past half century. There is a recognition that for academic institutions to be effective they must be allowed freedom of inquiry.

Postsecondary education is more international than at any time since its origins in medieval Europe.

Higher Education and the Civil Society

Universities contribute to the cultural and political life of modern society. They are not only the source of expertise on everything from genetic engineering to classical Greek, but are also the place where controversial issues are debated in an atmosphere of inquiry. Universities are among the few places in modern society where objective analysis takes place. It is not surprising that so many respected experts hold appointments in universities. Academic institutions are central to a civil society, and have, under sometimes difficult circumstances, been able to maintain their independence.

Academic institutions are not perfect, yet they have been remarkably successful during a half century of challenges. Their much criticized conservatism has permitted them to maintain their core values–autonomy, commitment to research and teaching without intellectual restrictions, and the conviction that ideas are important. At the same time, they have adapted to new circumstances. Differentiated academic systems have joined the elite universities, the curriculum has been broadened. Back in the 1960s, British scholar Sir Eric Ashby characterized the United States academic system as "any person, any study." At the beginning of the 21st century, much of the world has joined the United States in offering academic diversity to large numbers. This is a considerable accomplishment. ■

Global On-line Learning: Hope or Hype?

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As of fall 1999, less than 7 percent of the world's adult population was estimated to be connected to the Internet. About 50 percent in the United States and Canada and 20 percent in Europe were on-line, while 2 percent or less were estimated to be on-line in Latin America, Asia, the Middle East, and Africa.

Writing anything about information technology and distance learning these days is at risk of being outdated before anyone can read it, and no doubt the on-line population has already surpassed the above estimates. (The numbers of people on-line by region are available from Lua, Ltd., Dublin [http://www,nua.ie/surveys/how_many_online/index.html].) But they remind us that the technological infrastructure that some of us take for granted is just not there for much of the world. Within the United States, the Internet revolution seems to be creating a "digital divide" between information haves and have-nots, which is liable to worsen disparities between rich and poor in our society. On an international level, the digital divide may be more like a digital chasm, leaving Third World countries and regions even further behind in the global economy.

Cisco Systems CEO John Chambers has identified education as "the next big killer application for the Internet" (quoted in Thomas L. Friedman, "Next It's Education," *New York Times*, November 17, 1999). However, sorting out the hype from the reality in today's surging market for the electronic delivery of education is a challenge. The language used today to promote technology-delivered instruction—convenient, self-paced, individualized and interactive, faster and cheaper, flexible as to time and place—echoes that of a string of fads and movements in the United States throughout the 20th century. Thomas Edison speculated early in the century that motion pictures would replace textbooks as the principal medium of instruction. The radio revolution sparked a drive to hook up rural areas to state universities and allow course taking over airwaves. Forty years ago many heralded instructional television as the salvation of the American classroom. Video, satellite, and cable communications followed.

In each case technology enhanced and expanded learning opportunities for people who might not otherwise have had them. But history suggests that the impact of cutting-edge technologies consistently fell far short of the claims made by their proponents.

Now the sensational new phenomenon is on-line learning. The "virtual university" has arrived, and management pundit Peter Drucker has predicted that the residential university campus will be defunct within 30 years. A more likely scenario is that we will spend the next 30 years debating and experimenting with various hybrids of traditional, face-to-face, and technology-mediated learn-

ing. The trial-and-error process is already underway in the United States and at colleges and universities around the world.

Several powerful forces are fueling a global market for distance learning. The first is exploding demand. Human intellectual capital is the acknowledged coin of the realm in the increasingly globalized economy. Worldwide demand for education and training will continue to grow on into the new millennium.

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Demographic pressures are relentless. Half the world's population is under 20 years of age, and the population of developing countries and regions—the parts of the world in greatest need of human capital investment—tend to be even younger. The quest for new, better, and more cost-effective means of delivering education and training will intensify worldwide.

There is also the lure of profit. Venture capital has discovered distance education. It is now big business. Wall Street is betting huge sums on the convergence of education and the Internet. First came e-commerce; now there's e-learning.

Finally, the speed of innovation itself is fueling the market. Partly *because* of the amount of money being poured into information technology, the pace of change is accelerating. Previous technological breakthroughs made the world smaller, but the World Wide Web shatters barriers of time and space in ways unimagined only a few years ago. Its global reach and speed have created a sense of boundless exuberance and possibility for the future that sustains and expands the market. (Perhaps the hype *is* the reality, after all?)

Yet the visionaries and marketers of on-line learning sometimes gloss over major complexities, including barriers of technological capacity and literacy, as well as culture, language, and learning styles. In our spring 1999 report, *The Virtual University and Educational Opportunity*, Scott Swail and I raised a number of questions about the virtual university, including issues of quality assurance, cost, and equity (available on-line at <www.collegeboard.org>. Writing primarily in a U.S. context, we focused especially on who benefits, concluding that the virtual campus may widen opportunities for some, but not generally for those at the low end of the economic scale. Virtual space is infinite, but it does not promise universality or equity, nor is it appropriate for many students whose experience with technology is limited—and who might benefit far more from traditional delivery systems.

The U.S. Department of Commerce survey, "Falling Through the Net," demonstrates that computer ownership and Internet access are highly stratified by socioeconomic status (available on-line at <www.ntia.doc.gov>). In fact, the latest data show that, over the past year alone, gaps in Internet access have actually widened between the highest and lowest income groups and between whites and minorities.

Some argue that the digital divide is a passing thing; consumer prices for computer hardware, software, and on-line access are becoming more affordable all the time. Soon, it is said, a digital convergence will allow the packaging of communications technologies (video, voice, text or data) into one widely accessible unit, perhaps by way of the most ubiquitous appliance (in American households)—the television set. My guess is that it will take much longer than predicted to combine all these technologies into one inexpensive, reliable unit.

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The challenge is how to level the playing field so that the technology revolution opens doors to all students. There are no easy answers, but we do know that the marketplace by itself will not ensure equal access to technology. Government must play a part through industry incentives and safety-net programs to narrow the digital divide. Internationally, the issues of technological access lie much deeper. The vision of packaging courses with name instructors, beaming them over the Internet and mass-marketing them around the world is a powerful lure to investors and postsecondary providers as well as to countries trying to reach widely dispersed populations. But it hardly seems a realistic scenario in places where a radio is a luxury and telephone and electrical service unreliable. For much of the world, the promise of modern distance learning can only be realized after massive investments in communications infrastructure.

The Internet has great power and potential for good, which we must harness to the cause of educational opportunity. We must not let information technology become a new engine of global inequality. ■