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The New Cybersivityⁱ

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Abstract

In the broadband world, there will be no such thing as distance education. With broadband, nobody need be distant from very much at all anymore. Just about anything you could once do only on a university campus, will soon be available to you anywhere anytime. Of course there will always be some educational activities, such as clinical placements and medical procedures, that require students to be physically present somewhere at some time but the range of these activities will become narrower as the bandwidth available to us becomes broader. Welcome to the 'Cybersivity'. This paper by Professor James Barber, Vice Chancellor of The University of New En gland, Australia, explores his ideas about the 'Cybersivity'.



Everyone reading this paper has been brought up with the idea that a university is a place. You “go to” university after completing high school in order to further your studies. The nation has invested, and continues to invest, billions of dollars in these places - classrooms, laboratories, libraries, student accommodation and buildings of various kinds under the assumption that it is necessary to duplicate all of this infrastructure around the country if Australian students are to receive the best education possible.

My own view is that much of this capital expenditure is unnecessary and that future Vice-Chancellors will not thank their forebears for lumbering their balance sheets with under-utilized lecture theatres and burdensome depreciation costs. Having attracted considerable opprobrium in the past for making this claim, please allow me quickly to qualify it. I am NOT saying that all university campuses are a thing of the past. There will always be demand, mainly from school leavers, for a campus to “go to” but the traditional form of on-campus study will be only one of the educational options on offer and probably not the dominant one in future. Moreover, the form that most of these campuses take will be very different from the autonomous, self-contained model that most of us currently take for granted. Campuses of the future will be widely dispersed nodes of activity connected by broadband and distributed all over the world.

If I am even half right about these predictions, the implications for Australian universities are very significant indeed. There are serious threats ahead of us but there are also opportunities which, if grasped, could more than recover Australia’s loss of market share in international students.

In support of these propositions, I begin by briefly identifying some of the more important trends in cyberspace that are shaping the future of higher education before identifying the threats and opportunities for Australian universities that lie ahead.

Advances in Online Learning

Time was when studying off-campus or, as we used to say, studying by distance, meant receiving learning materials, originally through the mail and more recently via the internet. The material would be opened or downloaded and you would labour away pretty much in isolation, except for the occasional intensive school or, after Learning Management Systems were invented, with the benefit of some rather stilted imitation of a face-to-face discussion group.

In the broadband world, there will be no such thing as distance education. With broadband, nobody need be distant from very much at all anymore. Just about anything you could once do only on a university campus, will soon be available to you anywhere anytime. Of course there will always be some educational activities, such as clinical placements and medical procedures, that require students to be physically present somewhere at some time but the range of these activities will become narrower as the bandwidth available to us becomes broader. At this university, for example, certain aspects of emergency medicine are now taught by specialists from the medical school at the University of California (Irvine). Staff and students from UNE



connect via telepresence technology to UCI's robotic simulation ward where UNE students direct UCI's ward staff to administer treatment in response to simulated medical emergencies. The responses of the robotic patient are observed by the students and vital signs are displayed and downloaded onto laptops in Armidale. Meanwhile, staff and students at both universities work together to adjust interventions and debrief outcomes. Similarly, academic staff in chemistry and physics are designing practical classes whereby students can manipulate scientific equipment remotely and download their results onto PCs or i-Pads. With the aid of video cameras mounted around the laboratories, students watch the equipment come to life as they issue instructions from anywhere they can obtain a broadband internet connection.

In place of the traditional campus, then, what we are witnessing is the emergence of learning networks that are physically dispersed around the country and around the world. Unlike the traditional campus, learning nodes connected by high speed broadband do not have to be self-sufficient but can share libraries, infrastructure and academic staff to create efficiencies and ensure that students within the consortia have access to the best and brightest scholars from all over the world.

This movement into cyberspace will accelerate along with advances in hardware and software that are blending the virtual and the material. Virtual environments are being created that mimic the real world and provide us with a visceral sense of immersion. Some have even argued that the distinction between virtual and material will disappear altogether. This is because all surfaces including the skin are potential interface points enabling users to issue and receive computer commands using their own body parts as touchpads.

Advances in virtual reality like this are undermining the notion that students need to assemble in one place at one time in order to be informed, engaged or even entertained. As a result, the question for universities could soon become: What is the role of bricks and mortar in a world where students can now live and move, interact and experiment in the network cloud? Soon there will be no compelling reason to think of universities as *places* at all but if they do persist in that form, it will not be because they provide the best or most efficient means of educating people but because some individuals will always want to "go to university" somewhere to hang out with their friends.

The recent explosion in mobile technology is compounding the problem for traditional campuses. Consider some of the latest dizzying statistics:

- There are now 3 billion more smartphones in the world than there are people;
- On current estimates, 1 billion smartphones will be sold in 2014 alone, which is twice the number of PCs that will be sold in that year;
- By 2016 there will be around 10 billion mobile internet devices globally, with 50 times the amount of smartphone traffic in that year than there is today.
- Ericsson estimates that by 2015, 80% of people accessing the internet will be doing so from mobile devices. (In Japan today, over 75% of internet users already use a



mobile device to connect, and in the U.S., 2/3 of Americans connect to the web via a smartphone, tablet or other portable device.)

- Users are now downloading 1 billion android apps every month and over 18 billion apps have so far been downloaded in the Apple marketplace. A recent study by Distimo predicts that by 2016, every person in the world will have an average of 7 mobile apps each.
- Ambient Insight has forecast the compound annual growth rate for worldwide mobile learning products and services at 26.3% for the period 2011-2016, with revenues rising from \$US212.38 million in 2011 to \$US682.13 million by 2016.

All these mobile devices are now connecting users with a flood of free courseware that is pouring onto the internet. The idea of open courseware got going in 2001 when MIT started uploading its course materials to the net. Within 12 months MIT had 50 of its courses freely available and since then it has distributed around two-and-a-half thousand of its courses and is receiving close to 20 million site visits every year. MIT estimates that in the 10 or so years since it opened up its courseware, it has reached around 125 million people worldwide. This combination of internet-enabled mobile devices and open courseware quite literally places higher education into the hands of people who would previously have been too poor, marginalized, or remote to participate.

There are numerous other sources of free educational resources, of course, including iTunes U which amassed more than 350,000 downloadable files in its first five years of operation. And then there is Wikipedia which was launched in the same year as MIT's open courseware initiative and now contains more than 15 million articles only 20% of which are in English and all of which are continually updated and corrected by subscribers themselves. The enormous appeal of Wikipedia demonstrates another profound shift in the way that universities of the future will teach – the movement away from *acquisition* of knowledge as the fundamental purpose of education to incorporate its *creation* and *re-creation* by students themselves. This is unfamiliar territory for academics of my generation who were raised on the idea that only professional educators are qualified to teach. But Facebook, Wikipedia and blogging have radically undermined this assumption because all consist of information that is created by, not just communicated to, participants. The acts of teaching and learning are blurring as a consequence. Schooled on Google and Wikipedia, students today want to inquire, not rely on the professor. They want a conversation, not a lecture.

The most recent development in open courseware is of course the MOOC, which is an acronym for 'Massive Open Online Course' in which huge numbers of students enroll in online courses, network with one another online and undertake online quizzes and self-directed learning. The term MOOC was first coined in 2008 but entered common parlance only towards the end of 2011 when Stanford University professor, Sebastian Thrun offered to enroll students in his online robotics course free of charge and 160,000 people took up the offer. Buoyed by the success of his experiment, Thrun and his colleagues launched a free online university called



[Udacity](#) in February of 2012 and within the first three months of operation had achieved over 100,000 enrolments.

Six days after Udacity, coursera.org was launched by a star-studded line-up of U.S. universities including the University of Pennsylvania, the University of Michigan, and Princeton and Stanford Universities. These universities offer their courseware free of charge online and there is facility for students to interact with one another and take quizzes to monitor their progress. At the time of writing, coursera had amassed more than 2.5 million enrolments.

Not to be outdone, two weeks after coursera was launched, MIT and Harvard University joined forces to launch [edX](#) and on 1st August 2012, arguably the world's finest public university UC (Berkeley) threw in its lot with edX. Like other MOOC providers, edX also offers free online courseware to students around the world and its stated goal is to exceed one-billion student enrolments in the next decade.

As mobile technology and open courseware advance, the big winners will be what we euphemistically call 'non-traditional' students: the poor, the isolated, those with disabilities and people from developing countries. This is because the cost of mobile internet-enabled devices is in rapid decline and their power needs are so minimal that even people off the grid now have access to the internet. This combination of mobile technology and open courseware means that there should be no reason why higher education cannot soon become a universal human right.

Universities of the Future

As I indicated earlier, it is difficult to envisage the complete demise of traditional university campuses but it is highly likely that there will be far fewer of them in the years to come. Those traditional universities that do persist will most likely be the most prestigious and best resourced of the current crop. The rest of us will need to find ways of competing or collaborating with online alternatives to traditional universities and, as recent history demonstrates, the most successful of these alternatives are likely to come from some of the world's very finest universities searching for ways of expanding their reach globally.

As I see it, the options for most Australian universities are limited. Firstly, I do not see how our existing business model of self-sufficient, bricks-and-mortar establishments can be sustained in the long-term. One option I can see is for the creation of universities without walls – virtual institutions that operate entirely in cyberspace by distributing online courseware and providing academic services such as tutoring and online examinations. Indeed, institutions just like this are already proliferating, just not here in Australia. Another, less apocalyptic option for Australian universities is a hybrid strategy. Essentially, this is to radiate out from the traditional university base using broadband to connect to an expanding network of high-technology study centres and to partner universities around the world. This strategy should enable universities to enhance the quality of their academic offerings and grow Australia's market share without incurring the crippling capital costs of branch campuses.



While the speed and magnitude of the change confronting Australian universities today is unsettling, there are very significant opportunities for us. The most fundamental characteristic of online education in the world of high speed broadband is that it removes distance as an obstacle to participation by either students or teachers. This means that there should be no reason why an education provider based anywhere in the nation cannot succeed and given the massive scale of the international market for higher education, those universities that do succeed could become a magnet for academics and service industries from all over the world even if very few of their students attend those universities' campuses.

Conclusion

I need to conclude with a warning. Up to this point, I have written as if universities will continue to be the main providers of higher education and gatekeepers to the professions but it would be a mistake for universities to take this privileged position for granted in the post-broadband world. In her confronting introduction to a U.S. Department of Education (2006) report on the future of higher education, Education Secretary Margaret Spellings wrote that:

“What we have learned over the last year makes clear that American higher education has become what, in the business world, would be called a mature enterprise: increasingly risk-averse, at times self-satisfied, and unduly expensive. It is an enterprise that has yet to address the fundamental issues of how academic programs and institutions must be transformed to serve the changing educational needs of a knowledge economy....History is littered with examples of industries that, at their peril, failed to respond – or even to notice – changes in the world around them, from railroads to steel manufacturers. Without serious self-examination and reform, institutions of higher education risk falling into the same trap, seeing their market share substantially reduced and their services increasingly characterized by obsolescence” (p.xii).

In their research on the implementation of new ideas, Harvard professors, Clayton Christensen and Henry Eyring (2011), found that disruptive innovations rarely come out of established enterprises. Even when a truly new way of doing things does occur to someone in a traditional organization, established systems and standards take over and the idea is usually quashed. A new idea that is not dismissed entirely is almost inevitably modified to fit the way things are traditionally done, losing its innovation impact in the process. Let's hope Christensen and Eyring are wrong. Universities must surely be among the very finest institutions that society has created. Let's hope that at least some of Australia's universities embrace the new technology and find a way to compete in cyberspace.

ⁱ This paper is an edited version of a keynote address delivered at the 2013 Building Regional Australia Conference hosted by the Regional Australia Foundation in Armidale NSW.

References

Christensen, C.M & Eyring, H.J. (2011) The Innovative University: Changing the DNA of Higher Education from the Inside Out. Jossey-Bass, San Francisco, CA



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U.S. Department of Education (2006) A Test of Leadership. Charting the Future of U.S. Higher Education.
Washington, DC.