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LETTER FROM THE DEAN

MICHAEL D. SMITH
EDGERLEY FAMILY DEAN OF THE FACULTY OF ARTS AND SCIENCES; JOHN H. FINLEY, JR. PROFESSOR OF ENGINEERING AND APPLIED SCIENCES

ACADEMIC YEAR 2013–2014
Dear colleagues and friends,

I am delighted to provide you with this report, which highlights a small sample of the wide-ranging and infinitely exciting activities of the Faculty of Arts and Sciences during the academic year 2014 (July 2013 through June 2014). We accomplished much during another year of fiscal constraint. Each year looks financially a little bit brighter, and we describe the details of our progress in managing these challenges later in this report (pg 76).

Collaborations across disciplines, departments, and schools have given rise to important new faculty initiatives, and we note advances in the areas of big data and applied computational science, sustainable energy, the foundations of human behavior, and the role of the humanities in the 21st century. And exciting momentum is growing in many other research initiatives important to the future of our institution and the world. I encourage you to use this report as a launching point to learn more about, and possibly get involved in, these and many other of our faculty’s intellectual investigations.

This past year, what it means to be a member of Harvard’s learning community came to the foreground of campus discourse in multiple ways. The “I, Too, Am Harvard” campaign offered a powerful platform for black students to explore and unpack their experiences at Harvard, revealing in poignant and sometimes disheartening ways the continuing challenges of diversity and inclusion. Inspired by these and other student voices, Deans Pfister and Khurana formed a working group focused on fostering an inclusive academic community, chaired by Jonathan Walton, Plummer Professor of Christian Morals and Pusey Minister in the Memorial Church (pg 9–10). The FAS Committee on Sexual Misconduct Policy and Procedures, launched this past spring and chaired by Professor of History Alison Johnson, is engaging students, faculty, and staff in what has become a national dialogue on sexual and gender-based harassment in colleges and universities. Dean of Undergraduate Education Jay Harris, through the Committee on Academic Integrity, has furthered a discussion begun several years ago on our responsibilities and commitments as members of an academic community (pg 12). These are critical conversations, and I hope they will have the benefit of your participation.

The past year was the first year of the public phase of our Campaign for Arts and Sciences. The combined efforts of annual planning in the academic departments and units of the FAS together with the critical input of volunteers enabled us to develop compelling priorities for the Campaign that have been warmly received by alumni and other supporters. We made tremendous progress toward our financial aid goal, thanks to support of many donors and, in particular, with the leadership of Ken Griffin AB ’89 through an extremely generous gift. House Renewal was propelled forward with numerous generous gifts this year, including significant commitments from Chris Flowers AB ’79 and Craig Stapleton AB ’67, MBA ’70. The Hutchins Challenge — established by Glenn Hutchins AB ’77, JD ’83, MBA ’83 and his family — continues to motivate people to direct transformational gifts to House Renewal. International fundraising took a significant step forward with large donations in support of academic initiatives, professorships, and financial aid, and we have increased our activities to engage volunteer leadership internationally as well. This year will see us fill out our fundraising priorities with a broad range of intellectual initiatives from across the academic divisions.
The achievements touched upon in this report were possible only through the hard work and dedication of many in our unparalleled community, but there are a few individuals whose service deserves special recognition. First among them is Don Pfister, Asa Gray Professor of Systematic Botany. When I asked Don to serve as the interim dean of Harvard College, I knew he brought with him the wisdom and experience of forty years at Harvard and his many leadership roles, notably as a past Master of Kirkland House and dean of Harvard Summer School. But I could not have anticipated just how much his warmth, his insights, and his fungus-laden humor would make this interim year one to remember, and to cherish, for students, faculty, and staff alike.

I am also deeply grateful to Jim McCarthy, Alexander Agassiz Professor of Biological Oceanography, for his leadership of the Faculty Executive Board of the Harvard Museums of Science and Culture. Jim has played a critical role in developing and launching the HMSC consortium of museums, a novel model for university museums that opens new opportunities for teaching, research, and public programming. As he steps down after two years of leading the board, I am grateful to Jim for positioning HMSC so well for the future and look forward to seeing the full promise of this model realized.

I hope you are as proud as I am of what we continue to accomplish in spite of the real-world challenges that intrude on our primary mission of teaching and scholarship. We are fortunate to teach, mentor, and advise our extraordinary students, and I couldn’t imagine working with a better group of faculty and staff. I look forward to all we will accomplish together in the new academic year.

Sincerely yours,

Michael D. Smith
Edgerley Family Dean of the Faculty of Arts and Sciences; John H. Finley, Jr. Professor of Engineering and Applied Sciences
SPECIAL FEATURE: OBJECT-BASED LEARNING
The Power of Objects

Every object has a story, and most have many stories.

That's the premise behind several courses taught by historian Laurel Thatcher Ulrich, 300th Anniversary University Professor. This year, she offered a campus and HarvardX class on "Tangible Things" that showcased some of the artworks, historical relics, scientific tools, and other "stuff" in Harvard's vast collections—from a fragile gingham tunic worn by a Harvard student in the 1830s to a preserved fish in the Museum of Comparative Zoology.

The course demonstrated how much can be learned by closely examining what people have created, saved, arranged, exchanged, or thrown away. "An object can be the beginning of a historical investigation," Ulrich told students in the HarvardX course, which she co-taught with Sarah Anne Carter '02, PhD '10 of the Chipstone Foundation in Milwaukee, and with support from many Harvard archivists, librarians, and curators. "History isn't just found in written documents. It is also found in artifacts of all kinds."

Ulrich, who also gave a spring-term research seminar on "Working with Harvard Collections," is one of many FAS faculty who enhance their teaching through real or virtual visits to Harvard's world-renowned museums, archives, libraries, and grounds—reflecting a growing trend in learning from objects. According to the 2014 senior survey, three-quarters of students had classes that used the FAS museums, and 90 percent had visited the museums during their time at Harvard.

"Object-based learning adds a dimension to how we teach, how we learn, and how we do research," says Peter Galison, Joseph Pellegrino University Professor. "It is a great moment here at Harvard for this new kind of work."

In her art history courses, for example, Jennifer L. Roberts, Elizabeth Cary Agassiz Professor of the Humanities, has undergraduate and graduate students spend three hours examining a single piece of art they've chosen for a research paper. Professor of astronomy Alyssa A. Goodman has taken her data visualization class to the Harvard Map Collection to compare old maps with modern geographic information system technology.

Object-based learning also took place during the inaugural Harvard Museums' Seminar on Innovative Curatorial Practice. Held in April, this intensive three-day seminar featured international curator Carolyn Christov-Bakargiev and gave graduate students from across Harvard a chance to discuss curating and exhibiting with faculty and each other.

"Curatorial Practice" was envisioned by Galison, who directs Harvard's Collection of Historical Scientific Instruments. The collection hosted several memorable exhibits this year, including a refurbished display in the Science Center of IBM's Harvard Mark I, the world's first programmable computer.

"We use objects in the collection as a path for students to learn about history, culture, and science in a way that is not easily done through texts alone," Galison explains. "We can learn something about how people thought about time, for example, by studying the hundreds of 'pocket' ivory sundials that were used for centuries as a traveler's main clock."

Scholars are increasingly using display itself to express scholarship, with exhibits serving "not just as popularization, but as a form of presenting new knowledge," according to Galison. "Here, too, we are involving students—undergraduates, graduates, and postdocs—in preparing a long series of exhibits on Cold War pedagogy, 'Tangible Things,' the Rorschach test, the history of anatomy, and the Turing test—to name a few."

HARVARD COLLECTIONS AT A GLANCE

Our collections contribute to making a Harvard education unique.

- The six FAS museums house more than 28 million artifacts and specimens.
- Each museum holds one of the largest collections of its type in the United States, if not the world.
- Among the treasures: Material from the Lewis and Clark expedition, the Blaschka glass flowers, nearly 600 distinct meteorites, 1.4 million fungi, bryophytes, and algae, and scientific tools bought by Benjamin Franklin.
Donald H. Pfister, Asa Gray Professor of Systematic Botany, steered Harvard College with wisdom and warmth during the 2013–2014 year. He was appointed interim dean of Harvard College in July, marking a time of transition as Dean Evelynn M. Hammonds had completed her five-year term and a search began for a new College dean. Dean Pfister, who previously served as dean of the Harvard Summer School, provided careful stewardship and sought not only to continue the business of the College, but also to foster community and make progress in implementing policies and procedures supporting the College's mission.

Pfister’s successor as dean of Harvard College, Rakesh Khurana, will continue building on this foundation. Dean Khurana, Marvin Bower Professor of Leadership Development at Harvard Business School, professor of sociology in the FAS, and co-master of Cabot House, is a noted scholar and teacher with extensive experience working with undergraduates and a strong commitment to the College. The two deans have worked to ensure that Harvard College continues to provide a deeply transformative experience, preparing undergraduates to advance knowledge, promote understanding, and serve society.

**Pfister’s Open Door Deanship**
Upon arrival at University Hall, Dean Pfister sought to fully engage students in an effort to strengthen and promote community. His 40 years of experience as a faculty member—including 18 years as co-master of Kirkland House—and his work on various FAS committees over the years prepared him well for this role. Even before students had arrived on campus in August, Pfister had sent the first in what would become a series of periodic messages to all undergraduates. The subject matter varied, and included student-generated content, news from across campus, and even book suggestions for pleasure reading.

Pfister made a point of visiting Houses and attending activities, performances, and festivities. He held office hours throughout the year and agreed to meet with students regarding any subject. The dean extended his open door policy for staff, expanding his community-building approach beyond the student body.

**Khurana Makes Community Building a Priority**
Incoming Dean Khurana wasted no time continuing the team- and community-building efforts begun by Dean Pfister. Appointed in January, he immediately began collaborating with staff, faculty, and students in preparation for his new role, which began officially on July 1. He worked with the College cabinet alongside Dean Pfister, participated in meetings with staff and students, and was engaged in addressing some of the challenges facing the College.
In June, Khurana led a day-long strategy retreat for the College leadership team to reaffirm the College’s mission of providing a transformative experience — intellectually, socially, and personally — for all students, which is at the heart of a residential liberal arts college. The team spent the day developing a strategic plan to reinforce that mission, including the establishment of priorities and the setting of short-term, mid-range, and long-term goals.

Almost 82 percent of students admitted to the Class of 2018 will matriculate at the College this fall. Several factors seem to have contributed to this high rate: Harvard’s generous financial aid program, an extraordinary Visitas for admitted students in April, and extensive outreach through social media. Students were also attracted by Harvard’s four-fold increase in small Freshman Seminars; the 40-plus secondary fields; the augmented advising system; expanded opportunities for research with faculty; increased theater and arts opportunities; more options for study abroad; and the Harvard Innovation Lab.

The financial aid program got a tremendous lift in February with the announcement that alumnus Kenneth Griffin ’89 is giving $150 million to Harvard, with most of it supporting the financial aid program. His gift is expected to affect as many as 800 undergraduates a year through new scholarships. The groundbreaking Harvard Financial Aid Initiative, which makes the College more accessible to outstanding students of all backgrounds, turned 10 years old this year as well.

S E X U A L  M I S C O N D U C T

In May, Dean Smith established the FAS Committee on Sexual Misconduct Policy and Procedures. Led by Alison Johnson, professor of history and a member of the FAS Faculty Council, the committee is charged with examining policies and disciplinary procedures within the FAS in order to update and align them with the University’s new policy and procedures to prevent sexual and gender-based harassment. The Committee is undertaking its work with both care and a sense of urgency appropriate to a subject that, as Dean Smith has written, “corrodes the ability of faculty, students, and staff to contribute to our shared mission of research, teaching, and learning.”

Professor Johnson also serves on a University-wide Task Force, appointed by President Faust and led by former Harvard Provost Steven E. Hyman. In May, this group of students, faculty, and staff from across Harvard released recommendations for immediate actions to better prevent and address sexual misconduct. President
QUESTION & ANSWER

JONATHAN L. WALTON
Plummer Professor of Christian Morals in the FAS; Professor of Religion and Society, Harvard Divinity School; Pusey Minister in the Memorial Church

**Q:** You’re chairing a working group that Deans Pfister and Khurana formed this spring focused on fostering an inclusive academic community. Who is serving on this working group, and what will success look like to you?

**A:** Our students have a diversity of perspectives and life experiences, so it is important the working group recognizes and reflects that. Our group is comprised of faculty members, graduate students, and undergraduates from across the University. We were intentional about identifying scholars whose research sits at the intersections of race, ethnicity, class, and educational philosophies. We also have a member of the athletic department in our group, as varsity sports on this campus, in many ways, models the culture of inclusion that President Faust encourages and celebrates.

Our goal is to ensure that the College is providing a transformative experience—intellectually, socially, and personally. To that end, we believe it is important that every student at the College feels empowered to take advantage of the many opportunities provided through student-led groups at Harvard, which help facilitate that transformative experience. This must take the form of innovative programs and initiatives that enable an increasingly diverse student body to “feel at home” at Harvard, while stretching us all beyond our particular zones of comfort.

**Q:** Was the working group a response to the “I, Too, Am Harvard” campaign this winter and spring that highlighted the personal experiences of some black, Latino, and other students? What about their stories resonated with you?

**A:** The working group was born out of ongoing conversations between student groups, faculty, and administrators. The gifted minds behind “I, Too, Am Harvard” are indeed valuable contributors to this dialogue, as were many others. To be sure, I admire these students’ courage, candor, and creativity in giving voice to their experiences. Bias and discrimination take many forms and limit our ability to provide a transformative experience. Quite often, microaggressions are overlooked or dismissed as mere “misunderstandings.” Yet, like a seemingly innocuous stream of water upon a rock, microaggressions—whether concerning race, religion, disability, or social class—can erode the patience and confidence of even the most gifted among us. In bringing this to our attention and making the “invisible visible,” these students encourage us all to examine our latent biases, which are often concealed by our relative and varying levels of privilege.

**Q:** How do you define an inclusive college community?

**A:** I view an inclusive community of learning as one where differences are affirmed and appreciated rather than obscured or effaced. Whether these differences are racial and/or religious, based on sexual orientation or nationality (or any beautiful and crazy combination), it is the power of human difference, range of perspectives, and life experiences that enable us to learn from one another. We are better as a community for acknowledging and embracing the gift of our diversity.

**Q:** Are there plans to engage undergraduates this fall to continue the public conversation?

**A:** Absolutely! This is what it means for us to listen and learn. We look forward to working with Houses to host public conversations, as well as pilot new programs and identify activities that foster community engagement across lines of difference. In other words, our intention is to broaden the conversation in the hopes of moving toward the implementation of concrete programs that institute community ideals.

**Q:** Fifty years after the signing of the Civil Rights Act, where have we made progress? Where do we still need to go?

**A:** We are the beneficiaries of men and women who spurred this nation to live up to its professed aim of liberty and justice for all. Our nation in general, and Harvard in particular, reflect these positive developments. Nevertheless, injustice is not static. Every age has its own particular challenges to confront. Our challenge may not be that of legalized discrimination based on race, sex, religion, or national origin in school or the workplace. Yet too many people remain trapped outside of the doors of opportunity due to loving someone of the same gender, being born in the wrong zip code, or not having access to economic or social capital.

For nearly 400 years Harvard College has been educating its students to be the responsible citizen leaders and citizenry of our society. Harvard can extend its legacy of training moral leaders and

(continued on page 10)
HARVARD college responsible citizens prepared to wrestle with these important issues. The working group realizes that for this to be the case, however, we must continue to interrogate our own practices to ensure they speak to the complex times in which our students live. We can learn lessons from history without allowing past experiences to arrest the moral imagination needed to confront our present moment. This is our aim and responsibility.

Q: Given the importance of diversity to achieving Harvard’s learning goals, what are the things we as a community can do to ensure that each person feels that they belong?

A: I cannot answer this very important question as an individual. This must be answered by the community—hence, the reason the dean formed this working group. One might say that our work is an important step in promoting a culture of belonging.

Q: How do your roles as an ordained Baptist minister, a professor of religion and society, and a resident scholar in Lowell House inform your thinking on this topic of inclusion?

A: I grew up in a progressive, evangelical tradition that informed many abolitionists, early women’s rights advocates, and civil rights activists. Theologically this tradition affirms the parenthood of God and the siblinghood of humanity. Baptist educator Benjamin Elijah Mays summed up the religious grounds for diversity as, “The love of God and the love of humanity are one love.” We can never profess a love for God without declaring our commitment to the well-being of one another.

This view informs my research, as I engage the ways contemporary communities of faith interact with other spheres of society. As a social ethicist, I am most interested in identifying religious beliefs and practices that affirm and/or challenge exclusive and unjust social relations. This is why I am interested in Harvard’s sacred stories and normalized practices. Quite often (and rather easily) a community’s professions and its practices can get out of sync. The working group is committed to identifying and incorporating best practices in an attempt to ensure that our community is living up to President Faust’s vision of “One Harvard.”

Faust accepted these recommendations, which include increasing the resources and staffing at the Office of Sexual Assault Prevention and Response (which opened in 2002–2003), and implementing a new campus survey to assess the incidence, circumstances, and perceptions of sexual assault and other forms of sexual harassment at Harvard.

These steps build on efforts in recent years at Harvard to address sexual misconduct, including the appointment in March 2013 of its first-ever University Title IX officer, Mia Karvonides. Among other activities, she identified and trained Title IX coordinators at the College and at the other Schools. In addition, the 2013 Opening Days for incoming undergraduates included several new programs addressing sexual assault prevention and academic integrity.

On the lower level of Stone Hall, the smart classroom and Rothenberg Conference Room hosted classes all year, bringing faculty into the House to teach and interact with students. New practice rooms allow students to fulfill their passion for music. The Kates/Tobin Community Room has become a popular space for study and gatherings. While the building’s inside was transformed, the exterior was painstakingly restored to preserve its historic character. In fact, the Cambridge Historical Commission honored Stone Hall with a preservation award.

The first project of the monumental House Renewal initiative was completed in August 2013, when Quincy House’s Stone Hall (previously Old Quincy) opened to students, revealing invigorated social and academic spaces. The opening capped years of meticulous planning—which included gathering input from students, faculty, and staff—and 15 months of intense construction. Based on reactions from students and House staff, the renewal is a great success.
“This has drastically exceeded my expectations,” said Kevin O’Donnell ’16 as he sat in Stone Hall’s bright and spacious Kates/Tobin Community Room, which had previously been dark, underutilized basement space.

Underscoring the House system’s essential role in the College experience, House Renewal is one of the six funding priorities of the FAS campaign, The Harvard Campaign for Arts and Sciences, which launched in October. The modernization project, one of the largest and most ambitious capital improvement efforts in Harvard College history, aims to ensure that each House meets the learning and living needs of the 21st-century student, enhancing undergraduate education for generations to come.

Leverett House’s McKinlock Hall, the neo-Georgian portion of the House, was under construction during the 2013–2014 academic year and will be the second project to come online when students return in late August 2014. As with Stone Hall, the McKinlock renewal involved reconfiguring spaces to provide more opportunities for interacting, socializing, studying, and learning, and updating the aging building with state-of-the-art technology and materials, all while retaining the historic quality of the building.

Immediately following Commencement in May 2014, construction began on Dunster House, making it the first full House to undergo renewal. Dunster students will live in swing housing centered around the former Inn at Harvard during the 15-month renovation. Winthrop House is on deck to be renewed after Dunster.
The Allston Burr Resident Deans serve as chief academic advisers in each of the 13 Harvard Houses, dedicated to monitoring students’ progress to degree and positioned to offer advice about personal, social, and academic issues throughout the students’ three years in the House. As scholars who teach and conduct research, they offer academic advising from an informed perspective. As residents of their Houses, the Allston Burr Resident Deans are uniquely aware of “the whole student” and can address issues from a holistic point of view. Together with the House Masters, they play a critical role in facilitating the academic and residential mission of the House, while also ensuring that students receive the support necessary to further their academic careers.

In August 2013, the dean of Harvard College appointed an ad hoc committee to review the roles and responsibilities of the Allston Burr Resident Dean position. Comprised of senior faculty and administrators from the College and FAS, including current and former House Masters and former Allston Burr Resident Deans/Senior Tutors, the committee met throughout the 2013–2014 academic year. Its final report addresses both the importance and complexity of the resident dean position and the growing needs of students in the College, and makes several recommendations to provide additional support, training, and professional development opportunities to those in the position.

In accepting the report, then-interim dean of Harvard College Donald H. Pfister expressed his gratitude to the committee for its thorough review and fully accepted its recommendations, including the proposal to change the name of the appointment from Allston Burr Resident Dean to Allston Burr Assistant Dean of Harvard College, [Adams, Eliot, etc.] House, a title that “better reflects the complex role of the Resident Deans as academic leaders in the House,” according to Pfister.

**General Education Review**

The Program in General Education is now five years old and has grown dramatically from its earliest days. And with growth come new challenges. As mandated by the founding legislation, a faculty committee has been formed to review the program and its initial implementation. Chaired by Professor of Philosophy Sean Kelly, the committee comprises faculty from across the divisions. Their charge is to consider such questions as: Is the Gen Ed program achieving its intended pedagogical and intellectual aims? Are these aims clear to students and faculty alike? Are the courses providing transformative intellectual experiences for our students? Are the policies and practices of the program helping or hindering its aims? What methods of assessment and intervention might help improve and maintain the program’s health over the long term? Professor Kelly and his colleagues have begun discussions with a wide range of faculty and students and will continue their work next year, presenting recommendations to the faculty at the end of spring 2015.

**Academic Integrity**

The Academic Integrity Committee made great strides this year to strengthen the culture of academic integrity in the College. Led by Dean of Undergraduate Education Jay Harris, and composed of faculty, students, and staff, the committee proposed formal legislation to establish a new Harvard College Honor Code. The Faculty approved the legislation in May 2014, and the honor code will take effect in the 2015–2016 academic year. Students played a central role in this process, drafting the original language for the code and establishing many of the principles that will guide its implementation.

**Fellowships and Research**

The Office of Undergraduate Research and Fellowships (URAF) continued to broaden Harvard College’s institutional commitment to undergraduate research in 2013–2014. One of its tangible successes is the Summer Undergraduate Research Village, which in 2014 accommodated some 175 Harvard undergraduates (selected from over 400 applicants) participating in four distinct programs:

- **BLISS** – The Behavioral Laboratory in the Social Sciences, launched by the Office of the Dean of Social Sciences;
- **PRIMO** – The Program for Research in Markets and Organizations, co-hosted with the Harvard Business School;
- **PRISE** – The Program for Research in Science and Engineering and the oldest of the four programs;
- **SHARP** – The Summer Humanities and Arts Research Program, developed with the Office of the Dean of Arts and Humanities and representing the newest addition.
Together with participants from several affiliated summer research programs, there were more than 300 Summer Undergraduate Research Village residents.

In other fellowships and research news, 142 Harvard undergraduates were awarded fellowship grants in 2013–2014. Forty were from national sources, including nine Rhodes (six U.S., two Zimbabwean, and one Canadian), two Marshalls, one Churchill, and 28 Fulbright fellowships, a record for Harvard College, and 102 were from Harvard sources.

Public Service
Gene Corbin, assistant dean of student life for public service, launched PBHAs “Service to Society” program to encourage students to pursue public service during and after College, to involve alumni, and to engage faculty and strengthen the connection with teaching, learning, and research. Funding for Service to Society priorities is included in The Harvard Campaign for Arts and Sciences. Among the year’s highlights: More than 200 students and 100 alumni took part in a Wintersession conference that enabled students to explore postgraduate public interest opportunities with advice from alumni in these fields. Also, a Service to Society Freshman Council, formed with 12 leaders from the Class of 2017, involved classmates in public service activities. Students in the four freshman yards took service trips with their resident deans.

Gender-Neutral Housing
The faculty adopted a new policy, with support from House leadership, that allows students to form mixed-gender rooming groups in their Houses. The

ADVISING
The Advising Programs Office (APO) added 25 ladder faculty to the Board of Freshman Advisers roster, expanding the number of faculty, administrators, and/or proctors who help first-year students select courses and ponder questions around educational goals and requirements, summer opportunities, career plans, and more.

Student satisfaction with advising has seen some gains in recent years, thanks to a concerted effort by the College and FAS to strengthen pre-concentration advising and by resetting the timing for declaration of concentration to the sophomore year. In recent student surveys:

• 95 percent of students said their proctors contributed positively to their first-year experience;
• 95 percent said they felt they could turn to their peer advising fellow;
• 86 percent of students reported a high rate of satisfaction with sophomore advising in their first term;
• 85 percent of freshmen said they were generally or very satisfied with their academic advising; and
• 80 percent of seniors said they were generally or very satisfied with academic advising in their concentration, up from 49 percent in 2002.
policy, approved in May and favored by a majority of surveyed undergraduates, expands a pilot program that began at the request of transgendered students. House administrators will review requests for gender-neutral housing on a case-by-case basis.

Wellness
The College’s Working Group on Student Stress became a steering committee to continue identifying ways to help students manage stress, increase wellness, and find “work-life” balance. The group is led by physicians Paul Barreira (director of Harvard University Health Services) and Judith Palfrey (a Harvard Medical School pediatrician). In related activities, Freshman Advisers were encouraged to discuss sleep, nutrition, exercise, and stress management in their advising meetings, and a small wellness fair was held during Freshman Field Day. Meditation rooms have been incorporated into some Houses.

Freshman Experience
The College and FAS implemented measures to enhance the first-year undergraduate experience, including several efforts to encourage student-faculty interaction. For example, the Freshman Dean’s Office, along with the Office of Undergraduate Education and the Advising Programs Office, created a pilot Harvard Yard Senior Common Room, pairing 11 entryways with various faculty members. In addition, faculty participation rose in Through the Gates trips, which give first-years a chance to get to know Boston and Cambridge through leisure excursions and public service-oriented visits to underserved neighborhoods.

Efforts were also made to promote moral development in the Class of 2017, such as conversations during Opening Days on honesty and integrity; public service trips for freshmen; and faculty/freshman lunches addressing ethical topics.

Career Services
The Office of Career Services (OCS) advised 2,269 undergraduates and offered more than 340 programs from July 2013 through April 2014. Those programs included workshops on resume and cover letter writing, interviewing, and networking, as well as programs in “cluster areas” ranging from human rights and poverty alleviation to fashion and sports management, entertainment and media, environment and energy, global public health, law, engineering, business, and entrepreneurship. Career Services also co-sponsored a series of dinners with Arts and Humanities that gave students a chance to talk informally with faculty from various disciplines (philosophy, English, and music among them) about their professional journeys in the humanities.

END-OF-YEAR SURVEY
The Class of 2017 End-of-Year Survey, with a response rate of 62 percent, found that:

- 91 percent of freshman respondents said they were satisfied or very satisfied with their “overall experience.”
- 88 percent were satisfied with their “undergraduate education.”
- 88 percent had a positive freshman residential experience.
- 77 percent felt well-prepared to get along socially at the College, but only 68 percent felt well-prepared to succeed academically.
- 84 percent felt a sense of belonging at Harvard University.

Students paint ceramics as part of one of the “Through the Gates” outings sponsored by the Freshman Dean’s Office.
The Arts

The Office for the Arts (OFA) provided major support and artistic programming for several Harvard Campaign events, including the Stadium Launch in the fall, the FAS campaign kick-off on the Plaza, and the New York City launch featuring jazz musician Joshua Redman ’91.

Other highlights of the year:

The OFA opened up its new ceramics studio in Allston, an important development for the arts community and for Harvard/Allston relations.

A dynamic year of guest artist programming included some 40 residencies, ranging from Broadway luminaries like Bartlett Sher, Brian Stokes Mitchell, and Jason Robert Brown, to gifted musicians such as the Juilliard String Quartet, Eddie Henderson, and Yuja Wang, to leading figures in contemporary dance, to actors and directors such as M. Night Shyamalan, Laverne Cox, and Lonny Price.

The OFA theater and production staff supported about 50 shows in Agassiz Theater, Farkas Hall, and various House spaces. In the Dance Program, Director Jill Johnson and her team programmed exciting master classes and created four new courses, as well as several new dance works.

Seventeen gifted writers, musicians, dancers, actors, and filmmakers were selected as this year’s Artist Development Fellows. The OFA also supported presidential and University initiatives such as the Wynton Marsalis lectures, Herbie Hancock’s Norton Lectures, and Vince Gilligan’s public discussion with the president.

The ARTS FIRST festival was the largest yet, with over 2,000 students showcasing their talents. New additions included LITFest, several faculty-led performances, opportunities for the public to create art with students, and a concert given by Professor Vijay Iyer and his sextet that drew an enormous student and community audience.

STAFF TRANSITIONS

Sheila Thimba was appointed dean for administration and finance at Harvard College in June 2014, effective in August. In this role, she will work closely with the deans and unit heads in strengthening and sustaining the College’s planning, strategic management, and administrative services. She joins Harvard from Rutgers University, where she served as vice dean for administration in the School of Arts and Sciences. Sheila takes over from Russ Porter, who joined the College as interim dean for administration in September 2013 and was instrumental in guiding its administrative functions during this period of transition. Russ is returning to his position as dean of administration for the Division of Science in the FAS.

John “Jay” Ellison, secretary of the Administrative Board, associate dean of the College, and lecturer in Near Eastern languages and civilizations (NELC), departs Harvard College for an opportunity as dean of students in the...
College at the University of Chicago. A former police officer, Jay came to Harvard as a Divinity School student, earned a PhD in NELC in 2002, served as Allston Burr Senior Tutor in Lowell House, and became Administrative Board secretary in 2005. He led the board through several reforms designed to give students more support during the disciplinary process, including creating subcommittees that allow students to present their cases before only a few board members, and expanding the role of personal advisers for students. Brett Flehinger, associate secretary of the Ad Board, assistant dean of Harvard College, and lecturer in history, is serving as interim secretary.

Jennifer Halloran Chapman has been appointed director of Wintersession and Parent Programs. This half-time position in the Office of Student Life is a welcome addition as contact and primary lead for these two important programs. Jen has served in various capacities at Harvard over the past nine years.

Will Cooper joined the Office of Student Life as associate dean of student life. He comes to this position from the Freshman Dean’s Office, where he served for seven years as a resident dean of freshmen. In 2010, Will received the Dean’s Distinction Award for his outstanding service to Harvard College. His primary areas of responsibility are coordination of support for the Houses and House Renewal, the OSL budget, and personnel. Will’s background and strong commitment to student life within the Harvard learning environment make him uniquely qualified for his new role.

Figure 1: Over the past 10 years, several trends have been observed in the number of undergraduate concentrators by FAS academic division. The Social Science division continues to have the greatest number of concentrators; after a steady decline since 2005-2006, Social Science saw a slight uptick this year over last year. The greatest growth was seen again in the School of Engineering and Applied Sciences (SEAS). Modest growth was seen in the number of students concentrating in the Sciences. While not displayed in the chart, the number of students graduating in 2014 with a secondary field was 739, slightly fewer than in the previous year, but consistent with the pattern for the past three years. Source: Office of Undergraduate Education.
Introduction

During the 2013–2014 academic year, Dean Xiao-Li Meng launched a series of initiatives aimed at inspiring the graduate community and strengthening the reputation and competitive position of GSAS, while advancing existing efforts to enhance professional development opportunities for graduate students.

Strong Admissions Results, New Interfaculty PhD Program

In 2013, applications to GSAS increased to a record high of 12,700, and offers of admission were made to 1,076 students. The application increase included the new PhD program in education, which attracted 680 applicants and yielded the first cohort of 24 students (target size was 25). The overall admissions yield for the Graduate School was an impressive 62 percent, with 72 percent in the social sciences, 67 percent in the humanities, and 54 percent in the sciences. Nineteen programs reported yields over 80 percent.

A new interfaculty program was established during 2013–2014 to connect the existing ThD at Harvard Divinity School and GSAS’s PhD in religion under a single PhD program. Administered by the Standing Committee on the Study of Religion, the new PhD will focus on global religions, religion and culture, and forces that shape religious traditions and thought. The smooth transition to the new joint PhD in religion occurred thanks to the excellent guidance provided by Michael Puett, Walter C. Klein Professor of Chinese History, and other colleagues from the Committee on the Study of Religion, as well as the leadership of Dean of Harvard Divinity School David Hempton.

In advance of the 2014 admissions season, Dean Meng asked all 55 graduate programs to complete a new Program Overview document that will be updated annually. These documents provide a current picture of each program’s activities, quality, and aspirations and will help GSAS identify positive and negative trends. The overview data will also contribute to the development of a historic record of each graduate program and will aid in the smooth transition of chairs and directors of graduate studies. Ultimately we expect these data to help the FAS coordinate faculty and graduate student program planning.

Diversity Efforts Advance

GSAS continued to make a concerted effort to improve the diversity of the graduate student body. Applications from underrepresented U.S. minorities (URM) increased 15 percent over the previous year. The number of URM students accepting Harvard’s offer of admission (57) was larger than the previous year, and URM students will make up 7.5 percent of the entering class.

The most effective pipeline event in 2013–2014 was the IVY-PLUS Symposium, held in March and co-sponsored by Harvard and MIT with the participation of 10 other prestigious schools. The program drew over 130 promising minority undergraduates to Cambridge from across the country and conveyed the research opportunities and professional rewards that come with graduate school, as well as the varied career opportunities open to them. A large number of Harvard faculty served as speakers and judges for the poster session. The symposium was deemed highly successful and offered a special opportunity for students to benefit from personal conversations and advice from world-renowned faculty.
Building personal faculty connections is a key factor behind the success of the Leadership Alliance Summer Research Opportunities at Harvard (SROH) program, directed by Sheila Thomas, assistant dean for diversity and minority affairs in GSAS, which has engaged a large number of senior FAS faculty and current graduate students as advisors and mentors. Many participants are inspired to apply to GSAS and other top graduate schools, helping to strengthen the minority student pipeline. For example, during summer 2013, nine rising seniors participated in SROH; of those, five applied to PhD programs, two plan to apply, and one applied to an MD/PhD program. Of the five who applied to PhD programs, at least four were admitted to highly competitive schools, including GSAS, and plan to start in the fall.

Enhancing Professional Development

The second annual Harvard Horizons symposium, held at Sanders Theatre in April, drew an enthusiastic University-wide audience and included participation by the president, provost, and dean of the FAS, as well as GSAS alumnus Professor Stephen Blyth, PhD ’92, who sponsored the entire Harvard Horizons project. The eight Horizons Scholars demonstrated how the complex concepts that fuel a PhD dissertation can be distilled into compelling and illuminating short talks that are fully accessible to a general audience, sharing research on an array of topics from the spectral fingerprints of another Earth to ancient Assyrian social networks.

Their success as Horizons Scholars was due in large part to the training and mentoring provided by Shigehisa Kuriyama, Reischauer Institute Professor of Cultural History, Assistant Professor Laura Frahm, and Pamela Pollock and Marlon Kuzmick from the Derek Bok Center for Teaching and Learning. The Horizons Scholars were chosen by a cross-disciplinary faculty committee that reviewed the applications, interviewed the semifinalists, and made the final selections. During an intensive 10-week period, the scholars received in-depth mentoring that enabled them to successfully deliver their TED-like talks at the symposium. The training included a public speaking coach, assistance in mastering the art of good visual aids, and opportunities to enrich their written communications skills.

To give all students the opportunity to develop their written and oral communications skills, GSAS is in the process of establishing a new graduate writing center. The goal is to provide expertise to help graduate students craft strong arguments and communicate their ideas clearly and effectively. Plans are in place to hire a director and discipline-specific tutors for the center, to be located in Dudley House.

To promote excellent communication skills in science, the student-led group ComSciCon organized a January@GSAS workshop titled “Getting Beyond the Jargon,” which included two half-day sessions that gave graduate students a chance to interact with peer instructors who are leaders in technical communication, to learn from expert writers and communicators, including Harvard and MIT faculty, and to produce original works of science communication for publication.
Thanks to a generous gift from GSAS alumnus David Gochman, AM ’90, GSAS established the Gochman Dean’s Fund for Innovation and Development and supported new initiatives in 21 departments and degree programs. These focused on professional development opportunities, such as attendance at professional meetings, innovative ways to increase alumni engagement at the department level, and enhanced recruitment activities. Faculty and graduate students greatly appreciated the Gochman-funded initiatives, and GSAS hopes to continue this successful program.

**GSAS Initiative on Learning Assessment**

Significant progress continues to be made regarding the GSAS Initiative on Learning Assessment. Following up on ideas that came from last year’s conference titled “Are My Students Actually Learning?” GSAS and the Bok Center co-sponsored “What Are My Students Learning?” in January. This workshop introduced students to the theoretical and practical aspects of learning assessment and helped them think about ways to incorporate learning assessment in their current and future classrooms. Approximately 25 students representing multiple departments and disciplines participated, and a follow-up survey suggested that they found the workshop beneficial for their teaching and learning.

**Science Graduate Program Review**

Working with Edgerley Family Dean of the Faculty of Arts and Sciences Michael D. Smith and Dean of Science Jeremy Bloxham, Dean Meng organized a faculty review of the science graduate programs to foster discussion about some of the most critical and far-reaching questions related to graduate education. The Science Task Force, co-chaired by Avi Loeb, Frank B. Baird, Jr. Professor of Science, (see Q&A, pages 22-23) and Andrew Biewener, Charles P. Lyman Professor of Biology, worked tirelessly on three important questions: How should GSAS fairly allocate the unrestricted funds from the FAS to science programs? What should be the guiding principles for determining the size of each program? What are the key considerations for coordinating faculty size and graduate program planning?

With help from Dean Nina Zipser and her staff, and thanks to a heroic effort from Assistant Dean for Finance and Budget Eileen Doherty in navigating the complex financial landscape, the Science Task Force evaluated the various programs’ needs and considered future funding policies. The co-chairs, with the assistance of Associate Provost for Institutional Research Erin Driver-Linn, also conducted benchmarking interviews with senior leaders at Stanford, Yale, Berkeley, MIT, and Princeton. Conversations are ongoing, and a report with recommendations is anticipated early in fall 2014.

Looking forward, Dean Meng plans to conduct a similar faculty review of the graduate programs in the humanities and social sciences during the academic year 2014–2015.

**Alumni Engagement and Outreach**

GSAS graduates returned to campus in April for Alumni Day, an annual tradition that brought more than 300 former students to Cambridge for a day of intellectual engagement. Professor
Louise Richardson, PhD ’89, principal and vice-chancellor of the University of St. Andrews, delivered the keynote address on “Terrorism: What Have We Learned?” in which she provided an expert view of how terrorist groups are created, operate, and are ultimately defeated. Two afternoon symposia highlighted the wide-ranging work of five professors, covering such topics as genomics and human population history, American equality of opportunity, religious pluralism, and early navigation. A session concerning the media of scholarship featured Peter Galison, Joseph Pellegrino University Professor, and his advisee Stephanie Dick, PhD ’14, history of science, who was an inaugural Harvard Horizons Scholar in 2012–2013 and who joined Harvard’s Society of Fellows this fall.

That same weekend, GSAS celebrated the venerable history of one of the world’s great physics programs, when graduate alumni of Harvard’s Department of Physics returned to Cambridge for a successful annual department reunion program. The day included a symposium, alumni career panels, and student poster sessions. Panel discussions assessed discoveries of the past and present, and exciting research questions for the future, while examining the ways in which this fundamental science has become increasingly multidisciplinary. Nearly 200 people from 22 states and four countries connected with faculty and with PhD candidates based in biology, chemistry, engineering, and physics labs across Harvard.

As part of January@GSAS, 14 members of the Graduate School Alumni Association (GSAA) returned to campus to lead a two-day workshop titled, “Business Applications of the PhD” for current graduate students who are exploring careers in consulting, finance, nonprofit administration, and entrepreneurship. The workshop drew more than 130 GSAS students who were eager to gain professional insights and advice about the ways in which their PhD skills and expertise can be valuable in a variety of nonacademic settings.

Dean Meng attended the annual meeting of the Harvard Club of Cape Cod, where he delivered a talk on statistical evidence for personalized medicine to a group of 80 alumni. This was a well-received outreach event to Harvard alumni, and GSAS plans to hold at least four chapter events this coming academic year featuring Dean Meng and other members of the FAS.

International Outreach

GSAS hosted three University-wide alumni events in China during January. Dean Meng, a native of Shanghai, moderated a series of conversations—in Hong Kong, Shanghai, and Beijing—that featured remarks from Edgerley Family Dean of the Faculty of Arts and Sciences Michael D. Smith on current FAS priorities and innovations in teaching and learning. The events included animated dialogues between Dean Meng and Mark C. Elliott, director of the Fairbank Center for Chinese Studies and Mark Schwartz Professor of Chinese and Inner Asian History at Harvard. The two described Harvard’s scholarly interests in China, as well as its many activities
and collaborations across the country. More than 200 alumni from across Harvard schools attended the three gatherings, which were co-hosted by the Harvard Clubs of Beijing, Hong Kong, and Shanghai, as well as the Harvard Center Shanghai, the Harvard Alumni Association, and the Fairbank Center. Members of the Graduate Student Alumni Association Council traveled with the deans, including Don van Deventer, PhD ’77, Mia de Kuijper, MPA ’83, PhD ’83, Dan Johnson, AM ’82 ’84, Jean Liu, SM ’02, and Lee Zhang, AM ’01.

The Graduate School’s Alumni Council is also conducting a Global Outreach Survey to learn about alumni interest and engagement.

GSAS sent staff to graduate recruitment events and on university visits in Brazil, Saudi Arabia, Chile, United Kingdom, Mexico, and China. All were organized in collaboration with our international research centers, especially the regional offices of the David Rockefeller Center for Latin American Studies.

To enhance international outreach efforts, and with a generous sponsorship from GSAS alumnus Lee Zhang, AM ’01, GSAS established a new senior position: director of international strategy and development and special assistant to the GSAS dean. The first appointee to this new position, Hongping Tian, PhD ’01, was previously a director at the Yale-China Association. She is developing long-term outreach efforts and investigating the development of several international programs, which will be explored and piloted in the coming years.

In January 2014, the GSAS hosted a series of conversations in Beijing, Hong Kong, and Shanghai, titled “Perspectives on Leadership and China,” which featured Edgerley Family Dean of the Faculty of Arts and Sciences Michael Smith, GSAS Dean Xiao-Li Meng, and Mark Elliott, Mark Schwartz Professor of Chinese and Inner Asian History. Above, the deans and Professor Elliott joined Harvard faculty, alumni, and staff on a visit to the Great Wall. Back row (l-r): Mark Elliott, Paul Keenan, Jon Petitt, Jay Harris, Margot Gill. Front row (l-r): Timothy Brown, Peter Marsden, Michael Smith, Xiao-Li Meng, Mia de Kuijper, MPA ’83, PhD ’83.

**QUESTION & ANSWER**

**Q:** What’s on your mind these days in astrophysics?

**A:** It is remarkable that science today addresses questions that were previously in the realm of philosophy or religion. My research focuses on two such questions: “When did first stars form and light up the universe?”—which can also be framed as the scientific version of the story of Genesis; and, “When and where did life start to form?”—or in simpler words, “Are we alone, or is the universe teeming with life?” We currently have the technology to build telescopes and instruments that will attempt to answer these questions over the next decade. We live at an exciting time.

I recently wrote an essay containing 10 examples of blunders by astronomers who thought they knew the truth without looking at the sky and were proven wrong.

One example concerns Edward Charles Pickering, director of the Harvard College Observatory between 1877 and 1919. Pickering argued that telescopes had reached their optimal size at 1 to 2 meters (roughly the height of a person) and there was little to be gained from larger ones. Harvard is currently participating in the development of the Giant Magellan Telescope, which will be almost 20 times larger than what Pickering envisioned, and we plan to learn a great deal with it.

Another example involves Cecilia Payne-Gaposchkin, the first graduate student in astronomy at Harvard-Radcliffe who later became chair of the astronomy department. When writing her PhD thesis in 1925, she interpreted the solar spectrum of hydrogen as helium.

(continued on page 23)
and concluded that the sun’s atmosphere is made mostly of hydrogen. While reviewing her dissertation, the distinguished Princeton astronomer Henry Norris Russell convinced her to avoid the conclusion that the sun’s composition was different from that of Earth, as it contradicted conventional wisdom at the time. We now know that hydrogen is the most abundant element in the universe.

Astronomy teaches us humility. Earth is the place where kings and emperors received an ego boost after conquering a piece of land. Are you kidding me? There are more planets in the observable universe than grains of sand in all the beaches on Earth. An emperor proud of conquering anything on Earth resembles an ant proud of hugging a grain of sand in a huge beach. Arrogance based on events occurring on Earth is ridiculous in the big scheme of things.

But if you think about it, you realize there’s a simple reason for this lack of modesty: people tend to look down to Earth, rather than up. When I step out to the porch of my house every night, I look at the stars of the Milky Way galaxy and think of them as lights in a giant spaceship sailing through space. I wonder, “Are there passengers around the other lights of this spaceship?” And when I go back inside and tell my wife about my thoughts, she says, “If ETs exist and they ever land in our backyard to pick you up, please remember to leave the car keys with me and ask them not to ruin the lawn as their spaceship lifts off.”

Most of the time, we humans are preoccupied with our local environment. Many of our frustrations arise because we live on the two-dimensional surface of Earth. To alleviate our anxiety, we simply need to open our minds to the third dimension of space available to us. Looking up at the night sky changes our perspective. Out there lies a vast volume of space hosting planets like Earth around hundreds of billions of stars like the sun merely in our own Milky Way galaxy—which is one of billions of galaxies in the visible universe. The fact that we live for only a few billionths of the age of the universe underlines how transient and insignificant our pleasures and concerns are. Having a cosmic perspective teaches us modesty at a fundamental level.

Q: Your research has been covered by national news outlets such as Time and Discover. Why do you think your work captures the public imagination?
A: I was born in a small village near Tel Aviv, Israel. My parents had a farm, and I used to collect eggs every afternoon after school. I tend to think in simple terms. I call it “common sense astrophysics.” My colleagues are fascinated with more sophisticated math or very advanced nuances in our understanding. Reporters have a hard time connecting to very advanced nuances, so they talk to me. They report about my work because it makes sense to them. I am often surprised that other people haven’t come up with my ideas a long time ago, since they are relatively straightforward. But I am also glad to see that what I say makes sense to others.

Q: You recently co-chaired a faculty review of the science graduate programs. Why was it important to examine how we train our graduate students and how should we enhance their experience?
A: It has been a while since our science graduate program was reviewed. The principle that guided our committee’s deliberations was that funding should reflect the evolving academic priorities of the FAS. Exciting science often blossoms these days at the interface between traditional disciplines; as a result, many students are being advised by faculty outside their home departments. We tried to come up with a funding scheme that takes interdisciplinary research into account and also rewards scientists who raise outside funds to support their students. The well-being of our graduate students is our key concern. It is more important to maintain a high quality experience of study and research for them than to maximize their number. We must also stay competitive with peer academic institutions by raising donor funds for our graduate programs.

Q: How do you involve graduate students in your work, and how does their research influence the field of astrophysics?
A: Over the past two decades of my stay at Harvard, I’ve typically had between five and eight graduate students a year. Half originate from the physics department and the other half from astronomy. I am particularly proud of my first graduate student, Daniel Eisenstein, who is now a tenured professor in Harvard’s Department of Astronomy and is currently [fall 2014] receiving the prestigious Shaw Prize in Hong Kong. Five of my six graduate students this year are female, and I am also very proud of that.

I usually give each of my students a project on a completely independent theme, so that they become the world expert in that field and establish an innovative path that is independent of large collaborations.

Q: As chair of the Department of Astronomy, you’re an advocate of initiatives to help graduate students communicate clearly about science. Why is this important?
A: Scientific research has a strong impact on society, and the public deserves to know what we are doing with the funds allocated to us. Communicating our results is as important as deriving these results for securing a healthy dialogue with the public. The graduate students in astronomy pioneered a website called Astrobites that explains to non-experts the latest cutting-edge developments in astrophysics. They also organized a conference series on science communication (called ComSciCon) that brings a select group of interested students to the Boston area annually. We are grateful to GSAS, the FAS, and the Office of the Provost for their encouragement and continuous support of these important initiatives.
DIVISION OF ARTS AND HUMANITIES

DEAN DIANA SORENSEN
ACADEMIC YEAR 2013–2014
## Humanities Project

Articulating the value of the Arts and Humanities at Harvard and to society

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<td>Supporting department panels of alumni at Freshman Parents’ Weekend</td>
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<td>Collaborating on outreach and communication with the Office of Career Services</td>
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<td>Recruitment of Faculty Advisers</td>
<td>Establishment of vibrant online community via a new website and Facebook presence. In less than one year, over 7,000 Facebook “Likes”</td>
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In 2012–2013, Diana Sorensen, dean of arts and humanities and James F. Rothenberg Professor of Romance Languages and Literatures and of Comparative Literature, convened over 40 members of the faculty to undertake a thorough examination of arts and humanities education. Over 18 months, three committees explored the role of the humanities in preparing undergraduates to act in a global environment and succeed in a job market that requires creativity, adaptability, and highly honed critical and analytical skills. The committees’ responses to the current historical moment, described as “characterized by economic, military, ecological, religious, and technological challenges of mighty profile,” are explored in three reports known as The Humanities Project.

In 2013–2014, Dean Sorensen launched a number of curricular and outreach initiatives designed to respond to the committees’ recommendations. She describes these initiatives, detailed below, as being “informed by a conviction that the interpretation of human culture, the making and analysis of art, literature, music, and language, and the search for philosophical and religious truth are essential to good citizenship, good living, and professional success.”

**Framework Courses**
The Division, working with Mahindra Humanities Center Director Homi Bhabha, Anne F. Rothenberg Professor of the Humanities, launched and promoted three new introductory undergraduate courses: “The Art of Looking,” “The Art of Listening,” and “The Art of Reading.” These were designed to offer diverse pathways into the many departments in the Division of Arts and Humanities. A fourth undergraduate Framework course, “The Art of Living,” taught by Professor Sean Kelly of the Philosophy Department, will debut next year. Using postcards and posters and working closely with student advisers, the Division reached out to all freshmen and first-semester sophomores to encourage them to participate in one of the Framework courses.

**Humanities Colloquia**
Professors Stephen Greenblatt, John Cogan University Professor of the Humanities, and Louis Menand, Anne T. and Robert M. Bass Professor of English, are collaborating with six other colleagues in offering two separate semester courses, which debut in 2014–2015, exploring selected masterworks of literature from the Greeks to Primo Levi. (See Q&A, page 30.) The introductory humanities curriculum expanded in other ways, including new courses on “Empires” (Maya Jasanoff and Niall Ferguson) and “Love and Freedom” (Svetlana Boym and John Hamilton).

**Course Navigation**
The Division—with guidance from the Humanities Project Steering Committee—created a new Arts and Humanities category in the curriculum that is reflected in the FAS Courses of Instruction. This system will provide both clarity for students navigating the Division’s course offerings and flexibility for the inclusion of courses organized by theme and method.

**Faculty-Student Engagement**
In an effort to increase faculty-student interaction in Arts and Humanities, the Division solicited faculty members to serve as Freshman and Sophomore Advisers. This effort led to a significant increase in first-time faculty advisers.
The Division also co-hosted five very successful student-faculty dinners, during which faculty members shared personal and compelling stories about their career journeys in the arts and humanities, from their student days to the present. Twenty-one faculty members from many departments and 125 undergraduates attended the events, which were co-sponsored by the Office of Career Services. These dinners were part of the Division’s Building Lives, Building Careers series. Accomplished Arts and Humanities alumni were also invited to spend an afternoon or evening chatting with students about their career paths. Among the featured speakers were author Anne Fadiman ’75 and cultural entrepreneur Adrian Cheng ’02.

**Reaching Out to Prospective Students and Freshmen**

Divisional faculty members were recruited to make individual contact with admitted students who had expressed interest in the Arts and Humanities disciplines. Dean Sorensen personally wrote to prospective students before Visitas, inviting them to departmental open houses and providing them with a map and calendar of weekend events that would be of special interest to those drawn to the arts and humanities. Over 30 faculty members welcomed prospective students and their families to a vibrant and well-attended Arts and Humanities reception that weekend. Prior to Opening Days, Dean Sorensen sent welcome letters to all incoming freshmen and coordinated the efforts of divisional faculty members who had offered to serve as speakers and presenters during Opening Days events.

**Arts and Humanities Café**

Dean Sorensen secured the funding to renovate the Barker Café and dedicate it to the goal of building an ever more vibrant and engaged arts and humanities community. Renovations took place over the summer, with a fall 2014 opening planned. The café— with a new menu and excellent coffee!— will continue to serve as a meeting place for students and faculty during the day. Now, though, it will remain open in the evenings and be programmed several nights a week with music performances, student art exhibits, evenings of storytelling and film screenings, and other activities designed to attract students and faculty members with an interest in creativity, the art of conversation, and the exchange of ideas.

**LITFest**

The first-ever literary festival at Harvard had a successful launch this spring with three days of readings, panels, and workshops featuring alumni including Margaret Atwood (recipient of the Harvard Arts Medal as part of ArtsFirst 2014), Mark Chiusano, and Dan Chiasson; and faculty including Jamaica Kincaid, Bret Anthony Johnston, and Jeffrey Schnapp. Supported by the Department of English, the Office of the Dean of Arts and Humanities, and the Office for the Arts, LITFest featured workshops for students on spoken word, fiction, metaphor, and poetry; panels reimagining the book and its future with Harvard’s digital humanists and panelists from the *Atlantic* and the *New York Times Book Review*; conversations about publishing and the writing life with recent grads.
whose first books have made a splash; and receptions hosted by metaLAB and the Harvard Review. Plans are under way for the next LITFest in April 2015, to feature award-winning writer and Harvard alum John Berendt.

**Table Talk**

Language tables were held twice weekly during mealtimes in Annenberg Hall, thanks to the hard work of the directors of language programs. Students wishing to practice their conversational skills had the opportunity to chat over lunch in Spanish, French, Portuguese, Russian, Arabic, Chinese, Japanese, Italian, and German. Several academic departments also set up advising tables in Annenberg, offering freshmen many opportunities for informal conversations about departments, disciplines, and areas of research and study.

**Online Presence**

A new presence on Facebook has afforded the Division the means of promoting arts and humanities events and communicating with students easily on a regular basis. A rigorous yearlong campaign to establish a Facebook following has resulted in a community of well over 5,000 followers, with the number of “Likes” rapidly increasing.

**Staying SHARP in Summer**

The Summer Humanities and Arts Research Program (SHARP) kicked off in the summer of 2013 with 9 students and grew to 11 in 2014. This 10-week summer immersion experience allows undergraduates to pursue humanities and arts-based research projects and internships designed by Harvard faculty members, library professionals, and museum administrators. SHARP fellows join students from other programs (such as PRISE, BLISS, and PRIMO) as part of the Harvard Summer Undergraduate Research Village. In addition, the Division has partnered with the Peabody Essex Museum in Salem to offer several summer internships.

**Faculty Support**

Many Arts and Humanities departments will adopt a “3+1” teaching schedule in the 2014–2015 year. The shift to a reduced teaching load for tenure-track faculty follows a thoughtful study of each department’s curriculum and a similar teaching load adjustment in the Social Sciences. The 3+1 structure is designed to give faculty more time for research, contact with students, interdepartmental collaborations, and experimentation in certain disciplinary areas such as the digital humanities.

**Scholarship and Creative Projects**

**Innovation Fund**

The Lasky/Barajas Dean’s Innovation Fund for Digital Arts and Humanities, launched in 2013–2014, supports small- and medium-scale projects in the digital realm, including course development, interfaculty collaborations, technology and training, experiential learning opportunities, and student and faculty research. Projects awarded grants in 2014 include a digital audio-visual essay about the Japanese earthquake and nuclear disaster of 2011 (Lucien Castaing-Taylor, professor of visual arts and of anthropology); a website and database on medieval scrolls (Thomas Forrest Kelly, Morton B. Knafel Professor of Music); online data documentaries about the Arnold Arboretum (Jeffrey Schnapp, professor of Romance languages and literatures and faculty director of the metaLAB); and an open-access, online commentary on the Homeric Iliad (David Elmer, professor of the classics, and Greg Nagy, Francis Jones Professor of Classical Greek Literature and professor of comparative literature).

**Books [and Art-Making]**

Arts and Humanities faculty continued to produce an impressive variety of books, covering such topics as the history of security, Jewish humor, drama of the Yuan Dynasty, logic in grammar, socially engaged art, and the Battle Hymn of the Republic. Visual artists, musicians, and creative practitioners on the Arts and Humanities faculty continued to produce works that were screened, exhibited, and performed before audiences internationally.
The Mahindra Humanities Center
In its continuing conversations about cultural citizenship, the Mahindra Humanities Center hosted the Charles Eliot Norton Lectures with keyboardist-composer Herbie Hancock (pictured) on "The Ethics of Jazz" and the Rita E. Hauser Forum on the Arts with filmmaker Steven Spielberg. "The Paradoxes of Empathy," the 2014 Tanner Lectures by the former Archbishop of Canterbury Rowan Williams, served along with a major conference on mass incarceration in the United States, set the stage for the Mahindra Center's three-year university-wide Mellon seminar on violence and non-violence.

Harvard Ukrainian Research Institute
In 2013-14, the Ukrainian Institute of Harvard University organized two major international conferences to bring together dozens of scholars from all over the world to chart new international paths in the study of Ukrainian history and culture. Responding to recent turbulence and unrest in Ukraine and Russia, Institute faculty, staff, and associates published dozens of articles and gave numerous interviews to the international media, providing historical context and a nuanced understanding of the range of issues involved in the conflict.

Dumbarton Oaks
Three recent initiatives at Dumbarton Oaks have greatly expanded opportunities for Harvard students. The Tyler Fellowship program provides support over two years to advanced GSAS students in fields relevant to the mission and resources of Dumbarton Oaks. Paid summer internships enable Harvard students to contribute to institutional projects and gain valuable work experience and skills, while enjoying the Dumbarton Oaks campus and the resources of the nation's capital. Bliss Awards provide support for Harvard students traveling to Dumbarton Oaks to attend the annual symposia.
Andrew W. Mellon Foundation Grant
The Andrew W. Mellon Foundation has awarded a four-year grant to Professors Eve Blau and Julie Buckler, in collaboration with the Graduate School of Design, the Mahindra Humanities Center, the Radcliffe Institute for Advanced Study, and the Division of Arts and Humanities. This grant supports the development of “a vigorous, interdisciplinary, and coordinated study of urban environments for the humanities, to generate new visual and digital methods for the study, and to explore the establishment of a secondary field in urban studies across the different schools at Harvard University.”

Observing the Spanish Language
The Observatory of the Spanish Language and Hispanic Cultures in the United States, in its first year, published two analytical reports and organized and co-sponsored several well-attended events. The Observatory is a collaboration between Arts and Humanities and the Instituto Cervantes, a nonprofit organization that promotes the study and teaching of Spanish language and culture. Its founders envision the Observatory as an international hub for the study of how the Spanish language has evolved in the United States.

QUESTION & ANSWER

LOUIS MENAND
Anne T. and Robert M. Bass Professor of English

Q: What compelled you and Stephen Greenblatt (John Cogan University Professor of the Humanities) to develop a yearlong introductory humanities course on essential works of literature, philosophy, and the arts?

A: We’ve taught a similar course before, but with a strictly limited enrollment. A lot of the students were freshmen, and they were very excited and motivated. We each led a section and alternated lectures, and we felt that we got to know the students personally, which was fun and pedagogically satisfying. When Dean Sorensen encouraged faculty to develop more humanities courses that were interdisciplinary and appropriate for entering students, we decided to scale up ours to 75 students and make it two semesters. Six other faculty are teaching with us.

Q: Do you hope it will steer students toward humanities concentrations?

A: There are big introductory courses in areas like economics, computer science, and life sciences, but we didn’t have something comparable in the humanities. There was a feeling that the humanities were not getting in the shop window for entering students. Many of our peer institutions have “important books” courses like ours. A fair number of students who took our previous course told us afterwards, “Now I’m going to major in English or philosophy or history and literature.” We hope to attract freshmen but also students who are concentrating in areas remote from the humanities.

Q: Your colloquium starts and ends with Homer, moving from ancient times to the 20th century and back. How did you decide what to include?

A: The original idea was to teach books that mattered to us when we were in college and graduate school. What books made us become English professors, made us excited about being in the humanities? The fall semester includes works that influenced Joyce’s Ulysses—The Odyssey but also Dante, Hamlet, Mozart, etc.—so when the class gets to Ulysses students have some idea of Joyce’s sources. Thematically, the fall readings tend to be about the self and society; those in the spring are mostly about war and politics, like War and Peace, Henry V, and The Iliad. We also have a seminar room in the art museum, so that we can look closely at art works from Harvard’s great collections, and we’re planning to arrange for students to see performances, visit Boston museums, and generally connect with the living arts all around us.

Q: How will this class relate to the new humanities Framework courses on the art of looking, listening, reading, and living?

A: Framework courses are focused on methods of inquiry. Our course is much more about confronting the texts. These are books that are complicated and challenging, and students can feel good about themselves when they’ve been able to understand them. They’re also books and ideas that come up again and again in other courses and, indeed, in life.

Q: This course centers on the Western humanities. Are there plans to develop surveys of non-Western works?

A: This happens to be the material we know really well—we wouldn’t feel competent teaching a world literature course—but it would be great to have courses that deal with different traditions, too.

(See course description)
DIVISION OF SCIENCE

DEAN JEREMY BLOXHAM
ACADEMIC YEAR 2013–2014
The Division of Science encompasses 220 faculty in 10 departments, and it is nearly impossible to capture the breadth of research and teaching advances, outreach efforts, grants and honors, and other accomplishments of an entire year. Here are highlights by the division in 2013–2014, made under the leadership of Dean of Science Jeremy Bloxham, Mallinckrodt Professor of Geophysics.

The ever-increasing availability of data—from phones to factories to outer space—has opened new research opportunities, sometimes in surprising places. At the same time, it has intensified the need for tools and know-how to mine and manage it. Capturing, storing, and analyzing large amounts of digital information has required big changes in research computing at Harvard, creating productive partnerships between faculty and research computing teams. The big data revolution has also led to curricular changes to help students build essential skills for thriving in a data-driven world.

Established in 2007 as part of the FAS Division of Science, Research Computing (RC) helps investigators with complex data challenges through leading-edge computing services.

**Infrastructure**

Research Computing completed its expansion to the Massachusetts Green High Performance Computing Center (MGHPCC) in June 2013, marking an important advance in Harvard’s capacity for high-powered computation. Over 28,000 CPUs were installed, bringing RC’s total compute power to over 59,000 CPUs and more than 14 petabytes of storage. By August, the RC community had access to all newly installed CPUs, and by November, it had used more than 50 million CPU hours.

The state-of-the-art data center, located in Holyoke, Massachusetts, serves Harvard and four other research-intensive universities (Boston University, MIT, Northeastern, and UMass) and is a collaboration among universities, state government, and industry (Cisco and EMC). With its sustainable and energy-efficient design, including renewable hydropower, the facility became the first university research data center to receive a LEED Platinum certification.

In addition to improving storage and computing capacity, the expansion allowed Harvard to decommission or downsize existing data centers in the Bauer Life Sciences Building, 60 Oxford Street, the Geological Museum, and Converse, reducing annual energy costs. Research Computing also transitioned to a new open source job scheduler, saving more than $2 million in licensing fees.

Research Computing’s expansion did not stop at CPUs and storage. Working with the Aspuru-Guzik lab, it built a GPGPU cluster with 32 NVIDIA Tesla K20 GPU Accelerators. The introduction of GPGPUs allowed researchers to repeatedly perform the same operation quickly on large data sets. As of June 2014, RC had added 100 more K20 GPU Accelerators, bringing the total to 152 cards and 379,392 CUDA cores.
Continuing RC’s leadership role with the MGHPCC, Assistant Dean James Cuff worked closely with Executive Director John Goodhue and other officers and board members to ensure responsible stewardship.

**RC-Supported Research**

The new center has had a profound impact on faculty research. Among the discoveries supported by Research Computing:

In March, the Background Imaging of Cosmic Extragalactic Polarization 2 (BICEP2) project team, led by Associate Professor of Astronomy and Physics John Kovac, announced detection of B-mode polarization and gravitational waves. This discovery, made using a telescope in Antarctica, appears to confirm the long-held theory of cosmic inflation that describes the exponential growth of the early universe after the “Big Bang.” Research Computing provided computational support and infrastructure for the BICEP2 project.

Another astronomy breakthrough was revealed in May, when scientists led by theoretical astrophysicist Mark Vogelsberger of MIT and the Harvard-Smithsonian Center for Astrophysics created the first realistic virtual universe by running large-scale cosmological simulations on Odyssey, RC’s supercomputing cluster. The team developed the computer models by running lower-resolution versions of the virtual universe and then hundreds of test simulations.

In July 2013, the New York Times reported on findings about social and economic mobility in the U.S. by Raj Chetty, Bloomberg Professor of Economics, and colleagues at the Equality of Opportunity Project. In two related studies, the team found that the odds of escaping poverty has not changed significantly in 20 years, and that social mobility is higher in some parts of the country than others. Computations were run on Odyssey, and the study’s public website was hosted by RC.

**WATCH NOW:** Astronomers have created the first realistic virtual universe using a computer simulation called “Illustris.”

**The Odyssey system also contributed to these headline-making projects:**

- In July 2013, the New York Times reported on findings about social and economic mobility in the U.S. by Raj Chetty, Bloomberg Professor of Economics, and colleagues at the Equality of Opportunity Project. In two related studies, the team found that the odds of escaping poverty has not changed significantly in 20 years, and that social mobility is higher in some parts of the country than others. Computations were run on Odyssey, and the study’s public website was hosted by RC.
The lab of Peter Turnbaugh, a Bauer Fellow at the FAS Center for Systems Biology, published a paper in Nature in December 2013 showing that microbes in the human gut respond to changes in diet more quickly than was previously thought. Many news outlets, including National Geographic, covered the story. The Turnbaugh lab used Odyssey to analyze the data that led to the discovery.

In February, the online sports magazine Grantland described a new statistical framework for basketball analytics created by Kirk Goldsberry, visiting scholar at the Center for Geographic Analysis, and Luke Bornn, assistant professor of statistics. The researchers used Odyssey to run computations on their 93-gigabyte NBA player database. A full analysis required 500 parallel processors and two terabytes of memory.

RC Partnerships
Research Computing strengthened existing partnerships and fostered many new ones during the year. In March, for example, RC announced its partnership with a consortium of five universities dedicated to a community approach to computational research. The group received a $5.3 million NSF grant to support a national network of Advanced Cyberinfrastructure Research and Education Facilitators.

April brought the announcement of RC’s leadership role in the Massachusetts Open Cloud initiative, a consortium of private and public institutions dedicated to the creation of publicly available cloud computing. In other alliances, RC joined the Coalition for Academic Scientific Computation, Internet 2’s High Performance and Research Computing Program Advisory Group, and the Gluster Community Board.

ENERGY AND ENVIRONMENT

Division of Science faculty kept Harvard on the leading edge of research and teaching on energy, climate, and the environment in 2013–2014, with the division continuing to foster a vibrant, multidisciplinary, and multi-institutional intellectual forum for issues of sustainability.

Harvard received a nearly $12 million, four-year grant from the U.S. Department of Energy to establish an Energy Frontier Research Center aimed at improving the efficiency of industrial chemical production. Cynthia Friend, Theodore William Richards Professor of Chemistry and professor of materials science (in chemistry and chemical biology), directs the center, with Efthimios “Tim” Kaxiras, John Hasbrouck Van Vleck Professor of Pure and Applied Physics (in SEAS), as deputy director. The multidisciplinary center, called “Integrated Materials for Sustainable Catalysis,” will focus on developing sustainable catalytic processes for manufacturing chemicals used in many everyday items, from plastics to insulation to fragrances. Sustainable processes consume less energy and water, generate less waste, and may use renewable materials. (See related Q&A, page 38.)

Peter Turnbaugh co-authored a recent paper showing that dietary changes can quickly alter the microbes in your gut. Researchers hope the finding could one day be used to help treat certain diseases.
Harvard colleagues Alán Aspuru-Guzik (professor in chemistry and chemical biology), Roy Gordon (Thomas Dudley Cabot Professor of Chemistry, in chemistry and materials science), and Michael Aziz (Gene and Tracy Sykes Professor of Materials and Energy Technologies, in SEAS) demonstrated a new battery that holds promise for renewable energy by providing a cost-effective way to store large amounts of electricity on the grid. The breakthrough technology, reported in Nature in January and supported by the Department of Energy, could make power from wind, sun, and other renewable sources cheaper and more reliable by addressing the mismatch between their availability and variable demand. The metal-free flow battery uses small organic molecules called quinones (abundant in crude oil and green plants) and, like other flow batteries, stores energy in external tanks instead of within the battery itself.

With the climate-energy challenge a central global issue facing the next generation of leaders, Harvard College established a new secondary field in energy and environment. It will enable undergraduates in any concentration to explore climate change from the perspective of their primary field of study. The new offering is a collaboration between the environmental science and public policy program and the Harvard University Center for the Environment.

The Department of Molecular and Cellular Biology revamped its undergraduate concentration to place more emphasis on contemporary issues and hands-on activities. Students in MCB explore subjects that span biochemistry, cell biology, genomics, systems biology, developmental biology, immunology, drug design, cancer biology, molecular medicine, the microbiome, global health, and infectious disease. Among the new courses are “Cell Biology through the Microscope” and “Brain Invaders: Building and Breaking Barriers in the Nervous System.”

Curricular Revisions

Division faculty introduced or adapted courses to reflect the hunger for computational and data analysis skills. New courses this year included “Learning from Big Data” (Statistics 183), taught by assistant professor of statistics Luke Bornn. Students work in teams to solve real-world challenges involving huge data sets—say, classifying Wikipedia articles. Another new course, “Data Science,” (listed as Statistics 121, Computer Science 109, and Applied Computation 209) taught by Joseph Blitzstein, professor of the practice of statistics, and Hanspeter Pfister, An Wang Professor of Computer Science, enrolled about 300 students from various disciplines in the fall 2013 term. In addition, computational skills are being introduced earlier in such courses as Physical Sciences 12.
The Center for Brain Science (CBS) partnered with MIT to form the Center for Brains, Minds, and Machines, which received a $25 million award from the National Science Foundation. This group includes six current CBS faculty members, and CBS Executive Director Kenneth Blum is managing director of new center. Headquartered at MIT, the center’s five main research themes are circuits for intelligence; the development of intelligence in children; social intelligence; the integration of visual, motor, language, and social intelligence; and theoretical aspects of intelligence. The CBS aims to foster collaboration among institutions and across disciplinary boundaries.

In addition, the Center for Brain Science and the HMS Department of Neurobiology launched the Harvard Brain Initiative to strengthen the University-wide neuroscience community.

In the Department of Chemistry and Chemical Biology, the Xie research group—led by Xiaoliang Sunney Xie, Mallinckrodt Professor of Chemistry and Chemical Biology—developed an imaging technique to help surgeons accurately identify and remove brain tumors. The discovery, called stimulated Raman scattering (SRS) microscopy, uses laser technology to create a color-coded “map” that distinguishes healthy tissue from brain cancer cells. This work, conducted with University of Michigan scientists, was reported in Science Translational Medicine in September.

This image of a glioblastoma brain tumor was made with stimulated Raman scattering, or SRS, microscopy.

(LEFT) The Harvard-affiliated contributors to Clubes de Ciencia Mexico. (RIGHT) Ariela Schear (right) was one of three Cambridge Rindge and Latin students who interned in Harvard’s marine biology labs this year. Here, she’s with Harvard Professor Peter Girguis (left) and high school teacher Paul McGuinness.

SPARKING INTEREST IN SCIENCE

Wanting to give back to their country and share their excitement about science, 13 Harvard graduate students and postdocs traveled to Mexico in January to teach high school students who often lack quality science education at school. Their week-long science clubs covered physics of waves, worm biology, perfecting solar cells, and other topics. The outreach was organized by a team of Mexican PhD students, including Rogelio Hernandez and Adrian Jinich, who has been offering science enrichment to Mexican youths over the years through Clubes de Ciencia Mexico. Jinich says the Harvard project continued in summer 2014, offering 30 more science clubs for a total of 256 participants.

In another science outreach effort, three students from Cambridge Rindge and Latin School conducted research in the marine biology lab of Peter R. Girguis, John L. Loeb Associate Professor of the Natural Sciences, in spring 2014. Their semester-long internship, which included presenting their projects to their Harvard mentors, high school teachers, and family members, was part of a new collaboration between Harvard and the neighboring high school. Girguis said the program allowed the students to experience “the joy of discovery, innovation, and the challenges associated with it.”
The year also marked the creation of the Center for Mathematical Sciences and Applications, a “fusion point for mathematics, statistics, physics, and related sciences.”

Science Division faculty, students, and postdocs earned numerous accolades for their research, teaching, and mentorship. Among the impressive honors:

Martin Karplus, Theodore William Richards Professor of Chemistry, Emeritus, received the 2013 Nobel Prize in chemistry. He shared the honor with former colleagues Michael Levitt of Stanford University and Arieh Warshel of the University of Southern California, for “the development of multiscale models for complex chemical systems.” According to the Nobel site, the trio laid the groundwork for the powerful computer programs used today to understand and predict chemical processes, such as the photosynthesis in green leaves. Karplus, a 1951 graduate of Harvard College, has been a Harvard professor since 1966.

Mathematics Professor Jacob Lurie was named one of five inaugural recipients of the Breakthrough Prize in Mathematics in June 2014. This award for outstanding achievement in the field carries a $3 million prize and was established by entrepreneurs Mark Zuckerberg and Yuri Milner. Lurie was singled out for his work on foundations of higher category theory and derived algebraic geometry, the classification of fully extended topological quantum field theories, and providing a moduli-theoretic interpretation of elliptic cohomology. A 2000 graduate of Harvard College, Lurie earned a doctorate from MIT in 2004 and taught there before becoming a full professor at Harvard in 2008.

Four FAS faculty members were elected to the National Academy of Sciences:

- Daniel Eisenstein; professor of astronomy, department of astronomy
- Jeff W. Lichtman; professor of molecular and cell biology, Center for Brain Science and department of molecular and cellular biology
- Andrew W. Murray; professor of molecular and cellular biology and director, Bauer Center for Genomics Research
- Subir Sachdev; professor of physics, department of physics

The Howard Hughes Medical Institute released a short film, “The Origin of Species: Lizards in an Evolutionary Tree,” featuring Jonathan Losos, Monique and Philip Lehner Professor for the Study of Latin America and professor of organismic and evolutionary biology. Shot on location in the Caribbean, the film demonstrates the traits that enable dozens of anole species to adapt to different vertical niches in the forest. It is part of the BioInteractive series of resources for science teachers and students.
You received great news in June that the Department of Energy has funded Harvard’s Integrated Materials for Sustainable Catalysis center as an “Energy Frontier Research Center.” What questions will this new center (with you as director and Tim Kaxiras as deputy director) try to answer?

The center will focus on developing a fundamental understanding of how to design and develop new mesoporous materials to more efficiently synthesize key platform chemicals—a small group of chemicals used to make many different products. Chemical production accounts for nearly 25 percent of worldwide energy consumption, providing an opportunity for energy savings. Mesoporous materials are sponge-like in their structure but on a very small scale (nanometers to microns). As a comparison, a human hair is tens of microns in diameter—which is 1,000 to 10,000 times larger than the pores in the materials we study. More broadly, the principles derived from our work will guide the design of new materials for other applications in the energy sector.

How will the center build on the strength of energy science research at Harvard and enhance national and international collaborations?

The scientific expertise of several Harvard faculty will enable us to focus on a major scientific problem: to develop new ways of producing industrial chemicals that use fewer natural resources and generate less waste. The excellent research facilities, including at the Harvard Center for Nanoscale Systems (CNS) and in our individual laboratories, will also be a major asset. Bringing together computer-based modeling using theory and advanced experiments is one of the central parts of our work. Deputy Director Tim Kaxiras [John Hasbrouck Van Vleck Professor of Pure and Applied Physics] is a theorist. Our center also convenes an international team of leading researchers focusing on a common problem. This will attract new talent to this area and bring team members and other visitors to Harvard, which we expect will generally enhance the research environment on campus.

Where does this center fit into your own research interests in reducing global energy costs and developing alternative energy sources?

The EFRC builds on ideas and objectives in my own research; however, the scope of the EFRC is grand and depends on collaborations with scientists who have expertise beyond that available in my lab. My laboratory focuses on fundamental understanding of how to efficiently drive chemical transformations using solid materials as catalysts. We are also studying the conversion of light to chemical energy in my lab.

How will the Rowland Institute at Harvard—an FAS program supporting experimental science by young investigators—help leverage this new award?

By providing an intellectual and physical home for the EFRC. Our management team will have offices at the Rowland Institute, and we will hold scientific meetings and seminars there, so it will serve as a convening spot for our students, postdoctoral researchers, and scientists. The EFRC will, in turn, provide a source of intellectual excitement and a forum for discussing new ideas for the Rowland Junior Fellows and their research teams, thus advancing their careers.

Yours was one of 32 Energy Frontier Research Centers chosen from 200 proposals. Who else contributed to the success of your grant proposal?

The proposal brought together a world-class team of scientists to work in a highly integrated program, focused on solving an important energy-related problem. In addition to the excellent scientific team, the support we received from the FAS Division of Science, including Dean Jeremy Bloxham and Susan Gomes [director of research development and strategy], and from Kathy Zuccala in the CCB [chemistry and chemical biology department] financial office were critical. Another factor in our success was the support of the Harvard University Center for the Environment; through seminar programs and the graduate consortium for energy and the environment, we were able to engage team members who have not traditionally worked on these specific problems.
DIVISION OF SOCIAL SCIENCE

DEAN PETER MARSDEN
ACADEMIC YEAR 2013–2014
INTRODUCTION

The social sciences study the cultural, economic, historical, political, psychological, and social forces that shape people and their interactions with one another. Social science subjects range from the minds and brains of individuals situated in social settings, through phenomena that arise in small groups and communities, to features of large-scale complex systems of interrelated nations or firms. Concerns encompass both the present-day world and the human past, and engage vital normative questions in social thought and political philosophy as well as those involving empirical research.

The FAS Division of Social Science includes 10 academic departments and degree committees and 24 research centers, museums, and institutes. Some highlights of the 2013–2014 academic year are featured here.

RESEARCH AND TEACHING

Initiatives

Faculty in the Division of Social Science launched three major initiatives during 2013–2014 to promote scholarship and collaboration in the areas of human behavior, human history, and the history and culture of people of African descent.

The Foundations of Human Behavior (FHB) Initiative has an ambitious goal: to foster groundbreaking insights into the mechanisms that influence human behavior—and then translate that knowledge into interventions that can improve human well-being. The FHB will support Harvard faculty who study a wide range of cognitive, social, and behavioral phenomena, from decision-making, self-control, cooperation, and violence to productivity, innovation, and leadership. Directed by David Laibson, Robert I. Goldman Professor of Economics, the initiative established two research funds in the spring, which will award their first grants in fall 2014. The Pershing Square Fund and the Eric M. Mindich Research Fund will support faculty, postdoctoral fellows, and graduate students pursuing interdisciplinary and collaborative research that promises to advance understanding of social, institutional, and biological mechanisms shaping human beliefs and behavior. Three Pershing Square professorships were endowed in connection with the initiative. The first was filled in July 2014 with the appointment of Matthew Rabin of the University of California, Berkeley, a leading scholar of behavioral economics.

The Harvard Initiative for the Science of the Human Past draws on 21st-century evidence and powerful techniques from the natural sciences, social sciences, and humanities to expand our understanding of human history. The initiative engages a wide range of disciplines including archaeology, palaeoanthropology, cognitive sciences, computer science, digital humanities, environmental and climate studies, genetics, geographic...
information systems, linguistics, and molecular biology. Led by Michael McCormick, Francis Goelet Professor of Medieval History, the initiative held its inaugural conference, *The Encounter of Science and History*, on November 1, 2013. Leading scientists and scholars presented insights into such subjects as ancient DNA and pathogens, human hunting and evolution, medieval climate change, human movements and isotopes, and the biohistory of the fall of Rome. Among the Harvard speakers were McCormick; Daniel E. Lieberman, Edwin M. Lerner II Professor of Biological Sciences; David Reich, professor of genetics; Pardis Sabeti, associate professor of organismic and evolutionary biology; and Noreen Tuross, Landon T. Clay Professor of Scientific Archaeology.

The Hutchins Center for African and African American Research supports research on the history and culture of people of African descent throughout the world, providing a forum for collaboration and ongoing exchange of ideas. Six distinct institutes reside within the center: the W. E. B. Du Bois Research Institute, the Hiphop Archive & Research Institute, the Afro-Latin American Research Institute, the Image of the Black Archive & Library, the Program for the Study of Race & Gender in Science & Medicine, and the History Design Studio. Based on Mount Auburn Street, the Hutchins Center also houses the Neil L. and Angelica Zander Rudenstine Gallery, a space devoted to works by and about people of African descent. A second gallery, the Ethelbert Cooper Gallery of African & African American Art, will open in the fall of 2014.

An October 2, 2013, celebration in Sanders Theatre recognized the 14th annual W.E.B. Du Bois medalists and marked the center’s official establishment. Du Bois medals are awarded by Harvard to individuals for their outstanding contributions to African and African American culture and the life of the mind. The moving, star-studded event honored Valerie Jarrett, senior adviser to the President of the United States, playwright Tony Kushner, U.S. Representative John Lewis, Associate Justice Sonia Sotomayor of the U.S. Supreme Court, film director Steven Spielberg, and David Stern, commissioner of the National Basketball Association. Introductions were given by Massachusetts Governor Deval Patrick; Diane Paulus, artistic director of the American Repertory Theater; friend and benefactor Glenn Hutchins '77, JD '83, MBA '83, founder of the Hutchins Family Foundation; Harvard Law School Dean Martha Minow; Harvard University President and Lincoln Professor of History Drew Faust; and basketball legend Bill Russell, respectively.

Other Academic Developments
The division established a strong presence in research and teaching about the history of Latin America and the Caribbean as the FAS completed its recruitment of a world-class complement of faculty specialists. Sidney Chalhoub (history), a historian of 19th- and 20th-century Brazil, will join several other recent appointees in this field: Alejandro de la Fuente (Robert Woods Bliss Professor of Latin-American History and Economics in African and African American studies and history), who specializes in comparative slavery and race relations in Latin America and the Caribbean; Tamar Herzog (Monroe Gutman Professor of Latin American Affairs and Radcliffe Alumnae Professor in history), who focuses on Portuguese and Spanish America and their cross-Atlantic influences on Spain and Portugal; and Kirsten Weld (assistant professor of history), who studies 20th-century
Central America, Mexico, and the Southern Cone. These scholars play an active role within the David Rockefeller Center for Latin American Studies and its programs on Brazil and Cuba; de la Fuente also serves as founding director of the Afro-Latin American Research Institute within the Hutchins Center.

Division faculty offered several new HarvardX courses this year. Among these are China, taught jointly by Peter Bol, Charles H. Carswell Professor of East Asian Languages and Civilizations, and William Kirby, T.M. Chang Professor of China Studies and Spangler Family Professor of Business Administration; Justice, offered by Michael Sandel, Anne T. and Robert M. Bass Professor of Government; Tangible Things: Discovering History Through Artworks, Artifacts, Scientific Specimens, and the Stuff Around You, developed by Laurel Thatcher Ulrich, 300th Anniversary University Professor, and Global Health: Case Studies from a Biosocial Perspective, presented by Arthur Kleinman, Esther and Sidney Rabb Professor of Anthropology in the Faculty of Arts and Sciences and professor of medical anthropology in the Faculty of Medicine.

Social science faculty members were awarded two 2014 Cultivation Grants from the Harvard Initiative for Learning and Teaching (HILT). Ken Nakayama, Edgar Pierce Professor of Psychology, and Ryan Enos, assistant professor of government, in collaboration with Krzysztof Gajos, associate professor of computer science, will develop and evaluate online behavioral research experiments that can be used flexibly by students and instructors in psychology and the social sciences to facilitate active participation in behavioral research. Daniel Smail, professor of history, and Ann Blair, Henry Charles Lea Professor of History, plan to enhance their department’s Digital Teaching Fellow program—which develops and sustains an infrastructure of digital and multimedia resources to support active learning—and expand it to include at least six other departments in the Divisions of Social Science and of Arts and Humanities.

The Behavioral Laboratory in the Social Sciences (BLISS), a 10-week summer residential program in which Harvard undergraduates contribute to faculty research and participate in the College’s Summer Research Village, continued for a fourth summer session in 2014. Twelve BLISS fellows were engaged in 12 distinct faculty projects focused on such topics as inequality and mass incarceration, language and nonverbal communication, computer-assisted text analysis, and educational interventions, among many more.
RENOVATIONS AND RELOCATIONS

In May, the social anthropology program moved from William James Hall into the upper two floors of the newly renovated Tozzer Building on Divinity Avenue. The expanded facility—completed on time and on budget—unifies the Department of Anthropology by bringing the social anthropologists physically closer to their colleagues in archaeology, who are housed in the Peabody Museum of Archaeology and Ethnology, to the collections and resources of the Museum itself, and to a streamlined Tozzer Library (which itself returned in June from its temporary displacement to William James).

Renovations began in William James in May to update both classroom spaces on the lower level and office spaces on the third and fourth floors. The office renovations, expected to wrap up by year’s end, will allow the sociology department to expand and the social studies program to relocate to William James from Hilles Library, bringing it much closer to other departments and centers in the division.

EVENTS AND EXHIBITS

Throughout the 2013–2014 academic year, the departments, research centers, institutes, and museums within the Division of Social Science continued to offer robust support to both faculty and students for research and travel, hosted numerous visiting scholars and speakers from around the globe, and sponsored stimulating scholarly workshops, colloquia, seminars, lectures, and other events. A small sampling of these activities is highlighted here.

The Minda de Gunzburg Center for European Studies (CES) celebrated the opening of the Jacek E. Giedrojc Gallery in Busch Hall on October 24, 2013. The initial exhibition in this new space, Politics on Paper, included 25 unique Polish posters from 1957 to 2013. The CES mounted it in collaboration with the Adam Mickiewicz Institute in Warsaw and the Poster Museum in Wilanów.

On May 1, the Center for American Political Studies and the Hutchins Center hosted the first annual Ambassador John L. Loeb, Jr., Initiative On Religious Freedom and Its Implications symposium. Presented with the George Washington Institute for Religious Freedom, the event featured Sheikh Dr. Yasir Qadhi, Reverend J. Brent Walker, and Rabbi Angela W. Buchdahl, and was moderated by Professor Henry Louis Gates, Jr.
As part of the annual meeting of the History of Science Society, Harvard’s history of science department co-hosted a special reception at the MIT Museum on November 23 to mark the 100th anniversary of the Society’s journal, *Isis*.

Curators of the Collection of Historical Scientific Instruments (CHSI) engaged in three major initiatives this year. The 15-year-old exhibit in the Science Center atrium of Harvard’s Mark I (IBM ASCC) computer, designed in 1937 by Harvard graduate student Howard H. Aiken, was refurbished and now includes an extensive online virtual exhibit and video. In the Collection’s space on the second floor of the Science Center, curators organized *Time and Time Again: How Science and Culture Shape the Past, Present, and Future* (March through December 2013) and *Body of Knowledge: A History of Anatomy in 3 Parts* (March through fall 2014). Collection staff produced an online *Gallery Guide for Body of Knowledge*.

The Reischauer Institute of Japanese Studies mounted two significant exhibits in the Japan Friends of Harvard Concourse in the CGIS South Building. In September and October 2013, *Palimpsest*, an exhibition of artwork by Tomokazu Matsuyama, was on display. During the spring semester, the Institute collaborated with the Graduate School of Design on *The Thinking Hand: Tools and Traditions of the Japanese Carpenter*, including a replica of a famous 18th-century Kyoto teahouse, with construction overseen by a daiku (master carpenter) using a collection of early-20th-century handmade tools gifted to the Graduate School of Design by the Takenaka Carpentry Tools Museum.
Q: You direct the Foundations of Human Behavior (FHB) Initiative, which launched this spring with three new endowed professorships and funding to support research on the psychological, social, economic, political, and biological mechanisms driving human actions. What impact do you hope this project will have?

A: Understanding human behavior enables us to cost-effectively influence human behavior in ways that can be globally scaled. Research at Harvard has been used to transform work, savings, and health systems around the world; raising worker productivity, reducing racial and ethnic discrimination, improving retirement preparedness, easing financial stress, driving down health care costs, and driving up medical adherence. At Harvard, there is an enormous amount of interest from both students and faculty in interdisciplinary social science research, particularly in the domain of behavior change. The Foundations of Human Behavior Initiative will expand the scope of our internal activities and our ability to constructively shape policies around the globe.

A: Is the FHB research fund, supported with a generous gift from the Pershing Square Foundation, open to faculty and doctoral students from across Harvard?

A: Yes.

Q: You’ve said that a lot of human behaviors (such as smoking and saving for retirement) are malleable and can be influenced at low cost. Could you elaborate?

A: Here’s one example. If you offer families the opportunity to have their chronic medications (like statins) delivered to their homes for free and give them a reduced co-payment as inducement (home delivery is less costly for the health care system than pharmacy pickup), only one in six eligible families opts in. If you instead ask these families to actively choose between home delivery and standard pharmacy pickup, you get three times as many families to choose home delivery. This change in choice architecture (from opt-in to active choice) was pioneered by a research group at Harvard—John Beshears (HBS), James Choi (AB ’98, PhD ’05), Brigitte Madrian (HKS), and myself—and proved so successful at a pilot large national company offering prescription drug benefits to its employees that it has now been adopted by 400 other companies. This new choice architecture is currently saving the U.S. health care system $100 million per year.

Q: In terms of your field of behavioral economics, what questions keep you up at night?

A: How can we help people overcome self-defeating behaviors, like smoking and high-cost borrowing? Where is the line between a welcome nudge and unwelcome paternalism?

Q: In what ways has being at Harvard shaped your thinking and career path?

A: When I came to Harvard as a college freshman in 1984, I didn’t have the slightest interest in academic research. By the time I graduated four years later, I had found the intellectual obsessions that would energize my life for the next 26 years (and counting).

Coming back as a faculty member (in 1994) was also an extraordinary experience. I was the first doctoral student to get hired at any university with a job market paper in the nascent and controversial field of behavioral economics. Harvard made a bold bet in welcoming and encouraging someone with a research program that most people outside of Harvard thought was a waste of time. I owe an enormous debt to my colleagues in the economics department and to Harvard in general.

Q: Looking forward, what do you most hope to accomplish this coming academic year in your teaching and/or research?

A: My coauthors and I are working on the following question: What is the optimal level of liquidity in a retirement savings account? Should these accounts be non-liquid like Social Security (to block the temptation to spend the money too soon) or much more liquid, like an Individual Retirement Account (so the money is available for financial emergencies long before retirement)? What is the structure of a socially optimal retirement savings system?

In the classroom, I’m trying to get my students, both undergraduates and graduate students, excited about advancing the science of behavior change.
DIVISION OF CONTINUING EDUCATION (DCE)

DEAN HUNTINGTON LAMBERT
ACADEMIC YEAR 2013–2014
Under the direction of a new dean, Huntington Lambert, the Division of Continuing Education (DCE) continued its commitment to offering high-quality, academically rigorous programming to part-time students and lifelong learners.

The Division serves more than 20,000 students annually through its entities: Harvard Extension School, Harvard Summer School, Harvard Professional Development Programs, and the Harvard Institute for Learning in Retirement.

Dean Lambert began implementing his vision for student success by establishing long-term goals and undertaking a number of changes toward that vision.

The Division has defined student success around helping its part-time learners achieve their academic goals, attracting and supporting students who are able to succeed in academically rigorous courses and certificate and degree programs.

For DCE, creating a climate for students to succeed means:

- Providing open access to reasonably priced courses so that learners who may have struggled earlier in their academic careers can prove their way into certificate and degree programs by showing they can perform well now.
- Producing more than 900 courses a year so that students can find the courses that spark their passion.
- Offering flexibility so that students can learn in the manner that works best for them. This includes giving courses on the Harvard campus in the evening year-round, and during the day in the summer; online (taken “live” with a class or at the student’s own pace); and in every imaginable blended format.
- Continuing to offer an academic and career center to support the diversity of part-time learners’ needs.
- Having all DCE students say they succeeded in their learning goals in Harvard Extension and Summer School courses, graduate professional certificates, degrees, study abroad programs, weekend and week-long intensives, professional development programs, and learning in retirement study groups.
- Seeing students come back for more education when the need arises.

In 2013–2014, Harvard Extension School offered 669 courses in the liberal arts and professional fields. A total 13,643 students enrolled in Extension School courses, accounting for 26,631 course enrollments and representing 122 countries of citizenship. This constitutes a 1 percent increase in students over the previous academic year.

The Extension School continues to provide teaching opportunities for University faculty and staff. In 2013–2014, 56 percent of the 497 instructors were Harvard affiliates, 21 percent were ladder Harvard faculty, including emeriti, and an additional 13 percent were Harvard lecturers and preceptors with term-limited appointments.

As has been the case for several years, online instruction continues to fuel growth. In 2013–2014, enrollment in courses offered entirely online or with an online option increased 14 percent over the previous year to 14,351, accounting for 54 percent of total course enrollment. The Extension School again offered a record number of online courses (274), including 51 Harvard College and Harvard...
graduate-level courses and 86 web conference courses, and seven courses offering a blend of online and on-campus instruction. These classes enrolled students living across the United States and in 90 foreign countries.

The Extension School collaborated with HarvardX on several courses, offering a for-credit version of “China” based on material developed by Vice Provost and Charles H. Carswell Professor of East Asian Languages and Civilizations Peter Bol and T.M. Chang Professor of China Studies and Spangler Family Professor of Business Administration William Kirby (see Q&A, page 51). Similarly, Francis Jones Professor of Classical Greek Literature and Professor of Comparative Literature Gregory Nagy’s edX course, “The Ancient Greek Hero,” was given for credit through the Extension School. As an experiment, the Extension School offered a noncredit version of Gordon McKay Professor of the Practice of Computer Science David Malan’s course CS50x: “Introduction to Computer Science,” along with the existing for-credit version. This new class supplemented his free edX version with online office hours, moderated forums, and an end-of-term project exposition. It was deemed a success, enrolling more than 300 students at a price point of $350, with 83 students earning the certificate of completion.

Interest in credit-bearing certificates and degree programs remained strong, and on-campus courses offered during an intensive January session drew 767 students, a 5 percent increase over the previous year. Many attended in part to fulfill residency requirements for

Extension School degrees. The Extension School took steps to provide additional intensive residency opportunities for 2014–2015, including adding active learning weekend courses where students work together to solve problems and complete simulations.

The Division’s professional development programs, which build leadership and management skills in such areas as strategy, negotiation, and finance, continued to draw interest. Nearly 700 participants from around the world attended 30 two-day intensive noncredit programs during four weeklong periods throughout the year. Topics included “Data Visualization,” “Leadership Communications,” “Digital Marketing,” and “Managing Yourself and Leading Others.” They took place in various campus facilities, including Harvard Law School’s newly completed Wasserstein building.

WATCH NOW: In this era of information overload, being able to interpret, organize, and present data effectively is essential. In his two-day professional development course on data visualization, Hanspeter Pfister, An Wang Professor of Computer Science at Harvard, gives students tools to create meaningful and digestible visual representations of their data—without programming. His students have included teachers, financial advisors, scientists and other researchers, “and anything in between.”
Begun in 1871, Harvard Summer School is the oldest academic summer program in the United States and continues to serve a diverse population of traditional and nontraditional college students and adults. The faculty draws largely from Harvard’s ranks but also includes scholars from around the world.

In 2013, the Summer School offered more than 300 on-campus courses and a small selection of distance education courses (22, including five web conference courses) covering a broad range of liberal arts subjects such as chemistry, modern dance, economics, and religion. In 2013, Harvard Summer School enrolled 6,045 students, a 4 percent decrease from 2012. These students accounted for 8,175 course enrollments. Thirty-seven percent of students were international, with citizenship representing 107 nations. More than 1,700 students lived on campus in undergraduate Houses and Harvard Yard dormitories.

Twenty-four study abroad programs were offered in 16 countries and attended by 538 students. Harvard faculty led these programs, which provided a rigorous educational experience for the 325 Harvard College undergraduates, four Harvard GSAS and professional school graduate students, five Extension School undergraduate and graduate degree candidates, and additional students from 40 other colleges and universities, including local program host institutions.

The Summer School also encompasses the Secondary School Program for academically motivated high school students, which enrolled 1,230 students in Summer School courses for undergraduate credit. The Crimson Summer Academy (CSA) is a challenging residential program, created by the President’s Office, for academically motivated, low-income high school students in Cambridge and Boston. Over three consecutive summers and during the intervening academic years, the CSA helps its “Crimson Scholars” prepare to become viable candidates for admission to challenging four-year colleges and universities. There are approximately 90 students on campus each summer. At Harvard’s Commencement in May 2014, the CSA graduated its eighth class of Crimson Scholars, who plan to attend prestigious colleges including Dartmouth, Haverford, Lehigh, and Wesleyan.

The Harvard Institute for Learning in Retirement (HILR), founded in 1977, this year admitted 47 retired academics, professionals, businesspersons, artists, and writers, bringing its active membership to 550. Members participated in 127 peer-led study groups and in various extracurricular activities that included lectures, symposia, concerts, theater, and writing groups. The annual HILR convocation featured environment writer and activist Bill McKibben, who addressed an audience of 800 in Sanders Theatre on “Notes from a Rapidly Changing Climate.” The Institute
Division of Continuing Education

During its exchange relationship with Turkey’s leading public university, Boğaziçi (The University of Bosphorus), the director and council president attended the opening of Boğaziçi’s lifelong learning institute, “Second Spring,” in November 2013. Twenty-five members of the Boğaziçi Institute intend to visit HILR in October 2014.

The Division plays an important role at Harvard, providing opportunities for University employees to teach and for faculty to experiment with new pedagogies and online teaching, and leveraging classroom space unused during evening and summer hours. In addition, 1,741 Harvard staff members took advantage of Harvard’s Tuition Assistance Plan (TAP) to enroll in Extension School courses in 2013–2014, and 388 staff members took Summer School courses.

To date, more than 1,000 staff have earned a degree or graduate certificate through Harvard Extension School.

Financially self-supporting, DCE also makes an important annual financial contribution to the University through supplemental instructional salaries to faculty and staff who teach courses, funds for programs within the Faculty of Arts and Sciences, payments for facilities and other resources, and tuition waivers for Harvard employees.

In the coming year, DCE will continue to build on Dean Lambert’s plan for student success and fulfill its mission to serve the educational needs of a diverse local, national, and international population. At the same time, the Division will continue to enhance the academic and financial well-being of the FAS and the University.

This year’s Robert C. Cobb Jr. Memorial Lecture is delivered by author and environmental activist Bill McKibben in Sanders Theatre, an event sponsored by the Harvard Institute for Learning in Retirement. Over 800 members of the Harvard community attended the annual convocation.

CONTRIBUTION TO THE UNIVERSITY

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QUESTION & ANSWER

WILLIAM KIRBY
T. M. Chang Professor of China Studies, Spangler Family Professor of Business Administration

Q: You co-teach three versions of your survey course on China with Peter K. Bol (Charles H. Carswell Professor of East Asian Languages and Civilizations and vice provost for advances in learning): on campus through FAS, and online through HarvardX and the Harvard Extension School. How do these inform each other, given the different student audiences and course structures?

A: The most important change of teaching “China three ways” (sounds like a Chinese dish!) is that the original lecture format—which we must in order to be prepared for our class, which is now almost entirely discussion and case-based. In the past, we did not take attendance for granted. Now we absolutely require it, along with participation in the discussion by which students learn from each other. This format demands preparation and focus. We’re using a lot of technology in this course. When students are in the classroom, we want them completely engaged in the conversation. To that end we have exiled laptops and cell phones from the classroom. People are much more attentive as a result.

Q: In the spring and summer of 2013, you were developing online materials for the HarvardX course, including maps, photos, and videotaped interviews with China scholars across Harvard. Have you used those materials in different versions of the course, including to “flip” your FAS class?

A: Yes we have. We have also done a large number of filmed excursions in China and here, including interviews, that we are calling “field trips” for all our students—be they College, Extension, or online students.

Q: Your HarvardX course grew out of your earlier experience teaching through the Extension School. Did that experience prepare you for the development of your HarvardX course?

A: The Extension School did such a terrific job in filming and editing our lectures and discussion that it gave us confidence that something even more intensive, like HarvardX, could work and work well. Even so, we were not prepared for the amount of work that we ourselves had to put into this new enterprise; it was the time equivalent of at least two new classes for each of us.

Q: What do these courses tell you about interest in China?

A: That it is large; that it is longstanding (our course has a lineage back to 1939); and that it is global—the diverse world of our College, Extension, and now 45,000 global learners online.

Q: What about the hunger for online learning?

A: It is larger than I imagined, and it has fed our hunger for online teaching!

Q: What did you, as scholars, learn along the way in assembling the materials?

A: That you can teach old dogs (like us) new tricks; that teaching, like learning, is a lifelong experience.
SCHOOL OF ENGINEERING AND APPLIED SCIENCES (SEAS)

DEAN CHERRY MURRAY
ACADEMIC YEAR 2013–2014
CAMPAIGN LAUNCH

As part of the launch of the Harvard Campaign for Arts and Sciences, SEAS kicked off its Campaign for SEAS in October, with an ambitious goal of $450 million.

At the launch event, President Drew Faust emphasized Harvard’s commitment to engineering and applied sciences, and Dean Cherry A. Murray outlined for donors the SEAS campaign priorities:

- To increase the size of the School’s world-class ladder faculty from 70 to 90;
- To enhance and expand instructional spaces for teaching, hands-on design, and laboratory research;
- To raise innovation funds for cutting-edge, high-impact research, including startup research programs of new faculty members; and
- To invest in talented students through graduate fellowships.

SEAS Campaign co-chairs Paul Maeder, MBA ’84 and Herbert “Pug” Winokur ’65, PhD ’67, announced that $100 million of the $450 million goal had already been raised. The launch event featured a panel discussion on entrepreneurship with three recent SEAS alumni who are leading startups.

The School also launched a series of events for alumni and friends called “Engineering the Future,” with programs in Seattle and Silicon Valley at which the SEAS dean and several faculty spoke about their research and teaching in materials and computer science.

ENVISIONING AN EXPANDED CAMPUS

Under the leadership of the provost, Harvard continued to advance planning for a state-of-the-art science complex in Allston that will include a new building to house a significant portion of the SEAS research and teaching activities. The SEAS faculty came together over the past year to define the long-term teaching, research, and community space needs of the School to guide these development efforts. Through committees, task forces, focus groups, retreats, and regular faculty meetings, members established guiding principles and articulated broad programmatic requirements for the expansion. With this input, the Behnisch architectural firm will create conceptual designs for the School’s new signature building in Allston.

RECORD DEGREES AWARDED

During academic year 2013–2014, SEAS awarded a record 380 degrees (to graduates in November, March, and May), up from 306 the previous year.

The total includes:

- 231 SEAS concentrators earning bachelor’s degrees (180 A.B., 51 S.B.)
- 84 master’s degrees (including accelerated A.B./S.M. recipients and graduate students receiving the master’s en route to the PhD)
- 65 PhDs
Science and Technology Centers
SEAS faculty members figure prominently in two of the three new Science and Technology Centers (STCs) awarded by the National Science Foundation this year from a highly competitive field of more than 40 applicants. Harvard will lead a new Center for Integrated Quantum Materials and is playing a significant role in a second MIT-led project, the Center for Brains, Minds, and Machines. The STC program supports integrative partnerships that require large-scale, long-term funding to produce research and education of the highest quality.

The Center for Integrated Quantum Materials will receive up to $20 million over five years to fund research and education programs exploring the unique electronic behavior of quantum materials, including graphene, topological insulators, and nitrogen vacancy centers in diamond, with the goal of achieving new breakthroughs in electronics, photonics, and computing. Mallinckrodt Professor of Applied Physics and Physics Robert M. Westervelt will lead the center, which will bring together scientists and collaborators from Howard University, MIT, and the Museum of Science, Boston. The center will also encourage young students to pursue careers in science and engineering through an affiliated college network including Bunker Hill Community College, Gallaudet University, Mount Holyoke College, Olin College, Prince George’s Community College, and Wellesley College.

SEAS faculty member L. Mahadevan will serve as associate director of the Center for Brains, Minds, and Machines, which will investigate how intelligent beings interact with, and learn from, their environments. The scientific scope will range from vision, language, and child development to neural circuitry and social intelligence. Mahadevan is Lola England de Valpine Professor of Applied Mathematics at SEAS, professor of organismic and evolutionary biology, and professor of physics. He is also a core faculty member at the Wyss Institute for Biologically Inspired Engineering at Harvard and a member of the Kavli Institute for Bionano Science and Technology, based at SEAS. Leslie Valiant, T. Jefferson Coolidge Professor of Computer Science and Applied Mathematics at SEAS, will contribute to the center’s work, along with Elizabeth Spelke, Marshall L. Berkman Professor of Psychology, Ken Nakayama, Edgar Pierce Professor of Psychology, and Kenneth I. Blum, executive director of the Harvard Center for Brain Science.

North American Center for Research on Advanced Materials
SEAS and BASF SE, along with MIT and the University of Massachusetts Amherst, established a research initiative called the North American Center for Research on Advanced Materials to jointly develop new materials for the automotive, building and construction, and energy industries. Under the five-year agreement, approximately 20 new postdoctoral positions will be created at the three universities. The multidisciplinary team will explore topics including micro- and nanostructured polymers with new properties and bioinspired materials. The scientists are working on lightweight construction materials for wind turbines and automotive construction, for example, and on new color effects for cosmetic applications.
Multidisciplinary University Research Initiatives
Federico Capasso, Robert L. Wallace Professor of Applied Physics and Vinton Hayes Senior Research Fellow in Electrical Engineering, will serve as principal investigator of a new Multidisciplinary University Research Initiative (MURI) on Control of Light Propagation through Metasurfaces. The five-year, $6.5 million award from the Air Force Office of Scientific Research was one of 24 funded from among 361 proposals solicited by the U.S. Department of Defense. Columbia, Purdue, Stanford, and the University of Pennsylvania are collaborating institutions on the Harvard-based MURI. Marko Lončar, Tiantsai Lin Professor of Electrical Engineering, is a co-principal investigator on the project.

Tim Kaxiras, John Hasbrouck Van Vleck Professor of Pure and Applied Physics, will be a co-principal investigator of a second MURI announced by the Department of Defense this year. The University of Minnesota-led team will use multiscale modeling to predict and design new functional materials.

CUDA Center of Excellence
NVIDIA Corporation renewed Harvard’s CUDA (Compute Unified Device Architecture) Center of Excellence for a fifth year. The award is noteworthy because NVIDIA, a visual computing technology company, maintained Harvard’s designation while reducing its overall number of partners. The goal of the center, under the auspices of the Institute for Applied Computational Science (IACS) at SEAS, is to foster collaboration within Harvard and across multiple disciplines for GPU teaching, research, and external outreach. IACS Director Hanspeter Pfister, An Wang Professor of Computer Science, and Alán Aspuru-Guzik, professor of chemistry and chemical biology, serve as co-principal investigators.

Salil Vadhan, Vicky Joseph Professor of Computer Science and Applied Mathematics and director of the Center for Research on Computation and Society at SEAS, is working on ways to minimize the risk of personal data misuse, whether inadvertent or nefarious. Collaborating with colleagues in computer science, social science, statistics, and law, Vadhan’s goal is to define and measure privacy in mathematical and legal terms. While the project he leads for the National Science Foundation, Privacy Tools for Sharing Research Data, focuses mainly on social science data, efforts to design technological, legal, and policy tools for dealing with sensitive data may help address data privacy challenges in other domains, such as public health and electronic commerce.
Vadhan and colleagues are combining computer science tools like cryptography and human-computer interaction with novel policy approaches. The data sandbox for the NSF-supported project is the Harvard Institute for Quantitative Social Science’s Dataverse Network, a vast repository of social science data sets that currently are not anonymized. By developing instruments to anonymize privacy-sensitive data, a practical result of the effort will be to make the Dataverse information available for use by many more researchers and policymakers.

FACULTY RESEARCH HIGHLIGHTS

From self-organizing robots to new cancer drug delivery techniques, SEAS faculty and students reported a wide range of groundbreaking research results across all of our areas this year. Here are a few examples:

**3D-Printing Biological Tissues**

Jennifer A. Lewis, Hansjörg Wyss Professor of Biologically Inspired Engineering, and her team pioneered a new bioprinting method to create intricately patterned, three-dimensional tissue constructs containing multiple types of cells and tiny blood vessels. The novel inks carry living cells or tissue components like an extracellular matrix, the foundational step toward creating 3D living tissue. In the future, 3D-printed tissue could be used to test the safety and efficacy of therapeutic drugs, to heal injuries, or to replace diseased tissue. This and other research by the Lewis lab has expanded the practical uses of 3D printing and opened up new options for miniaturization of medical and nonmedical devices. *(See Q&A on next page)*

**Renewable Energy Battery**

The mismatch between the availability of intermittent wind or sunshine and the variability of demand is the biggest obstacle to getting more of our electricity from renewable sources. A team of Harvard scientists and engineers demonstrated a novel metal-free flow battery that could provide a cost-effective means of storing large amounts of electrical energy. It relies on the electrochemistry of naturally abundant, inexpensive, small organic molecules called quinones. The battery was designed, built, and tested in the laboratory of Michael J. Aziz, Gene and Tracy Sykes Professor of Materials and Energy Technologies. Roy G. Gordon, Thomas Dudley Cabot Professor of Chemistry and professor of materials science, led the work on the synthesis and chemical screening of molecules. Alán Aspuru-Guzik, professor of chemistry and chemical biology, used his pioneering high-throughput molecular screening methods to calculate the properties of more than 10,000 quinone molecules in search of the best candidates for the battery.

*To learn more about this and other sustainable energy research, see Division of Science section, pages 34-35 and 38.*
**JENNIFER A. LEWIS**  
Hansjörg Wyss Professor of Biologically Inspired Engineering at SEAS and a core faculty member at Harvard’s Wyss Institute for Biologically Inspired Engineering

**Q:** Your team recently developed a new bioprinting method to create 3D tissue constructs containing blood vessels and different types of cells, representing an important step toward printing human tissues. How might this technology be used in science and medicine?

**A:** Our technology will enable printing of 3D tissue constructs for drug safety screening, and (we hope) ultimately for applications involving tissue repair in humans.

**Q:** How does this discovery advance your earlier work and thinking?

**A:** This builds on our prior work in designing functional materials for 3D printing and extends it in an important new direction, namely that of bioprinting. We can now produce 3D-engineered tissue constructs that mimic vascularized natural tissues. We do this by co-printing “bioinks,” which contain key ingredients of living tissues, in precise geometries. For example, one ink has extracellular matrix that knits cells into tissues, another has living cells, and a third ink can be fashioned into blood vessels. Each of these components plays a vital role in imparting, supporting, or sustaining the biomimetic function of the engineered tissue structure.

**Q:** Looking back at the 2013–2014 academic year, what were one or two other highlights in your research and/or teaching?

**A:** Another big highlight was our research on 3D printing of lithium ion microbatteries. We created batteries that are 1,000 times smaller than the smallest rechargeable battery available commercially—as small as a grain of sand. These batteries could eventually help power tiny devices in medicine and other fields, like sensors, microrobots, or biomedical implants. This advance was featured on NPR’s *Science Friday*.

Our work on microscale 3D printing was recently selected as one of the year’s top 10 breakthrough technologies by the *MIT Technology Review*. This recognition was extremely gratifying.

**Q:** When joining the SEAS faculty in January 2013, you were drawn to Harvard’s opportunities for multidisciplinary, collaborative research. Has Harvard met your expectations so far?

**A:** Since coming to Harvard [from the University of Illinois], my research group has established numerous collaborations within SEAS, the Wyss Institute, and well beyond. We have become fully embedded in Harvard’s ecosystem of innovation and benefitted greatly from its highly collaborative, interdisciplinary environment.
Self-Organizing Robots
Inspired by the collective intelligence displayed by African termites that build protective mud towers above their nests, a team of computer scientists and engineers led by Radhika Nagpal, Fred Kavli Professor of Computer Science, created an autonomous robotic construction crew. The system needs no supervisor; just simple robots that cooperate to modify their environment. The TERMES system demonstrates that collective systems of robots can build complex, three-dimensional structures without the need for any central command or prescribed roles. In the future, similar robots could be programmed to, for example, lay sandbags in advance of a flood or perform simple construction tasks on Mars.

Gel-Based Audio Speaker
In the first demonstration that electrical charges carried by ions, rather than electrons, can be put to meaningful use in fast-moving, high-voltage devices, SEAS researchers created a working audio speaker that represents a robust proof of concept for ionic conductors.

Ionic conductors can be stretched to many times their normal area without increasing resistivity, a problem common in stretchable electronic devices; they can be transparent, making them well-suited for optical applications; and their electrolyte gels are biocompatible, so ionic devices such as artificial muscles or skin could be developed using them in the future. The research was led by Zhigang Suo, Allen E. and Marilyn M. Puckett Professor of Mechanics and Materials, and George M. Whitesides, Woodford L. and Ann A. Flowers University Professor in the Department of Chemistry and Chemical Biology.

New Master’s Program
Building on its strength in computer science and applied math, and in response to a growing demand for graduates who can take a scientific approach to data analysis, SEAS launched a new master’s program in computational science and engineering (CSE) in the fall of 2014. The 24 students in the inaugural CSE class came from medicine, software programming, finance, and many other backgrounds, with plans to either revolutionize their own fields or break into new ones.

Offered through the Institute for Applied Computational Science (IACS), the program introduces students to the power of computation as an essential tool in solving real-world challenges. A new two-year Master of Engineering CSE degree launches in fall 2014.
Working with an advisory board of leaders from industry and national laboratories, SEAS designed the programs to be both rigorous and flexible. Students take core computer science and applied math courses and electives in one or more domain areas, and they can (and must in the ME program) apply their learning to real-world problems through independent research projects. The board helped SEAS hone specific learning outcomes: CSE graduates will be able to solve a problem with a computational solution that is reproducible and comprehensible by others in the same field; model complex systems; use computation for advanced data analysis; and apply software engineering techniques and tools to build robust, reliable, and maintainable software.

In addition to studies within SEAS, students in the new program took courses at the Graduate School of Design, Harvard School of Public Health, the Law School, and the Medical School. The IACS sponsored biweekly seminars with leaders from academia and industry, and Sadasivan Shankar, a senior principal engineer at Intel, became the first IACS Distinguished Scientist-in-Residence. This year, the institute’s ComputeFest, a two-week program of computational skill-building activities held in January, culminated in a high-level symposium on data science.

Eric Mazur Garners Minerva Prize
The Minerva Academy named Eric Mazur, Balkanski Professor of Physics and Applied Physics and area dean for applied physics, as the first winner of the Minerva Prize for Advancements in Higher Education. Mazur is to receive the honor, which carries a $500,000 cash prize, in October 2014.

In recognizing Mazur for his significant contributions to improving higher education, the academy noted his development of Peer Instruction, an active learning method that has been recognized worldwide for driving dramatic improvements in student learning outcomes. Mazur devised the “flipped” classroom approach more than 20 years ago as an alternative to the traditional lecture-style class. With Peer Instruction, students prepare for class by either reading or watching videos covering the desired content; then the instructor uses class time to engage students in interactive discussions with him/herself and each other.

Two decades of research support the effectiveness of Peer Instruction across disciplines. Nearly 1,500 papers have been published in peer-reviewed journals, and numerous books have been written, on the innovative approach. Mazur’s 1997 book Peer Instruction: A User’s Manual has been translated into four languages, and he founded a global network for educators who use Peer Instruction.

Also this year, Mazur’s long-awaited college textbook, Principles & Practice of Physics, was published by Pearson, and Mazur was elected to the Royal Holland Society of Sciences and Humanities, the oldest scientific society in the Netherlands. ■
FACULTY AWARDS AND RECOGNITION

During the year, an assortment of prestigious organizations recognized SEAS faculty for their scholarship, teaching, research, and public policy contributions. For the full list, click here.

Notable examples include:

- Greg Morrisett was elected a fellow of the Association for Computing Machinery and was named a Harvard College Professor, FAS’s highest award for distinguished undergraduate teaching and advising.
- David Edwards was elected to the National Academy of Inventors.
- Katia Bertoldi earned the 2014 Thomas J. R. Hughes Young Investigator Award from the Applied Mechanics Division of the American Society of Mechanical Engineers.
- David J. Mooney received the Capers and Marion McDonald award for excellence in Mentoring and Advising at SEAS and was elected to the Institute of Medicine. A novel implantable cancer vaccine that Mooney and colleagues have been developing began clinical trials in September 2013.
- Jelani Nelson received a Faculty Early Career Development (CAREER) grant, the National Science Foundation’s most prestigious award in support of junior faculty who integrate outstanding research and teaching.
- Stephen Chong garnered a 2014 Research Fellowship from the Alfred P. Sloan Foundation to support his work on language-based information security.
- The 2014 class of Fellows of the American Academy of Arts and Sciences included SEAS faculty Michael Brenner and Joanna Aizenberg. Michael Brenner was also recognized by the American Physical Society with the Stanley Corrsin Award “for his intellectual leadership in fluid dynamics and in particular for his seminal contributions to electrohydrodynamics and droplet splashing.”
- Jennifer A. Lewis was named a “Key Player” in the field of Microscale 3D Printing on the 10 Breakthrough Technologies list in MIT Technology Review. Lewis and her research team also received the Academic R&D Award at the IDTechEx Printed Electronics USA 2013 conference for the “innovation, success, and development” of a tiny 3D-printed battery.
- Barbara Grosz was elected a Corresponding Fellow of the Royal Society of Edinburgh, Scotland’s national academy of science and letters, in recognition of her achievements in artificial intelligence.
- John Briscoe received the Stockholm Water Prize, considered the “Nobel Prize for water,” from the Stockholm International Water Institute.
- Rob Wood was selected by the National Geographic Society to its 2014 class of Emerging Explorers, “a group of 14 visionary, young trailblazers from around the globe whose innovative ideas and accomplishments are making a significant difference in the world.”
- Radcliffe’s 2014–2015 class of fellows includes L. Mahadevan, who was named the Audrey, Fay, Katherine, and Megan Shutzer Fellow for Science and plans to develop a mathematical approach to understanding the complexity of the brain’s shape and evolution.
- Cynthia Friend was named director of the Rowland Institute at Harvard, an organization that supports basic science research by junior fellows.
- Federico Capasso received the Humboldt Research Award for lifetime achievements.
- Cherry A. Murray was appointed to the U.S. Secretary of Energy Advisory Board.
FACULTY TRENDS

DEAN NINA ZIPSER
OFFICE FOR FACULTY AFFAIRS
ACADEMIC YEAR 2013–2014
2013–14 was a very active year for recruitment, as the Faculty of Arts and Sciences (FAS) grew from 713 to 730 faculty. This is the largest our faculty has ever been, and we are intellectually stronger and more diverse than ever before.

The FAS considers faculty diversity to be one of its highest priorities, and we have recently made significant progress in this area. In the last three years, the FAS made 68 external offers to women, resulting in 43 new hires. The percentage of offers to women has steadily increased each year, growing from 40% in 2011–12 to 50% in 2013–14.

The FAS Faculty Retirement Program has also played a role in increasing diversity. Since the program launched in 2010, 92% of participants have been men. Consequently, the number of male faculty decreased by 8 (from 540 to 532) during this period. At the same time, the number of women increased by 16 (from 182 to 198).

The FAS has also made progress in recruiting minority candidates. In the last three years, the FAS extended 36 external offers to minorities, resulting in 25 new hires. This represents 24% of all offers and 25% of all new hires during that period. Minorities currently comprise 19% of the faculty.

We are encouraged by all of these outcomes and will persist in our efforts to reinforce best practices during the faculty search process. With Professor Mahzarin Banaji, senior adviser to the dean on faculty development, we continue to update and distribute “Recommendations for Ensuring the Integrity of Faculty Searches,” which draws on behavioral science research and departmental
feedback in suggesting ways to minimize bias when conducting a search. “Recommendations” is sent to department chairs with every search authorization, and all search committee members are asked to use it as a guide throughout the search process.

We hope to build upon our recent success and continue to diversify and strengthen our faculty in the coming years.

Promotions
The FAS is deeply committed to a tenure-track system, and promotion rates have remained strong in recent years.

Of the cohort of assistant professors hired between Fall 2003 and Fall 2009, 84% were promoted to associate professor, including 85% of the male members of the cohort and 82% of the women. A Chi-square test for independence shows no statistical difference (p=0.56) between the two groups.

Among faculty who actually stood for their promotion review, the success rate was 96% for both men and women.

Of the cohort of associate professors starting their appointment between Fall 2003 and Fall 2010, 48% were promoted to tenure, including 51% of the men and 42% of the women. A Chi-square test for independence shows no statistical difference (p=0.25) between the two groups; however, we will continue to closely monitor these rates.

Among faculty who stood for their tenure review, the success rate was 68% for both men and women.

As seen in Tables 2 and 3 above, the gendered difference in the cohort promotion rates is due to a smaller percentage of women deciding to be reviewed for tenure (the majority of these women left before their scheduled review year), as compared to men. In the coming year, we want to better understand and address these differing attrition rates. In collaboration with the Office of Faculty Development and Diversity, we will use the results of the 2013 Faculty Climate Survey to identify and examine any cultural or climate issues that may be discouraging women from remaining on the tenure track. We will also partner with department chairs, the senior adviser to the dean on faculty development, and the Standing Committee on Women to tackle this important and complex issue.

### Table 2: Assistant-to-Associate Professor Promotion Rates

<table>
<thead>
<tr>
<th>% who stood for review to Associate Professor</th>
<th>Associate review success rate (conditional on standing for review)</th>
<th>Associate promotion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>85%</td>
<td>96%</td>
</tr>
<tr>
<td>Men</td>
<td>88%</td>
<td>96%</td>
</tr>
<tr>
<td>Total</td>
<td>87%</td>
<td>96%</td>
</tr>
</tbody>
</table>

Table 2: Assistant-to-Associate Professor Promotion Rates. Rates were calculated from outcomes for the 196 assistant professors hired between Fall 2003 and Fall 2009. One pending outcome was not included in the cohort.

### Table 3: Associate-to-Tenured Professor Promotion Rates

<table>
<thead>
<tr>
<th>% who stood for review to tenured Professor</th>
<th>Tenure review success rate (conditional on standing for review)</th>
<th>Tenure promotion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>61%</td>
<td>68%</td>
</tr>
<tr>
<td>Men</td>
<td>75%</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>70%</td>
<td>68%</td>
</tr>
</tbody>
</table>

Table 3: Associate-to-Tenured Professor Promotion Rates. Rates were calculated from outcomes for the 184 associate professors who started their appointment between Fall 2003 and Fall 2010. One pending outcome was not included in the cohort.

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4 This is the largest cohort available to us. The FAS Office for Faculty Affairs’ comprehensive data on associate promotions extends back to assistant professors hired in Fall 2003. We cannot extend beyond those hired in Fall 2009 because a sizable fraction have not completed their review yet.

5 This is the largest cohort available to us. The FAS Office for Faculty Affairs’ comprehensive data on tenure promotions extends back to associate professors starting in Fall 2003. We cannot extend beyond those starting in Fall 2003 because a sizable fraction have not completed their review yet.
Not shown:
Cassandra Extavour
Matthew Rabin
FAS LIBRARIES

Sarah Thomas, vice president for the Harvard Library, was appointed Roy E. Larsen Librarian for the Faculty of Arts and Sciences in September 2013 to oversee all FAS Libraries. Thomas’s dual roles allow increased cooperation, communication, and continuity among the FAS Libraries and the Harvard Library, an entity formed in 2012 to fulfill the vision of unifying Harvard’s 73 libraries into a coordinated system with regard to strategy and policies.

The FAS Libraries, which encompasses Widener, Lamont, Houghton, Cabot, Harvard-Yenching, and several other specialized libraries, created a set of shared priorities that include staff development, collaborative planning, transformative financial development, stabilized delivery of public services and collection management, and a defined library structure.

The FAS Libraries recently created an FAS-wide Collections and Content Council to harmonize collecting policies, ensure the best use of resources, and acquire the broadest representation of scholarly materials—activities of paramount importance to Harvard’s researchers.

Another priority is to build upon the successful development of spaces that support teaching and collaborative learning, such as the new digital studio in Widener Library. A related objective is to continue to integrate library expertise and collections into Harvard’s many teaching and learning programs, including the Harvard Initiative for Learning and Teaching (HILT), HarvardX, and the Museums. These collaborations strengthen communication, and with it, the implementation of best practices and common approaches. This, in turn, benefits scholars who use the services and collections of the libraries.

The George Edward Woodberry Poetry Room in Lamont Library has an autographed book of T.S. Eliot poems on display.

**COLLECTION DEVELOPMENT**

The FAS Libraries provided an incremental $1.1 million from its budget for collection development this year. As of spring 2014, 28 digitization, acquisition, and preservation projects were under way.

**Funded projects include:**

- Preservation of recordings from the Woodberry Poetry Room of T.S. Eliot and other poets.
- Digitization of photographs and images from Alexander Agassiz’s expeditions (1891–1906) to investigate fish populations and make hydrographic surveys in the straits of Panama, the South Pacific, and near Easter Island.
- Cataloging and digitization of Russian political ephemera from the 1980s and ’90s, such as postcards, posters, and 4,000 pieces of rare and unique political literature.
- Permanent access to a corpus of 20,000 electronic books from academic presses in the humanities, social sciences, and area studies through Project Muse.
- Digitized portraits of boxers and other athletes from a trove of images held by the Fine Arts Library.
- The Emily Dickinson Archive, a collaboration among Houghton Library, Harvard University Press, and several major repositories, provides high-resolution images of Emily Dickinson’s manuscripts, along with transcriptions and annotations from historical and
The FAS Libraries prioritize connecting scholars with its vast collections through liaison programs, research guides, personalized course support, individual consultations, events, exhibits, and collaborations with the Harvard College Writing Program and Program in General Education.

**Some highlights from 2013–2014:**

- Regular exhibit programming included the student-led “In Africa It Is Another Story” hosted in Pusey Library; displays in Houghton Library and the Loeb Music Library showing medieval scrolls and the work of C.P.E. Bach; student artwork in Cabot Library; and student book-collecting showcases in Lamont Library.
- The popular “Thinking with Your Eyes” conference explored visualization across disciplines and research methods, and brought together librarians, faculty, and computing groups from across campus.
- “Data Scientist Training Bootcamp” engaged librarians in learning how to mine and manage data. Librarians familiarized themselves with the research data lifecycle, using the latest tools for extracting, wrangling, storing, analyzing, and visualizing data. In the era of big data, librarians who attended will be better able to partner with researchers.
- Houghton Library was a “location” for filming of HarvardX courses on “Tangible Things” and “History of the Book.” In a module for the latter, Professor Jeffrey
Hamburger of History of Art and Architecture described some of the illuminated medieval manuscripts held by Houghton Library but now shared with the world through digitization.

The re-envisioning and repurposing of existing space for teaching and learning have been objectives of the FAS Libraries for the past several years.

The newest addition is a collaborative learning center in Widener Library— the first of its kind in the FAS Libraries. The Rita E. and Gustave M. Hauser Digital Teaching & Learning Studio opened on the concourse level in the fall. Home to state-of-the-art video capture equipment, it serves as a high-tech production facility and a training ground for faculty and students from across the University. The studio brings together the libraries, the Harvard Initiative for Learning and Teaching (HILT), the Derek Bok Center for Teaching and Learning, and HarvardX.

Plans are under way to reimagine the Cabot Science Library to enhance services, upgrade its physical infrastructure, and better integrate the space with the Science Center Atrium and nearby Plaza, part of President Faust’s Common Spaces Initiative. A planning committee of faculty, library, IT, and facilities staff began meeting in October 2013. One goal is to create more venues for interaction, peer learning, and digital and object-based discovery and analysis to reflect the changing nature of the library in the 21st century—and our growing understanding of how people learn.

A re-envisioned Tozzer Library opened in June 2014 to connect Harvard’s collections in anthropology and the social sciences with the University’s programs in social anthropology and archaeology, as well as with the neighboring Peabody Museum.

Sarah Thomas, vice president for the Harvard Library and Roy E. Larsen Librarian for the FAS, was elected to the American Academy of Arts and Sciences in spring 2014.

Susan Fliss, associate librarian for Research, Teaching, and Learning (RTL), was named director of the Graduate School of Education’s Gutman Library in May. Fliss will continue her role in RTL while developing areas for collaboration with educators in the Ed school—another signifier of growing cross-campus integration. See Q&A on next page.

Tom Hyry was appointed Florence Fearrington librarian for Houghton Library, Harvard’s distinguished repository for rare books and manuscripts, in early June. Hyry, who previously served as director of special collections at the UCLA library, joined Harvard this fall to build on the work of Houghton’s interim librarians Rachel Howarth and Susan Pyzynski.
QUESTION & ANSWER

SUSAN FLISS
Associate Librarian for Research, Teaching, and Learning at Harvard College and Director and Librarian of the Monroe C. Gutman Library at the Harvard Graduate School of Education (HGSE)

Q: How does today’s library differ from the library of 10 or 20 years ago?
A: Today’s academic library supports teaching and learning through integrated services and new physical and digital library resources. Spaces are being redesigned to support the learning that happens outside the classroom—whether a brick-and-mortar or virtual classroom. Libraries provide spaces for using digital and print collections alongside one another, collaborative spaces for peer learning, teaching spaces for librarians to meet with classes, and the still highly valued quiet spaces for individual thinking, reading, and writing. Services are integrated; for instance, the writing program staff and librarians offer research paper workshops, the Media Lab in Lamont is co-managed by the multimedia librarian and an academic technologist from the Academic Technology Group, and librarians are on the support teams for General Education and HarvardX courses.

Within the digital environment, the Harvard Library is open 24 hours a day. Outreach to students and the library community is ever-expanding, with the online reference service “Ask a librarian,” research tools, and e-books and e-journals providing paths of inquiry and information. Using anthropological research methods, libraries now collect information on how services, collections, and spaces are used and tailor their services and programs accordingly. Library staff are supporting their communities differently these days as well, teaching researchers about metadata, creating taxonomies, assisting with data analysis, and designing research assignments and assessments.

Q: Will you be working with the Bok Center, the Harvard Initiative for Learning and Teaching (HILT), and other programs focused on innovative teaching?
A: The Library will continue working in partnership with the Bok Center, HILT, and the College’s General Education Program, among others, and will extend opportunities for participation through a newly formed Harvard Library-wide Research, Teaching and Learning group. Library staff with specific subject, teaching, and technical expertise collaborate with faculty and other academic support members in courses and academic programs. We will continue to offer workshops for faculty, students, and staff in alignment with Bok Center efforts and HILT needs, such as the Multimedia Authoring Boot Camp during Wintersession.

Q: In what ways do librarians partner with faculty in teaching and learning?
A: There are so many examples—here are a few that demonstrate the variety of partnerships.

Liza Vick was the “on-call,” or embedded, librarian in Music 97b: Music History and Repertory: Classical to Contemporary, taught by Anne Shreffler, James Edward Ditson Professor of Music. Liza attended weekly teaching team meetings, classes, and sections, contributed to designing the assignments, and created a course-specific research guide.

Deborah Garson co-teaches “Researching and Writing a Critical Literature Review” (S553), a credited HGSE yearlong doctoral seminar with Eileen McGowan, lecturer on education. The course, which uses current technologies to expand academic research, is taught by two colleagues with expertise in research methodologies and library science.

Laurel Thatcher Ulrich, 300th Anniversary University Professor, collaborated with librarians and used collections across several libraries for her “Tangible Things: Harvard Collections in World History” course. Students participated in letterpress printing workshops offered by Houghton Library, viewed exhibits created by the Herbaria and Botany Libraries’ staff on the economic use of plants, attended a library session on the botany and use of the potato, and visited the Loeb Music Library to examine music scores, field recordings, and archival materials documenting performance practices. In addition, staff from the Harvard University Archives and Radcliffe Institute’s Schlesinger Library tracked down objects for the HarvardX taping of a Tangible Things module, while staff from many libraries helped students as they worked on individual assignments and projects for the course.
The Faculty of Arts and Sciences has led the University in implementing many groundbreaking sustainability initiatives over the past decade. For example, the FAS adopted Harvard’s first greenhouse gas (GHG) emissions reduction goal in 2007, a year before the University announced plans to reduce greenhouse gas emissions 30 percent below 2006 levels by 2016.

Today, in partnership with the Harvard Office for Sustainability, the FAS focuses on constructing and operating energy-efficient buildings and generating cost-effective methods of conserving resources. The FAS team manages various programs that engage students, faculty, and staff in saving energy, cutting waste, and sharing best practices.

Now almost 12 years old, the Resource Efficiency Program (REP) is FAS’s oldest sustainability program and employs 20 undergraduates who educate their peers about energy and waste reduction, as well as sustainable dining, and work to empower their fellow students to make lasting changes at Harvard. REP sponsors the annual inter-House Green Cup competition, which Adams House won this year, and oversees the freshman action think tank, Green ’17, which engages first-year students in environmental projects on campus.
Sustainability highlights of the 2013–2014 academic year include:

**House Renewal**

The FAS renewal of Stone Hall (Old Quincy), involved modernizing a historic building with an eye toward increasing interactions, comfort, and sustainability and enhancing the overall living-learning environment for students. The project was the first within the House Renewal initiative to reinvigorate each of the 12 undergraduate Houses physically and programmatically. Due to the FAS’s commitment to sustainability and energy-efficient operations, Stone Hall was certified LEED platinum, the highest rating possible and a remarkable accomplishment for the renovation of a 1929 building.

After 15 months of construction, Stone Hall welcomed back students for the start of the 2013–2014 academic year. Sustainability improvements included energy efficiency upgrades to reduce energy costs and curb greenhouse gas emissions, nontoxic building materials and improved lighting, reuse of existing materials when appropriate, and installation of a rainwater harvesting system to reduce irrigation water usage by 61 percent. Similar sustainability measures will be an important part of the other House Renewal projects under way and in the future.

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**FAS SUSTAINABILITY SNAPSHOT: FY06-FY14**

Despite the addition of new lab buildings and fitting out existing spaces to allow for more teaching and research space, the FAS has still managed to reduce our greenhouse gas (GHG) and water use as compared to an FY06 baseline. Through building efficiencies and energy conservation measures, there has been a 12.3% decrease in GHG overall for FAS, and a 29.4% decrease in the buildings built before FY06, showing that emissions reductions can happen while still supporting the University’s core teaching and research mission.

**GHG EMISSIONS: CAMPUS INCLUDING GROWTH**

<table>
<thead>
<tr>
<th>Total Emissions</th>
<th>Energy Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.3% Reduction</td>
<td>18.4 % Increase in energy</td>
</tr>
<tr>
<td>FY06: 93,116 MTCDE</td>
<td>FY06: 1,084,395 MMBTU</td>
</tr>
<tr>
<td>FY14: 81,626 MTCDE</td>
<td>FY14: 1,284,222 MMBTU</td>
</tr>
</tbody>
</table>

**GHG EMISSIONS: PRE-EXISTING BUILDINGS ONLY**

<table>
<thead>
<tr>
<th>Total Emissions</th>
<th>Energy Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.4% Reduction</td>
<td>8.0 % Reduction in energy</td>
</tr>
<tr>
<td>FY06: 89,830 MTCDE</td>
<td>FY06: 1,072,819 MMBTU</td>
</tr>
<tr>
<td>FY14: 63,528 MTCDE</td>
<td>FY14: 986,761 MMBTU</td>
</tr>
</tbody>
</table>

**WATER USAGE: CAMPUS INCLUDING GROWTH**

<table>
<thead>
<tr>
<th>Water Consumption</th>
<th>21.4% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06: 196,377,101 gallons</td>
<td>FY14: 154,338,826 gallons</td>
</tr>
</tbody>
</table>

**WATER USAGE: PRE-EXISTING BUILDINGS ONLY**

<table>
<thead>
<tr>
<th>Water Consumption</th>
<th>30.7% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06: 196,377,101 gallons</td>
<td>FY14: 135,088,457 gallons</td>
</tr>
</tbody>
</table>

**GREEN BUILDINGS**

LEED (Leadership in Energy and Environmental Design) is the standard for green construction.

- # of LEED Certified Projects at FAS: 31
- # of LEED Projects in Progress for FAS: 13
- # of New Projects started for FY14: 4

**FAS building LEED ratings:**

- Platinum: 1
- Silver: 11
- Gold: 16
- Certified: 3

All data is based on energy readings to date. FY14 Greenhouse Gas (GHG) numbers are based on projections of GHG conversion factors.

*Sustainability highlights of the 2013–2014 academic year include:*
Reducing Building Energy Use
Energy use in buildings is the largest contributor to Harvard’s greenhouse gas emissions. The FAS is committed to constructing and operating energy-efficient buildings to reduce costs and emissions.

- Energy Conservation: The FAS Office of Physical Resources and Planning continued to make great strides in energy efficiency. This year, the FAS supported 110 energy conservation measures (ECM) from the ECM fund, saving nearly $600,000 in utility costs annually. This fund is available to FAS facility managers to support projects that promote sustainability and save energy and money. Most projects have paybacks of under five years.

- Pumps and Steam Traps: This year, the FAS repaired steam traps in over a dozen buildings and worked with Harvard’s energy provider, NSTAR, to receive $170,000 worth of new high-efficiency pumps at no cost. These pumps are approximately 30 percent more efficient than their predecessors.

- Ventilation and Air Exchange: The process of conditioning, heating, and cooling air for buildings is energy-intensive. FAS partnered with Harvard Environmental Health and Safety and occupants in the Northwest Building to safely reduce the number of air changes per hour needed in office and lab spaces for one lab, saving $290,364 annually and cutting greenhouse gas emissions by 779 MTCDE a year. This collaborative project received University-wide recognition with a Green Carpet Award and will be expanded to other portions of the building this coming year.

- Fume Hoods: The FAS celebrated the 10-year anniversary of the Shut the Sash fume hood competition, with over $240,000 in avoided energy costs annually. Nearly three-quarters (73 percent) of labs successfully met their monthly goal, an all-time high. The FAS Green Labs Program established Shut the Sash in 2005 to encourage researchers to close their fume hoods when not in use as a way to improve safety and reduce energy consumption. The pilot competition involved five labs in the chemistry and chemical biology department and has since expanded to 19 labs.

- Freezers: In fall 2013, FAS launched a new incentive program that subsidizes the cost of energy-efficient freezers. After fume hoods, Ultra Low Temperature (ULT) freezers are the second biggest average energy user in a lab. To date, six labs have purchased new freezers under this program, which allows researchers to buy best-in-class equipment with lower maintenance costs and more storage.
capacity for the price of a standard freezer. Nearly all labs also take part in a maintenance program that covers the cost of an annual checkup and a biannual cleaning for ULT freezers, helping them run more efficiently and last longer.

- **Lab Competitions:** In Spring 2014, FAS held the first Lab Environmental Competition to encourage labs to post unwanted equipment to the Labs Reuse List, clean out unneeded samples from freezers, and take quizzes and surveys designed to share best practices. The competition compelled one lab to clean out more than 4,000 samples from their freezers, which will save both energy and space.

**Reducing Waste**

- **Composting:** The Green ’17 freshman student group successfully piloted a composting program in two dorms, Mower and Greenough Halls, significantly diverting compostable materials from the trash (by about half a pound per student per week). Based on these results, they concluded that scaling up to the entire Yard could keep more than 800 pounds of compost out of the trash each week. The students won approval for an expansion in 2014–2015; as a result, every class of 2018 suite will have a compost bin and drop-off location. Green ’17, which worked with the Freshman Dean’s Office, Harvard University Dining Services, Harvard Yard Operations, and Harvard Recycling, received a Green Carpet Award for this effort.

- **Freecycles:** FAS works with Harvard University Dining Services to host periodic “Freecycles” at the Farmers Market. A freecycle enables people to exchange resources, from toys to clothing to pots and pans, keeping reusable items from ending up in the trash. FAS held five freecycles this year; the biggest, in June, involved over 300 participants and nearly two tons of items.

- **Water and Energy Use in Dorms:** REP conducted a “perception poll” to gauge students’ willingness to try new environmentally beneficial actions while also debunking misconceptions. Over 2,100 students participated, and a majority said they would be willing to take shorter showers and wash their clothes in cold water in order to reduce wasted water and energy. This data is valuable as the REP considers steps to reduce hot water use in undergraduate residences.

**Encouraging Best Practices to Fuel Progress**

FAS building managers are dedicated to finding creative and cost-effective opportunities for operating their buildings efficiently while meeting the needs of occupants.

- **In 2014, FAS organized the first University-wide Operations and Maintenance Tradeshows, allowing facilities teams from across the University to hear about energy-saving opportunities and**
technologies, including improved pricing for those products. Twenty outside vendors and contractors participated, showcasing cutting-edge products, from high-efficiency lab freezers to sustainable insulation. NSTAR, Phillips, and GE also gave presentations on rebate programs and the many resources available to Harvard clients. One exciting outcome: the event became an opportunity to eliminate price disparities by creating transparency in purchasing and leveraging improved rates for everyone in the FAS.

- Operations and Maintenance Forums enable attendees to share innovative ideas being implemented in buildings across the campus. This year’s forums presented common building issues that facility managers solved by using their diverse range of expertise. In addition, the forums featured presentations on sustainability-related products and honest discussions about costs and benefits of using the technology.

**Partnerships**

During 2013–2014, the Sustainability Program focused on expanding its partnerships across campus to amplify its impact.

*As examples, it joined with:*

- Strategic Procurement to expand the use of green office supplies, and added a pop-up window on HCOM that suggests eco-friendly alternatives when someone starts to purchase certain office supplies from Harvard’s preferred vendor, WB Mason.

- FAS Human Resources to describe opportunities to conserve energy and resources during orientation training for new hires. The Sustainability Program expects to reach over 100 new FAS employees a year with a sustainability message as a result of this initiative.

For more information, visit www.green.harvard.edu/fas
FINANCIAL REPORT

LESLIE KIRWAN
DEAN FOR ADMINISTRATION AND FINANCE

FISCAL YEAR 2013–2014
We are pleased to present here the FAS’s financial results for Fiscal Year 2014, the fiscal year ending June 30, 2014. This report follows a standard set in October 2009, when FAS Dean Michael D. Smith presented a financial report to the faculty to help them and other key audiences gain a deeper understanding of the FAS’s financial condition in light of the impacts of the global recession. At that time, the dean committed that future annual reports would be published each October following this new, more timely, and more comprehensive standard, of which this report is the sixth in a series.

This report is intended to present a summary of the FAS’s finances and operations and to explain how our financial resources changed and how they were used during the year in support of our academic mission. Traditionally, we have presented these observations in a “managerial” format only. The managerial view focuses on the overall change in cash, where a surplus represents an increase in reserves and a deficit represents a decrease. The managerial view incorporates all cash expenses, whether generated through operations—the teaching and research activities at the FAS—or through capital expenditures (i.e., construction activities and the purchase of certain equipment). This year we also introduce a “Modified GAAP” (Generally Accepted Accounting Principles) operating result, describing the FAS’s internal income statement in a way that more closely resembles the University’s external statements. In this view, depreciation—or the annual wear and tear on physical assets such as buildings and equipment—is included as an operating expense, while principal payments on internal debt are excluded. For ease in comparing Fiscal Year 2014 to previous years, below we present both a consistently-applied management view and a crosswalk to the Modified GAAP view.

It is important to note that these results are not audited, nor should they be confused with the audited financial statements of Harvard University as a whole, which will be published in November 2014. However, we have worked with the University to ensure that our figures and theirs agree.

Guide to the Accompanying Financial Statements
The FAS budget is both large (approximately $1.275 billion) and highly decentralized, with significant spending under the direct control of over 150 separate departments, centers, libraries, and museums. The consolidated Statement of Activity presents important categories of revenues and expenses of the FAS as a whole. This view combines what is typically called the “Core” of the FAS, which comprises the faculty, the College, and the Graduate School of Arts and Sciences, together with the other major affiliates of the FAS (i.e., Athletics, the Division of Continuing Education, Dumbarton Oaks, the Harvard College Library, the Museums, and the School of Engineering and Applied Sciences). Given that the Core constitutes about 73 percent of both the FAS Fiscal Year 2014 consolidated revenues and consolidated expenses, we also present a Fiscal Year 2014 Statement of Activity for just the Core.

Finally, we include a Balance Sheet for the consolidated FAS that presents the FAS’s major assets and liabilities at the end of Fiscal Year 2013 and Fiscal Year 2014.

Overview
This report will expand on the following key themes:

· The FAS completed Fiscal Year 2014 operations with a smaller deficit than anticipated, measured in both the traditional managerial format and in the new format, Modified GAAP.
· Targeted, strategic investments last year included faculty searches, financial aid, House Renewal, the Student Information System (SIS), DCE and FAS Development.
· The Campaign was launched and the first year of its public phase provided meaningful contributions aligned with academic priorities.
· Continued fiscal planning and prudence will be necessary to ensure sustainable excellence of our academic, physical, financial and digital assets.
· Research funding is receiving enhanced focus in the current competitive market for top faculty and students.

Background
In previous Annual Reports we have detailed the progress the FAS has made in restoring fiscal stability since the economic recession. During the last several years, a variety of revenue and expense solutions and resource allocation tradeoffs were employed to reach balance while maintaining essential investments in research, teaching, student financial aid and infrastructure.

1 In that view, depreciation of certain physical assets is charged as an expense in the operating budget. This accounting practice is intended to clarify the true costs of responsibly maintaining and using our facilities over time. The FAS’s large and valuable physical plant generates a significant annual depreciation expense. In Fiscal Year 2014, depreciation expense represented over $120 million of total “Modified GAAP” expenses. For more information on “Modified GAAP, please refer to Footnote 22 of the Appendix “Faculty of Arts and Sciences Managerial Financial Report.”
In Fiscal Year 2012 and Fiscal Year 2013, the FAS achieved roughly balanced budgets in its unrestricted core operations as viewed through the traditional management lens. At the same time, the FAS participated in a University-wide multiyear planning effort to understand the trajectory of operating and capital budgets to align with academic plans.

In the context of these analyses, Fiscal Year 2014 (July 1, 2013 to June 30, 2014) was always understood to be a year in which the FAS would operate in a deficit position. This expectation was communicated in the Fiscal Year 2013 Annual Report and in meetings with stakeholders throughout last fall, and was driven by two main factors. First, all major revenue sources, including the endowment distribution, were constrained to a level below normal expense growth. Second, Fiscal Year 2014 was a year in which a number of strategic investments were necessary. These included the ongoing, highly successful House Renewal project; the FAS share of a new, eventually Harvard-wide Student Information System (SIS); and restructuring of the Division of Continuing Education (DCE) and investments in the Development organization to support the Harvard Campaign for Arts and Sciences. In light of the strategic significance of these investments, a draw from reserves to pay for them was appropriate and necessary, though we acknowledged continued draws of that magnitude would be unsustainable.

Finally, the shift to budgeting and reporting in the Modified GAAP income view introduces a new framework with which to view the FAS’s financial performance, with depreciation included as an operating expense. Including depreciation increases the FAS’s expense base. Over the long term, managing to a budget that includes depreciation is intended to ensure that funds will be available to provide for the maintenance and renewal of our physical plant, in the context of the broader choices we make in stewarding our intellectual, financial, physical, and digital assets.

**Fiscal Year 2014 Results**

As expected, the FAS completed Fiscal Year 2014 with a deficit in its unrestricted core operations and on an all-funds basis, both from a management view and a Modified GAAP view. However, in each case, the actual deficit was smaller than earlier estimates.

The actual results for Fiscal Year 2014 show improvements over the originally forecasted deficits. From a management view, the predicted core unrestricted deficit was reduced from $76 million to $55 million; on an all-funds, consolidated basis (including SEAS), the deficit was reduced from $122 million to $77 million. Using a Modified GAAP income view (including SEAS), the originally budgeted $115 million deficit was reduced to $55 million. The drivers of these results are described in more detail below.

**Revenues.** On a consolidated basis, FAS total revenues grew just 1.1 percent over Fiscal Year 2013 levels. Revenue sources that increased over the prior year included net tuition (+7.1 percent), driven by a 3.5 percent increase in the tuition package increase for undergraduate and graduate students, increased enrollment and revised estimates of financial aid program costs; endowment distribution (+2.3 percent); and grants and contracts (+3.2 percent). That sponsored revenue grew modestly instead of falling as predicted was significant. It reflects the net effect of a modest decrease in federal grants and a significant increase in non-federal sources, as our faculty sought and secured less traditional sources of funding in a constrained federal funding environment. However, a consequence of this shift is a drop in indirect cost recoveries; while this loss is modest thus far, it is a factor that must be monitored over time. Revenue sources that decreased included: current use gifts (-9.3 percent, reflecting the receipt of a $31 million one-time gift in Fiscal Year 2013), and transfers from the University/academic programs (-25 percent).

Relative to the Fiscal Year 2014 budget, actual revenues showed a $45 million or 4 percent increase. This increase was driven by two factors. Net tuition increased more than planned for the reasons described above. Current use gifts were $24 million more than anticipated, reflecting the successful launch of the Campaign and the implementation of a new hybrid gift policy, which encourages donors to provide a share of certain major gifts in the form of current use funds in order to activate their philanthropy more quickly.

**Expenses.** FAS total expenses grew by 4.4 percent over Fiscal Year 2013 levels.

**Contributors to this result included:**

- **Salaries, Wages and Benefits:** Salaries, wages and benefits increased by 4.2 percent or $24.1 million over Fiscal Year 2013. The majority of this increase was linked to the annual merit increases for FAS faculty, exempt and union employees. The remainder of the increase was the result of other personnel transactions including modest position growth, filling of vacant positions, reclassifications, and equity adjustments.
**Other Expenses:** Supplies and equipment costs increased by 15 percent or $9 million over prior year levels. This increase reflects increased investments in library acquisitions, research computing and development events, principally the Campaign launch.

**Operation and Maintenance of the Physical Plant:** These costs increased by 8.9 percent or $12.6 million in Fiscal Year 2014. This increase supported the ongoing investments in House Renewal, facilities improvements, and strategic investments in DCE and research computing. Specific expenditures included costs such as hazardous materials remediation, swing housing, and rental of new spaces.

**Transfers to the University,** including the University assessment and transfers for academic programs, decreased by 4.8% or $3 million in total.

**Services Purchased,** a category that saw significant increases in recent years with the transfer of FAS Information Technology and Library staff and services to the University grew by just one percent or $1.5 million in Fiscal Year 2014.

**Other Expenses:** Other expenses increased 8.8 percent or $5.4 million in Fiscal Year 2014. Although this category is comprised of many different expense categories, the majority of the increase relates to increased travel and event costs in Development and Athletics due to the launch of the Campaign and postseason tournaments, respectively.

Relative to the budget, Fiscal Year 2014 actual expenses experienced a small decrease of 0.9 percent or $1.1 million.

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**Continued efforts to manage expense growth included the following practices:**

**Staffing.** We continue closely to monitor personnel costs and look for opportunities for efficiency. Faculty and staff compensation (salary, wages and fringe benefits) represent the largest component of the FAS budget. On June 30, FAS staff stood at a count of 2558 FTE, compared to 2515 FTE at the end of Fiscal Year 2013. Of the new positions, approximately one-quarter reflect strategic growth in DCE to implement its new academic and business plan. The other three-quarters occurred in academic divisions, departments and centers. There was virtually no growth in administrative departments.

**Efficiency in facilities operations, life-safety and renewal.** FAS’s facilities organization is focused on efficient building operations, continuing investment in life-safety, and proper stewardship of FAS facilities. Close management of expenses produced budget savings of 3 percent ($3.3 million) despite higher utility costs due to the colder-than-average winter. As part of the energy reduction program, FAS completed the installation of an innovative biomass plant that provides wood-generated heat for the research complex at the Harvard Forest. Across the FAS and its affiliates, $105.6 million was invested in operating and capital renewal, excluding House Renewal. As part of a University-wide program, a formal, in-depth facilities condition assessment commenced with a pilot study in the chemistry labs and continued through the first 500,000 square feet of FAS’s 10 million square feet of buildings. All assessments are anticipated to be completed in 18 months, and the resulting data will serve to guide and prioritize the future renewal program.

**Operational enhancements.** In Fiscal Year 2014, the FAS continued to implement new systems and procedures designed to bring about operational or administrative efficiencies and in some cases reduce costs. These include: a new cloud-based system that provides a detailed inventory of classrooms and other event spaces, enabling more efficient class scheduling; OracleAssets fixed assets system, which will improve the management and reporting on plant and equipment assets; ePerformance, the new University-wide performance management system linking pay to performance; eCert, a new system to streamline effort reporting required in grants administration; and GLACIER, a secure online tax compliance system which creates a uniform process for setting up payments to foreign individuals ensuring accuracy of withholding and treaty rates. Finally, we are in the early stages of implementing Oracle Business Intelligence, a new Financial Reporting System. Upfront investment in these systems is expected to yield improvements and savings over time.

**Targeted Investments are a Significant Part of the Fiscal Year 2014 Result**

**Faculty Searches.** Following Fiscal Year 2013, in which a then-record number of 73 faculty searches were launched, Fiscal Year 2014 was another active year for faculty recruitment as the FAS conducted 85 ladder faculty searches (including SEAS). The recent increase in search activity has generated a steady stream of incoming faculty, whose arrival on campus in the coming years will be reflected in future operating budgets. Our multi-year financial planning incorporates these future costs.
Financial Aid. During Fiscal Year 2014, 3960 undergraduate students or close to 60 percent, received some level of scholarship grant aid to attend Harvard. After a number of years in which sharp increases in undergraduate financial aid expenditures were experienced, undergraduate aid rose modestly in Fiscal Year 2014 to $169 million. In comparison, financial aid expenses were less than half this total as recently as Fiscal Year 2005. Additionally, stipend levels for graduate students were increased modestly. Between Fiscal Year 2008 and Fiscal Year 2014, the FAS’s total financial aid budget grew by $78 million, or 49 percent, remarkable growth in the context of the financial pressures experienced during this period. This growth has exerted significant pressure on unrestricted FAS funds.

Student Information System (SIS). The implementation of a new student information system aims to clear impediments to cross-discipline teaching and learning, improve services available to faculty and students, and streamline daily business operations for administrative staff. In the first year of the program, FAS administrators and HUIT began to align current business processes and existing data with the new platform, which will launch next summer and replace a large number of current systems, including HERS1, HERS2, Advising Network Portal (College), and Student Progress to Degree (GSAS). The program team will be collaborating throughout this year with departments, faculty, and students to ensure the new system meets their needs and provides a modern and intuitive experience. In Fiscal Year 2014 the FAS paid $7.5 million of its expected total investment of $23 million.

Division of Continuing Education (DCE). Always an engine of teaching innovation, engagement and outreach, and sustaining financial contributions to the FAS, DCE is investing in new and expanded programs and approaches. Under the leadership of Dean Hunt Lambert, DCE is partnering with HarvardX to create expanded course offerings building on established DCE strengths and leveraging HarvardX content, with different price points depending on the type of engagement and credential sought by the student. The DCE business plan entails some targeted investment in staff, faculty, space, and other resources needed for these program expansions. In Fiscal Year 2014, these investments totaled $3.2 million.

Capital Investments. In Fiscal Year 2014, the FAS capital program emphasized investment in renewal of our facilities and enhancing life-safety equipment, as well as completing several large projects supporting academic and research programs. Significant safety-related projects were completed in seven FAS buildings including new fire sprinklers, alarm systems, and emergency lighting improvements. Three elevators were replaced and a new elevator constructed for the Semitic Museum, providing full access to the Department of Near Eastern Languages and Civilizations as well as the Museum.

The impressive renewal project of replacing the 135-year old roof of the University Museum complex is nearing completion. Programs continued to replace aging and inefficient chemical fume hoods in our laboratories and to provide upgraded HVAC systems, particularly in the music complex, the Carpenter Center, and the biology labs.

The FAS also completed a number of projects supporting our research, teaching and student programs. The Tozzer renovation project was completed under budget and the new facility is now fully occupied by the Anthropology Department and library and includes a classroom featuring advanced media technology. A subsequent project which will enable the relocation of the Social Studies Department is now underway, with the department’s move to William James Hall scheduled for January. FAS remodeled and upgraded 11 other classrooms and teaching facilities during Fiscal Year 2014.

Finally, the renovation and expansion of the Bright-Landry Hockey Center is now complete. The project provides new locker room, training and coaching facilities for our women’s and men’s teams, as well as a greatly enhanced facility for the broader Harvard community.

House Renewal. Fiscal Year 2014 saw significant progress in the FAS’s massive undertaking to renew the undergraduate residential Houses. The first test project, Old Quincy, was completed on time and slightly below budget, received its Certificate of Occupancy early in Fiscal Year 2014, and was dedicated as Stone Hall in September 2013. Construction of the second test project, Leverett McKinlock, was launched in late Fiscal Year 2013 and was substantially completed in Fiscal Year 2014. This project, too, was completed on time and budget and was ready for student move-in in the fall of 2014. Also during Fiscal Year 2014, final design was completed and construction began for the next project, Dunster House, which is the first project involving a full House. To enable the
Dunster project and future phases, the former Inn at Harvard was converted to swing housing. Finally, design and planning progressed for the next project in Winthrop House, scheduled for construction in 2016-17 following a planned year of strategic assessment of all execution, programmatic, and financial aspects of the project.

The FAS and the University have together devised a multiyear funding plan for House Renewal. This plan includes the use of FAS endowment funds, philanthropy, reserves, both incremental and non-incremental long-term debt, and cash from operations. As of June 30, 2014, the Corporation has authorized the FAS to spend $355.2 million on House Renewal.

The project affects the Fiscal Year 2014 results in several ways. First, FAS invested $99.8 million in project construction and planning, as reflected in fixed assets. Second, $9 million in housing costs were incurred to accommodate displaced students and $1 million was incurred in lost income from the Inn conversion.

**Balance Sheet View**

As set forth in the Consolidated Balance Sheet, total net assets for the FAS rose by $1.8 billion, or 11 percent, during Fiscal Year 2013, from $16.3 billion at the close of Fiscal Year 2013 to $18.1 billion at the close of Fiscal Year 2014. In contrast, between Fiscal Year 2012 and Fiscal Year 2013 the FAS’s net assets rose by 6 percent.

The Fiscal Year 2014 increase is the result of positive investment returns in Fiscal Year 2014, reflected in a 10.7 percent increase (+$1.5 billion) in long-term investments (primarily endowment) and a 5.1 percent increase (+$82 million) in Fixed Assets, net of depreciation. An increase of 43 percent (+$139.5 million) in pledges receivable reflects activity in the first year of the public phase of the Capital Campaign, which saw a highly successful launch in October.

At June 30, the FAS’s long-term investments (primarily endowment) stood at $15.8 billion, up 10.7 percent from $14.3 billion a year ago. In contrast, this figure was $16.6 billion at the close of Fiscal Year 2008, before dipping to a low of $11.6 billion at the end of Fiscal Year 2009. At $15.8 billion, the FAS’s endowment position at June 30, 2014, was approximately 95 percent of what it was on June 30, 2008. Put another way, the endowment has not yet recovered 15 percent of the $5 billion lost in the downturn. As we begin to approach the nominal value of the endowment prior to the recession, it is important to realize the losses of real value over that time, even in a relatively low-interest environment. Adjusting for higher education inflation, the endowment would need to be $18.6 billion today, significantly more than the actual value of $15.8 billion, to have the same buying power today as in Fiscal Year 2008.

In Fiscal Year 2014, the FAS continued to pay down internal debt obligations in anticipation of House Renewal-related borrowing planned later in the project. Internal debt dropped by 3.3 percent, or $29.6 million, as part of this deliberate strategy.

The six priorities of The Harvard Campaign for Arts and Sciences, whose public phase formally launched in Fiscal Year 2014, provide a framework for the FAS’s ambitions in the coming years. Each priority is an essential component of Harvard’s efforts to provide an unparalleled undergraduate and graduate education for the 21st century. At the same time, they are designed to protect and enhance core mission-related initiatives that are both growing and consuming more and more unrestricted funds. Thus—while not a panacea—the Campaign is directly addressing both academic priorities and financial pressures in the FAS.

**The Outlook: Fiscal Year 2015 and Beyond**

The FAS budget for Fiscal Year 2015 was built on an assumption of a 3 percent increase in endowment distribution revenues for the budget, a meaningful improvement over the 2 percent available for Fiscal Year 2014. However, during the development of the budget we communicated the guidance that financial discipline will still be necessary to control expenses which are running above the pace of revenue growth. At the time of our budget submission, we projected a Modified GAAP deficit of $81 million. It is our intent to improve that result over the course of the year as we did in Fiscal Year 2014.

Looking ahead, as part of a University-wide effort the FAS has developed a 10-year financial model taking into account revenue and expense forecasts as well as academic, operating, capital and other needs. This multiyear view, which currently projects a deficit position that grows to a level representing as much as eight percent of the total FAS budget, demonstrates the need for continued discipline and prioritization to bring operating expenditures in line with revenues while providing appropriately for intellectual investments as well as House Renewal and other facilities renewal needs. We are working hard to
refine the plan as well as identify additional steps and actions that will help us manage costs and improve the long-term outlook. Ongoing upward pressure on some of our expense categories, coupled with, at best, modest increases to our key revenue sources for the foreseeable future, will demand our continued focus and innovation.

Ensuring adequate resources to attract and retain outstanding faculty and graduate students remains our highest priority. Operating successfully in today’s increasingly competitive market for the finest scholars requires competitive search budgets and authorizations as well as competitive scholarship and aid programs for graduate students. Research funding is receiving a high degree of focus. While the FAS and Harvard invest significantly in many kinds of research funding every year, faculty identify some gaps and opportunities to provide additional support both overall and in targeted fields. Accordingly, when developing the FAS multiyear financial plan, Dean Smith incorporated a significant placeholder for new intellectual investments that we aspire to make. This recognizes that in addition to providing additional budget capacity to steward the financial and physical assets of the FAS, funds for the intellectual and digital needs of the faculty must be prioritized.

With a national spotlight on the growing costs of higher education and concerns about affordability for American students and families, revenue from tuition is under tremendous pressure. Annual increases in the cost of attendance are expected to remain modest in the coming years. At the same time, our dedication to sustaining Harvard’s “best in class” financial aid program remains steadfast, though keeping this commitment intact in recent years has exerted considerable pressure on the unrestricted budget. In addition, tackling the long-deferred renewal of the undergraduate residential Houses is expected to require significant draws on reserve funds in addition to endowment decapitalizations and the philanthropy that will be essential to making the program possible.

**Introducing New Budgeting and Reporting Method**

In connection with these planning efforts, the University has introduced Modified Generally Accepted Accounting Principles (GAAP) or, more specifically, “Modified GAAP” income and cash statements as a standard applying to the component schools as well as to the University as a whole. “Modified GAAP” is described in more detail in Footnote 22 of the accompanying “Faculty of Arts and Sciences Managerial Financial Report,” which for the first time includes a detailed crosswalk from the managerial view to the Modified GAAP view. Among the largest differences from the FAS managerial view is that Modified GAAP includes depreciation expense and excludes principal payments and payments supporting the acquisition and renovation of property plant & equipment in the income statement. As displayed below, depreciation expense was $120.6 million, roughly equivalent to 10 percent of the FAS budget and $47 million more than principal payments. With large capital investments underway and planned in the near future, this newly recognized depreciation expense will continue to rise.

At this time of constrained revenues and large one-time outlays for House Renewal—our biggest capital renewal need—the FAS is not in a position to fully cover depreciation with operating revenues in the near term. Consequently, the FAS’s Modified GAAP view results in material current and projected deficits for the FAS.

### FY14 FAS MANAGERIAL TO MODIFIED GAAP CROSSWALK

<table>
<thead>
<tr>
<th>NET CHANGE IN FISCAL YEAR ACTIVITY (MANAGERIAL REPORT)</th>
<th>(77)</th>
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<tbody>
<tr>
<td><strong>Adjustments</strong></td>
<td></td>
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<tr>
<td>Substitute Depreciation for Principal Payments</td>
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<td>Principal Payments</td>
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<tr>
<td>Depreciation</td>
<td>(121)</td>
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<tr>
<td>Remove Capital-related Activities (moved to Balance Sheet)</td>
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<tr>
<td>Financing Activities (^1)</td>
<td>(127)</td>
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<tr>
<td>(e.g. new debt, net transfer from endowment, fundraising–capital)</td>
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<tr>
<td>Investing Activities</td>
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<tr>
<td>(e.g. capital facilities and equipment expenditures)</td>
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<tr>
<td><strong>NET ADJUSTMENTS</strong></td>
<td></td>
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<tr>
<td>MODIFIED GAAP OPERATING RESULT</td>
<td>(55)</td>
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</tbody>
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\(^1\) Financing activities is comprised of transfers from/to endowment ($72.3), new debt ($49.2), principal prepayments ($32.7), construction gifts applied ($32.6) and distributions from split interest agreements and other GOA changes ($6.1).
other FAS renewal projects demonstrate, we share the commitment to preserving our capital assets, and aspire to make progress toward the Modified GAAP standard over time in balance with our academic priorities.

As described above, for Fiscal Year 2014 the FAS managerial result, or Net Change in Fiscal Year Activity, was a $77 million deficit. The exhibit below provides a crosswalk from that figure to the Modified GAAP deficit of $55 million, using line items introduced in the University’s Modified GAAP cash statement.

The financial performance and investments described in this report reflect the leadership, creativity and hard work of colleagues throughout the FAS and business partners elsewhere at Harvard. Though continued discipline will be required to build upon these gains, your efforts have positioned the FAS to withstand continuing fiscal challenges and enable key investments in our academic mission.

Respectfully submitted,

Leslie A. Kirwan
Dean for Administration and Finance