

HarvardX and HILT—bringing the University's principal vehicles for pedagogical innovation together with its central research group for designing experiments in teaching and learning.

As Carswell professor of East Asian languages and literatures, Bol has taught seminars and large lectures, adopted digitized and online content in his classes, and co-developed the multi-module ChinaX offering online. (He is also a director of Harvard Magazine Inc.) Recalling his own student days (when images of China were projected from glass slides) and the evolution of his own teaching, he said that education innovation has been continuous at Harvard. Rather than worry that the early investment in MOOCs has not yet transformed classrooms across the campus, he pointed to active and experiential learning in many disciplines; new kinds of hands-on labs; the spread of case teaching across schools; and wide instructor interest and involvement in HILT through conferences, grants, biweekly teaching-practice newsletters, and more.

"How can we improve teaching and learning for *everyone*?" he asked, and take

advantage of technology to make Harvard teaching accessible worldwide for the first time—a potential that has excited many faculty members. The largest benefit from HarvardX so far may be that the courses are "not just back-of-the-class lecture capture" on video. Instead, participating faculty members have been explicit about their educational objectives, and about exploring the best way to achieve them. Such practices apply equally to the classroom, broadening professors' awareness of what they must do to encourage and enable students to learn.

On the very near horizon is broad adoption of the Canvas learning-management system, the classroom course platform now being rolled out across Harvard. Unlike earlier course websites, which provided requirements and a syllabus, and sometimes links to readings or other materials, Canvas can be used to create a dashboard enabling students to see frequent assessments of their work, and teachers to see in real time whether students are progressing. Such speedy feedback, if proven effective, could be "an area where we're prepared to make a significant investment," Bol said. Over time, the system can

incorporate HarvardX-like modules and digital content—helping along the merging of lessons from online approaches with residential classroom practice.

Lest this appear threatening to other modes of learning, Bol hastened to add that the evidence on the effectiveness of active learning (in-class problem sets, for instance) does not, by formula, mean that the lecture will expire. He stressed the importance of determining what any course aims to teach, and where lecturing or active learning or machine-guided adaptive learning may be most effective. Large General Education lectures (and their departmental equivalents) have a distinct, enduring value. Acquiring information and mastering certain bodies of knowledge, he said, may not be the point of a literature or philosophy course.

"We need to discriminate among learning goals, teaching modes, and the appropriate standards for each," Bol said. In the current era, with more teaching and assessment tools, richer technology, and large-scale and seminar-size courses being taught side by side, the menu of options is longer than ever. ~JOHN S. ROSENBERG

Harvard Law Weighs In

AS LEGAL EDUCATION and the profession face substantial change—with law graduates' careers developing in increasingly varied, often global, contexts—Harvard Law School (HLS) kicked off its "Campaign for the Third Century" on October 23, becoming the last school to unveil its fundraising ambitions within the University's \$6.5-billion capital campaign. At the celebratory dinner following afternoon speeches and panel discussions that hinted at transformations in practice and pedagogy, campaign co-chair James A. Attwood Jr., J.D.-M.B.A. '84, announced a \$305-million campaign goal—and revealed that the development staff had not been idle during the protracted "silent phase" of fundraising: \$241 million (79 percent) had already been given or pledged.

HLS priorities in-

clude financial aid and clinical education, both deemed critical to the school's mission of advancing justice, increasingly among the underserved. Since her appointment in 2009, Dean Martha Minow said in an earlier interview, the school has nearly tripled spending on financial aid and loan forgiveness. Meanwhile, clinical education, which gives students hands-on experience, often through work with low-income clients, has become more important in the curriculum, despite the added expense of its low student-to-faculty ratios.

Increasingly, graduates enter fields outside the legal profession. As if to illustrate, U.S. senator Mark Warner, J.D. '80, of Virginia, a businessman (he was an early investor in Nextel) and later a politician, kicked off the launch-day luncheon by saying, "I've never practiced a day of law." After lunch,

the assembly of alumni, faculty, and students broke up to attend presentations on international human rights, corporate governance, the making of a civil-rights lawyer, and the school's veterans legal clinic (founded in 2012 with twin goals of pedagogy and service). TED-type faculty talks, 10 minutes or less each, followed. In the evening, President Drew Faust touched on HLS's history (its bicentennial is in 2017) and future, noting its impact in producing presidents, senators, Supreme Court justices, and CEOs. "We need the Law School and the extraordinary leaders it creates," she said. "We need the clarity that it brings to confusing and divisive times. We need its capacity to civilize, and we need lawyers wise in their calling."

Noting the school's growing number of international students, Dean Minow touted the global reach of its skills-based curriculum. "The value of high-quality legal education, the need for legal order, have never been more apparent. The hunger for justice around the world has never been greater...We do and we must include the imperative of advancing justice in our core mission, in our reform efforts, and our



MARTHA STEWART/COURTESY OF HARVARD LAW SCHOOL

preparation of students” so that they can “solve hard problems and imagine better worlds.”

For more on the campaign launch, and the challenges facing law schools, see harvardmag.com/hls-16.

The Campaign, Comprehensively
WITH HLS'S GOAL now public, the nominal allocation of objectives under The Harvard Campaign's umbrella lines up this way: Faculty of Arts and Sciences (including nonbuilding priorities for engineering and applied sciences), \$2.5 billion; Business School, \$1.0 billion; Medical School, \$750 million; Kennedy School, \$500 million; School of Public Health, \$450 million; HLS, \$305 million; Graduate School of Education, \$250 million; Graduate School of Design, \$110 million; Radcliffe Institute, \$70 million; Divinity School, \$50 million, Dental School, \$8 million—a total of nearly \$6 billion.

That would make the central administration parts of the campaign, and goals not otherwise associated with a school, a half-billion dollars. These include priorities such as the engineering and applied

sciences complex in Allston (see page 28)—some part of which might well be funded with debt; financial aid and other critical support for schools with alumni largely clustered in lower-paying professions; cross-school scholarly and pedagogical collaborations; and projects such as the conversion of part of Holyoke Center into Smith Campus Center.

Since the last progress report (“\$6 Billion-Plus,” November-December 2015, page 20), two other schools have detailed their results. The Kennedy School said it had secured gifts totaling \$460 million as of last September 30; its extensive campus expansion, previously reported as budgeted at about \$125 million (for which fundraising was to have been completed before breaking ground), now is shown as having realized \$90 million in support toward a goal of \$155 million. The medical school reported fundraising of \$475 million as of September 30—63 percent of the goal. Gifts and pledges to support research and discovery, the largest campaign aim at \$500 million, have reached \$318 million; some \$37 million has been realized toward the

\$160 million sought for “education,” as the school implements its new M.D. course of study (see “Rethinking the Medical Curriculum,” September-October 2015, page 17). The campaign's conclusion, it was disclosed in November, will rest with a new dean (see page 33).

Klarman, Cabot, and Library Largesse

MEANWHILE, the fruits of donor support continue to appear. The business school—with Tata Hall open and Chao Center construction well along (both are focused on executive education)—has filed the plans for Klarman Hall and the associated “G2 Pavilion.” The two-part project will yield a new 1,000-seat auditorium, with contemporary communications and media gear (81,100 square feet of new construction). Once that is built, 18,000 to 24,000 square feet of meeting and classroom space will be erected separately, in part on the site of Burden Hall, the 1971 auditorium designed by architect Philip Johnson '27, B.Arch. '43. The naming gift, from Seth Klarman, M.B.A. '82, and Beth Klarman, was announced in June



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Back to brick: a rendering of the Business School's Klarman Hall



COURTESY OF HARVARD BUSINESS SCHOOL

Cabot Science Library and environs, reimagined for today's student researchers



MACK SCOGIN MERRILL LEE ARCHITECTS

for the financial crisis, has been shorn of meeting and conference facilities, so Klarman Hall represents another possible synergy between the business and engineering schools.

In Cambridge, the faculty group responsible for reenvisioning the undergraduates' Cabot Science Library has unveiled a "design brief" for redoing the first floor of the Science Center, integrating the library, Greenhouse Café, and courtyards "to create a dynamic, 24-hour student commons and a technology-integrated library," complete with "mobile discovery bar." Construction is to begin after Commencement; the work is funded by Penny Pritzker '81, who was slated for a leadership role in the campaign before her appointment as U.S.

even demoralizing transition to a shared administrative system, new financial model, and unitary collecting and services begun in 2012. According to figures provided by the library system, its fiscal year 2009 and 2015 expenditures and full-time equivalent staffing were \$123 million and \$111 million, and 1,094 people and 741, respectively. Those changes reflect both the transfer of functions (human resources, technology, and so on) to other parts of the University, and consolidations, retirements, and downsizing. Expenditures on materials were \$46.5 million in the earlier year, and \$45.9 million last year—a rising share of the budget. Now, the library system is pursuing a \$150-million campaign aimed at collections, spaces, staff, digitization, and preservation; \$52 million has been secured, Thomas reported. She is proceeding on projects ranging from the Cabot makeover and information services for the new engineering complex to a prospective purchase of space in a depository facility in Princeton shared with that university, Columbia, and the New York Public Library; given its continuing acquisitions, Harvard's library system contemplates exhausting the storage space in its own Massachusetts depository within the next several years.

~JONATHAN SHAW AND JOHN S. ROSENBERG

2014. The work will also yield an enlarged central campus green. Construction is tentatively planned from early this year until August 2018—preceding the engineering and science center across Western Avenue. The latter complex, simpler and smaller than the four-building design being pursued be-

Secretary of Commerce. The library system more generally is also in campaign mode. Sarah Thomas, vice president for the Harvard Library and University Librarian, reported to the Faculty of Arts and Sciences in early November that the system had weathered the difficult and

Engineering a School's Future

ONE HUNDRED DAYS into his new position as dean of the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS), and after consultation with faculty members in the school and across the University, Francis "Frank" J. Doyle III shared insights into SEAS's future during an autumn conversation.

Computer science, in which he will make 10 senior appointments, will grow in Allston, when much of the school occupies new quarters at the end of the decade (see below). The department, strong already in the theoretical realm, looks to add expertise in applied directions like machine learning and optimization (developing efficient solutions for problems: a simple example is how to get from point A to point B in the shortest time). Bioengineering, a relatively small presence now, is poised for growth, perhaps with collaborators at

Harvard Medical School, particularly in the quantitative-leaning systems biology and biomedical informatics departments.

He sees enormous opportunity for more cross-school collaboration. SEAS offers a collaborative degree with the Graduate School of Design, but Doyle says Harvard has "arguably the world's leading business school,...medical school, and...law school"—all with professors eager to explore potential partnerships with engineers. As one example, he points to the many faculty members throughout the University who are working in some way on climate change.

Like climate change, "The nature of these big challenges in [engineering] research going forward," Doyle asserts, "is that they are going to touch on policy is-



Francis J. Doyle III

issues, legal issues, computing, data-privacy issues." Personalized medicine, for example, is bound to affect the healthcare discussion, get into legal issues of privacy, and have an entrepreneurial dimension,