

Real options for virtual universities

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Introduction

The term virtual university, or e-university, is used in various ways, a few of which are described below. Some usages reflect significant changes in views about who should be providing university-level education, who should be paying for it, what it should comprise and treat, who should receive it, what entry qualifications they should have and where, when and how their university-level education should be available. Other usages reflect further changes in the external environment, notably the lowered cost and increased viability of at-a-distance alternatives to campus-based education (particularly alternatives based upon information and communications technologies, ICTs). Those changes have led to the emergence of competitors with little history of involvement in university-level education. For them, education is a market, and is subject to the same rules of business as any other market. As in commerce in general, a well-funded 'green-field' organization can enter an established market (university-level education) and quickly take a market share from the existing players, since it does not have to bear the cost of maintaining legacy systems or old products (courses). The cost of establishing a virtual university is now so low that many such organizations are being set up.

Virtual, in the context of universities, typically refers to off-site teaching, often termed virtual education. In my opinion, virtual education can and should provide a rich set of learning experiences and opportunities that compare favourably with traditional education. Unfortunately, online courses are equated increasingly with an impoverished view of virtual education — one that treats students as passive consumers of a restricted range of knowledge in 'bite-sized chunks'.

This chapter is concerned mainly with virtual education in a rich rather than an impoverished sense, whether provided by traditional degree-awarding public institutions such as campus-based universities, or by other organizations, including virtual education institutions (defined below) and so-called corporate universities. Its intended readership includes policy makers, people already involved in virtual and corporate universities, and people working in traditional educational institutions. The latter, in particular, may be unaware of the threats that their institutions are now facing, or the opportunities afforded by changes in conceptualizations of the nature and purpose of education, new technologies and new working methods and organizational structures. The conclusions apply to other activities associated historically with universities, such as research and knowledge-transfer activities (as in virtual science parks).

Virtual education — the influence of Cardinal Newman

Landow [1] discusses virtual education in the context of the idea of the electronic university — the university as an institution in the age of digital information. He begins his discussion with a passage from the autobiography of the person who apparently coined the term virtual university, in 1852: John Henry Cardinal Newman [2]. In the opinion of Newman, his *alma mater*, the University of Oxford, had a mistaken and inadequate notion of university education, equating, for example, the ready availability of cheap printed books with truly understanding those books. For him, “the mere multiplication and dissemination of volumes” was one element of an inadequate “virtual education”; it was no substitute for thought and discussion. For him, a *real* university was in essence a place for minds to meet, and for students to experience personal teaching and support comparable with that which he received from his much-beloved tutor. Newman had to leave Oxford and his tutor as a consequence of his conversion to Roman Catholicism (there being restrictions at that time on who could attend such a university; Jews, Catholics and women were amongst the disadvantaged). His autobiography describes that departure. Landow comments that [1]:

To anyone concerned with Newman’s idea of a university and its relation to late-twentieth-century developments in information technology, educational practice, and institutional change, this scene of departure conveys... [that a university] is first and before all else, ... What Newman describes as “a place of teaching universal knowledge. This implies that its object is, on the one hand, intellectual, not moral; and, on the other, that it is the diffusion and extension of knowledge rather than the advancement”.
([2], p. xxxvii)

It is interesting, in connection with the notion of spatial location, to consider the analysis of Brian Kelley [3], who characterized much current thinking about the development of universities in terms of the history of a fictional “Paradigm University”, established 200 years ago. Since that time, the leaders of Paradigm University have been fixated on its physical assets. The development of its site over the years, and the architecture of the buildings on that site, reflect the concerns of each generation. There is a noticeable lag between the needs of the external environment and the provision being put in place on the campus. In Paradigm University, no significant provision has been made, even in the most recent building plans, for off-campus activities using ICT, such as control of laboratory equipment at a distance, or distance learning. One wonders about its prospects.

Newman [2] was committed to the idea of a scholarly community, and ICT is recreating just such a community even as it destroys the importance of physical place. Today it is possible for anyone with an Internet connection to experience the pleasure, once known only to those with a conference budget, of meeting like-minded individuals outside one’s institution, where perhaps no one else shares or perhaps even understands your interests. An academic conference

on the Internet with those who have similar interests can provide the nurturing experiences, and the sense of collegiality, so hankered after by Newman.

Although some of what Newman advocated is becoming achievable by all, we must be aware of any tendency to over-sentimentalize our early experiences and strive for impossible or worthless goals in virtual universities. As Landow ([1], p. 11) says:

Facing the possibility of electronic universities, we tend, I would argue, to sentimentalise present universities much in the way those who oppose electronic text sentimentalise...the pleasures of reading a beautifully designed...leather volume...when in fact we and our students generally read...packets of photocopied materials. Similarly, although we like to think...that our educational institutions are characterised by Oxbridge tutorials, small seminars, and large amounts of contact between student and faculty, ...the great majority of American and European students (many of whom, incidentally, are nonresident or attend institutions without campuses or adequate student facilities) receive their education from large lectures.

[Yet, encouragingly]...those comparatively few schools that maintain an ideal of small seminars, close contact between student and teacher, do not have to abandon their ways in an onrushing electronic world, ...since...electronic text, hypertext, computer conferencing, and other forms of the digital word support and supplement these activities, rather than doing away with them.

As it turns out, perhaps ironically, ...certain of our most fundamental cultural assumptions about authorship, intellectual property, creativity, and education depend in important ways upon particular information technology... For example, although Newman thus clearly envisages both the university he has left and the one he wishes to create as places of wise speech, he assumes that this preaching, lecturing, instruction, and conversation will largely concern books....

Landow [1] concludes, after some discussion, with an explanation of his stance:

...I remark on the way we fall short of our ideals of collegiality and close and continuous interaction with students...to remind us that the digital university is coming into being to remedy the shortcomings of the present non-digital one. ...[Our] needs as teachers and scholars demand new solutions, though like all solutions to major problems they promise to confront us with a range of new questions and issues.

Towards a working definition of Virtual Education

A recent Commonwealth of Learning appraisal of virtual education determined that “The label *virtual* is widely and indiscriminately used around the world. Indeed it is frequently used interchangeably with other labels such as open and distance learning, distributed learning, networked learning, web-based learning, and computer learning” ([4], pp. 2–3). The breadth of practice revealed in that study gave rise to the following definition of a virtual education institution ([4], p. 11), as either a direct or an indirect player in teaching and learning.

(a) An institution which is involved as a direct provider of learning opportunities to students and is using...[ICT] to deliver its programmes and courses and provide tuition support. Such institutions are also likely to be using...[ICT] for such other core activities as:

- *administration (e.g. marketing, registration, student records, fee payments etc.);*
- *materials development, production and distribution;*
- *delivery and tuition;*
- *career counselling/advising, prior learning assessment and examinations.*

That single-institution definition is wide enough to encompass most of the aspirations of Newman [2] and those people influenced by Newman. The Commonwealth of Learning also offers an organizational definition:

(b) An organization that has been created through alliances/partnerships to facilitate teaching and learning to occur without itself being involved as a direct provider of instruction.

Changes in the external environment

The literature on product innovation and technology management (e.g. [5–7]) provides ample evidence of the importance of being able to detect important changes in the external environment of organizations, recognizing the significance of those changes and taking appropriate actions.

The difficulty is that the initial signs of important change may be so gradual that they are hard to spot against the noise of other signals in our information flow. Handy [8] gives an apocryphal example of a frog that will let itself be boiled to death if it is put into water that is heated slowly. More recently, the management of a well-known global software company is said to have attached little significance initially to the emergence of a new market in the form of the Internet, although its importance was clear to people lower down in the organization. Personal communications indicate that junior staff sent many memoranda ‘upstairs’ but that it was over a year before their advice was heeded. The organization in question was agile, powerful and sufficiently influential to be able, within a year, to secure the position of leader in that new market, but many other less-capable organizations would have gone into terminal decline.

An example of lack of agility, lack of vision and lack of attendance to external signals is provided by the reaction of the owners of ocean liners to the emergence of air travel. In the early years of air travel there were no air-based passenger services across the Atlantic Ocean. The only way to travel reliably, quickly and in comfort was by liner. As the technology of aeroplanes developed, they became capable of inter-continental travel and passengers could begin to be carried, but at huge expense. The number of 'early adopters' was low, and ocean liners continued to be the dominant form of travel.

The introduction of the Boeing 707 jetliner saw the emergence of cheaper, mass-market air services, with much lower levels of comfort than on a liner. Each subsequent refinement to air travel reduced the comparative advantage of sea travel. The scope for refining sea travel and increasing its speed was limited, and slowly but surely the air-based alternative — with its greater technical potential — became more sophisticated and more attractive, and there was a change in competitive leadership. This is an example of the S-curve phenomenon, which characterizes the disruptive changes that arise because of technological transitions (e.g. ICT and the Internet, in the case of universities). Foster [9] wrote a classic paper on this topic.

It took some years for it to become apparent to everyone that the market for ship-based travel was in decline, and by then it was too late to do anything about it. Interestingly, it seems that no ocean liner company became an airline, and no ship builder became an airframe builder. Presumably this was because those in the ship industry did not take the new industry seriously, and so did not value the notion of diversification into the new form of transport. They did not recognize they had two different and separable missions: providing fast transportation and providing a high-quality shipboard experience. Speed won; ocean liners lost out to aeroplanes. Travel became affordable for many people. Today, far fewer liners are in operation, and they target a different market: the cruise market rather than the travel market. In that market, people often fly on package tours to take a cruise. They are interested primarily in the shipboard experience, not speed or indeed getting anywhere at all (they return to their original destination).

Below I set out some possible lessons from this case study and analogy with university education. Before doing so, it is instructive to look at the external environment of universities, in which some important changes may be slow and initially hard to detect, whereas others are more apparent.

At one time, most of the competition faced by campus-based universities was from other campus-based universities, with similar visions, standards, time scales and constraints. The level of competition was relatively low and so was the rate of change. The emergence of distance-teaching institutions such as the Open University in the U.K. was seen initially as a temporary aberration that could safely be ignored, and indeed for about 20 years that is exactly what traditional universities did in relation to distance teaching. The slow rate of change, and reluctance of campus-based universities to engage in teaching at a distance, created favourable conditions for distance-teaching institutions. For example, they could assume that if the initial enrolment was high on a distance-teaching course treating a subject that was slow to change (e.g. Shakespeare), the enrolment would stay high in subsequent years because no new competitors would emerge. A high

initial investment could then be justified, making it relatively easy to offer high-quality courses at a lower cost per student than in a campus-based institution.

More recently, we have seen significant changes in higher education in general, including requirements to widen participation (to admit students from previously under-represented groups, perhaps with lower qualifications), to admit more mature students and to encourage lifelong learning [10]. As Hicks [10] has observed, we can also see a broad shift in pedagogical emphasis within higher education from teaching to learning. This implies a gradual move away from lectures and towards the creation of 'resource-based learning environments' in which students can take greater control over the time, place and pace of their own learning. All those changes now have to be achieved in the context of the emergence of new competitors and, in many cases, year-on-year reductions in resources from public funds. In any single year, the effects of such changes may be painful but tolerable. Taken over several years, their cumulative effect may be difficult to bear.

Arguably, universities and colleges are still trying to be ocean liners, combining quality of life, learning and research with (relatively) rapid progress towards traditional degrees. A variety of competitive airline-like learning organizations are springing up to cater for new student demands. Technology and economics are the main driving factors. The market for learning is growing and changing. Continuing leadership cannot be taken for granted. And finally, the institutional *status quo* is being challenged — we need to decide what we want to be in the future.

In terms of the liner analogy, the obvious choices are to be an airline, a cruise operator, or to try not to change. The equivalent of a mass-market airline could be a fast, flexible, customer-oriented virtual university, with a focus on web-based learning, competencies and professional credentials. The equivalent of a cruise operator could offer a unique experience, such as a course that cannot be taken elsewhere, or a resource-rich model as advocated by Cardinal Newman [2]. The latter might comprise highly personalized education, with an emphasis on learning, quality, community and intellectual stimulation. In the U.K. and the U.S.A. this might correspond to an enhanced and more expensive form of Oxbridge or Ivy League education, perhaps with a mixture of face-to-face and ICT-based educational experiences, some of which might be on campus. The equivalent of staying as we are might be to travel on the Titanic — apparently unsinkable until it faced the serious challenge of travelling at night through foggy ice-filled seas. Of course, that ship would not have sunk had there been a reliable way to detect and avoid icebergs, or had it travelled in warmer seas.

Universities will have to choose one of these options, be faster and better at what they do, or develop new income streams to allow them to survive the challenges. Without new income they will have to do more with less. Their income streams (e.g. from teaching, research and consultancy) are no longer assured and many are finding it harder to retain their share of the student market. Universities that offer only campus-based courses or open learning courses, created by them alone, are under particular threat from organizations that can meet the needs of a wider range of students, more effectively and at lower costs, and which have greater resources and a higher income. The needs of a wider range

of students can be met in many ways. For example, unnecessary obstacles to their learning can be reduced by increasing the quality of their teaching, by providing support and mentoring, and by ensuring that ready opportunities exist for applying what is studied and thereby making it more meaningful. Lower costs can arise by re-packaging existing materials or by sharing development costs. Higher incomes can be obtained by offering courses only in high-demand areas, such as management, or by having a far larger market, spread over several institutions or even countries.

A recent article [11] suggested that universities that can adapt to meet such challenges have reason to be optimistic about their future, but:

Even the...universities that have come closest to creating the core-and-cloud university of the future find it difficult to define the core and to manage relations with the cloud. ...Universities...have expanded hugely...while continuing to insist on their broader civilising mission and their right — no, their duty — to be accountable to nobody. Nice work, so long as taxpayers are willing to pay for it. [11]

The importance of either securing continued support from taxpayers or alternative funding (e.g. via public-private partnerships) is clear. Many examples now exist of universities that have entered into multi-national alliances and partnerships, to offer courses to students in several countries. Increasingly, the partners include commercial organizations not historically associated with education and training, and bring new aspirations and new resources. They also bring new conceptualizations of what is important, new expectations of what can be achieved, and new ways of doing things. In some cases, this can lead to tensions with academic partners. There can also be differences of view about the role that technology can play in reaching solutions to the perceived problems. Although few would contend that technology is sufficient to provide all the answers, commercial partners may find it easier to effect changes in attitude that facilitate the adoption and effective deployment of new and perhaps more appropriate technologies and associated working methods.

We can expect a well-run virtual education institution to be more competitive than a traditional university in three ways. (i) By developing effective and sustainable working methods that have the backing of all involved. Organizations whose approaches are based upon the Viable Systems Model (VSM) of Stafford Beer [12] seem to be particularly well-placed to do this [13]. (ii) By operating on a sufficiently large scale, through alliances, partnerships and marketing, to achieve *economies of scale* using quality-assured courses. (iii) By having access to a sufficiently wide range of materials, expertise and facilities to be able to achieve *economies of scope*.

Options open to universities

The change-related options available in practice to a particular university will depend in part on four factors: (i) whether there is consensus across the organi-

zation about what changes are necessary; (ii) the time it has available before it has to change (slow changes may be more manageable); (iii) the financial, social and other resources available to facilitate the change, including the intellectual capital represented by people who have experience of change and (iv) the behavioural systems of the organization.

A classic paper by Nadler and Tushman [14] offers a relevant framework for modelling the last of these, an understanding of which is crucial before embarking on major change. Using this framework, it is possible to determine how well each of six systems fit in the organization. These comprise the fit between, respectively, individual needs and organizational needs; individual needs and task demands; individual needs and the needs of the informal organization; task and organization; task and informal organization; and the needs of the informal versus formal organization. The greater the congruence between each area, the more effective will be the organization and the easier it will be to effect change.

In trying to create new options for universities, we need to determine whether any options are currently precluded, perhaps because of a lack of congruence between its systems. We should also determine whether there are any circumstances in which our current assets (whether physical plant and buildings, good will, contacts, contracts, agreements, practices or general intellectual capital) could become liabilities, for example because they represent commitments that reduce our agility.

Where possible, a university should manage its affairs to reduce unnecessary complexity (or 'variety', in systems terms), and so reduce the need to manage changes along several dimensions at once. One way in which a university can reduce complexity is by restricting what its staff can do externally. With such an approach, staff might for example be unable to offer their services or their lectures and other course components to competing organizations, or to compromise the 'brand' of their university by allowing their affiliation to be mentioned by other organizations. Without such a policy, a prestigious university could find its name mentioned in the marketing literature of another organization, thereby giving the impression that the courses of that other organization were in some sense affiliated with or validated by the prestigious university.

Having put in place policies to reduce complexity, a university can act decisively in other areas, bearing in mind the dictum (widely attributed to the management theorist Peter Drucker) that "The best way to predict the future is to create it". A possibly more attractive rendering of that notion is the observation by Gandhi that "We must be the change we wish to see in the world". If a university wishes to determine its own future by being a leader in creating all our futures, it will need to be pro-active in its use of appropriate methods and technologies, rather than re-active. A 'follow-the-herd' strategy, or even a 'fast-follower' strategy, will not be as successful in differentiating what it offers or in restricting the scope for competitors to innovate in other ways.

A possibility for a university with a strong research tradition and capable staff is to select those technologies and methods that best enable it to stand out from the crowd. It could, for example, develop world-class expertise in a research or teaching niche that is hard for others to enter, and promote its

strengths with vigour. The world's leading universities are likely to be safe from competition in their fields of excellence, as long as they can generate sufficient income to maintain their pre-eminence and make others aware of that pre-eminence.

A complementary approach is to work with other organizations in a non-competitive way, to ensure that more effective use is made of their joint intellectual capital. That co-operation could be informal, between researchers or teachers, or could involve helpful codification of the experiences of others. Codifying and sharing knowledge and expertise about teaching can reduce or even remove the need for expenditure. By way of illustration, Draper [15] provides a number of examples of how others managed to increase teaching effectiveness in particular domains.

Co-operation can be taken to another level by entering into formal partnerships with other higher-education institutions and/or commercial organizations, perhaps even going so far as to become a virtual education institution or a distributed learning organization. In terms of the ocean liner example, this might correspond to establishing a hybrid 'travel service' that provides inclusive 'package tours' for learners, with each component (the educational analogues of travel, food, accommodation, local guides etc.) being provided by a different supplier. Only some of those components might be technology-based. This could imply less time in class, more quality contact between faculty and students, the separation of content creation and the delivery of learning services, and the emergence of new services.

Conversation-rich virtual education

In principle, a single campus-based university can become a viable virtual university if it uses ICT intelligently to offer an experience that compares well with on-campus attendance to students who would not otherwise enrol with it.

Newman [2] tells us that the elements of such an experience include knowing each student in the way that parents know their children — not *in loco parentis*, but challenging and understanding them. The crucial elements of such an experience include the following. (i) Knowing who everyone is: being able to maintain a database of student profiles that adequately represents the current status, progress, needs and abilities of each student; doing likewise for tutor profiles. Both databases can then be used to inform interactions between students and tutors, before or during those interactions rather than retrospectively. (ii) Knowing where to look: being able to provide rapid access to resources (e.g. people and materials) that provide each student with an appropriate level of challenge. (iii) Knowing what to say: being able to facilitate conversations between tutors and students. This includes being able to draw their attention to significant elements in those communications, and providing an acceptable level of immediacy and intimacy, and a general feeling of participation.

Regarding the technical aspects of facilitating conversations, ICT provides increasingly convincing technical solutions to virtual education's lack of immediacy, intimacy and general feeling of participation. An example is 'voice-

over-IP' (voice over the Internet), as offered by such companies as HearMe (<http://www.HearMe.com/products/distance/>). Their products are typical of others, offering quick ways to create an interactive classroom where students can talk directly to presenters or form small study groups. Students can join discussions directly through their Internet-connected computer or from any standard telephone. Those discussions can be recorded, archived and retrieved so that classes, seminars and events can be reviewed later.

Organizations such as the Open University are studying how to personalize such discussions, in the sense of Newman. It is already feasible to use ICT to automatically monitor spoken or written discussions on the Internet, and to draw the attention of participants to similar discussions in other classes or institutions. The ICT system can even interject via a computer-generated discussion leader in the form of an avatar (a virtual human model with highly articulated movements complemented by life-like expressions). ICT used in such ways can bring like-minded people together, in real-time. By directing attention to what they have written (in text-based discussion groups) or uttered (in spoken discussion groups), it can also help to reduce the problem of information overload.

If we improve the conversational element, we may facilitate collaboration between students. As the songwriter Malvina Reynolds put it in *The Soul Book* (Schroder Music Co. 1967),

*Conversation is thinking in its natural state.
Thinking is the conversation within us.*

*Words distinguish us from the blessed beasts.
Words began in human beings in the process of transforming gregariousness
into co-operation.*

More formally, there is a research literature on what characterizes effective conversations in education. Useful starting points are provided by Bohm et al. [16], Laurillard [17], Isaacs [18], Harri-Augstein and Webb [19] and Winieki [20].

The future

As yet, few organizations have succeeded in providing more than one component of rich virtual education on any scale, yet many of the pre-conditions for success are present. Relevant literature and expertise exists concerning the human aspects (e.g. 'learning conversations' and 'sense-making'). The technical building blocks are emerging for building student profiles, for providing rapid access to resources and for facilitating communications (see e.g. [21]). Also, hundreds of companies are developing affordable, mass-market hardware, software and learning materials. Such developments make it relatively easy for any university to set up its own virtual university and to try to reach new markets, across the globe, offering 'borderless' education, research and consultancy.

We can anticipate that virtual universities will become widespread and widely accepted. As and when this happens, they will be able to offer a wider range of courses, and/or courses with a significant degree of personalization. Further, they will be able to do this quickly and economically, even if individual courses have low enrolment and are of a specialist nature or need frequent updating. The success any given virtual university has in attracting students will depend on the strength of its offer and on how effectively that offer is marketed. We can expect universities that take Newman seriously, and which treat students as individuals, to gain a reputation for quality. Likewise, we can expect well-known and respected universities with strong local partnerships to do better than lesser-known institutions with weaker brand images.

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