We are living in historic, extraordinary times. Even taking into account the global economic downturn, the fact remains that never before has the world been so prosperous, never before have so many people lived such long and healthy lives, never before have we witnessed such dazzling technology, and never before have we reached, on average, such advanced levels of education. And yet never before have so many people lived in such poverty, never before have so many died from preventable diseases, never before has the planet itself been so threatened, and never before have so many people needed education.
Indeed, I would argue that it is education that threads all these factors together: education fuels sustainable development and a reliable way out of poverty; education is fundamental to working democracies and enlightened citizenship; education promotes social justice and an understanding that is essential to the peace and harmony—and even the continued life—of our species on this planet. Through education and the institutions of higher education—that is, colleges and universities—new and innovative ways are being found to meet not only the needs of the 21st century but also the rights of people to be educated. We have unlocked formidable new capabilities, and if we pay attention, we can solve many of the problems that confront us. But to do so, education and universities will need to reach many, many more people than hitherto and will need to be relevant to our times.

The questions to be asked are whether innovation is being embraced quickly enough, whether we have reached a scale necessary to the task, whether technology can help us, whether we can bring more hands to the wheel, and whether we are managing and leading in appropriate ways.

**Technology**

Technology has fueled some of this change while at the same time the scale and reach of technological change itself is startling. Jack H. Schuster and Martin J. Finkelstein have argued that technology and the changes it has unleashed strike right at the heart of what higher education does and how academics conduct their affairs: “The foundations of the economy are shifting structurally, that is, how the economy is organised, and its functional ‘rules’ are changing radically. Moreover, at the core of this dimension of changes are precisely those economic arrangements related to the collection, dissemination, and management of information and knowledge: historically higher education’s core social functions.” Stirring stuff, this prompts a close examination of what the university experience should be and what scholarship itself means in this day and age.

And technology has also been marvellously enabling of widening participation in education. Technology

- enables us to communicate with more people than at any previous time in history;
- enables—by the convergence of different modalities—learning anytime, anywhere, anyhow;
- facilitates personalization, one of the major trends of our time;
- promotes openness in previously unimagined ways (open source, open content, open educational resources), which in turn promote sharing (sharing our knowledge, our experiences, our commonwealth);
- promotes participation in content production, knowledge production, and news production, since almost anybody can be a broadcaster and almost anybody can be a publisher, with voices, opinions, and views from all over the world accommodated in ways not seen before; and
- enables collaboration at scale at almost zero cost in a way never before possible.

It is not just the possibilities of sharing and collaborating in the best traditions of scholarship that are remarkable; the creation of an amazing gift culture and the building of a new kind of economy are enriching us all. We can harness many minds from many places and cultures and disciplines to focus on the complex and difficult problems of today’s world. The sheer momentum of these changes has enormous power to affect higher education as we know it—and to change it for the better.

However, many of these developments (certainly those in the open educational resources domain) are happening mostly among universities in the Northern Hemisphere. Although the scholarship relating to science might not
be dominated by a particular worldview (and even that could be contested), that relating to the humanities and social sciences is seriously deficient of material that would be recognizable and embraced by people whose cultures and traditions are very different from those in the Northern Hemisphere. And of course language issues compound this challenge. If university leaders around the world do not recognize the importance of changing the present dominance, it is difficult to imagine who will—and this represents both a responsibility and an opportunity.

Demographics
Another challenging trend is sheer demographics: despite the enormous increase in higher education provision, we are still not doing well enough in terms of addressing the number of people who need education. Clearly, building the vast infrastructure required by traditional bricks-and-mortar colleges and universities to meet the demand is simply not a viable proposition, even if we could staff such an infrastructure. Even in reasonably rich countries, the governments, policy-makers, donor bodies, and public sectors have come to recognize that there are other models for higher education—models that can and do run in parallel with the traditional, conventional, public-sector higher education system. The blurring of public/private boundaries, the blurring of distance/residential learning, and the blurring of full-time/part-time study are all clear manifestations of the dramatic changes in higher education provision that have taken place in the last few decades.

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Private-Sector Competition
Apart from technology-enabled change, the blurring of public/private boundaries has been perhaps one of the most dramatic changes in higher education over the last decade. According to a “Policy Commentary” published by Universities UK in 2008, more than one in three students globally now study in the private sector.2 It is of course the scale of demand for education that has attracted the private sector to the market and, in the process, promoted intense competition. In my opinion, this is not a bad thing. It brings more hands to the task. Indeed, some countries—for example, Malaysia and Vietnam—have strategies that even promote private-sector education in order to meet the need. It has led to another dramatic demonstration of the competitive forces, and that is the “unbundling,” or disaggregation, of educational activities and processes. This has changed the landscape in ways that few of us could have dreamed about.

Think about the value chain that makes up the business of the university—from marketing to content production, from tutoring and other forms of student support to assessment. New (mostly private-sector) providers are emerging to target one or more of these specific activities and processes. This changes our current costing and pricing assumptions; in fact, it changes the whole business model. In the process, it compels university leaders to ask themselves: who can or must undertake each of their activities, and at what cost?

Consequences
What consequences do these emerging trends in higher education hold for universities? The new dynamics in higher education require a fundamental shift in the way in which institutions conduct their affairs—from leadership and strategic thinking to management and fundamental operations. Changes demand action in four areas of activity: research and scholarship; teaching and learning; community engagement; and management and investment.

Research and Scholarship
At the core of the university is research and scholarship, and scholarship itself—in all its manifestations—is being inexorably altered, even revolutionized. Vast digital assets (of libraries, museums, and archives) are being created; combined with the current computing power, they make it possible to ask questions that were not capable of being researched before. What scholars (from undergraduate students to professors) today need to know in order to achieve their goals is dramatically different from the requirements of the past. In its 2009 edition, The Horizon Report made some sharp observations about an insufficient number of academics paying attention to the upgrading of their skills in order to take advantage of the potential for their research and for the design of the educational process.3 Numerous research opportunities are unfolding: into
pedagogy; into the database rendered visible by digitization; into entirely new models of learning and scholarship. In some disciplines, research is being conducted in whole new ways, with tens of thousands of researchers addressing questions posted on the web by private-sector organizations.

In her excellent book Scholarship in a Digital Age, Christine Borgman states: “Today’s initiatives in cyberinfrastructure, e-Science, e-Social Science, e-Humanities, e-Research, and e-Learning emerged from a tumultuous period in scholarly communication in which technological advances converged with economic and institutional restructuring. Every stage in the life cycle of a research project now can be facilitated—or complicated—by information technologies. Scholars in the developed world have 24/7 access to the literature of their field, a growing amount of research data, and sophisticated research tools and services. They can collaborate with other individuals and teams around the world, forming virtual organizations. Data have become an important form of research capital, enabling new questions to be asked by leveraging extant resources. With the mass digitization of books now under way, previously unforeseen possibilities arise to compare literary themes, extract details of events, improve machine translation, and compile indexes and directories. Text and data mining promise everything from drug discovery to cultural enlightenment.”

Borgman makes a case for more work on the integration, policies, and practices that form this infrastructure, and indeed we need to pay attention nationally to the state of our cyberinfrastructure and internationally to the disabling inequalities in the speed and cost of Internet access in many parts of the developing world. But the quote I have selected goes to the heart of why academics (and indeed other professionals) in this day and age need to engage with the research questions. Never before have we unleashed—over such a short space of time—quite so many research questions. Research strategy and research organization need to be dramatically altered.

Teaching and Learning
Teaching and learning processes and content production are also changing, being reformed to harness the power of the new technologies and to take advantage of the opportunities in the open educational resources (OER) movement. And it is not just the possibility of sharing resources with different people in different parts of the world that the new technologies and the OER movement offer. Students now have the opportunity to register for courses at universities all over the world, and staff now have the opportunity to contribute to courses offered beyond the borders of a particular university or country. Such opportunities should be actively encouraged—especially in these economic times, when we need to find more optimal outcomes balanced with financial necessities. It may well be more sensible, for example, to accredit particular courses offered elsewhere rather than to provide them in-house.

In this new age, we have to ask ourselves some serious questions about what it is we are trying to teach our students. Don Tapscott, in his book Grown Up Digital, suggests several shifts in the way we approach instructional design. I will highlight four:

- **From instruction to discovery**: What you know matters less than how you can navigate and discover and what you can do with what you discover.
- **From individual to collaborative learning**: Apart from what we are learning about the new social networks of this digital age, sound research demonstrates that collaborative learning is more effective than individual learning in increasing academic performance. In the process, we learn more about each other, more about people in other parts of the world, and more about other cultures and other worldviews.
- **From broadcast to interactive learning**: We knew that the one-size-fits-all model was not ideal, but it was the best we could do with the resources we had. We are no longer limited in that way, and we can stretch ourselves to different learning models and can encourage different kinds of intelligences.
- **From teacher-centric to student-centric**: The teacher now becomes a “guide on the side” rather than a “sage on the stage.”

These shifts are radically changing the academic’s landscape. As Schuster and Finkelstein have noted, institutions can share staff in many low-demand fields. Technology has weakened “the role of the individual faculty member as ‘gate-keeper’ of knowledge (the ‘best’ content...
Academics are navigators through the wealth of resources. The quality of the selected content and the quality of the learning experience and its outcome are consequences of the intervention, not the withdrawal, of the guiding hand of the teacher.

authorized by disciplinary associations and/or authored by renowned scholars is increasingly available directly on the Web unmediated by local faculty, and institutions anywhere in the world can offer courses taught by highly regarded faculty members with whom they have contracted. IT permits—indeed, greatly accelerates—the ‘unbundling’ of traditional faculty functions, especially the separation of content generation from presentation/interaction with learners, allowing for ‘division of labor’ and specialization in the instructional function. It also, of course, accelerates the trend toward teaching-only functions in the academic role.

Yet though much has been made of the fact that the role of the academic in producing content is being vastly reduced, I think we need to be careful about the definition of content. Libraries have been filled with books for hundreds of years, and nobody suggested that academics were no longer necessary in the dissemination of knowledge and, in particular, in the design and moderation of the learning experience. Academics are navigators through the wealth of resources. The term navigator is an old one in education circles, but it now has new purchase. The quality of the selected content and the quality of the learning experience and its outcome are consequences of the intervention, not the withdrawal, of the guiding hand of the teacher.

Clearly, the design of the learning experience has grown much more complicated—and much more interesting. Learners now have the capacity to be “co-producers and not just consumers of learning content,” and this too impinges on the role of the teacher. Much imagination is required to harness the possibilities—but also much knowledge. This is no longer knowledge that can safely be delegated to a specialist in another department. Doing so, in a digital age, is untenable. Although it is true that one member of a department or program may well know much more in the field of technology, an academic who is not technologically engaged will not be able to fully appreciate the possibilities, and the learning design / learning experience will be very much the poorer for it.

Finally, instructional design will also include how we organize student support. New technologies and the social networks they have spawned can be harnessed to enhance student support with peer-to-peer mentoring and collaborative learning models. We need to work out how to deal with the shifting boundaries between formal and informal learning possibilities where they happen to be physically located, mobilizing (and I use the language of war and campaigns advisedly) in effect a giant volunteering effort. Indeed, not all of the activity need be volunteering only. There is quite a well-established activity called “service learning,” in which academics have found ways of giving credit to students for their service activities. This would encourage students and accelerate their propensity to join in either physically—in some giant kind of Peace Corps—or virtually, in the ways I have suggested.

This is not as far-fetched as one might imagine. Already we have examples of young people using the Internet to
devise innovative solutions to global challenges—and using technology to share ideas and mobilize resources to create a new kind of society for the 21st century:

- HealthCare Volunteer (http://www.healthcarevolunteer.com/) is currently the largest listing of health-related volunteering opportunities in the world, accessed by thousands of volunteers from more than 118 countries.
- Syinc (http://www.syinc.org/) connects young Singaporeans to take action on a wide range of social issues, from HIV/AIDS to social entrepreneurship.

There is certainly an acceptance—encouraged by the last UNESCO World Conference on Higher Education in 2009—that higher education institutions can play a key role in what has come to be known as “civic engagement.” We can all learn from some impressive examples of “service learning” and “campus compacts.” There is also a resurgence in universities’ commitment to civic engagement—for example, the Talloires Network (http://www.tufts.edu/talloiresnetwork). What I am suggesting here takes the notion to a whole new level, playing out on both the local and the international stage, both in physical spaces and in cyberspace. I believe we can expect that our universities, wherever they may be, will recognize the challenges of this century and take the lead in addressing them.

Management and Investment

Finally, management and investment are actions that will be located differently depending on the arrangements in place in various countries. But globally, the current financial circumstances present some tough challenges to the management of universities. Competitive forces make short work of poor performance management. Those universities that are better managed will survive in tough times, and those that are not well managed will falter. Although the latter may not collapse, their quality will deteriorate.

Highly competitive environments bring with them all the demands and business practices of that environment. Competition also demands a massive reorientation of organizational culture. The following are some of the new management practices in higher education, ones that would not have been found even ten years ago:

- Much more emphasis on strategic planning (and even the tools of scenario-based
recognize the importance of partnerships and are ever more ambitious in the partnerships they pursue. Working in partnership is not as easy as it sounds. Partnership management (especially in the world of quality assurance) can be a key skill for success.

The practices described above require at least some of the competencies that make organizations much more reflective and analytical—and much more resilient for the volatile times of today. In the process, they also bring about necessary culture change.

The trends and environment described also require an emphasis on investment—of time and money—with a concomitant disinvestment in activities that do not fit with the general strategic direction:

- Investment in staff development in e-learning and other distance education initiatives, with “staff development” activities including everybody from the formal hierarchies of presidents and vice presidents to deans and professors. All are going to have to up their game in understanding the possibilities of this digital age.
- Investment in the staff base, making it much more diverse in terms of gender, ethnicity, and age
- Investment in widening participation, with access being improved for low-skill members of the population and with learning from successful e-learning and open- and distance-education successes
- Investment in cyberinfrastructure. In a world where access to information is crucial, a dysfunctional or elderly infrastructure in cyberspace will strike a death knell for maintaining a leading edge in a global context. Less-developed economies will have the advantage of being able to leapfrog the technologies, but what they cannot afford to do is ignore the infrastructural implications. It would be a grave error to use the excuse of these economic times to back-pedal on IT.
- Investment in quality assurance systems, which are crucial if mobility and credit transfer are to gather pace—not least in the field of e-learning
- Investment in enhancing the permeability of the “boundaries,” making governance and strategic decisions open to outside influences
- Investment in collaborative activity, working with industry for research, with universities across the world, with employers for curricula and learning opportunities—sharing research and other facilities and ensuring that students learn how to work collaboratively
- Investment in OER, particularly to contextualize material that is developed elsewhere and needs to be made fit for local purposes
- Investment in incentives that encourage the way forward, especially in areas such as staff promotion criteria
- Investment in both productivity gains and diversification of income. Currently, we have an expensive business model in which each university devises its own version of relatively straightforward material. But the high-level and expensive staff resources that go toward presenting different courses to different students in various parts of the world are difficult to justify in the face of the pressing need to reduce costs and reach more people. The OER movement is very significant in this respect: it has the capacity for reducing the cost of education while at the same time diversifying the provision—especially in higher education. Productivity issues also question the time allocated to obtaining a degree and the time set aside for extended vacation periods.

In summary, higher education institutions and their leadership need to become much more flexible in how education is delivered, much more focused on what type of curriculum is relevant, much more industry- and employer-engaged, and much more
In the 21st century, the knowledge that our actions may well be central to solving many of the problems that lie ahead for our world in the 21st century. The latter will, perforce, remain the privilege of the few. But our science, our technology, our imagination, and our ingenuity have brought us to a situation where we have alternatives. Thomas Homer-Dixon, in his book *The Upside of Down*, remarks on how wonderful it is that even though we are living through perilous times, we have invented this dazzling technology—technology that enables planet-wide collaboration and the application of many minds to difficult issues. In a 2009 *Wired* article, Kevin Kelly calls this the “new socialism.”

Whatever you call it, universities have a unique responsibility. But they also have a fabulous opportunity. With an unlimited demand for our continually refined educational opportunities now rendered possible—doing so in the knowledge that our actions may well be central to solving many of the problems that lie ahead for our world in the 21st century. The dance with history cannot be a slow and stately one; it needs to gather pace!

Notes

We must exploit the potential of the new technologies and embrace the educational opportunities now rendered possible—doing so in the knowledge that our actions may well be central to solving many of the problems that lie ahead for our world in the 21st century.