

ticularly salient in an environment of constrained federal support for research. The fiscal 2018 commercialization revenue of \$54 million, and the corporate research funding of \$51 million, point to a new vision for advancing academic innovation that meshes well with the University's aspirations for developing an enterprise research campus in Allston: in the past five years, OTD has helped faculty members start more than 70 companies and raise more than \$1.5 billion in

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equity financing to commercialize Harvard-based discoveries.

Kohlberg says success in this kind of work turns on building relationships of trust. “We spend a lot of our time in the labs” with researchers, rather than in the OTD offices, “and we interact on a regu-

lar basis with chairs of departments, with deans, and with heads of research centers in a very close way.” The result is a single, integrated ecosystem—unique in higher education, he says—built to accelerate the pace at which discoveries can become technologies.

~JONATHAN SHAW

Undergraduate Education Agendas

I. Gen Ed in the Offing

WHEN SHE became dean of undergraduate education last July 1, Amanda Claybaugh, Zemurray Stone Radcliffe professor of English, immediately inherited the Faculty of Arts and Sciences' (FAS) longest-running, most pressing curricular challenge: launching the College's re-reformed, required General Education courses successfully, effective this coming fall semester. During a December conversation at her office in University Hall, she put that in context of her office's larger mission: devising “a new story about what a liberal-arts education is in the twenty-first century,” amid such pressures as students' strong shift toward concentrating in STEM fields (science, technology, engineering, and math), and the need to bridge students' varying preparations before they matriculate to assure that all can “have access to the same set of possibilities at Harvard” no matter where they began. But first, Gen Ed, which Claybaugh said had dominated her first six months.

Briefly: in 2016, the faculty concluded a review of the curriculum as it was reconsidered under former president Lawrence H. Summers, legislated under interim president Derek C. Bok, and implemented amid the financial crisis during Drew Gilpin Faust's administration—and found it a mess (see “Unfinished Business,” July-August 2018, page 3). The new Gen Ed, about to debut, says it “lies at the heart of the intellectually transformative mission of Harvard College and seeks to prepare students for meaningful lives of civic and ethical engagement in an ever changing world.” The means are one half-course each, purpose-built, from the four categories of Aesthetics & Culture; Ethics & Civics; Histories, Societies, Individuals; and Science & Technology in So-

ciety. In addition, the young scholars must take a departmental course from each of the three FAS divisions (arts and humanities; science and engineering; and social sciences); and a course in the new empirical and mathematical reasoning field.

The purpose-built offerings (and the new empirical reasoning one) are Claybaugh's principal concern, as they have been her predecessors'. They depend on professors' willingness to step outside their disciplinary teaching (tied into their research and graduate-student mentoring), which in turn depends on having time and resources to propose, devise, and have vetted new courses and pedagogies. And to satisfy student demand, there need to be plenty of courses among which to choose (and a compelling appeal, since undergraduates can cling to their concentrations).

Claybaugh said she has found that everyone involved in building the new Gen Ed agrees that the courses have to *feel* distinctive to students, who have to be able to understand why that is so. The common element, she said, is pedagogy. Once the substantive idea for a course is approved, it is assigned to a team within the Bok Center for Teaching and Learning who work with faculty members on course development, and to teaching specialists and resource people in the Division of Continuing Education, the Academic Technology Group, and the libraries and museums (whose col-

lections may figure in experiential classes and exercises). Although the solutions necessarily vary by field, she said, each course aims to realize the Gen Ed ambition of connecting learning to the wider world by devising assignments that are outward-facing—in disciplinary terms, by crossing scholarly boundaries; or even through engagement with real-world circumstances and challenges.



Amanda Claybaugh

JUSTINE COOPER

The new faculty chairs of the Gen Ed committee—Suzannah Clark, Knafel professor of music, and Amy Wagers, Forst Family professor of stem cell and regenerative biology (see Harvard Portrait, page 19)—are helping ensure that the professors teaching these new courses are also building a common culture. During the winter, the Gen Ed faculty will convene over dinners to talk about their courses, solicit and offer suggestions, and take the first steps toward becoming an interdisciplinary teach-

ing cohort themselves. Over time, Claybaugh said, those conversations might help evolve norms and standards for Gen Ed courses: their workloads, expectations of students, and so on.

Finally, she said, she intends to prompt continuous improvement through course evaluations that assess the intended distinctiveness of Gen Ed offerings and suggestions for realizing the program's ambitions.

In sum, Claybaugh said, she hopes students will perceive the “expand, explore, engage” logic of the refreshed Gen Ed. Its interdisciplinary, case-study, and hands-on approaches align with “how [they’ll] think out in the world” they will be addressing after Harvard, drawing on multiple elements of the College’s liberal-arts education.

Ironically, the biggest challenge to acceptance has arisen from students’ decade-long stampede into the more practical disciplines (see “Here Come the Quants!” January-February 2017, page 20), anchored in computer science and the School of Engineering and Applied Sciences (SEAS)—much of which is slated to move to Allston, away from the rest of FAS, in 2020.

Knitting the education there more tightly together with the broader arts and sciences mission is “really important,” Claybaugh said. The S.B. degrees offered in SEAS—in fields such as electrical engineering and mechanical engineering—require 20 half-courses. With the freshman expository-writing requirement, up to eight Gen Ed courses, and a possible required semester or year of foreign-language instruction, some students may be down to one or two electives in their entire College course of study. Some, she said, describe Gen Ed as “onerous”—just another set of transactional requirements. For them, and perhaps students generally, it is critical that the new curriculum, when begun, appears as an opportunity, not a hurdle.

Among the 35 courses available this fall, announced to students on January 25, are familiar favorites (“The Ancient Greek Hero,” by Gregory Nagy, and “Science of Cooking,” by David Weitz and Pia Sorensen); updated offerings on subjects of likely importance and appeal (“The Future of Globalization,” by Lawrence Summers and Robert Lawrence, “Tech Ethics” by Michael Sandel and Douglas Melton); and twenty-first-century selections (“Anime as Global Popular Culture,” by Tomiko Yoda, and “Global Feminisms,” by Durba Mitra).

In the very near term, the most practical hurdle has been crossed: Claybaugh expects the full 2019-2020 launch year to feature an ample menu of six dozen or so new Gen Ed courses. The proof will be in the teaching and learning.

II. Rethinking Course Registration

AMONG the challenges to conducting any successful course is knowing how many students will enroll and arranging for enough qualified teaching assistants (TAs) to staff sections or other small-group exercises. That is especially so for courses like those being built for Gen Ed, with potentially large enrollments and contents crossing the bounds of most professors’ and graduate students’ disciplinary expertise. Thus, though not linked to Gen Ed’s fall debut, the new discussion of possible changes in course registration—notably, “shopping week” (when undergraduates sample classes before committing)—will have a bearing on those required courses’ outcomes.

In March 2018, Harvard College dean Rakesh Khurana broached the idea of moving from shopping week for course selection at the beginning of each term toward a preregistration system with an add/drop provision (see harvardmag.com/fas-mtg3-18). In discussion then, some faculty members said that “shopping” sounded consumerist, and undercut more meaningful, long-term academic planning by students. Some noted that a chaotic first week made it impossible to staff their courses—jeopardizing an essential part of graduate students’ training—and wasted precious instruction time. And others observed that digital tools could enable other ways of making course selections in advance, easing the pain of migrating toward preregistration. A contrarian noted that preregistration would make it incumbent on professors to post a syllabus well in advance of a course, and forgo lotterying students out of their classes.

Early in the current academic year, dean of undergraduate education Amanda Claybaugh and Faculty of Arts and Sciences dean Claudine Gay, both newly installed during the summer, expressed support for exploring some sort of preregistration.

Not so fast. Undergraduates, in no mood to relinquish a perquisite, objected loudly, and a faculty committee was created to study the matter. That might seem overkill, but a mid-December conversation with professor of philosophy Bernhard Nickel, who chairs the group—the day before his email



Bernhard Nickel

unveiling a website (<https://coureregistration.fas.harvard.edu>) and inviting engagement—reveals an empathetic, thoughtful effort to make things better.

The current discussion, he said, echoes one held early in the millennium. Faculty members regret losing teaching time, particularly for seminars that meet only weekly. They rightly worry about how to prepare when they don’t know whether they will be lecturing to 100 students, or engaging one-sixth that number in discussion. Many graduate students outside the sciences who earn their keep from teaching are rightly anxious about knowing whether they will have no assignments—or two preparations in one semester (cutting into their dissertation work).

At the same time, “There are real benefits to shopping week,” Nickel said. Students

Yesterday's News

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

1919 The Faculty of Arts and Sciences, “a pioneer without being precipitate,” votes to establish general examinations for the A.B. in all departments, consonant with President Lowell’s view that no mere aggregation of credits merits a degree unless the student can also prove that he knows “some one thing well.”

1929 The Student Council reports “a real and urgent need of advice” for undergraduates choosing vocations and urges establishment of an office to provide it.

1934 The Federal Emergency Relief Administration announces a special fund to help needy students finish the academic year, but Harvard College says it has money enough for its own students and will not apply for an allotment.

1959 Harvard and MIT establish a Joint Center for Urban Studies to search out the basic facts in the tangled problems of big city growth.

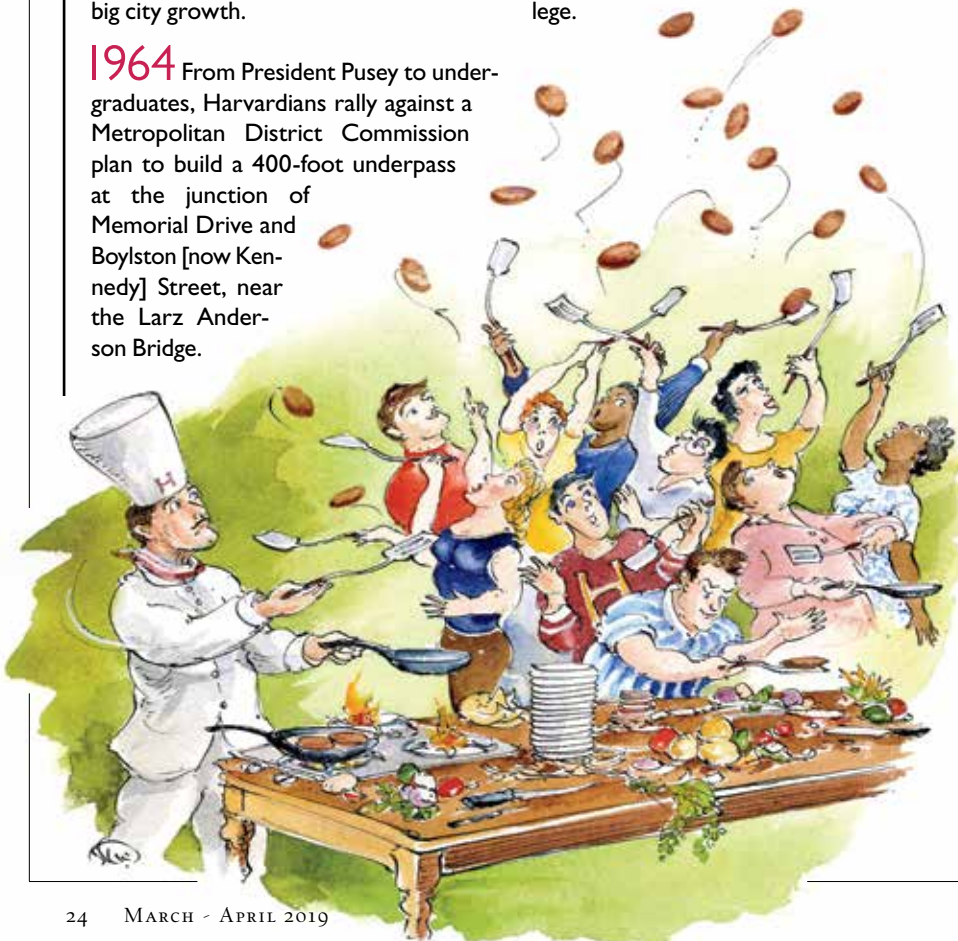
1964 From President Pusey to undergraduates, Harvardians rally against a Metropolitan District Commission plan to build a 400-foot underpass at the junction of Memorial Drive and Boylston [now Kennedy] Street, near the Larz Anderson Bridge.

1999 On the same day a large student rally against sweatshop labor in clothing manufacturing occurs in the Yard, Harvard endorses a policy of “full disclosure” obligating manufacturers of licensed apparel to reveal the location of their factories.

Harvard Dining Services’ executive chef, Michael Miller, has developed a five-session, \$25 course, “Cooking for the Culnarily Challenged,” to help students survive once they leave the Yard.

2004 The University launches the Harvard Stem Cell Institute, engaging seven of its schools and six affiliated hospitals in both research and clinical efforts focused on using stem cells to correct organ failure.

On April 1, for the first time in Harvard history, more women (1,016) than men (1,013) are offered admission to the College.



can better judge the level at which material, even in supposedly introductory classes, is actually presented. They can accurately gauge whether there is a “learning fit” for them when they see a professor in action. They may be encouraged, or not, by their assessment of other students enrolling. And in important instances, they may do what faculty members always exhort them to do: explore intellectually, falling into a course, and sometimes even a concentration, that had never before seemed appealing. That possibility, Nickel said, is clearly higher in a shopping period than under preregistration.

And there is “benefit to faculty from the current system,” he noted. Typically, a syllabus can be pulled together just a week or two before a course begins. Under preregistration, faculty members might have to commit a semester or even a year in advance, if they are on leave, or have research or conference commitments. (The pros and cons are judiciously detailed on the committee website.)

Thus, the situation is not a binary choice—and there might be “knock-on effects of any change in policy.” (Some observers note that there are disciplinary differences, too: large courses in fields with defined course sequences, like the introductory computer-science class, routinely assemble large cohorts of assistants, some even upper-level undergraduates; but expertise in the humanities can be much more fine-grained, and the pool of potential TAs far smaller.)

His committee, Nickel said, is a vehicle to look beyond binary choices and perhaps identify alternatives. (Yale College recently announced it is tightening up its shopping period, and directed professors to get each syllabus posted earlier; longer term, preregistration seems likely.) The effort necessarily involves talking to a lot of stakeholders; Nickel said he found it “heartening to see everyone is committed to making the education as good as possible.” Importantly, that means taking account of the way students experience the education they came Harvard to enjoy—often from their initial impressions of a class, which may be better if the teacher knows what size class to expect.

Technological tools to sample courses might be part of the answer, but other emerging avenues of exploration are surprising. Nickel noted that the landing page of Brown’s course website lists low-enrollment courses many students may have overlooked; a simple measure, but nothing

psychiatry and HUHS staff member before his appointment as director, he oversaw a significant expansion of resources devoted to counseling and mental-health services, among other initiatives.

EARLY ADMISSIONS. The College announced in mid December that it had admitted 13.4 percent of early-action applicants to the class of 2023 (935 of 6,958 hopefuls), down slightly from 14.5 percent admitted in the prior year (when 964 of 6,630 applicants were admitted). Details on those admitted and their academic interests can be found at harvardmag.com/early-action-18. Yale and Princeton accepted 13.2 and 13.9 percent of early applicants, respectively.

HIGHER-ED INDICATORS. The Higher-Education Price Index for the year ended June 2018 was 2.8 percent: down from the prior year's 3.3 percent but—the Commonfund (which compiles it) reported—above the average of 2.4 percent for the preceding five fiscal years. Separately, Moody's, the credit-rating service, extended its negative financial outlook for higher education for a second year, citing low tuition revenue (after financial aid) and continued inflation in expenses.

MISCELLANY. Leah Rosovsky '78, M.B.A. '84, vice president for strategy and programs since January 2013, stepped down at year-end; she is now a dean's administrative fellow at Harvard Business School.... Pomona College president emeritus David Oxtoby '72, president of the Board of Overseers during the 2013-2014 academic year, has been appointed president of the American Academy of Arts and Sciences.... Poet, memoirist, and editor Meghan O'Rourke, the Radcliffe Institute's 2014-2015 Putnam Fellow, has been appointed editor of *The Yale Review* effective July 1—the two-hundredth anniversary of the literary quarterly's founding.... Ackman professor of public economics Raj Chetty has been named a fellow of the American Academy of Political and Social Science.... New fellows of the American Association for the Advancement of Science include Eric J. Chaisson, associate of the Harvard College Observatory; David D. Ginty, Lefler professor of neurobiology; and Dani Rodrik, Ford Foundation professor of international political economy.

their now-classmates who may remain enmeshed in “[p]roblems at home with their families and friends—typically some combination of evictions, convictions, and violence...”: the antithesis of a bank of social capital upon which to draw.

Harsh though those demands are, some students even reported being disowned when they decided to accept a scholarship for an education away from home. And given the differences between the privileged poor and the doubly disadvantaged, who may seem to others a single cohort in racial or other terms, some of the most disadvantaged undergraduates encounter the old truth that “All skin folk ain’t kinfolk.” The more acutely such differences are felt, Jack finds, the less likely it is that the students affected will perceive that advisers, office hours, and counseling resources are meant for them.

The practical weight of his research is that institutions that have made it their business to effect such diversity also have to recognize that *access is not inclusion*. For admissions officers and administrators, perhaps the primary value of Jack’s book lies in the power of its personal stories, making that lesson indelibly vivid. Pforzheimer professor of teaching and learning Richard J. Light did much the same thing, for a different group of students, in *Making the Most of College* (see “The Storyteller,” January-February 2001, page 32), and Rachel L. Gable, Ed.D. ’16, provided a statistical portrait of the social and academic experiences of first-generation and low-income students in her dissertation (see “Mastering the ‘Hidden Curriculum,’” November-December 2017, page 18). Jack’s carefully elicited anecdotes, and the surrounding context, complete the narrative.

The societal context. More broadly, Jack is exploring the widening socioeconomic gaps—geographic, residential, and otherwise—in the United States (often layered atop sharply drawn lines between the races, particularly in some of the most economically vibrant coastal cities). “[B]eing poor,” he writes of a doubly disadvantaged student from a small farming town, “had never made him feel like an outsider until he came to Renowned.” For some underprivileged students, Jack says, such experiences are their first direct encounter with economically comfortable fellow citizens—and vice versa.

In this sense, selective colleges’ nearly two-decade efforts to become more economically diverse (dating to Princeton’s

decision to eliminate loans from financial-aid packages) matter far beyond the tiny slice of the population these schools serve. They may be among the relatively few venues where the effort is even being made, in a society where it has become possible, even *normal*, for people never to come into contact across class boundaries.

So the lessons taught and learned on such campuses are a social experiment of rare import. Jack doesn’t focus on the benefits to upper-income college students of bringing them into contact, at least nominally, with economically disadvantaged peers. “One could argue that exposure to different people, customs, and ways of life is as important as the lessons students learn in their classes,” he writes—“that college is about expanding your world-view.” This is the argument made, on racial and ethnic grounds, for affirmative action in admissions.

It is not the job of students from underrepresented groups to teach wealthy peers about their lives.

But across classes, he continues, “this learning too often comes in the form of poor students having to justify their decisions about what activities they do or do not want to partake in. Not everyone is asked to explain themselves: poor students are often asked why they won’t go out for dinner or to a dance club, but no one is asking rich students to justify spending \$30 for a lobster.”

In purely humane terms, Jack writes, “[W]e need to make a concerted effort to teach students about each other. Understanding your peers can help limit misunderstanding and exclusion.” But broadly, “This expansion of world-view must go both ways.... It is not just a matter of poor students adjusting to a world of wealth: upper-income students must learn to be more accepting of other students’ ways of life.” Beyond the experiment in access and inclusion now under way at Renowned, Jack is pointing toward the society in which such places are embedded: “It is not the job of students from underrepresented groups to teach wealthy white students about their lives.”

—J.S.R.