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Virtual higher education: some Commonwealth experience
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A little personal history first. In 1971, at the invitation of la Commission française pour l'unesco, I took part in a colloque at the Centre national d'études spatiales on the use of satellites for education. We - or some in the colloque - were expecting them to revolutionise education. A few years later, instructional television, pioneered at the Ecole Normale St Cloud and further afield in Niger and Côte d'Ivoire, was going to bring that revolution. Or perhaps radio. We talked about that revolution and its costs and effects at the University of Dijon in 1978, again thanks to the commission, and to the World Bank. I was back in Paris in 1989 for UNESCO's Congrès international on *Education et informatique*; by now it was a newer set of technologies that would bring the revolution. I am grateful for these repeated promises of revolution: they bring me to France. But I have news: *la révolution n'aura pas lieu*.

In between these, and other, visits to France I have been working in international education with a particular interest in open and distance learning. On the basis of that experience I want to try to answer two questions. First, what is happening in virtual education, e-learning, and the use of technologies in higher education mainly in the Commonwealth? Second, what can we learn from the experience?

What is happening in the English-speaking universities?
As one of the functions of universities is to preserve and transmit culture to a new generation, they are necessarily, though not wholly, conservative institutions. Clark Kerr, head of the University of California, once pointed out that of 75 institutions founded before 1520 and still surviving with recognisably similar functions, 60 are universities. It is not therefore surprising that the major uses of information and communication technologies within universities are to support their conventional teaching and research. The internet is an adjunct to the library; academic staff put lecture notes on to websites rather than distributing handouts; email helps communication between teachers and students; web-based publication has begun to reshape academic publishing. But this is not to change the nature of teaching, or research. In a review of online learning the Observatory on Borderless Higher Education at the Association of Commonwealth Universities notes, from a recent American survey, that,

> while IT is indeed making important inroads into the classroom and study processes, to date the effects of this penetration seem to signal important enhancements in the convenience of postsecondary teaching and learning but not yet a 'learning revolution'. To go further, to have ICT fundamentally change norms of materials development, classroom delivery, conceptions of learning, study tasks and assessment is to challenge the very cultural fabric - much of it semi-conscious - of mainstream higher education worldwide.
>
> (Garrett and Jokivirta 2004: 15)

The English academic Alison Wolf makes the same point: 'Some are convinced that an IT-based revolution is around the corner, but across the world people are opening universities of a most familiar kind' (Wolf 2005). That sets the context: most of the teaching activities of my own university, lectures, tutorials, laboratory and library work, are for students on the campus and look surprisingly similar to those that were in place fifty years ago. Recent surveys of Commonwealth universities found that, for responding institutions, there was little or no 'online presence' in 81 per cent of programmes or courses in 2002 and 75 per cent in 2004 (Garrett and Verbik 2004: 2). At the same time, universities' main interest in using communication technology was to support conventional, on-campus, teaching. In 2004 'as in 2002, on-campus enhancement continued to be the dominant focus of almost all university online learning strategies (distance learning institutions aside), followed by a correlative desire to improve flexibility of delivery for students. Across all categories, enhancement of distance learning ranked considerably lower than enhancement of on-campus learning'(Garrett and Jokivirta 2004: 7).

We can usefully distinguish a range of different ways of using computer-based technologies in higher education. At the simplest, technologies like email, wordprocessing and internet searches ease regular academic work without radically changing it. Then the internet may provide a means of distributing teaching material. One Canadian study found that 'much of the effort to use the Web for teaching and learning has merely resulted in using the Internet based structure to deliver content by merely transforming traditional text to electronic text' (Hussain 2002: 178). In contrast, and at a much greater cost, the technologies have been used to provide resource-rich teaching, exploiting their advantages for display and interaction, for students both on and off-campus. An important contrast, with both economic and educational consequences, is between the use of the technologies to distribute material from their use for communication between tutor and student or among students.

This paper concentrates on the use of technologies for teaching beyond the campus, considering this range of applications and including both the distribution of materials and long-distance tutoring. Its starting point is that, when we talk about borderless education or virtual students or e-learning we are talking about something that is outside the mainstream, although both influenced by and influencing it. Where figures are available, for both industrialised and developing countries, somewhere between 5 and 15 per cent of university students are studying at a distance, some through print-based open and distance learning, some through e-learning. I am talking about this group, remembering all the time that they are a minority.

Beyond the mainstream of conventional higher education four sets of actors have been using information and communication technology in one way or another and so changing the practice of higher education.

Conventional universities
The first set of actors are the conventional universities. Partly in response to student demand they have begun to use the internet for internal communication and for contact with their students. Lecture notes have gone on to websites not as a result of grand university policy but of student expectation. At the same time, universities have seen the technologies as a way of recruiting and reaching out to new groups of students, both within and beyond national frontiers. They may have been influenced by on-campus developments. Once time, energy and money have gone into the development of computer-based materials for use on-campus it is natural to ask how far they could be used off campus. Australian and British universities have been particularly vigorous in recruiting online students internationally with an estimated 31,000 and 77,000 students respectively (Garrett and Verbik 2004: 7). In Britain at least, postgraduate rather than undergraduate studies dominate with universities finding niche markets. (The Open University is, in contrast the major player for general degree courses at bachelor's level.) The Wye campus of Imperial College, for example, with long-established and widely recognised courses in agricultural sciences, was a pioneer here. Sheffield university offer master's courses at a distance in Japanese studies, Sunderland computer studies, Staffordshire sustainable development and Cardiff palliative care - to take a few of many examples - all reflecting areas of particular expertise on-campus.

Open universities
Open universities, and dual-mode universities with major open-learning programmes like Deakin and Monash universities in Australia, are the second set of actors. They have seized on the new technologies as offering an alternative to print, radio and television on which they had previously relied, with the intention of expanding their student numbers and of working across frontiers. In 1999, for example, the University of Southern Queensland saw itself as 'a regional university with an international mission' with 15,000 off-campus students of whom nearly 3000 were studying abroad (CVCP 2000: 133). At the same time the open universities have been cautious in switching technologies. From the Open University in Britain to the Indira Gandhi National Open University in India, print is still the dominant mode of teaching. Where they have switched from print to the internet this has sometimes simply been for ease of distribution.

Corporate institutions
The third set of actors are described in one report as 'the new kids on the block': corporate, private-sector and for-profit institutions. Some international companies, like Ford and Microsoft have set up in-house training institutions, using e-learning, particularly where they have widespread workforces with similar needs. For-profit universities, like Phoenix in north America, are finding a market for internet-based courses. While in the late 1990s there were great hopes for student numbers and a rosy financial future these

faded in the dot-com crash: Phoenix has survived, others crashed with no immediate prospect of their flying again.

Partnerships

The ease with which technologies can move education, and the new division of labour brought by distance education have encouraged the fourth set of actors: partnerships of various kinds. When one group of people prepares teaching materials, another provides individual teaching and support, and perhaps a third offers accreditation, there may be good reasons for the different institutions to play each of these roles. E-learning lends itself to partnerships of an unfamiliar type for universities. At least within the anglophone tradition there is a long history of cooperation in research but little experience of cooperation in teaching. Partnerships to provide teaching have, however, been developed within countries and have taken various forms. To take one example, in England the non-profit National Extension College worked with Coca-Cola and with Bradford University to run a programme for young employees of the company. They worked for the company, which funded the scheme, four days a week, got teaching from the college, attended short courses at the university which also examined them and awarded the degree. At the end of four and a half years these worker students had both work experience and a qualification (Perraton 2004: 28-9). Other partnerships work across frontiers. With encouragement from the Commonwealth Scholarship Commission, several British universities have been working in partnership with universities in Africa and Asia to enable students to register for distance-learning programme in Britain but with local support being provided by the overseas university. The medium-term aim is to enable the overseas university to take over and run its own programme; an alternative is for the two universities to continue to work together with in a changed form of partnership. The University of Pretoria in South Africa, for example, hopes to be in a position to develop teaching materials in some areas of agricultural development that, through its partnership, will be available to Imperial College in London as well as to its own students.

Drivers

It is worth asking what has been driving this process. Conventional distance education, in both the industrialised and developing countries, has been seen as a way of widening access to education, responding to labour-market demands and national economies, and of containing educational costs.

> Within the university sector, e-learning seems to have been pushed by three groups. First, both open and dual-mode universities have seen e-learning as a new technology that may help them in their existing task of finding appropriate technologies for reaching off-campus learners. Second, and often in those same institutions, individuals have been keen to exploit a new way of teaching out of a personal interest in the technology. Third, universities have seen the new technologies as a way of expanding their recruitment at a time when they have felt the need to compete for students and for resources. In Australia, for example, federal funding for universities fell from 90 per cent of income in the early 1980s to below 54 per cent in 1997 with a consequent pressure to recruit international students and then to seek new ways of teaching them (CVCP 2000: 131). E-learning has been seen as a way of expanding student numbers while holding back costs.
>
> (Perraton 2004: 37-8)

It remains to be seen how far it can meet all those hopes.

What have we learned?

There is sufficient experience of open and distance learning, and of the application of new technologies to it, for us to draw some conclusions, and make some suggestions for future development and research. I see them in terms of practicalities, of economics, of regulation and of pedagogy and curriculum.

Practicalities

Perhaps we can learn more from failures than successes, even though it may be embarrassing to do so. There is a story, perhaps apocryphal, that after the collapse of educational television in Côte d'Ivoire, an honest appraisal of its failure was written but then collected in, taken off the shelves of those UNESCO staff fortunate enough to have received it. More happily the story of the British e-university is documented (Education and Skills Committee 2005). Briefly, in 2000 our secretary of state for education announced an 'e-university' with which Britain would lead the world and gave it £62 million (€93 million). Four years

later, with £50 million (€75 million) spent, it had recruited only 900 students against a target of 5000, and was closed down. Some £14.5 million (€21.75 million) had been spent on a teaching platform because it claimed, without any research, that none of those used by others in the field was suitable. Only 200 students used the platform and; when the collapsed university tried to sell it, purchasers wanted to be paid to take it away (*ibid*. 111). It was intended to work as a public-private partnership but failed to attract any private-sector funding. The parliamentary committee investigating its collapse was particularly critical of the £44,914 (€67,371) annual bonus paid to the chief executive as it was collapsing about his ears. Government blamed the failure mainly on poor marketing while the committee chairman commented that 'senior executives showed an extraordinary confidence in their ability to attract students'.

But better marketing alone would not have rescued the project and there are several other lessons to be learned. First, do not assume that there are large numbers of students, wanting to study in an unusual way. The e-university worked on the basis of what its senior staff, drawn from marketing and not education, believed to be the case without looking at existing evidence or research. Second, then, learn from the experience of existing universities. The planning documents for the e-university were drawn up by accountants not educators. The Open University, for example, might have been able to tell them, if asked, about demand for different kinds of courses, as could other universities teaching in two modes. Third, do not assume that public-private partnerships will be easy. Despite the allure of the government millions, and the possible glamour of the project, private companies were unconvinced that there were benefits for them. Fourth, get the costs and economics right.

The e-university was intended to be a partnership and it would also, therefore, have been sensible for them to look at the previous history of partnerships in this area. A colleague and I looked at the record of open learning partnerships for the English Department for Education and Employment a few years ago and drew up guidelines suggesting that effective partnerships tended to have five features:

> clear goals and a clear statement of purpose;
> significant roles for administrative and academic staff in all member institutions;
> a governance and funding structure that fits the purpose;
> complementary roles between the partners and benefits for all;
> a commitment of resources, possibly in kind, from all partners
>
> (Perraton and Hülsmann 1998; Perraton 2004: 31)

In a pithy summary the Canadian educator Ian Mugridge advised:

> 1. High-sounding rhetoric is a waste of time as is a vague desire to collaborate.
> 2. The smaller the initial group of participants, the greater the chance of success.
> 3. Objectives of collaboration have to be clearly defined and probably not too ambitious, at least at the outset.
> 4. There has to be something in it for every participant.
> 5. There must be people in every institution who want and are in a position to make it work.
>
> (cited in Daniel *et al.* 1986)

The modalities demand particular attention in partnerships

Economics

The e-university got more than the economics wrong but they demand attention. The economics of what we might call conventional open and distance learning are well understood and are based partly on the nature of part-time study and partly on capital-labour substitution. Part-time students, working at home, do not need campuses or student residences thus reducing capital and recurrent costs. By investing capital in learning materials, which replace much conventional teaching, and restricting the costs of tutorial support, open and distance learning systems can afford relatively high fixed capital costs for their teaching because they have low variable costs. As a result institutions with large numbers of students enrolled on their basic courses can afford an investment of £1 million (€1.5 million) or more to develop a course. Economies of scale become possible with distance education where costs per student tend to fall with increasing numbers; there are no such economies in conventional education where teacher numbers, and so costs, rise inexorably with

increasing numbers of students. But e-learning hits the economics with a double whammy. While, as we saw, some internet teaching merely puts printed text on to a web site, teaching that takes advantages of all the potential of computer-based techniques can cost far more to generate than older-style distance learning. One American study - whose findings are confirmed by others - compared the costs of developing a course in various different media, showing that as you moved from simply producing text to virtual reality the cost of development can rise more than fifty-fold, from $18,000 to $1,000,000. (See table 1.) With fixed costs rising so dramatically it is more difficult to recover the costs from student fees.

Table 1: Cost of developing a three unit internet course (1998 US$$)

Course outlines and assignments	6,000
Text	12,000
Text with reference material	18,000
Text with reference material and images	37,500
Audio and video	120,000
Simulations	250,000
Virtual reality	1,000,000

Source: Arizona Learning Systems quoted in Rumble 2001

But that is not all. With conventional distance education there are constraints on the cost of student support. Face-to-face support is offered for limited times and periods - perhaps a summer school, or a monthly tutorial session. Tutorial guidance tends to be provided through the marking of a limited number of student assignments. It is possible for the administrator to control the amount of face-to-face support and so limit these variable costs, which rise with the number of students. Once students have electronic access to their tutors, or pursue their studies through computer conferencing, there are no longer limits to student-tutor contact. If the tutor is paid per hour then the costs can rise unsustainably. If the tutor is paid per student, then the conscientious tutor is likely to be exploited by the institution. One experienced e-tutor made the point:

> The amount of time required for online teaching lessens as more experience is gained but it is never minimal. In particular, marking and giving feedback in writing is very time consuming but is one of the most important ways that a faculty member can contribute to an individual student's understanding of how well they are learning, what they are doing well, and what needs improvement. Fair remuneration for time spent is a concern for faculty members who work on contract with no benefits of job security.
>
> (Brindley *et al.* 2003: 154).

There is an inevitable risk that the variable costs of an open and distance learning system will rise, perhaps even to the level of a conventional institution. Thus, the effects of e-learning may be to increase not only the fixed cost of open and distance learning but also its variable costs so that any economic advantage it has over conventional education may disappear.

Pedagogy and curriculum

Getting the economics right depends in part on resolving questions of pedagogy and of developing conventions for computer-based teaching which are fair to the student, the tutor, and the university. Perhaps the best guidance here is what we have already learned from earlier forms of open and distance learning, and for the need to provide good materials, appropriate student support which may well involved some face-to-face contact and sound logistics. One Australian academic comments:

> Had the early designers and managers of online programs heeded the lessons painfully learned over decades of DE [distance education] theory and practice, much of the attendant disappointment and frustration with online programs - of students, teachers, administrators - could have been avoided. Early online programs seemed to exacerbate attrition, with some programs reporting up to 90 per cent drop out.
>
> (Ryan 2004: 125)

But there are some new issues worthy of research. One is about the practice of online teaching and its practicalities. It does seem, for example, that it is much more difficult to run a seminar, creating a community of learners, than in a conventional seminar, although computer conferencing formats make this possible in theory. Two examples. First, the Open University runs a predominantly online master's programme in distance education - using the methodology to teach about the methodology. The students are therefore a self-selected group sympathetic to this method of teaching and learning. And yet, in the first presentation of the course, only half of the students made any use of optional computer conferencing opportunities (personal communication). Second, and more anecdotally, in my own online teaching for Carl von Ossietzky university Oldenburg I have consistently found that teaching tends to fall away from being a joint, asynchronous, discussion involving the whole group of students into a set of individual two-way exchanges. (Synchronous conferencing is ruled out if students are in different time zones or simply need to study at different times of the day.) A challenge is to work out a good pedagogy for online teaching.

Then there is a big research area around the use and re-use of materials. Can we balance the desire to have an integrated, coherent, curriculum with the wish to re-use teaching materials in the interests of economy? Can learning objects really be transferred from one context, one course, to another? Has anyone done it on any significant scale? Then, again, once teaching materials are available on the internet, as, for example, through the Massachusetts Institute of Technology initiative, what is the role of the distant university whose students have access to those materials but want to integrate them into their own learning?

This in turn bears on the curricular question. At least in Britain, for off-campus study, we have a range of broad, general, degrees at bachelor's level from the Open University, a plethora of master's level courses in business studies, and growing number in computer studies, and a disparate variety of highly specialist master's courses. Given the high cost of developing materials there are pressures for these to recruit internationally. But there are significant gaps: you will be hard-pressed to find a bachelor's course in mathematics or a foundation course in fine arts despite demands from the economy in one case and from individual learners in the other. In some disciplines the market is too small to justify the costs of course development if there are to be competing courses but we have no tradition of *dirigisme* or mechanism for universities to agree on a rational pattern of course development. (South Africa provides an interesting contrast: in the late 1990s many universities wanted to develop distance courses but were prevented by the Commission for Higher Education which was concerned at the potential waste of resources from competing course programmes, each too small to be economically viable.)

There are issues here both for research and for the development of good inter-institutional practice.

Regulation

Moving from pedagogy to jurisprudence I simply want to note that there are questions about the proper regulation of education, and proper protection for the student, as soon as the technology makes it possible for education to go across national boundaries. Historically, in many traditions, universities have been self-regulating agencies, though operating within national legal frameworks. Operations outside their border may be in a kind of legal limbo, or may be subject to jurisdiction both at home and abroad. There has been much controversy, at least in Britain, Australia and Asia about the quality of offshore education and there are proper concerns about the difficulty, for the remote student, in distinguishing the genuine university offer from the bogus. UNESCO and others are working on the development of guidelines here but the problems will continue to demand our attention.

Conclusion

I have suggested that we can usefully develop guidelines for policy by looking at the modalities of e-learning and other forms of distance learning and then at economics, pedagogy, and regulation. The conclusion I draw is that, in planning the sound use of e-learning, and the enrolment of remote students which it makes possible, we need to seek a balance between pedagogical and economic demands. To some extent universities are already doing this: in England the fees for many online master's programmes are not much lower than those for face-to-face versions of the same course. To some extent the re-use of materials may yield both economic and pedagogical advantages, though I suspect that we do not yet know how to do it. But, beyond that, I would argue the case for what is beginning to be called 'blended learning' in which some parts of a course are delivered face-to-face and some at a distance. Australian universities, with a long

tradition of a bimodal or trimodal approach in which universities teach some students full-time on campus, some part-time on-campus, and some part-time off-campus, argue for blended learning and for minimising the distinction between different groups of students. One consequence of this is to make it easier for students to switch between on and off-campus study as their circumstances change.

Another example comes from the partnership schemes funded by the Commonwealth Scholarship Commission, referred to earlier. I spent a day last month with students from India who were doing a distance-learning master's degree in sustainable development from Staffordshire University. Over a period of two years they spend five terms working part-time in India with local support from Jadavpur and Madras universities but with distance teaching and materials from Staffordshire. For one term, ten weeks, they came to Britain for face-to-face sessions with their tutors. They were articulate, even passionate, in their arguments for the strength of this blend. It brought home to them the links between the various elements in a cross-disciplinary course which had been less clear when studying on-line, provided them with opportunities for extended contact with their tutors, and access to a good conventional library. At the same time it gave them better internet access than most could get at home. Taking account of living and travel costs, the total cost of their study was significantly less than a one-year residential MA course in England would have been. For half the group if was more practical: they could not have found the time for a one-year stay abroad. For them, the blended course had much in its favour.

I began by arguing that the technologies would not bring us revolutionary changes in education. I think they may bring us valuable evolution and that the various ideas of blended learning suggest a useful way forward. If we see different modes of study as having different benefits then, as an egalitarian, I would also argue for this kind of blending so that we share around face-to-face and distance learning instead of assigning some students to work on-campus and some off-campus.

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