In May 2012, edX president Anant Agarwal introduced Harvard and MIT’s joint venture in massive open online courses (MOOCs) with a bold promise: “Online education will change the world.”

In the years since, the hype surrounding MOOCs has oscillated between outsized optimism and declarations of fast failure. There were early signals of hope: more than 180,000 students registered for CS50x, the MOOC version of Harvard’s popular introductory computer science course, after it launched in October 2012. The next month, The New York Times declared 2012 “The Year of the MOOC.”

But there were reasons for concern as well. Less than 1 percent of those original CS50x registrants—1,439 students—completed enough of the course to earn a certificate. Observers wondered whether a massive-scale, broadcast model could effectively reach students of different backgrounds and communicate the complex skills taught in college classrooms. “Two words are wrong in ‘MOOC’: massive and open,” Stanford president John Hennessy suggested in an interview with the Financial Times. By the end of 2013, a headline in The Washington Post asked, simply: “Are MOOCs already over?”

This quickly churning cycle of excitement and disappointment makes it difficult to evaluate the true promise of Harvard’s educational experiment. Pinning down a definition of “success” is further complicated by the diverse roster of courses and cohorts of students. During its first two years, HarvardX, the University unit in charge of developing courses for the new platform, has offered everything from a four-week introduction to the statistics of the life sciences to a long series of “mini-courses” covering millennia of Chinese history. As Menschel HarvardX research fellow Justin Reich reflects, “There’s no grand unifying theory of MOOCs.” (For more on Reich’s work, see “Harvard Measures Its MOOCs,” May–June 2014, page 22.)

Since the program’s launch, a number of courses at HarvardX have tested a simple solution to many of MOOC detractors’ biggest complaints: scaling down, not up. These experiments—which come with their own acronym, SPOC (small private online course)—enable professors to more fully engage a targeted group of learners, who benefit in turn from an intensive, personal course setting.

In the end, small courses’ successes rest on defying many of the very promises of the MOOC revolution: they might not be massive, open to everyone, cheap to run, or entirely online. But by using technology to combine the centuries-old lessons of campus
education with the best promises of massive learning, SPOCs may be the most relevant and promisingly disruptive experiments the MOOC boom has yet produced.

Beyond the “Guru on a Mountaintop”

THREE MONTHS after CS50x’s massive launch, Harvard began its first experiment at the other end of the spectrum. At the start of the spring 2013 semester, WilmerHale professor of intellectual property law William “Terry” Fisher began teaching his introductory course on copyright in a “networked” form. In its first year, CopyrightX brought together Harvard Law School (HLS) students; a cohort of 500 online learners from around the globe, chosen by application; and a group in Kingston, Jamaica, led by one of Fisher’s former students. Fisher’s innovation, in a sense, was to be less experimental: using digital resources to engage students in the kind of intense learning experience expected on campus.

Relevant to the professional lives of artists, filmmakers, and other creative types, copyright was a rich subject to share with a new audience. But it was also one Fisher thought would not work in the “one-to-many, broadcast, guru-on-a-mountaintop model” of many online courses. A set of lectures and a reading list could provide a spine, but real learning required deep engagement through intense Socratic discussions and difficult writing assignments, thoughtfully graded by a real teacher. “This is not a new idea, but it’s oddly neglected online,” Fisher explains. “From the beginning, the idea was to implement in this new technological setting some age-old principles about education.”

The course was designed to be demanding across the board. “I hoped, from the beginning, that it would be possible to reach these audiences without dumbing down the material at all,” Fisher says. “That was just a hope in the beginning, but it proved to be true.” Everyone watched his lectures on copyright theory, doctrine, and case studies (their 90-minute structure a deliberate move against the MOOC trend toward short, pithy, and highly produced videos). For online students, Fisher condensed the reading list of case law to create a still-rigorous syllabus that fit the lives of working professionals. Most important, by including online discussion sections led by HLS students working as teaching fellows (TFs), he tried to replicate the intensive dialogue that stands at the center of legal pedagogy. Asynchronous discussion boards, where students can post on their own schedules, have been part of the DNA of online courses from the beginning, but the kind of robust exchanges that Fisher wanted required more immediate back and forth. (EdX’s original built-in discussion forum, a core component used in many courses, was biased against complex debates. As Justin Reich notes, the ability to make sub-points in any conversation was limited to three: question, response, and comment. This worked for basic computer-coding problems, but not for tricky questions of legal doctrine. Recent updates to the tool have tried to better support “discursive” discussion.)

For Fisher’s course, groups of 25 students and their TFs logged on to an Adobe conferencing system each week and spent an hour and a half in the same virtual room, debating the cases at hand. Granted, there were a few more technical difficulties to iron out, but “It’s remarkably similar to teaching in person,” says Ana Enriquez ’10, a fellow at the Berkman Center for Internet & Society and CopyrightX’s head TF. In fact, she says, the diverse online student pool created openings for particularly rich discussions, as artists and filmmakers could weigh in with their professional experiences.

At the end of the 12-week course, online students took an essay-based take-home exam, based in part on the test given to their HLS counterparts, that their online TFs then graded. The ability to give feedback on long and complex writing—based on prompts like, “Design your ideal copyright system from scratch”—is another stumbling block for the ambitions of massive-scale online education. Automated testing programs have difficulty evaluating tasks where “we want students to reason from evidence,” Reich reports. “Which is unfortunate because one of the main things we do in higher education is teach people to reason from evidence.”

The results of this experiment in scaling down from massive are promising. First are the benefits to on-campus learning—one of the oft-repeated goals of HarvardX. The new TF program offers students a rare chance to gain teaching experience in a law-school setting. And by assigning his video lectures as homework for his HLS students, Fisher has cut down the number of weekly class sessions from three to two. The remaining meetings, he says, now feature deeper, more nuanced discussions.

The online experience, moreover, offers some comfort to those wringing their hands over MOOCs’ inability to keep students engaged and learning. The second year Fisher’s course was offered, 80 percent of the students who logged on for the first week’s seminar attended the final one. And 41 percent of students who enrolled in the class took the exam and passed it—graded by the same standards used for Fisher’s HLS students. (This, of course, at least in part a product of self-selection.) For Fisher, the retention is two-fold. The students stay, and they sustain enough knowledge to take and pass an exam. Still, he notes, “It’s not perfect.” Although 85 percent of online students who took the exam passed it, essentially all HLS students do. (There was little variation in success rates for U.S. and non-U.S. online students, or for students of different educational backgrounds.)

When thinking of the impact small courses can have, HarvardX faculty director Robert Lue points out that the 200 students who passed Fisher’s online exam represent a cohort comparable to the number of students in a MOOC who actually end up engaging with the material. Moreover, “If you compare ‘Copyright’ at HLS to the hundreds of people that have done it [online], it has scaled,” he says. “Massive is a relative term, right?”

“From the beginning, the idea was to implement in this new technological setting some age-old principles about education.”

Learning by Doing, Online

FOR Regina Herzlinger, teaching on HarvardX is part of a “mission” that requires reaching a different, not necessarily massive, new audience. The McPherson professor of busi-
ness administration has made a career of teaching entrepreneurs to “do well,” or make money, while “doing good” in the fractured, inefficient healthcare sector. Bold ideas, she says, aren’t in short supply—but clinicians and scientists don’t always have a good sense of how to turn them into realistic ventures. “Very often, these brilliant people think if you build it, they will come,” she explains. “They’re not going to come unless you have a viable business plan.”

It was the prospect of reaching health experts unlikely ever to enroll in an M.B.A. program that motivated Herzlinger to put her long-running course “Innovating in Health Care” on the edX platform in the spring of 2014. But at Harvard Business School (HBS), she explains, “The philosophy of teaching is you learn by doing”—nearly impossible on a massive scale.

Students in BUS5.1x: “Innovating in Health Care” could enroll in a MOOC with videos, readings, quizzes, and discussion boards. But the program also gave them the chance to put theory into action in a smaller, application-only section, which began a few weeks later after accepting 100 business proposals from teams of three to six. Herzlinger required each team to display diverse expertise, including both financial know-how and technical proficiency, such as engineering or clinical skills, relevant to their proposal. Many teams consisted of partners who’d begun working on their ideas long before the class began, but others formed during the early weeks of the course: 63.7 percent of the students reported holding an advanced degree, so the course offered a rare chance for those doctors, engineers, and business experts to make connections. “This is what we need in healthcare management education,” she reflects. “To reach these talented people and enable them to actuate their terrific ideas.”

One clear benefit of group-based learning was that students stayed. The SPOC started with about 440 students spread across 100 groups, and 75 of the teams finished, according to Heather Sternshein, a manager of instructional development at HarvardX who organized the course. (In contrast, just 600 of the more than 10,000 participants in the course’s massive version earned a certificate of completion.) Student Joyce Nabuurs, for example, said it was the rich group experience and a sense of responsibility to a team that kept her going. Nabuurs, who had finished her bachelor’s degree in medicine in the Netherlands when she began the course, met for weekly two-hour Skype sessions with her partners, including a surgeon based in New York, an information-technology expert in Milan, and a finance professional in Melbourne. (Finding a time to meet, naturally, was a bit of a challenge.) The team experience introduced her to a very different way of thinking: she’s now enrolled in a master’s program focused on life-sciences entrepreneurship.

The course’s other real success, from Herzlinger’s perspective, was that plans for 75 potential new ventures have been built using her framework. In the final weeks of the course, students made and voted on each other’s video pitches. The winning teams earned video consultations with Herzlinger, and she and her co-instructors—Smith professor of computer science Margo Seltzer and Duke University School of Medicine’s Kevin Schulman—offered advice and helped them network, just as they would for students on campus. “To be an entrepreneur, you can’t just do it yourself,” Herzlinger says. “We opened the door for these people.”

“Innovation in Health Care,” version two, launched on edX this spring, and the staff has focused on making the team aspect of the course more robust. This has required moving even further away from MOOCs’ one-to-many model. The instructors have limited the SPOC pool to 50 teams, and hired five alumni of Herzlinger’s campus course to serve as teaching assistants, to help a handful of groups develop their plans. For now, this is a way to improve what has become the class’s signature, non-massive component. Herzlinger and her colleagues hope to learn lessons about how to better shepherd groups through the business-plan process—discovering the kind of tools that could, one day, allow them to scale back up again.

These experiments with small, connected groups are part of what HarvardX faculty director Lue calls the effort to break down “hub-
and-spoke model" of education. “The more connections you have between students, the more powerful” a course will be, he explains, “both in the classroom and also out there in the wider world.”

**A Different Notion of “Course”**

Courses, Li professor of international health Ashish Jha explains, usually begin with a familiar foundation: “I disseminate the information, you give it back to me to show me that you’ve learned it.” But for Jha, HarvardX has been more than just a soapbox. It offers a chance to easily engage health professionals around the world by using online students as both sounding board and source.

Rather than grafting a campus course onto a digital platform, Jha used PH555x: “Improving Global Health, Focus on Quality and Safety” as an exercise in defining the new field of global health quality. Online education, he felt, could create a two-way street: defining a new field and seeding dispersed networks of community leaders around the globe who could help move this new area of study and practice forward. That, he reflects, “is a different notion of what a course is.”

The course’s massive component offered one way for Jha, the director of the Harvard Global Health Institute, to reach and learn from practitioners in the field. Just over 50 percent of registrants reported having an advanced degree, and 78 percent worked in healthcare. He asked students to fill out surveys about quality issues in their own countries (more than 170 were represented). It was a way to “create a public good,” crowdsourcing the kind of data that researchers can spend years collecting. (Students could also contribute new knowledge through the course’s optional final assignment. A total of 417 enrollees wrote 1,200-word “perspective” essays, the best of which Jha has arranged to have published as part of a special section in *BMJ* Quality & Safety, a journal affiliated with the British Medical Association.)

Reading his students’ international perspectives convinced Jha that his initial hunch about the field was right—issues of quality are similar around the globe, in both developed and developing countries. And the course, even more significantly, did help build a global network of like-minded professionals. “Part of the goal,” he explains, “is to create this sense of community.”

The course also experimented with a potential system for reaching students through blended learning by combining in-person discussions with Jha’s online resources—creating, in effect, a network of local communities working on questions of quality. In February 2014, his team taped an interview for the course with Rwanda’s minister of health, Agnes Binagwaho, who is a senior lecturer on global health and social medicine at Harvard Medical School. The country has completely overhauled its health system during the past two decades; now, says Binagwaho, quality is the next frontier.

In the weeks leading up to the course’s launch, the ministry encouraged healthcare workers in the country to enroll and organize in-person discussion groups at the hospital level (physicians were eligible for continuing medical-education credit). The timing worked especially well because one of the course’s teaching fellows, Harvard School of Public Health doctoral student Kirstin Woody Scott, was already planning to spend the year in Rwanda. Scott helped coordinate groups at 21 sites, nearly half of the country’s hospitals, and provided discussion guides to help facilitators connect each week’s global concepts to local contexts.

This was just the kind of opportunity Rwandan health worker Manzi Anatole had been looking for. Anatole runs quality improvement and mentoring programs in the three districts where Partners In Health (PIH), the Boston-based nonprofit, operates. Anatole has long wanted to discuss quality of care, but such conversations are often pushed aside in favor of teaching harder, clinical skills. Last fall, finally, he was able to help with leading the HarvardX discussion group at Rwinkwavu Hospital and coordinating groups at PIH’s other two sites. These global health resources, he says, helped spark meaningful local debates. He recalls, for example, how a conversation about patient satisfaction opened a dialogue about the role of those beyond the clinical team, using the successful example of a local dialysis center. By bringing local concerns into the course’s existing curriculum, he says, “People could see everything as real.”

For Jha, this partnership with a group already on the ground is a potential model for replication. One sign that the local component worked: 66 Rwandan students, nearly half those officially enrolled in the program, submitted the optional final paper. Overall, nearly half of Rwandan students registered in the course earned a certificate. He recognizes, though, that expanding the prototype won’t necessarily always be simple. Spotty Internet connections meant that course materials had to be delivered on flash drives in advance (a potential snag for edX’s global ambitions generally). Moreover, Rwanda’s highly centralized healthcare system encouraged high participation rates, and Scott’s presence was crucial for local trouble-shooting and managing the different sites.

For Jha, though, the “public good” value is clear. Healthcare ministers and administrators may care about quality, he explains, but lack the resources to set up training programs. “Well, we’ve got one. It’s from Harvard. It’s free.” Will it always remain free? “I don’t know,” he says. “What’s the model on this?”

**Choosing Scale**

The answer to that question about a business model is, perhaps, choice: small and massive formats both have something to offer, and course options at multiple scales can work in tandem to fit the needs of different users. New content in engaging new formats is enough for some students. But the availability of material alone won’t revolutionize learning, especially when proponents are trying to engage the masses of potential students who, as Rob Lue puts it, can do “Harvard hard” but don’t have access to Harvard proper.
HarvardX has tested this diversity in action through the different versions of Dillon professor of government Graham Allison’s course “Central Challenges of American National Security, Strategy, and the Press.” The Kennedy School (HKS) version of the course has run for more than three decades—so long that Allison’s current co-instructor, David Sanger ’82, a New York Times journalist and Belfer Center for Science and International Affairs senior fellow, took the course as an undergraduate. In the fall of 2013, Allison, Sanger, and Derek Reveron—a professor of national security at the Naval War College—experimented, for the first time, with online instruction.

That semester, they ran HKS211.1x in two forms: as a MOOC and as a “limited enrollment” version with 500 learners chosen by application. They assigned cohorts of 100 students to live discussion groups, led by a handful of course teaching fellows. The TFs also were responsible for giving feedback on memo assignments that required students to boil down case studies (on topics like Iran’s nuclear ambitions) into short policy recommendations. Such online discussions and small bits of feedback from instructors are “not the same as being in the classroom,” acknowledges Allison. “But it certainly is a halfway house between that [HKS experience] and just being online.”

The next fall, the team tested another form when Reveron, a Belfer Center faculty affiliate, taught the class through the Harvard Extension School, the University’s continuing-education arm. Ten students joined him in the classroom, and another 35 participated online. As part of a smaller cohort than the edX sections, students received much more personal attention, including in-person guest lectures from Allison and Sanger and detailed feedback on written work. Significantly, this didn’t come free: it cost $1,250 for undergraduate, and $2,200 for graduate, credit.

This sliding scale of courses intentionally puts personal touch at a premium, according to Summer Marion, HarvardX’s project lead for the class. Kennedy School students pay for access to the course’s professors, Extension students pay for contact with Reveron and his teaching assistants, and students in the SPOC have access to teaching fellows (and can pay a small fee to earn a “verified” certificate). These tiered offerings create the choice that many think stands at the center of the future of education. “If you just want the content, great, it’s there for free. If you want human feedback from an expert, who has to be paid to do this, then that might cost something,” Lue says. “It allows you to decide what you really want.”

**Blended models**—with learners engaging in groups with MOOC material—may combine the best elements of massive and small.

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Ashish Jha

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**Let’s Get Small**

Small is, for online education, perhaps a necessary corrective to the enormous aspirations and large disappointments of the first years of the MOOC boom. These experiments with engaging small, targeted groups of students in rich learning experiences have re-taught an age-old principle of education: personal attention matters.

And it’s a lesson with increasingly important implications, as digital solutions become more pervasive in higher education. Just as ambitious commentators predicted a few years ago, a new collaboration between edX and Arizona State University, announced in May, will begin to offer the equivalent of a first-year ASU curriculum on the online platform. SPOCs and other non-massive experiments that have emerged from the MOOC boom will provide important lessons for these kinds of collaborations—helping to figure out what kind of education those students who stick through the MOOC grind can hope to get.
Innovators across the MOOC landscape have begun developing digital tools to easily scale up some of the benefits of lower student-teacher ratios. HarvardX professionals are working on a system to organize peer feedback, tapping into the highly educated population that enrolls in its courses. They're also testing how they can recreate, and even improve on, the responsiveness of a classroom teacher, with a program that alters the presentation of materials based on student performance.

But experiments during the past two years have led to the realization that, sometimes, going smaller is necessary to create the kind of rich learning environments that HarvardX leaders and faculty members most want to project beyond Boston and Cambridge. This past spring, the team behind the second iteration of Graham Allison's HarvardX course saw firsthand the potential benefits of focusing on small scale. Originally, they had hired a group of 15 TFs and hoped to scale the "limited enrollment" SPOC up to 1,000 participants. But when just 132 students enrolled, the course, unintentionally, was able to offer them intense, weekly, 12-student seminars. With fewer participants, course staff could provide better feedback—and track learning better. The result, according to Summer Marion, was that the average grades on student memos improved between the first and last assignments.

The kinds of communities the teaching staff could create online were key to that success. Though it might be “less scalable,” says Aurora Lachenauer, one of the TFs for the edX course, “it’s the only way to engage, to have the two-way interactions” necessary for real progress. Still, Lachenauer acknowledges that the kind of community she created as a TF online is difficult to compare to the rich experiences she’d had as a student the semester before, when she took the Extension School version in person. “There’s a lot of value in being able to sit in class and raise your hand and ask questions,” she explains. “I’m just really happy I got to experience it in person.”

One potential solution to this tension among scalability, private attention, and the power of in-person interactions is a blended model that outsources the personalized, communal aspects of massive courses to co-teachers around the world. A networked group of learners, often meeting in person to engage with digital edX curriculum may combine the best elements of massive and small. Like writing a textbook, it helps researchers disseminate their work. But the responsiveness of online platforms offers something totally new: the chance to create meaningful connections among scattered groups of learners—and even to learn from them.

Terry Fisher, for example, calls this one of the most surprising benefits of his networked CopyrightX course. For each of the last three years, he’s vetted more “affiliate” leaders. This year, the 18 leaders have coordinated groups at an arts center in Nairobi, universities in Beijing, Cairo, and Rio de Janeiro, and a U.S. law firm. By limiting the number of teachers, Fisher has ensured quality instruction and created a robust network that gives him, in return, a far more international perspective on copyright pedagogy and doctrine. Fisher is not concerned about scaling distribution in the truly “massive” sense. Rather, he sees value in scaling the communities where real learning can happen. And this blended focus, argues Robert Lue, “is the transformative future.”

This turn to small—whether online or in-person—is a far cry from the dreams of edX as a cheap, ever-expanding portal from Harvard to the world. But it gives faculty members and the most committed students a chance to truly engage one another, fulfilling the hoped-for goal of a global network of learners and thinkers. In the end, building fewer, stronger, more expensive bridges might have more impact. “We’re like Columbus or Vasco de Gama,” Regina Herzlinger reflects. “We’re just starting to learn how to make this effective.”

Staff writer Stephanie Garlock ’13 has considered enrolling in a MOOC herself.