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Abstract: - This paper takes a broad view of the field of distance education and argues that the systemic under-funding of Australian universities, coupled with the increasing uptake of information and communication technology (ICT), can lead to a situation where telelearning environments can be seen primarily as a commercial conduit for generating revenue. The implications of such an argument require Australian universities and their various stakeholders to take notice of the literature emanating from the field of electronic commerce. The reasons for such a claim are discussed, as are aspects of electronic commerce that may shed light on the idea of telelearning environments used in distance education in universities being the 'thin edge of the wedge' in movements to commodify higher education.

Introduction

Distance education in Australian universities is approaching a century of history. It was first practised in the University of Queensland (UQ) in 1911 (Senate Reference Committee, 1994, p. 11) when correspondence courses were offered. Whilst the 1994 Senate Reference Committee inquiry was looking, in part, at the potential for the use of television in higher education, print-based media have been the mainstay of distance education for most of the time since UQ first entered the field. Over time, many information and communication technologies (ICT) have been applied to distance education to supplement, complement or, in some instances, to replace print media. That modality has changed somewhat over the past six years, since the arrival of the world wide web (WWW) made the Internet more commercially attractive. Telelearning environments have been developing predominantly as a result of the expansion in usage of the WWW, which itself can be seen as a convergence of broadcasting, publishing, computing and telecommunications technologies.

The field of distance education is replete with problematic terminology. Keegan (1996) and Johnson (1990) have both endeavoured to clarify usage of nomenclature. Keegan arrived at a synthesis of usage on the basis of a review of the chronological development of terminology in the literature with 'six basic defining elements' (1996, p.44) which, he believed, characterised distance education, as follows:

- the separation of teacher and learner which distinguishes it from face-to-face lecturing;
- the influence of an educational organization which distinguishes it from private study;
- the use of technical media, usually print, to unite teacher and learner and to carry the educational content;

- the provision of two-way communication so that the student may benefit from or even initiate dialogue;
- the possibility of occasional meetings for both didactic and socialization purposes; and
- the participation in an industrialized form of education, which, if accepted, contains the genus of separation of distance education from other forms within the educational spectrum. (*loc cit* p.44)

Keegan had initially reported on this research in 1980, however in the updated 1996 work cited above he shows a range of definitions had been collected for the period from 1967 through 1994. Some definitions were moving toward a more comprehensive acknowledgment of the increasing role of information and communication technology (ICT) in higher education - and this would seem timely given the imminence of the WWW. This paper will use 'distance education' as an overarching and inclusive term that includes the concept of 'telelearning'. Telelearning in this paper refers to distance education based predominantly on the use of the WWW, though print-based material (or other media) may complement such use. Telelearning will be used as a synonym for the other often-found terms of 'online learning/delivery', 'distributed learning' and 'eLearning'. Telelearning represents yet another phase in the application of technology within distance education.

The adoption of telelearning approaches and technologies may require a review of the foregoing 'defining elements' of distance education, because the emphasis on print media will likely be reduced and the 'possibility for occasional meetings' will arguably be replaced by online variants facilitated by digital techniques, such as desktop video and audio conferences or streaming video. Furthermore, the telelearning environment, based on digital technologies, will provide a convenient mechanism for organisations, other than universities, to enter the competition for students in higher education. Such entry will have an impact of the last of Keegan's 'defining elements' whereby the 'genus of separation of distance education from *other forms* within the educational spectrum' (1996, p 44. - emphasis added for this paper) will no longer be a reference to other delivery modalities, but rather will refer to alternatives to universities in provision of higher education. The implications of this are discussed later in this paper.

In Taylor's (2001, p3) view, the use of the WWW in distance education, as suggested above, would refer to the 'Fourth Generation' of his five distance education models with "interactive multimedia online; internet-based access to WWW resources, and computer-mediated communication" being characteristic of the associated delivery technologies. However, Taylor used the term 'Telelearning Model' to refer to the Third Generation in his taxonomy, whilst the Fourth Generation he referred to as the 'The Flexible Learning Model' - thereby again underscoring the difficulty encountered with terminology in the field of distance education. Telelearning technologies in Taylor's Third Generation were typically broadcast or narrowcast in nature with audio and video conferencing, television and radio being core technology of the Generation. Notwithstanding the conflict in terminology just outlined, Taylor's models show that distance education has sought to use whichever technologies were appropriate. The field continues to evolve (educators and universities continue to innovate) though the pace of that evolution and the catalysts for change are somewhat different to those that have led distance educators to adopt the variety of media over the past ninety or so years of our distance education history. It is to the discussion of the implications of those innovations and of the pressures for change that we now turn.

Information Economy

Barry Jones (1982, 1996) and Marc Porat (1977) investigated trends in the composition of the workforce for Australia and the U.S., respectively. They produced similar charts from their work, which are shown in Figures 1 and 2 following.

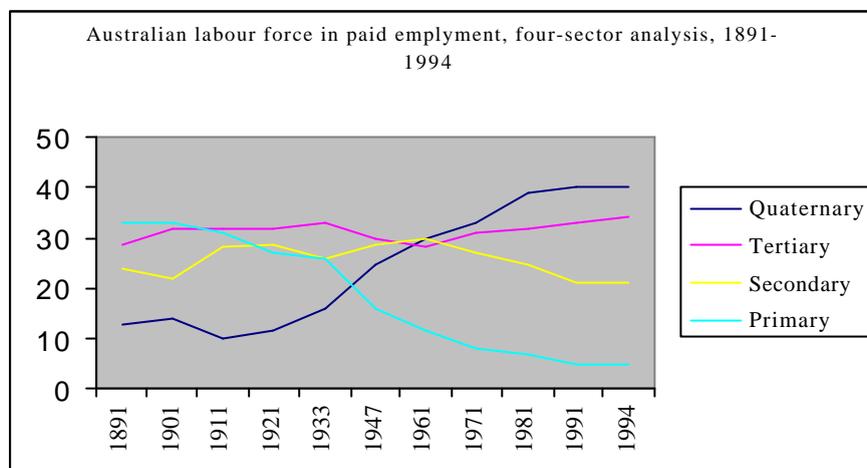


Figure 1. Australian labour force in paid employment, four-sector analysis, 1891-1994. (Source:- Jones, B., 1996. *Sleepers, Wake!* Oxford University Press, Oxford. p.58.)

What is important to note is that the proportion of workers, engaged in what Jones labelled the 'quaternary sector' and that Porat labelled the 'information sector', has risen dramatically to a point where over 40% of the working population produce value for their employers by creating, storing, retrieving, manipulating or disseminating information.

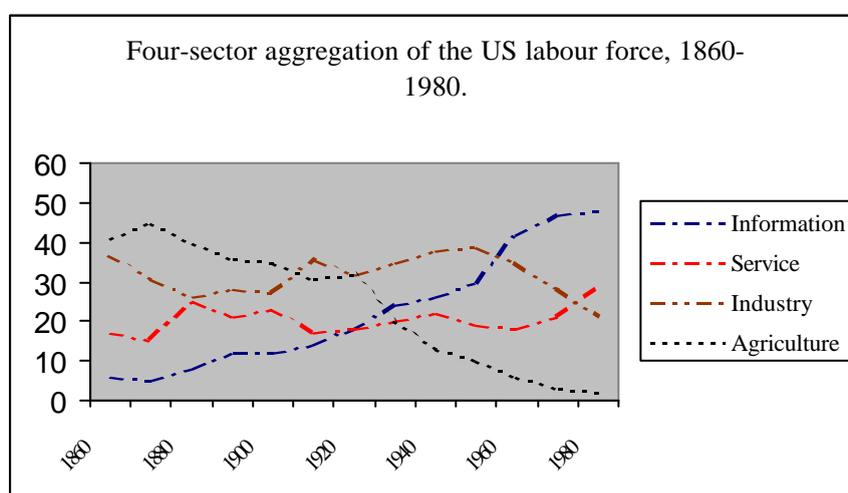


Figure 2:- Four-sector aggregation of the US labour force, 1860-1980. (Using median estimates of information workers). Source:- Porat, M. U., *The Information Economy*, vol. I, p.121. US Department of Commerce, 1977 in Jones, B., 1996. *Sleepers, Wake!* Oxford University Press, Oxford. p.58.). (Note: this chart was prepared by estimating the figures from the chart in Jones. It is not therefore an exact replica.)

Jones argues that these information workers are critical to the development of national wealth and that information work is a driver of the information economy. More recently Alan Greenspan (2000, p 1) commented that

it is the coming together of technologies that we label IT [that] has allowed us to move beyond efficiency gains in routine manual tasks to achieve new levels of productivity in now-routine information processing tasks that previously depended upon people to compute, sort, and retrieve information for purposes of taking action. As a result, information technologies have begun to alter significantly how we do business and create economic value, often in ways that were not even foreseeable even a decade ago.

Greenspan goes on to discuss pressures in the US economy and the role of labour policy before saying, "I see nothing to suggest that the trends toward a greater conceptual content of our nation's output will end." (*ibid* p 3). In his speech he then moved to the implications for education and stated "workers must be equipped not simply with technical know-how but also with the ability to create, analyze, and transform information and to interact effectively with others. Moreover, learning will, increasingly, be a lifelong activity" (*ibid*, p 3). He concluded (*ibid* p 6), that "[we] need to foster a flexible education system" before commenting that "the increasing availability of courses that can be 'taken at a distance' over the Internet" may be a particularly valuable development.

What Jones and Porat, then later commentators such as Greenspan, all point toward is the interconnection between the economy, higher education, global pressures and the role of ICT. This coalition of trends and pressures suggest that the changing face of higher education is not confined to Australia—competitive markets are likely to be global in nature. Servicing the increasing global demands for higher education presents an opportunity for provider organisations, including, but not restricted to, universities, to carve out a niche in the market place and to establish expertise or build on prior expertise in the delivery of distance education.

University research (knowledge creation) and teaching (knowledge dissemination) contribute to economic growth. With the trends shown in the prior figures it is apparent that the 'information/quaternary' sectors are increasing in importance. Furthermore, both authors - but especially Jones - emphasise the fact that information workers are to be found across all parts of the economy. Coupled with the pervasive application of ICT in modern economies these workers, sometimes referred to as symbolic analysts (see Reich, 1991) or knowledge workers (see for instance Drucker, 1969) carry increasing weight in economic productivity and are arguably an important 'output' from the systems of higher education around the globe. The ongoing problem that these people face is that their value-adding capability is eroded by the ever diminishing lifespan of their professional knowledge. Whilst I have read of this being around three years for most professions (Ruttenbur et al 2000, p.12, contend that 'the amount of stored information doubles every 2.8 years'), the salient point is that the 'half-life' is reportedly decreasing. This extrapolates into the pressure that modern economies face to update constantly the skill and knowledge bases of their workforces—in other words, life-long learning has taken centre stage over the recent past with major international organisations (for example, the OECD, the European Union, Canadian and US governments) focussing research into the ramifications of such pressure.

An outcome of the changes in, and pressures on, economies has been the increased interest shown by for-profit bodies in entering higher education. The Business of Borderless Education reports (Cunningham et al 1997 and 2000) (see 'Useful Links' at the end of this paper for directions to online versions of the papers in full, or in summary) in Australia and the U.K. bear witness to this development. Investment reports/analyses, such as those by Moe (1999) and Ruttengur et al (2000), which look directly at the looming education

market also add weight to the changing perception of higher education from a public good (perhaps more so in Australia and the U.K. than in the US) to that of a very attractive private investment market.

The preceding collection of inter-twined points helps to provide a backdrop to developments in telelearning environments being researched, developed and implemented in universities worldwide. Their use in the provision of distance education underscores yet another set of pressures being faced by universities and a discussion of those pressures and one possible scenario for future development is now in order.

Universities, distance education and electronic commerce.

The combination of issues presented to this point allude to the complex inter-twining of pressures being exerted on the modern university to 'deliver the goods' to stakeholders. High in the ranking of influences is the continuing under-funding (Marginson, 1997, Marginson and Considine 2000) of Australia's universities since the introduction of the 'Dawkin reforms', during a Labor party government, in the late 1980s, but more strikingly since 1996 under the current, Liberal party, government. Whilst the Australian situation is the focus here, it is worthwhile noting that similar funding crises are reported to be occurring in other countries, such as New Zealand, England and Canada as well (see, for example, Roberts and Peters, 1999; CVCP, 2000 and Sifton, 2001 respectively for more discussion).

The desire of politicians from both major Australian parties to allow the 'free' market to take a role in determining the mix of subjects and courses that will be offered by universities in a competitive market place has been responsible in part for the steady decline in funding. Marginson (1997) details the idea of educational markets and makes the point that higher education credentials are moving away from being the 'positional goods' that once they were. Only the internationally renowned universities will be able to bestow credentials that have 'positional value' and few, if any, Australian universities will be able to do likewise. This situation arrives again, in part, because of the massification of higher education and the increase in credentialism that is evident in the US and elsewhere. Marginson also argues that the three-tiered system of Australian universities ('sandstones', 'red bricks' and 'gumtrees'—from oldest and most established/prestigious through to youngest and least established respectively) means that the responses that will be evident or are currently being implemented will vary with the 'gumtrees' likely to move most strongly to competition in alternative modes of delivery of their products and services. Whilst it is evident that the 'sandstones' are actively pursuing flexible delivery developments on campus they are not (as yet) as active in utilising distance education (including online/telelearning) approaches to attract students domestically or internationally. Marginson does not analyse how universities deciding to exploit distance education are going to do so and neither of his recent books (1996, 2000) provide thorough analyses of the distance education activities in universities in Australia. He does briefly allude to the likelihood of distance education being of interest to the younger institutions as a means for them to generate revenue. This suggests that the smaller universities will have to cast their marketing nets widely, broadening their catchment vision from domestic to international areas, in an attempt to attract sufficient students for operational viability. Distance education may become their principal means of survival.

Marginson is correct in pointing to this line of activity as a potential revenue stream for the younger universities for a few reasons—they generally have less access to research based

funding, they have less unburdened capital, they often have a heritage of being teaching oriented (sometimes with a track record in distance education activities) and, apart from internal cost-cutting exercises, the leveraging of their current content looms as the most attractive option to pursue. Having already made substantial investments in ICT, including infrastructure related to the Internet/WWW, it also seems that they are well-placed to try to capitalise on their strengths. It follows logically that they would see distance education domestically and internationally as viable, perhaps lucrative, markets. What they are essentially doing is following the dictates of the business-oriented analysis known as SWOT (strength, weakness, opportunities and threats) which suggests that they need to capitalise on opportunities and strengths and to defend against threats and weaknesses. Leveraging their investments in ICT, together with repackaging or 'repurposing' existing content, seems to be among the options left to universities in the lower echelons of the system. The development and adoption of telelearning environments as an extension of distance education may therefore be more driven by political and economic imperatives than by pedagogical or altruistic concerns.

These developments will question the preparedness of universities for entering competitive markets and conducting educational activities (producing educational products and services) that are clearly more commercial and more befitting of corporations than has previously been the case in their history. Clearly, there will be a need for innovation in the universities which attempt to compete in the distance education market place. Whilst Australian distance education is replete with instances of innovation, in terms of the adoption and utilisation of technology, it is another matter again to start to think in business terms where the products and services of higher education are concerned.

Lockwood and Gooley (2001) have compiled a book in which an international group of authors detail innovation in their universities. Those accounts are primarily teaching and learning related, with less emphasis on administration and institutional/organisational governance. Innovation/diffusion theory is presented in Chapter 2 when Robinson (*ibid* pps. 15-26) reviews literature about the role of innovation in education and defines innovation as "an idea, practice, approach, process, system or object which is perceived as new by an individual, group or organisation." (*ibid*, p 16). An important aspect of innovation is that it does not have to be an invention, an original creation of something that has not previously existed, for the individual or organisation. Practices, processes, systems and so forth can exist in another field or discipline for ages before being adopted in a new context - at which time it is innovative in its new environment.

Universities are entering a new phase in their development, a phase which will require them to be innovative, perhaps inventive, in their quest for survival in competitive markets. Policies designed by economic rationalists and free-marketeters have dictated that this be the case in our national system. It seems logical therefore to try to gain an understanding of the manner in which the universities might compete by looking to the business world. In particular, the domain of electronic commerce offers potential for three reasons. First, businesses around the globe are experimenting with this new form of activity (often as a complement to their standard practice), and much work has already been done in terms of assessing new electronic commerce business models. Secondly, ICT enable the activities of electronic commerce and the universities already have significant investments in ICT in place that may be able to be optimised, if they can be used in new ways. Finally, the engine of electronic commerce is information and the major stock-in-trade of a university is information and knowledge. Evans and Schuster (1999) refer to the latter situation as the

change from commerce in atoms to commerce in bits. Their book was an attempt to operationalise the concept of "commerce in content" by showing the reader how informational aspects of business could open up opportunities for any business (but especially those that were service-oriented) that worked out how to 'unbundle' the information of its products and services for sale as separate commodities. Universities are now faced with a similar dilemma, though the use of ICT may offer one part of an answer, and distance education may constitute one aspect of new business.

Electronic commerce

'Electronic commerce' is rather difficult to define precisely, with various authors positing claims that it can be all-encompassing, including any form of business enacted with the assistance of an electronic medium, e.g. telephone, whilst others have tried to restrict its usage to specific forms of use and application. Mitchell (2000, p 6), states that

The definitions of e-commerce have shifted over the past few years in two respects:

- Initially e-commerce was defined as financial transactions over electronic communication, but the trend now is to define e-commerce as any business communication such as the exchange of information by electronic communication
- Initially e-commerce was defined as the technical event of electronic communication, but now the trend is to see e-commerce as an approach to business, with the technology as the enabler.

For the purposes of this paper an amalgam of the definitions and trends found in the literature (see Clarke 1999 web resource, NOIE 1999 p. 60 and Mitchell 2000 p. 6) is used as follows—e-commerce is an approach to commerce in which business is communicated and transacted over networks and through computer systems.

Electronic commerce has in its broadest sense existed for quite some time, with collaborating companies often installing their own private networks. However, the trend now is toward use of public networks, such as the Internet and the WWW. Electronic data interchange (EDI), electronic funds transfer at point-of-sale (EFTPOS), email, groupware technologies to support collaborative work teams and the WWW are all typical of electronic commerce technologies and applications.

Electronic commerce is very actively supported by western (and other) governments (for instance, see the Australian National Office of the Information Economy site at <http://www.noie.gov.au/>) because of the fundamental belief that electronic commerce is going to be good for the national economy by helping to provide an infrastructure (legislative, policy and technical) through which Australian business can compete more productively.

Kalakota and Winston (1996, 1997) have contributed to our understanding of electronic commerce through two books written in the 1990s. The following diagram is reproduced from their work, though it appears in Turban et al (2001)—

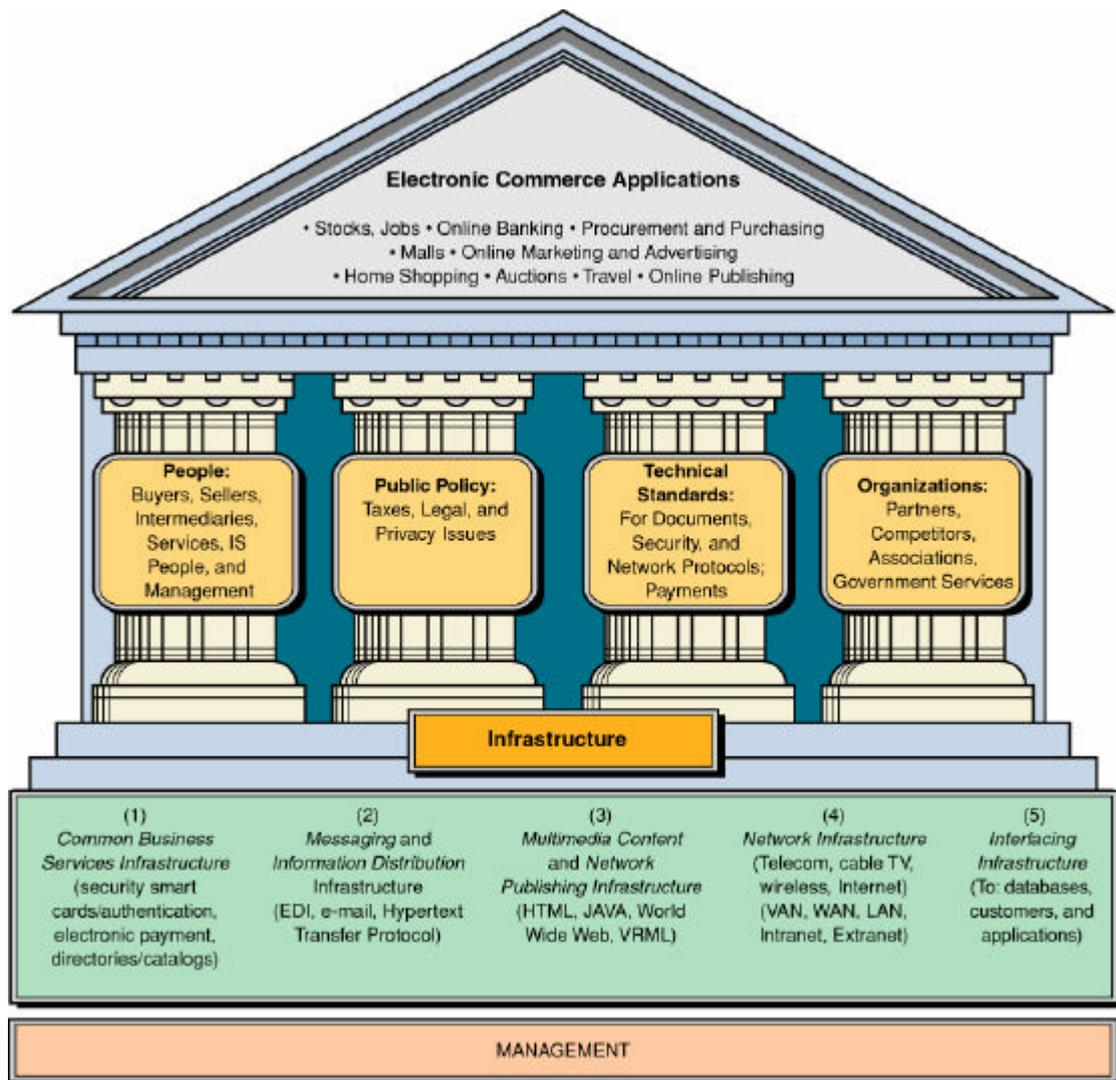


Figure 3:- A framework for electronic commerce. (Source: Kalakota and Whinston (1997), p.12, cited in Turban et al, 2000)

This framework has been chosen as it underlines the importance of seeing electronic commerce as being systemic in nature and impacting on an adopting company in many areas of their value-chain. It is but one of many models of electronic commerce that have been developed, but it emphasises that many components need to be in place if decisions to follow electronic adjuncts to other business activity are to be successful. Universities that see their economic survival resting on innovation at a corporate level will need to do a thorough assessment of their activities before trying electronic commerce. Electronic commerce innovation by individuals, or groups, within a university is unlikely to be successful unless it happens in conjunction with attempts to innovate at the level of the institution. This can happen when visions of a new future are built on an encompassing strategic plan incorporating business and technology.

The framework for electronic commerce in Figure 3 is presented as an architectural edifice and, by analogy, the applications shown at roof level cannot be attained if the structure below is missing or is incomplete. The underlying requirement is a management perspective that is committed to electronic commerce—without this, individuals and groups will operate piecemeal, acting as *early adopters* in the innovation cycle but lacking

in institutional support (whether that be in financial or human resources, for example). Even when there is a management commitment for electronic commerce in place, the foundations required are the technical and technological infrastructure. The past years of work with the national/global information infrastructure initiatives in the US, Australia and elsewhere have been aimed at establishing these foundations. Australia is now relatively well-served in this regard, to the extent that the five elements in the 'foundation concrete' are entrenched. The four pillars are increasingly evident in Australia, though some work remains to be done in the area of information privacy/security, in legislation for electronic business and criminal prosecution. Given the extensive support for electronic commerce by state and federal governments in Australia, these problems are being better understood as time passes. Business models are not incorporated in the framework and are arguably an area of ongoing concern but there is much activity in the area of corporate higher education and vast amounts of money are at stake, so business models too are being developed and trialed (see, for instance, the Standing Stones Report, 2000). Applications already exist in large numbers in the world of commerce and industry with examples shown atop the diagram. To these can be added the complete range of software necessary to enable online higher education. Among these are applications and technologies such as video and audio streaming, email, content production and management software, enrolment and student administration systems, secure communication channels for student support, animation and presentation software, payment and billing systems, self-paced learning packages and archiving technologies.

Conclusion

Telelearning environments may be one catalyst for electronic commerce in higher education. Together with the broader societal and economic trends outlined in this paper, universities are faced with mounting pressure to change the way in which they bring their products and services to the wider community, both domestically and internationally. Telelearning environments enabled by ICT, as with electronic commerce, are one possible avenue for responding to such pressures. However, the ramifications of a decision to perceive distance education as a means to generate revenue are not as yet fully understood. Furthermore, those academics currently engaged in experimenting with telelearning environments may be unwittingly opening up opportunities for their employing institutions to pursue ICT-enabled distance education for reasons other than those usually to the forefront, such as pedagogy, access, support, and equity.

Whilst sound pedagogy and superior student (customer) support may be foremost in an academic view of distance education and, indeed, may be among the best marketing approaches, these facets may also be endangered if the decision making with regard to distance education is driven by administrators with commercial imperatives. Ensuring a united and coherent view of the future of higher education must be a priority and the literature, to date, does not suggest that this is so within the universities in Australia.

Australia is arguably among the knowledge nations of the world, with vested interests in producing and cultivating graduates capable of value-adding via their intellectual prowess. These graduates will need constant re-skilling and their professional knowledge bases will need renewal at an increasing rate - thereby fuelling one form of demand for access to ongoing higher education. The right to provide that access will be strongly contested if the market analysts are correct in regard to higher education. Universities which seize the opportunity to use their ICT infrastructure and their content creation capability can be assured of some place in the competitive market place of higher education. Innovation

therefore will be required and they may do well, as suggested here, to analyse the literature of electronic commerce to find what is required of them. High on the list of priorities will be the need to understand what students, as customers, will expect from electronic telelearning environments. Likewise universities will need to fully investigate their staff relationships lest they alienate the academics who are the primary value-creators in the university systems of the world. Quality assurance frameworks, which are currently being developed in Australia and elsewhere, will impact on many of the issues discussed in this paper. These frameworks will need to be analysed, and perhaps contested, so that the intent of their producers is abundantly clear and an understanding of their implications for telelearning and distance education deepened.

Distance education has long been practised in Australia, though it has often been seen as marginal, catering to a target audience of roughly 10-15% of the total cohort of higher education students. Telelearning, as an emerging ICT-mediated modality for higher education, will grow larger if the pundits are correct. That growth will have to be accompanied by an expanding knowledge of the appropriate ways in which to teach and learn via the ICT-enabled environment. Invention and innovation with pedagogical aspects of telelearning will have to become commonplace. Furthermore, investigation of the implications of commercialising higher education, including decisions to embrace and expand telelearning, must become central if the role of the universities, their academic staff, and their competitors are to be understood in a knowledge-based economy.

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Useful links: -

The Australian (2000) Business of Borderless Education Report, (Cunningham et al) is at http://WWW.detya.gov.au/archive/highered/eippubs/eip00_3/bbe.pdf

The United Kingdom parallel study is at <http://WWW.universitiesuk.ac.uk/bookshop/downloads/BorderlessSummary.pdf>

Roger Clarke's extensive web site is available at the following address <http://www.anu.edu.au/people/Roger.Clarke/EC/ECDefns.html>