PROPHE is dedicated to building knowledge about private higher education worldwide. Neither pro- nor anti-private, PROPHE does, however, engage major policy issues and dissemination for decision makers and the general public.

PROPHE is a network of scholars in some 20 countries. It additionally includes partner centers and emerging regional centers as well as a network of students working on dissertations on the subject of private higher education. By design, PROPHE is mostly composed of junior scholars.

To see output and activities, see http://www.albany.edu/eps/~prophe/. Output includes working papers, edited books, other publications, and conferences. It also includes compilations and analyses of data, relevant laws, and news features from around the world. A large bibliography (2004)—produced in partnership with Boston College's CIHE—provides a guide for scholars and policymakers. CIHE also cooperates by allocating to PROPHE a regular column in IHE.

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Enrollments

PROPHE's developing database covers institutions, faculty, field of study, diploma or degree levels, geographical concentrations, and the like. Culling just system enrollments from the total picture, we get a quick feel of the breadth and intensity of the private revolution.

No region is unaffected. Postcommunist Eastern and Central Europe has moved from virtually 0 to as high as 20 and 30 percent in some countries. China is now about 10 percent private, and Mongolia and Southeast Asia have private sectors. Major developments likewise characterize South Asia and the Middle East as well. Several Asian countries with long-standing private higher education show large majority enrollments (Japan, Philippines, and South Korea). Latin America's roughly 40 percent average also includes countries with private majorities (Chile, Brazil, and the Dominican Republic). Africa has come recently from near 0 to figures as high as 20 percent in countries like Kenya.

Analysis shows that the private revolution is much clearer and dramatic in developing than developed regions. Western Europe remains the region with the least private higher education, though interesting changes are emerging there, too, and private higher education now has a notable place in New Zealand and Australia. Furthermore, the nature as well as the size of enrollments is changing. U.S. private higher education holds rather steady, around 21 percent, but dramatic is the rise of for-profits as well as a more general commercialization of nonprofit (and even public) institutions. Japan has just begun to experiment with for-profits.

Issues for Analysis

So the private higher education revolution is not about numbers alone. It is also about profound changes within the sector. A related subject for study is how private higher education fits into broader higher education reform trends internationally, from finance to governance, accountability, autonomy, accreditation, and much more. Beyond "fit" is even the question of leadership: how, how much, and where does private higher education lead major higher education changes?

At the same time, analysis shows that private higher education is far from just one phenomenon. It varies greatly across regions, across countries, and even within countries. Subsectoral variation is huge, as the for-profit versus nonprofit matter shows and as differences among religious/cultural, academic, and commercial subsectors further show. Without doubt, the most extensive and profound revolution has been occurring on the commercial side.

Analysis must be intersectoral as well. PROPHE looks at changing degrees and at the distinctiveness and similarities between the private and public sector. Comparisons include private subsectors versus public subsectors. Additional issues, often crucial for policy analysis as well, concern intersectoral cooperation and conflict. Cooperation has in many countries gone as far as formal private institution partnerships with public institutions.

PROPHE thus has an active and expanding research agenda. Yet it is a daunting challenge to try to document and analyze the private higher education revolution that is sweeping so much of the world. ■

University-Industry Partnerships Reconsidered: MIT, Cambridge, and Tokyo

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University-industry partnerships have been a hot topic for universities, industry, and governments alike. That universities should play an economic role is becoming a dominant view globally, though everyone interprets the concept differently. Universities tend to see relationships with industry as new revenue sources. Industry focuses on narrow benefits such as student recruitment or specific technical solutions. Governments, on the other hand, want universities to generate new industries or to stimulate existing ones and often see spin-offs or licensed patents as an obvious metric of success.

These respective wishes have often led to some tensions.

Many universities have become disappointed as only a small fraction of patents turn out to be lucrative. Performance metrics by governments on patents and spin-offs have led to an artificially large number of spin-offs or patents from universities—often without clear commercial success in spite of public subsidies. Complaining that universities are becoming greedy, companies demand confidentiality agreements that are hard for universities to deal with, given freely mobile students.

The Economic Role of Universities

My past research, which compared the experience of MIT to that of Cambridge and Tokyo (Routledge, 2004), as well as my recent research on the role of universities in regional innovation systems, suggests that universities can integrate this new economic mission into their normal business of education and research, by learning to conduct these traditional tasks differently. Universities could enable students to acquire knowledge and skills relevant in a changing world and to explore fundamental issues through research. Society will benefit, not from universities becoming more like companies but from their becoming good partners to practitioners, while remaining a separate sphere of knowledge creation and diffusion. The key is for universities to be "connected" to the real world so that their activities can be relevant.

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Networked Academics

At the heart of any organizational capability for relevance are well-networked academics. They can be connected to the real world through consulting, joint research, conferences, or even alumni networks. Networking with industrialists enables academics to learn what the real problems are in industry and to be exposed to know-how and private knowledge that would otherwise remain hidden behind corporate walls. One Nobel Prize Laureate from MIT described consulting academics as "pollinating butterflies"; they see the problems faced by multiple companies and can offer solutions based on insight gained from such exposure.

Such networked academics can also be an effective conduit for relevance in teaching. Their role is the same as before—teaching their students basic learning skills that are helpful for the rest of their lives—but they use updated materials and topics, selected on the basis of thinking about where industry might be going. Networked academics are able to benefit from private knowledge in industry to help them decide what students should learn. Contemporary and real-life examples help motivate students in their studies and in applying their skills later. Their students would not only acquire up-to-date knowledge but would also be imbued with interest in spheres of emerging importance.

In research, networked academics have another role to play—conducting research with an eye to applications. By the time they make discoveries, they may be well aware of the potential applications of their discoveries. They belong to what the literature of science calls "Pasteur's Quadrant"—scholars undertaking science as Pasteur did but being interested in applications, as he was.

Well-networked academics existed in all three universities that I examined: MIT, Cambridge, and Tokyo. However, the differences were found in the frequency of their activities, in how easily academics could network with the outside world, and in how successful they were in scaling up their activities by collaborating with other academics and recruiting students or postdocs. These differences appeared to arise from the ways in which the three universities managed their organizational boundaries, externally and internally.

Defining External Boundaries

In Tokyo, my research took place at an early stage of on-going reforms (ca. 1999–2000), well before the university became incorporated and autonomous in 2004, and so their academics were still subject to civil service and other government regulations. While these policies did not stop enterprising academics from developing their own ties to industry, it took so much more work and effort on the part of individual academics to develop agreements with companies and establish norms about student participation and confidentiality agreements—all with virtually no help from the university. The university was good at replicating a very limited range of "acceptable" industrial partnerships, but it was not good at supporting academics in forging new ones. Universities' organizational boundaries were more impermeable and less negotiable than in the other two universities.

The university's boundary was fuzzy, but it was up to individual academics to define how to work with industry.

In Cambridge, which was another place where university-industry relationships were being actively debated and undergoing significant change, the rules did not dictate against networking. Indeed there was very little that academics could not do, and some academics managed to develop very deep relationships with their industrial partners, from whom they gained substantial insight and support. The university's boundary was fuzzy, but it was up to individual academics to define how to work with industry. This can be contrasted with MIT, where there were fairly clear rules as to how much and what kind of work academics could undertake outside and in what ways collaboration with industry could be undertaken on campus. MIT's external boundaries were well regulated and clear; there were set norms about how to work with industry, which allowed academics easily to engage in and to develop relationships with industry.

Universities' Internal Boundaries

Another difference found was the way internal boundaries were defined and managed. In Tokyo, academics readily worked with colleagues in their disciplines from other universities, but there were fewer interdisciplinary collaborations. Interdisciplinary research was often a result of individual academics purposefully electing to undertake research in new fields, rather than a collaborative venture between academics from different disciplines, though several organizational units have been created to encourage the development of new fields. In Cambridge, the college environment was helpful in encouraging interdisciplinary encounters among academics, but it was not easy to find organizational or physical space for sustaining and scaling up collaborative work. Disciplinary boundaries were not easy to cross, nor were there mechanisms to expand such interdisciplinary activities into new fields.

At MIT, there was an organizational arrangement called a "research center," which was an organizational space in which academics from different disciplines could assemble to undertake research. Research centers could expand their activities depending on their ability to attract external resources and thus recruit graduate students, postdocs, and even senior researchers. But tenured academics came from and continued to belong to traditional disciplinary communities—until the new field became sufficiently established to affect departmental boundaries. Interdisciplinary research centers also provided generic "labels" helpful to industry, whose problems are rarely confined to a single discipline.

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The picture I found was one in which the universities used industrial and private knowledge to nurture the future workforce and to advance science. The beneficiaries were not confined to the individual companies with whom universities worked but included the industry of the day and that of tomorrow. My conclusion is that the ability of universities to perform such an economic role depends very much on the way they define and maintain organizational boundaries, both externally and internally.

The Role of Administrators

In this connection, a key role in managing boundaries can be played by university administrators. Universities change slowly and do not usually tolerate unilateral decisions from administrators, but considerable room exists for administrators who understand academic values to negotiate sensibly and to modify and enforce rules that would enable academics to engage in outside activities more readily and easily. The norms and rules—about consulting or contract agreements with industry—all contributed to ensuring a certain porosity in a university's external organizational boundaries.

Likewise, the administrators are the ones who hold the key to making the boundaries between disciplines more permeable by providing space and seed money for interdisciplinary activities. Administrators could also provide organizational incentives and support for individual academics and for academic units to undertake collaborations, which in turn would help promote new fields selectively in both research and education.

These are not easy tasks. What appears to be important is for the administration to comprise not only academic-administrator hybrids (academics who turned into administrators) who can understand core academic values as well as the nature of disciplinary boundaries but also industry-administrator hybrids who bring in the values of outside worlds. It helps for the administration to have such "bilingual" and "trilingual" individuals who can understand and speak all three languages of academics, industrialists, and administrators. It is these hybrids who best manage the external and internal boundaries sensibly and effectively.

So is there a role to be played by the government? I argue that there is.

The Role of Governments

So is there a role to be played by the government? I argue that there is. In MIT, many of the important interdisciplinary centers were established as a result of government funding. Small research grants from industry can help hundreds of small interdisciplinary projects to flourish, but there is also a critical need for larger bulk funding to develop a cohesive scientific community. Bottom-up identification of scientific agenda through proposals from individual scientists is critical, but when these can be fostered in an environment of concentrated funding, research communities develop more readily. The National Institutes of Health and Departments of Energy and of Defence were all important sources of funding for basic science in the United States, motivated by their interest in applications; these agencies were pumping federal money into the basic sciences that they believed to be relevant fields. Federal funding provided another mechanism for American universities to push the frontiers of science in keeping with Pasteur's Quadrant.

Ultimately, universities must be the ones that define their economic role, but what governments and industry do can condition the institutions' activities in critical ways. It takes all three parties to help universities become relevant to the society. ■