would be a stretch, and I went there searching for something,” he adds. “But I didn’t know what that was.”

For nearly two years he promoted books and creative writing to a range of students: pimps, prostitutes, junkies, thugs, robbers, con men, and even killers. His recently published memoir, *Running the Books: The Adventures of an Accidental Prison Librarian* (Random House), is a rich meditation on this wild experience and the related nuanced questions about morality and humanity that he confronted armed with little more than his own sensitivities and book learning.

“A prison library is a fascinating place,” Steinberg says in retrospect. “People there

have a dire need to connect—with other people, with estranged loved ones, with their past, with themselves.” At the same time, the library is the only place, apart from solitary confinement, where inmates can experience any quiet in a social setting; carpeting and books dull the roar and screams of prison life that reverberate against all that steel and concrete. It was within this context of books—of writing, reading, and thinking—that Steinberg aspired to create “a space where you can make people open up instead of close down, to awaken people instead of numbing them,” he explains. “Everywhere else in prison is a place of shut down, lock down, literally.” The library allows people to relax, briefly, away from the power-mongering and threats of physical harm, and reminds them “that they are more than criminals, if they choose to be.”

THE JOB’S IMMEDIATE MILIEU was familiar enough: “Libraries feel like home,” Steinberg says. Born in Jerusalem, he and his family lived in Cleveland until moving to Cambridge in 1993, when his father, Bernard Steinberg, became director of

Harvard Hillel. Growing up, “there was always reading, and conversations about books; we’d pull one out to talk about it. And there was a willingness to argue. That’s part of the Jewish tradition: arguing that doesn’t lead to conflict.”

Raised Orthodox, Steinberg went to the Maimonides School in Brookline, where he channeled his “considerable adolescent hooligan rage into, of all things, intense Torah study.” That included Torah summer camp in the West Bank, where whole days and nights were spent in the *beit midrash*, the House of Study. In an assigned table spot surrounded by the Talmud (a stack of six volumes), a Hebrew Bible, a set of Maimonides’ Code, and Hebrew and Aramaic dictionaries, Steinberg’s teenage years were taken up by studying and praying: “I loved wrestling with the ancient books, having them speak to me in their original mysterious languages,” he writes.

This library living continued at Harvard. “I wanted to study all day—and not for the grades or exams, all of which are absent in yeshiva, but just for the love of it,” he explains. A history and literature concentrator, he “basically just went into Widener Library and emerged bleary-eyed a few years later.”

At the prison, inmates nicknamed him “Bookie.” With no library-related degree and only a modicum of in-house training, Steinberg threw himself into the union job. His boyish face and Harvard credentials marked him as the “youngest, greenest of staff members”—as no one ever failed to remind him. Advice came from all sides: “Trust no one,” “Be careful,” and “Watch your back.”

Any assumptions about the ease of book learning quickly disappeared. “As a prison librarian, you need to fight for the space, fight to purchase the books, fight to keep books on the shelves, fight for people to be able to come to the library, fight to keep people *coming back* to the library,” Steinberg says of his daily struggles. “It takes a lot of effort to bring books alive for people. To me, this was not obvious before.”

In the subculture of the library he found a “prison crossroads, a place where hundreds of inmates come to deal with their pressing issues”: pending legal cases, illiteracy, stalled educations, nonexistent



Visit harvardmag.com/extras to read an excerpt from Avi Steinberg’s memoir.

careers. "There is no wake-up call more effective than 25 convicts in matching uniforms coming at you first thing in the morning," Steinberg writes. "The chaos begins right away."

The library is also a hidey-hole, a place where inmates can sneak into the stacks to engage in illicit activities: hatching plans, or passing notes. Such "kites"—letters filled with love promises, soap-opera-worthy jealousies, and not a few erotic poems—are usually passed between men and women (who live in sex-segregated prison quarters and must use the library

separately) inside books in the stacks. These notes are contraband, as are any weapons made from hard-bound books, such as knives, mallets, or simply blunt instruments. Also banned in cell blocks are pens, tape dispensers, CDs and DVDs, paper clips and staples. Magazines, though not banned, have been known to be rolled up tight with duct tape—to become fear-some billy clubs.

Inmates were intrigued by two of the most famous Boston prisoners who educated themselves while incarcerated, Malcolm X and gangster Whitey Bulger,

according to Steinberg. "For each person seeking spiritual guidance or the development of a political conscience, like Malcolm, there was a cold materialist, studying how to employ violence more efficiently...Just like Whitey," he writes. The library is not allowed to carry the most-requested book: Robert Green's *The 48 Laws of Power*, an update on Machiavelli's *The Prince*, made famous on the streets by rapper Tupac "Makaveli" Shakur. Steinberg found the laws a bit unnerving: "Strike the shepherd and the sheep will scatter"; "Get others to do the work for you, but always take the credit"; "Use selective honesty and generosity to disarm your victim"; and "Despise the free lunch."

Faith and religion led to perhaps the richest conversations and debates at the library. Inmates were fascinated by Steinberg's background and by Hasidism, which Steinberg (no longer fully observant) came to see as not dissimilar to the street gangs that shape many prisoners' lives. "In their minds, Hasidism embodied the ideals of thug life," he writes: "a reputation of viewing the world as us-versus-them, and running their businesses and community institutions without any regard for a system of law imposed by outsiders, persecutors of their community. And what's more, they did it in style. They dressed their own way, talked their own way, walked their own way."

STEINBERG FOUND the best approach to inmates was to ask the simplest question: "What are you looking for?" Many sought what was elusive: finding peace with themselves. Despite repeated warnings, those were the people Steinberg drew close to. This caused him no end of worry about the boundaries between prisoner and jailer, but also honed his conscience—and spurred a maturity—in a way he never could have done by himself in the library of the yeshiva, or even at Harvard.

"It takes a lot of courage to be kind to anyone in prison," he says. "Kindness was literally outlawed." Strict bureaucratic rules applied, as did an unwritten "us versus them" mentality; nobody was explicitly trusted, no one was a "friend." Policies precluded staff from "sharing any item, no matter how small, with an inmate," Steinberg writes. "This was what made the prison library—a *lending* library after all—such a radical concept." And

Crimson in Congress

The Republican resurgence of 2010 decreased alumni ranks—defined for this exercise as graduates of or matriculants in a degree program at the University—overall on Capitol Hill. Two years ago, 38 Harvardians took their seats in the 111th Congress; Al Franken '73 later boosted that number to 39, until the death of Edward Kennedy '54, LL.D. '08, in 2009. In the 112th Congress, the likely total at press time appears to be 31, reflecting a net gain of one for the Republicans, a net loss of eight for their rivals. Representative Jane Harman, J.D. '69, Democrat of California, remains the only woman in the group.

In the Senate, the Harvard contingent added both a Democrat, Richard Blumenthal '67 of Connecticut, and a Republican, former congressman Pat Toomey '84 of Pennsylvania. Incumbent Democrat Russ Feingold, J.D. '79, of Wisconsin lost his reelection bid, while Republicans Michael Crapo, J.D. '77, of Idaho and David Vitter '83 of Louisiana won theirs.

In the House, Republican Thomas Petri '62, LL.B. '65, of Wisconsin, remains the sole member of his party to have graduated from Harvard. Randy Altschuler, M.B.A. '98, of New York, came close to joining him, but ultimately conceded on December 8, losing by 263 votes out of more than 194,000 cast.

On the Democratic side of the aisle, Artur Davis '90, J.D. '93, of Alabama, withdrew to mount a failed gubernatorial bid, and Joseph A. Sestak Jr., M.P.A. '80, K '82, Ph.D. '84, of Pennsylvania, ran for the Senate but lost to Pat Toomey.

Meanwhile five alumni first elected in 2008—John Adler '81, J.D. '84, of New Jersey; Bill Foster, Ph.D. '83, of Illinois; Alan M. Grayson '78, M.P.P. -J.D. '83, G '87, of Florida; Dan Maffei, M.P.P. '95, of New York; and Walter C. Minnick, M.B.A. '66, J.D. '69, of Idaho—lost their seats, as did House veteran Chet Edwards, M.B.A. '81, of Texas.

The line-up at press time (asterisks mark newcomers):

Senate Republicans: Michael D. Crapo, J.D. '77 (Id.); *Pat Toomey '84 (Pa.); David Vitter '83 (La.).

Senate Democrats: Jeff Bingaman '65 (N.M.); *Richard Blumenthal '67 (Conn.); Al Franken '73 (Minn.); Herbert H. Kohl, M.B.A. '58 (Wisc.); Carl Levin, LL.B. '59 (Mich.); John F. (Jack) Reed, M.P.P. '73, J.D. '82 (R.I.); John D. Rockefeller IV '58 (W.Va.); Charles E. Schumer '71, J.D. '74 (N.Y.); Mark R. Warner, J.D. '80 (Va.).

House Republican: Thomas E. Petri '62, LL.B. '65 (Wisc.).

House Democrats: John Barrow, J.D. '79 (Ga.); Gerry Connolly, M.P.A. '79 (Va.); James H. Cooper, J.D. '80 (Tenn.); Barney Frank '61, G '62-'68, J.D. '77 (Mass.); Jane Harman, J.D. '69 (Calif.); Brian Higgins, M.P.A. '96 (N.Y.); Jim Himes '88 (Conn.); Ron Kind '85 (Wisc.); James R. Langevin, M.P.A. '94 (R.I.); Sander M. Levin, LL.B. '57 (Mich.); Stephen F. Lynch, M.P.A. '99 (Mass.); James D. Matheson '82 (Utah); John P. Sarbanes, J.D. '88 (Md.); Adam B. Schiff, J.D. '85 (Calif.); Robert C. Scott '69 (Va.); Bradley J. Sherman, J.D. '79 (Calif.); Christopher Van Hollen Jr., M.P.P. '85 (Md.); David Wu, M '81 (Ore.).



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was Steinberg himself a teacher, mentor, jailer, or baby-sitter? Sometimes he “quietly permitted modest amounts of dancing in the library,” or did online searches for inmates, or allowed loans of prohibited books, such as the black, urban pulp fiction novels of Triple Crown Publications. Once, breaking serious rules, he brought in a chocolate cupcake for a man celebrating a lonely birthday and allowed him to eat it in private in the library office. “Even the toughest guys I met said that anyone who tells you they didn’t cry in the early days of imprisonment, or still don’t, sometimes by themselves in the dark of night, is lying,” Steinberg notes.

Among those he became closer to was a former drug dealer turned aspiring television chef, Chudney; Steinberg helped him develop a plan of action, track down recipes, and plow through extensive applications to cooking schools. Another inmate, C.C. Too Sweet, a short, loud-mouthed attention-seeker, was writing his magnum opus: an autobiography detailing his rise from a childhood of physical abuse by his mother to a successful career as a pimp. He and Steinberg together edited and shaped hundreds of pages of a handwritten manuscript over the course of a year. (Inmates may write only in prison-issued notebooks, using specially designed bendable pens.)

One inmate Steinberg befriended was Jessica, an addict and a Sylvia Plath fan (as were many women inmates) who came to his creative-writing class. She longed to reunite with the baby son she had left in a church pew with a note—who had turned up on the male side of the prison. From the library window, she silently watched him play basketball in the yard, but never came into contact with him. Surely one of her tasks, as Steinberg points out, was “to come to terms with the crime she was never charged with—abandoning her son.” He urged her to compose a letter and another inmate spent weeks drawing her portrait, both of which Steinberg had ambivalently agreed to deliver to her son. But as this once-removed encounter drew near, Jessica ripped up the letter and portrait and was transferred to another prison without saying good-bye. A few months later, shortly after her release, she was dead of a drug overdose.

Later on, Steinberg found out that another recently released inmate, Chudney, the aspiring chef, had been shot in

the back and killed, apparently because he had inadvertently crossed into enemy gang territory with his brother. At this news, Steinberg shut the library for the day. “Then I closed my eyes and was initiated into an ancient club, those who cry alone in the darkness of prison.”

By that time he had developed serious stress-related back injuries and had had some unsettling run-ins with a few guards. One deliberately set off a foul-smelling spray to disrupt Steinberg’s most constructive movie discussion (on Baz Luhrmann’s *Romeo + Juliet*, a modern take involving Verona Beach street gangs shown during the library’s Shakespeare Festival). That caused chaos and justifiable fury among the inmates. Meanwhile, he writes, even though the “book-slinging sheriff persona still worked wonders at cocktail parties,” the reality “was starting to give me acid reflux. I wasn’t a visitor in this prison. I held a key and was beginning to feel infected by it. Frankly I was falling apart, headed toward something of a mental and physical breakdown.” To top things off, he was mugged at knifepoint on his way home one night by a former library patron. Though he recognized

Steinberg—“You’re the book guy!”—the mugger still took Steinberg’s wallet and ran, turning back to yell, “Hey, I still owe you guys two books!”

FIVE MONTHS LATER, Steinberg left the library. For him, that incident “encapsulated the humor and sadness of prison life, and the fact that not everything has a redemptive ending. It made my decision to leave a little clearer.”

He is now a full-time writer in Philadelphia, still sorting through the depth of his prison experience. Much of what he saw and heard he did *not* write about, preferring to focus on the “human stories” because “I want people to see that this place cannot be reduced to a message or, as it is so often, a political spin.” The guards, for example, deserve a whole book to themselves: “I know they encounter inmates in much more trying circumstances than I saw in the library.” Still, he suspects his book will not be on the shelves of the Suffolk County House of Correction—or touted by his Orthodox schools.

In the book, he details an episode from Torah camp in which he and two friends unwittingly trespassed into a Palestin-

Heritage and Service

CAUSA crystallized in 1994 when Cesar Conde '95 and Carlos Zumpano '96 bumped into each other in the Yard and discovered they'd had the same idea: Cuban-American students at the College needed a core around which to focus their joy in celebrating and sharing their heritage, and their efforts to promote a free and democratic Cuba. Since then, the Cuban-American Undergraduate Student Association at Harvard (www.harvardcausa.org) has been a model for similar groups at other universities and has reached out to Cuban Americans in the graduate schools and to alumni.

On October 1-3, CAUSA's current members, led by co-presidents Daniel Balmori '11 and David Garcia '11, convened the group's first alumni conference: to foster new avenues for service and activism and build bridges across generations. “A Community of Experiences” combined the serious—including talks by former Miami mayor Manny Diaz, a fellow at the Institute of Politics; Modesto A. Maidique, president emeritus of Florida International University, a visiting professor at the Business School; and Jorge I. Domínguez, vice provost for international affairs and Madero professor of Mexican and Latin American politics and economics—with breaks for networking, Cuban fare, and an evening of dominoes, music, and dancing.

CAUSA's mission statement calls for “passionately promoting” its goals; the gathering reflected that. Alumni stressed the duty, and satisfaction, of sharing the benefits of a good education. Conde (now president and chief operating officer of Univision Networks) and Zumpano described their projects to help low-income Hispanic youths; Suzanne Besu '01 told of home visits to persuade protective Cuban-American parents to send their high-achieving children to cold and distant Cambridge. The undergraduates proved their passion in mounting the conference. Their hard work, said Teresita Alvarez-Bjelland '76, M.B.A. '79, the Harvard Alumni Association's first Hispanic president, left her feeling “invigorated, inspired, touched, proud, and hopeful.”

ian farmer's field and were suddenly confronted by his sons. "They were tough and courageous. We, on the other hand, played adventure video games in air-conditioned suburban palaces." His friend Moshe took out a well-worn copy of the Torah and gave the book to the Arab boys' leader, indicating it was a gift. Steinberg was ashamed at the time because it is taboo in Jewish tradition to give away a holy book, especially to an enemy.

Prison helped changed Steinberg's view of that incident. "We had been taught to place the Other on a narrow spectrum of pity, suspicion, and hate....But Moshe...knew the holiness of the book was in sharing it." In prison, as on the West Bank, he writes, book-sharing is taboo. "I met people on the outside of prison who made it clear they didn't want their tax dollars funding a pretty library for violent criminals." Steinberg understands that, just as he understands "the misery we had felt as kids relinquishing our holy book to the enemy. It involved crossing a very real boundary. What did we accomplish by it, or by running a library for convicts? Perhaps nothing. But there was a greater danger in not doing these things—or, at least, in not being willing to try." ~NELL PORTER BROWN

A Milestone for Asian American Alumni

ORGANIZED BY THE Harvard Asian American Alumni Alliance (HAAAA), the three-day Asian American Alumni Summit on October 15-17 drew more than 400 people from six decades and all of Harvard's schools (<http://summit.haaaa.net>). "We are immeasurably diverse as a group, yet we share many of the same goals," said Jeannie Park '83, who co-chaired the event with Jeff Yang '89.

The summit celebrated progress made since the 1970s, when an Asian-American presence was virtually nonexistent on campus, and examined remaining challenges faced by Asian Americans today. During the opening plenary session, "Where We Stand: The Changing Asian-American Experience at Harvard," William F. Lee '72, managing partner of WilmerHale and the first Asian American to serve on the Harvard Corporation, spoke of a time when encountering another

Harvard Arab Weekend

The Harvard Arab Alumni Association and the Middle East and North African Groups (MENA) at Harvard hosted a fourth annual gathering at the University on November 18-21. Among the major speakers were Queen Noor of Jordan, who gave the opening speech, and Prince Turki Al Faisal Al Saud, who presented "A Saudi Foreign Policy Doctrine for the New Decade." Panel discussions focused on the global economy in the Middle East, as well as on career opportunities in medicine, public health, design, and education. For additional details, visit www.harvardarab-alumni.org/MENAweekend/index.php.

Asian student at Harvard was a rarity.

Yet by the time Jane Bock '81 arrived on campus in 1977, a critical mass of Asian-American students was ready to be politically organized. They worked to gain minority status for Asians at Harvard, and Bock's sociology thesis, "The Model Minority in the Meritocracy: Asian Americans in the Harvard/Radcliffe Admissions Process," prompted a Department of Justice inquiry into the treatment of Asian-American college applicants. The number of Asian-American students at Harvard doubled in the next four years. Not quite 20 years later, HAAAA co-chair Jeff Yang could point out that the group's summit venues on campus included both the Fong and Tsai auditoriums.

The summit's 50 speakers and presenters ranged from Secretary of the Cabinet Chris Lu, J.D. '91, to novelist Gish Jen '77 and professional poker player Bernard Lee '92, A.L.M. '94. There were panel discussions on topics such as social entrepreneurship and public service, film screenings, and an "elevator-pitch" competition.

Affirmative action and race-blind admissions were recurrent themes. Several speakers expressed concern that enrollment of Asian-American students at the College, currently 17 percent, has remained flat for the past 30 years despite that group's growing representation in the applicant pool.

The summit was also a forum to advocate academic study of Asian-American culture at Harvard. Eileen Chow '90, former assistant professor of Chinese liter-

ary and cultural studies, who helped develop the Asian-American studies minor track in the East Asian studies program, was among the speakers, as was Athena Lao '12, who helped with that effort and is co-president of the Asian American Association (AAA) student group. The AAA can help bring the more ethnically specific Asian cultural groups at Harvard together, Lao says, and encourage students who identify with the Asian-American community "to say it proudly."

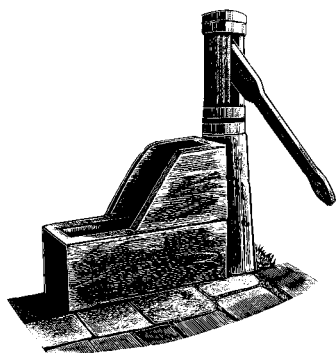
Reaching across divides within that community was also a theme in the keynote address by Chris Lu, who serves as an assistant to his law-school classmate Barack Obama. Lu emphasized responsibilities beyond Harvard, pointing out that although the "model minority" stereotype applied to all the Harvard graduates in the room, it didn't necessarily apply to the Hmong high-school dropout. "Let us commit ourselves to those who have not fared as well," he said.

Lu asked the audience to raise their hands if their parents were immigrants, and nearly everyone did. "My story is your story. It's the quintessential immigrant story," he said, after narrating his then 18-year-old father's arrival in America, which included a five-day bus ride to Tennessee during which the traveler consumed nothing but hamburgers and milk, the only items he could name in English. Many other speakers also cited the importance of their immigrant parents' having given them the opportunity and, in some cases, the freedom to pursue their dreams.

All the same, if there's any constant at Asian-American alumni gatherings, it is jokes about overbearing parents. During the panel "The Road Less Traveled: Asian Americans in Atypical Careers," Georgia Lee '98, director of the film *Red Doors*, said her parents told her, "You can do anything you want—as long as you are a biochemist, doctor, or lawyer." ~SARAH ZHANG

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gatherings, visit www.commencementoffice.harvard.edu.**

New Faces



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

THE WHITE MEN hanging on Harvard's walls are moving over. With a \$100,000 grant from the president's office, the Harvard Foundation for Intercultural and Race Relations began in 2002 to commission oil portraits of minority and female Harvardians. Foundation director S. Allen Counter has said, "We simply wish to place portraits of persons of color and others who've served Harvard among the panoply of portraits that already exists."

About 750 oil portraits occupy Harvard halls, not counting the Law School, according to a 2002 inventory. Some 60 are of white women. Only two are of minorities. The *Boston Globe* quoted Sandra Grindlay, recently retired curator of the University Portrait Collection, as saying that the portraits "have the power to represent the institution, insofar as when some students look at them, they think, 'If this is Harvard, what am I doing here?'"

Counter assembled a committee to select portrait subjects who had worked at the University for at least 25 years, held a competition, and chose a painter, Stephen Coit. The first of 12 portraits Coit has done for the foundation is of the late Archie Epps III, the College's longtime dean of students, who was African American. He has also painted Rulan Pian, a Chinese American who is professor emerita of mu-

sic and of East Asian languages and civilizations, and Rabb professor of anthropology emeritus Stanley J. Tambiah, from Sri Lanka. The most recent portrait, unveiled in December, is of an imagined Caleb Cheeshahteumuck, A.B. 1665, of Martha's Vineyard, the first Native American to graduate from Harvard. (He has had commissions from other parts of Harvard as well: for example, from the Radcliffe Institute for Advanced Study for a portrait of President Drew Faust.)

Coit '71, M.B.A. '77, of Cambridge, is an alumnus of Silicon Valley, where he was a venture capitalist. He always liked to draw. In 1992, when he was laid up for months with a bug, a friend gave him a box of pastels to experiment with. In 1996, at the age of 48, he quit funding entrepreneurs to paint full time.

As an undergraduate, Coit looked at the portraits in Lowell House, where he lived, and thought them a lifeless lot. This November he added a portrait of his own to their ranks (below). It is of fellow Lowellian Chester M. Pierce '48, M.D. '52, professor emeritus of both psychiatry and education and a psychiatrist at Massachusetts General Hospital. Last spring the hospital named its global psychiatry division in Pierce's honor.

A good story about Pierce turns up in *Football: The Ivy League Origins of an American Obsession* (2001), by Mark F. Bernstein: "In 1947, [he] be-

came the first African American to compete against a white college in the South when the Crimson traveled to Charlottesville to play the University of Virginia. A few weeks before the game, a Virginia athletic official called [Harvard director of athletics] Bill Bingham to suggest that Pierce not make the trip, lest there be any disturbances in the stands. To his credit, Bingham made it clear that either the whole Harvard team went or no one went.

A few Harvard players, including captain Ken-ny O'Donnell, later an aide to President John F. Kennedy, wrote to the Virginia players reiterating that Pierce was a member of the team and would play. The Cavaliers, many of whom came from the Northeast anyway, unanimously voted their agreement.

"If the Virginia players were not a problem, the Virginia citizenry was. When a Charlottesville hotel manager insisted on lodging Pierce in a black hotel, [head coach Dick] Harlow moved the rest of the team there, as well. When a local restaurant owner made Pierce use the rear door, the entire Harvard team followed. When the Crimson entered the stadium on Saturday afternoon, Harlow ran in next to Pierce, staying on the side closest to the stands so that any debris thrown might hit him instead. Despite cat-calls from the bleachers, the game passed without incident...."

Harvard got a drubbing, 47-0, but at the end of the day was not shame-faced.

~PRIMUS V



Visit harvardmag.com/extras to see a gallery of Coit's Harvard Foundation portraits.



Chester Pierce lecturing in the Ether Dome at Massachusetts General Hospital. Apollo stands behind him.

Good Dogs

For centuries, a simple technology permitted people to survive the Arctic.



WINTERS in Kugaaruk, an Inuit community on the Gulf of Boothia in Canada's Nunavut Territory, are cold, very cold, and one wants one's vehicle to start reliably in the morning. An experienced Inuit hunter said to Maija Lutz many years ago, when telling her about a tragic accident, "Ski-doods break down. My dogs never broke down."

Now retired as the librarian of the Tozzer Library at Harvard's Peabody Museum of Archaeology and Ethnology, Lutz is writing a book about the history and development of contemporary Inuit art, to be published by the Peabody Museum Press. She is focusing on the museum's rich Chauncey C. Nash Collection of about 300 Inuit prints and sculptures acquired by Nash between 1959 and 1967, a time of "great experimentation among Inuit artists," says Lutz, "as they explored new methods, materials, and subject mat-

ter, or discovered their innate talents for the first time."

Nash, A.B. 1907, was a Boston stockbroker and serial collector—of Colonial tools and furniture, New England coinage, and, in his seventies, Inuit art. His strong interest in wildlife took him to Churchill, Manitoba, known for its polar bears, beluga whales, and migrating birds, and there he had his first encounter with Inuit sculptures.

The piece shown here was made in Kugaaruk of carved ivory, leather, and sealskin. It is 7³/₈ inches long. This community was "especially well known for its carvings of small ivory figures and tableaux representing the daily lives of the Inuit," says Lutz. "As with many of these objects, which were used as items of both trade and sale as early as the nineteenth century, we do not know the identity of the artist." This dogsled, she adds, "depicts a way of life that most Inuit living today have only heard about." ~C.R.





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