Technological Talespinning

New media and higher education in the USA: an examination of technological determinism

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Abstract

This thesis examines the theory of technological determinism, which espouses the view that technological change drives social change, through an analysis of the impact of new media on higher education models in the United States of America. In so doing, it explores the impacts of new media technologies on higher education, in particular, and society in general.

The thesis reviews the theoretical shape of the discourse surrounding new media technologies before narrowing in on utopian claims about the impact of new media technologies on education. It tests these claims through a specific case study of higher education in the USA. The study investigates whether 'new' media technologies (eg the Internet) are resulting in new forms of higher education in the USA and whether the blurring of information and entertainment technologies has caused a similar blurring in education and entertainment providers. It uses primary data gathered by the author in a series of interviews with key education, industry and media representatives in North America in 1997.

Chapter 2 looks at the literature and history surrounding several topics central to the thesis – the discourses of technological determinism, the history of technology use and adoption in education, and impacts of new media technologies on education. Chapter 3 presents the findings of the American case study on the relationship between media and higher education and Chapter 4 concludes and synthesises the investigation.

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Chapter 1: Introduction

1.1 The Problem

> Access to the information superhighway should be a basic right like access to water...We need to ensure that sections of our population are not left behind in the transformational rush. We have to decide as a country that access to the national information infrastructure will be no less a right than access to water or public transport.
>
> (Keating in Woods, 1997)

Former Australian Prime Minister Paul Keating joined an ever-growing group of world leaders with his 1997 call for all Australians to have the basic right to access the Internet. Similar concerns and commitments to Internet connectivity have been expressed around the world – from America and Canada to Singapore and Malaysia. The perception is that in the 'information age', nation states, industries, employees and citizens will need access to the information superhighway in order to participate in society – at home, at school and at work. Attention is increasingly focused on the implications and ramifications of globalisation, electronic commerce, virtual environments, cyberspace, convergence and related developments. Good parts of the world are now covered by satellites, have access to the Internet, or are hooked up to cable television. Technology is ubiquitous – or appears to be so.

As geographical and cultural boundaries blur, there is also a blurring of the differences between various communications and information technologies (CITs). It is no longer necessary to have separate television sets, stereos, radiograms, newspapers and computers. It is now possible to watch television, listen to a radio broadcast or a music CD, access today's news or search for information on the home or work PC (personal computer). Governments, industry leaders and others have no doubt this convergence will continue and will be instrumental in shaping successful nation states and economies. In Australia, for example, CITs have been the subject of a long line of reports in the last three years (*The Global Information Economy: The Way Ahead,* 1997; *A National Policy Framework for Structural Adjustment within the New 'Commonwealth of Information'*, 1997; *Australia.com: Australia's Future Online,* 1997; *Spectator or Serious Player,* 1997; *Rural Australia Online,* 1996; *Converging*

Technology, Work and Learning, 1995; *Surf's Up – Alternatives for Full Service Networks in Australia,* 1995; *The Online Economy,* 1995). The digitisation of industry, education, business, government and society also form a primary theme in *Investing for Growth* (released in December 1997), the Howard Government's latest high-level policy framework for the country's economic future.

Visionary proclamations of the shape and reach of CITs and their role in society cloud the issue, as it becomes difficult to determine whether these are real or myth (with myth understood as providing a total explanatory schema for a phenomena that far outstrips its evidence base). Such proclamations are made by fringe commentators and by those perceived to be 'experts' in their fields (government, industry, technology, education), further complicating efforts to forecast future trends. For example, is the director of the Media Laboratory of the Massachusetts Institute of Technology and a founder of and writer for *Wired* magazine, Nicholas Negroponte, talking *probable* or *perceived* futures in this picture of life in the next century?

> Early in the next millenium your right and left cuff links or earrings may communicate with each other by low-orbiting satellites and have more computer power than your present PC. Your telephone won't ring indiscriminately; it will receive, sort, and perhaps respond to your incoming calls like a well-trained English butler. Mass media will be redefined by systems for transmitting and receiving personalised information and entertainment. Schools will change to become more like museums and playgrounds for children to assemble ideas and socialise with other children all over the world.
>
> (Negroponte, 1995, p. 6)

Nation states are struggling with the implications of the new information age while attempting to map out a route forward, in order to ensure that they are able to participate in the information economy. Many countries have sketched initial plans to enable this participation – Singapore is working to connect all residents at home and work by the turn of the century (the Singapore 2000 project); Malaysia has set aside a 100km 'super corridor', including government offices, industry and educational institutions, which will have super-fast access and connectivity and will become a technology hub for the region; and America, Australia, Canada and others have designated information infrastructure initiatives.

These policies vary in detail, but share many common elements, including a common equation of technology with progress, and a focus on government, business/industry

and education as primary platforms for transition from post-industrial to information age. The 'educated' worker, creative, innovative and equipped with lifelong learning skills, is the primary currency of the new age (Cunningham et al, 1998; Howard, 1997; IITF, 1997; Jones, 1996; Jones, 1998; Oblinger & Rush, 1997a, Oblinger & Rush, 1997b). This importance has been recognised for more than a decade. In 1984, the OECD Review of Australian Youth Policy concluded that by the year 2000, Australia's economy would require a better educated and trained workforce, and Australian educationalist Peter Karmel asserted that the charges generated by technological progress would require a population with greater scientific and technical skills (Windschuttle, 1986, p. 108).

In *Sleepers Wake!* (first published in 1982) Jones argues that the most scientifically innovative countries per capita have the strongest educational traditions and that it is essential for Australia's future that all citizens have the right to recurrent education.

> This is particularly serious in an age of technological revolution...In a period of increasing emphasis on high technology, it is essential that our education promotes humane and pluralist values and strengthens individuals vis-à-vis their social environment. In the prevailing philosophy of machine worship, it is assumed that people must adapt to technology rather than technology adapting to people.
>
> (Jones, 1996, p. 167)

Education, and specifically higher education, has an important role to play in the shaping of the information age, where "knowledge has become the central 'factor of production' in an advanced developed economy...Knowledge has actually become the primary industry, the industry that supplies to the economy the essential and central resources of production" (Drucker in Jones, 1996, p. 181).

In the late 1990s, the Australian government has also identified education and training – at school, TAFE and university levels – as an "essential foundation to create a workforce with the requisite skills" (*Investing for Growth,* 1997, p.71) and compete in the information economy. One 1997 Australian report, echoing sentiments expressed by US President Bill Clinton and Britain's Dearing Committee, had made an even stronger statement about the urgent need for graduates with CIT skills, calling for "all tertiary graduates...(to) be information and communication technology literate in their chosen fields of study and expertise by the year 2000" (IITF, 1997, p. 79).

In light of the pressure for higher education to play its part in the information age, it is not surprising that academics, university administrations and policy makers struggle to identify the future shape of the sector. Will the university of the twenty-first century be a 'virtual' institution, without buildings, bricks and mortar? Will there even be universities in the traditional sense, or as Maslen (1997) suggests, are they "...moving into a maelstrom of dramatic change that could result in many being sucked under – and possibly disappearing entirely." In keeping with the mythos of technology as a driver of change, the one aspect on which most stakeholders agree is that technology will be a key factor.

Any attempt to clarify the dimensions of the information age and the information economy must first consider the role of technology and the relationship between technology and society. Attempts to explain this relationship have been many and varied, but fall roughly into three groups: those that consider technology as a driver of social and cultural change; those that argue the reverse (social need drives technology development and change) and those who promote some mix of the two. However, the "single most influential theory of the relationship between technology and society" (MacKenzie & Wajcman, 1993, p. 4) is the first of these.

This proposition, usually termed technological determinism, asserts that technology is an independent entity and that changes in technology cause social change. It positions technology as "impinging on society from outside of society" (MacKenzie & Wajcman, 1993, p. 4). Adherents of this standpoint may consider that technology's influence and impact is overwhelmingly for the worst (dystopian), or, conversely, that it is the solution to society's ills (utopian). However, whatever their beliefs about the outcome of technological change, they are convinced of its inevitability. Questions about the future focus on how to cope with technology-induced change and the celebrations or demunerations of such change rather than whether technology-induced change is desirable or even necessary.

1.2 The Research Aim

This thesis will examine the theory of technological determinism through an examination of the impact of new media on higher education models in the United States of America. In so doing, it will explore the impacts of new media technologies on higher education, in particular, and society in general.

1.3 The Research Approach

The thesis will explore the theoretical shape of the discourse surrounding new media technologies before narrowing in focus to consider utopian claims about the impact of new media technologies on education. It will then examine these claims through a specific case study of higher education in the USA. The study investigates whether 'new' media technologies (eg the Internet) are resulting in new forms of higher education in the USA and whether the blurring of information and entertainment technologies has caused a similar blurring in education and entertainment. It uses primary data gathered by the author in the process of her 1997 investigation of higher education[1], however it differs from that work in that it incorporates revised and previously unpublished data, and in that the raw data is being used for a different purpose: to examine concerns about the impact of technology on education (and society) and about the role of technology in the future provision of education.

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[1] In 1997, the Australian Government commissioned a study of the "the growing convergence of global media networks and higher education provision". The subsequent six-month international investigation (researchers interviewed respondents and examined models in 10 countries on four continents) resulted in an Evaluations and Investigations Program report *New Media and Borderless Education* (Cunningham et al, 1998). The investigation's primary focus was to explore the convergence of global media networks (GMNs) and higher education provision, to analyse the strategies of GMNs in promoting education content via cable and satellite networks and to assess the impact of these developments on higher education provision in Australia. As well, the investigation was to make policy recommendations and discuss implications for publicly funded education in Australia. The author, who conducted the North American investigation, has sought and gained permission to use the data and analysis generated in the project for further research and publication, as long as substantial passages are not published verbatim without further permission. The primary data in this thesis draws only on S. Tapsall's research, and includes material unpublished in the EIP report.

This case study is particularly useful in examining technological determinism as a theory for explaining change. First, higher education is considered one of the primary platforms to the information age. Second, promoters of new technologies have always promoted their educative potential as one of the most significant reasons for adoption. And, during the twentieth century, concerns have been expressed from various sectors (including government and Academe) about the blurring of boundaries between entertainment and education.

There is already an extensive literature addressing social and technological change and, despite its relative youth, a significant body of literature on the information age and economy. However, the importance which governments, policymakers and institutions ascribe to technology and the changes facing individuals and organisations in the 'information age' make it imperative that the theory of technology-driven social change is explored. In the face of the power of a prevailing myth, there needs to be a testing of rhetoric and reality, historical and empirical reality and normative assumptions.

Chapter 2 looks at the literature and history surrounding several topics central to this thesis. Section 2.1 discusses the discourses of technological determinism, Section 2.2 addresses the history of technology use and adoption in education and looks at predictions about the impact of technology on education.

Chapter 3 presents the findings of the American case study on the relationship between media networks and higher education and Chapter 4 concludes and synthesises the investigation.

1.3.1 Methodology

This thesis uses qualitative research methodology – namely a case study – to examine the research question. The case study comprises various methods (including interviews and historical analysis) and is considered relevant when one deliberately wants to cover contextual conditions – believing they might be pertinent to the subject of study (Yin, 1994, p. 13). (Such is the case in this research, when it is necessary to

make a distinction between the contexts surrounding the introduction of new technologies and the technical aspects of their development.)

Case study methodology may also be identified as *field research*, wherein the researcher attempts to examine, understand and theorise about a phenomenon through immersion in the 'real-world' environment.

> Some call it 'qualitative'...research...because observations typically are reported in ordinary language, much as in the daily newspaper...Others have referred to field research as "observational" research, or more commonly, 'participant observation'...field researchers may actively participate in the lives of the people and situations that they are studying. Yet, to call this approach simply 'participant observation' is too limiting. While observation yields the fundamental data, field research may or may not involve direct interaction with the people observed, and is not limited to observational data. *Any evidence that provides firsthand information and enables the researcher to get close to the subjects being studied – from direct experience to documents to unstructured interviewing – may supplement field observation.* What brings these activities together...is that they always take place *in the field.* Two other terms are also associated with this approach... 'case study' and 'ethnographies'.
>
> (*emphasis added* Singleton, 1993, p. 316-317)

The study draws on, synthesises and initially assess the theoretical and historical literature on education and new media technologies and, in the examination phase, draws on data from interviews, and documentation of the development and utilisation of media technologies in education.

As already mentioned, the interviews were conducted by the author as part of the *New Media* investigation, but this study takes the material further than was possible within the parameters of that investigation. More than 40 representatives from industry, higher education and most major media corporations were interviewed at their head offices in America and Canada in May-June 1997. Media organisations included traditional media organisations (eg News Corporation, Jones International, Time Warner), computing corporations (eg Apple Inc, IBM) and publishers (eg McGraw Hill). The higher education sector included representatives from traditional institutions (eg Harvard, University of Georgia), new providers (University of Phoenix), corporate providers (Motorola University) and various professional organisations (Global Alliance of Transnational Education, National Education and

Telecommunications Organisation and the International Society for Technology in Education).

The semi-structured interviews were based on a question bank[2] that included general questions, to be asked of all interviewees, and separate sets grouped according to type of organisation. The questions aimed to garner information about the extent of the individual or organisation's participation, intended or actual, in media/higher education convergence, their attitudes towards such convergence and their perceptions about the role and future of higher education and technology. Of major importance, to this study, was a question (G12[3]) designed to identify respondents' beliefs about the role of technology in the discourse surrounding change, and the need for change, in higher education.

1.3.2 Scope and Limitations

Closely related central concepts of 'globalisation' and 'convergence' are interlinked with much of the debate accompanying the growth of CITs, but will not be considered in this thesis. Globalisation is seen as less explanatory in its value then multinationalism and internationalisation, which are more likely to be referred to throughout this study.

A certain degree of **technological** convergence is assumed to be occurring. The distinctions between communications and information technologies, in particular, are blurring (as discussed briefly elsewhere in this thesis). One of the questions which this research will consider is whether this technological convergence is resulting in social and industry convergence.

This thesis is not an investigation of open learning, distance education or distributed learning. It will only refer to issues of lifelong learning or continuing and professional education when relevant to the primary research question.

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[2] See Appendix 2.

This research focuses on the impact of media technologies or communication and information technologies (CITs), although as a form of shorthand, the term 'media' is used. At times, the terms will be used interchangeably, although CITs is probably the most accurate. Media technologies, for the purpose of this study, are those which assist in social communications – they may provide personal means of communication or be a mass medium. The term media is also be used when referring to media structures (Internet, satellite, radio transmitters) and media networks (including broadcast, print and book publishers). Media technologies (CITs) include the telephone, telegraph, movies, radio, television, cable television, computers, the Internet, satellite, software, and books. This study will concentrate on CITs of the past century: telephone, radio, moving pictures, television, cable television, computers, satellite and the Internet.

The case study is limited in several respects. It is an 'available evidence check' with conclusions and analysis based on publicly-available information gathered through literature searches, personal interviews and other documentation. It may be that relevant corporate information was unavailable to the researcher because the interviewee was unaware of, or chose not to reveal, such information.

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[3] G12: Is this a discussion we could have had 10 years ago? How important has the convergence of technology been to developments in this area?

Chapter 2: Contextualising Technology

2.1 Technological determinism: the parameters

> The medium, or process, of our time – electric technology – is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and re-evaluate practically every thought, every action, and every institutions formerly taken for granted. Everything is changing – you, your family, your neighbourhood, your education, your job, your government, your relation to 'the others'. And they're changing dramatically.
>
> (McLuhan & Fiore, 1967, p. 8)

> Since the 1960s we have lived with a series of prophetic voices proclaiming a technological revolution to be realised through the marriage of computers and television, communications and information processing . We are deep in furrowed ground, etches in the national imagination of long standing.
>
> (Carey & Quirk, 1992, p. 137)

Technological determinism (occasionally referred to as media determinism) is the most popular and influential theory of the relationship between technology and society (Carey & Quirk, 1992; Chandler, 1997c; MacKenzie & Wajcman, 1993). This theory has its critics, but they tend to be outnumbered by its proponents – many of whom are high-profile popularist visionaries. Technological determinists do not agree on all aspects of the theory, but adhere to the central tenet that technology, in and of itself, causes social and cultural change. Technology is reified, presented as a 'thing' that exists and has just been waiting to be discovered and used – and it will be discovered. Technology is pictured as a tsunami – a massive, inescapable wave waiting to sweep all in its path. Its directions and effects are unpredictable and immeasurable.

> Technological determinists interpret technology in general and communications technologies in particular as the basis of society in the past, present and even the future. They say that technologies such as writing or print or television or the computer 'changed society'. In its most extreme form, the entire form of society is seen as being determined by technology: new technologies transform society at every level, including institutions, social interaction and individuals. At the least a wide range of social and cultural phenomena are seen as shaped by technology. 'Human factors' and social arrangements are seen as secondary.
>
> (Chandler, 1995f)

Individual theorists may consider the impact of technology-driven change to be either positive or negative (discussed in more detail later in this chapter). However,

regardless of their analysis of the final outcome, they reflect a common belief that technological change drives social change. Technological determinists may also take opposing positions on whether or not technology is autonomous and 'neutral' or 'value free'[4], as well as whether technological change is inevitable and unstoppable.

Whether optimistic or pessimistic in nature, technological-determinist statements easily translate into prophetic and visionary statements – they capture the imagination and headlines, they echo anxieties already present in society, they capitalise on 'self evident' and 'taken for granted' assumptions.

The discourses associated with determinist interpretations of technology are epitomised by Marshall McLuhan and his tenet 'the media is the message'. *Content* is insignificant, the *technology* or *medium of delivery* is the real determinant of the message received by the audience. McLuhan's ideology is evident in work dating back several decades:

> Societies have always been shaped more by the nature of the media by which men communicate than by the content of the communication...Electric technology fosters and encourages unification and involvement. It is impossible to understand social and cultural changes without a knowledge of the workings of media."
>
> (McLuhan & Fiore, 1967, p. 8)

Over recent decades, McLuhan's currency has waxed and waned, however, with the convergence of communications and information technologies it is enjoying a resurgence in popularity.

Before McLuhan, and influencing him, was Harold Innis. Writing in the late 1940s, Innis asserted that "the nature of the media technology prevailing in a society at a given point in time greatly influences how the members of that society think and behave" (De Fleur & Ball-Rokeach, 1982, p. 184). Jhully asserts that for Innis, "the most critical factor in society is the way in which the means of communication provide a framework of possibilities and parameters – the limits and boundaries within which social power...operate" (Jhally, 1993).

---

[4] It is important to note the difference between debate about whether the impact/effect of **technology-driven change** is negative or positive and questions as to whether the **technology itself** is 'neutral' or 'value-free'.

Karl Marx and Christian philosopher Jacques Ellul (1912-1994) are other early technological determinists, although, unlike McLuhan and Innis, their focus was not on media technologies. Ellul, a Marxist at 19 and converted Christian three years later, wrote hundreds of articles and more than 40 books, the dominant theme of which was the threat to freedom and faith created by modern technique. Ellul's most noted work *The Technological Society* was published in 1964 and describes the way in which "an autonomous technology is in process of taking over the traditional values of society" (John Wilkinson in Ellul, 1964, p. x).

Marx saw the machine as the primary factor in the production and distribution of raw materials, commenting (in the *The Poverty of Philosophy)* the "hand-loom gives you society with the feudal lord; the steam-mill, society with the industrial capitalist" (in Postman, 1993b, p. 21). In "The machine versus the worker", which opens with the vivid image of technology as a force opposing man, Marx states that not only is the machine a 'direct antagonist' of man, it is a competitor, a power, capable of replacing man (Marx, 1993).

2.1.1 Technological Utopianism/Dystopianism

While technological determinists agree that technology effects social and cultural change, they disagree on the impact of that change. Their responses vary from those who believe that any technology-inspired outcome is a positive one, making the world a better place to live in (utopianism) to those who consider the opposite – that technological change leads to the loss of all traditional values and beliefs (dystopianism).

Those who are optimistic about the impact of technology see it as solving such social and economic woes as unemployment and poverty, while lifting humans to new planes of creativity and innovation. More pessimistic theorists consider that the technology can exacerbate the very problems it endeavours to solve, leading to huge job losses and downgrading.

> The optimistic approach sees the march of technology as bringing about unprecedented human benefit. With the advent of new technology, according to the optimists, far more

> jobs will be created than will be lost. Not only will there be more jobs but these jobs will be at a higher intellectual level...In contrast, the pessimistic view of technological change sees the advance of technology as inevitably leading to massive unemployment. But the pessimist argues that, even in those jobs which do remain, there is still present an unremitting tendency for the jobs to be continually deskilled and degraded.
>
> (Watkins, 1986, p. 6)

Stoll, Postman and Ellul concentrate on the dehumanising or restrictive aspects of technological change, while Negroponte invites society to join him on an express elevator ride to a shiny new world. In concluding his 1996 work *Silicon Snake Oil*, Stoll rejects the promised new world of information technology, comparing it unfavourably with the 'real' natural world:

> The popular mythos tells us that networks are powerful, global, fast, and inexpensive. It's the place to meet friends and carry on business. There you'll find entertainment, expertise, and education. In short, it's important to be online. It ain't necessarily so. Our networks can be frustrating, expensive, unreliable connections that get in the way of useful work. It is an overpromoted, hollow world, devoid of warmth and human kindness. The heavily promoted information infrastructure addresses few social needs or business concerns. At the same time, it directly threatens precious parts of our society, including schools, libraries and social institutions. No birds sing.
>
> (Stoll, 1996, p. 233)

Postman's inherently deterministic stance is visible in his taxonomy of cultures as tool-using, technocracies or technopolies (Postman 1993b, p. 22). He asserts that tool-using cultures, which may support or reject tools, and may have many or a few tools, operate in such a manner that tools reflect their world-view and are integrated into local culture. Techniques may be developed to meet a perceived need. In contrast, in a technocracy, which is how Postman defines the 'modern' world, tools attack culture and, as a result, "tradition, social mores, myth, politics, ritual, and religion have to fight for their lives" (Postman 1993b, p. 28).

Postman defines technolopolies as deifying technology, where "the culture seeks its authorisation in technology, finds its satisfactions in technology, and takes it orders from them. This requires the development of a new kind of social order" (Postman 1993b, p. 5). Elsewhere he asserts that rather than heralding a brave new world, new technologies limit and reduce available opportunities. Modern modes of transport have signalled the end of international travel by boat. CDs replaced LPs and decimated the record market.

> ...contrary to conventional wisdom, new technologies do not, by and large, *increase* people's options but do just the opposite...new technologies drive old technologies out of business; which is to say that there is an imperialistic thrust to technology, a strong tendency to get everyone to conform to the requirements of what is new. Now, this is not always a bad thing, although sometimes it is very bad... I bring it up to call attention to the fact that what we too easily call 'progress' is always problematic. The word comes trippingly off the tongue, but when you examine what it means, you discover that technology is always a Faustian bargain. It giveth and it taketh away.
>
> (Postman, 1993a)

The 'loss of choice' theme can also be identified in the work of Winner, who asserts that humans have lost control and their options or choices because "technology is now a kind of conduit such that no matter which aims or purposes one decides to put in, a particular kind of product inevitably comes out" (Winner in Watkins, 1986, p. 6).

At the opposite end of the continuum are theorists such as Negroponte, a prophet of the evolutionary and beneficial impact of technology.

> I think of myself as an extremist when it comes to predicting and initiating change. Nonetheless, when it comes to technological and regulatory changes, as well as new services, things are moving faster than even I can believe – there is obviously no speed limit on the electronic highway. It's like driving on the autobahn at 160kph. Just as I realise the speed I'm going, *zzzwoom,* a Mercedes passes, then another, and another. Yikes, they must be driving at 120mph. Such is life in the fast lane of the infobahn.
>
> (Negroponte, 1995, pp. 75-76)

2.1.2 The Technological Imperative

Another aspect of technological determinism is a belief in the inevitability and inescapability of technological change. This belief is reflected in the language and discourses surrounding technological change. The technological imperative diverts attention away from questions of whether or not technology is necessary or desirable through an acceptance that it is unstoppable. The focus of any consideration becomes dealing with the impact and effect of the technology, adjusting to life in the new age, or moving on to the next stage.

> The doctrine of the technological imperative is that because a particular technology means we *can* do something (it is technically possible) then this action either *ought* to (as a moral imperative), *must* (as an operational requirement) or inevitably *will* (in time) be taken."
>
> (Chandler, 1995d)

Thus, commentators from all spheres talk about the need to respond to the 'information age'. Governments and corporations scramble to prepare themselves for participation in the 'information economy', an inevitable outcome of the information age. Efforts are concentrated on equipping individuals with the technological tools necessary for survival in the new age.

One problematic aspect of the technological 'imperative' is linked to the above concepts of limited choice and inevitability. If technology-driven social change is inevitable and inescapable, then humans can either jump on board and enjoy the ride, or be mowed down by the train of technology on the fast track of progress. Critics suggest the acceptance of the technological imperative may disempower or discourage those who might seek to oppose technology-induced change.

2.1.3 Technology as Autonomous and Neutral

Closely associated with notions of the technological imperative is that of the uncontrollability or autonomy of technology. Technology is no longer subject to the agency of humans, it "thus reveals itself at once destroyer and creator, and no one wishes or is able to master it" (Ellul, 1964, p. 85). Technological determinists disagree over whether technology is an independent variable, operating outside society, or a dependent factor. They also differ on the issue of whether technology can be considered to be 'neutral' or 'value free' – its positiveness or negativity determined by the use to which it is put rather than the nature of the technology itself.

> This is the 'cargo cult' view of technology: we wake up one morning to find a computer in the garden, it has arrived impersonally and we must take it or leave it as we find it. Technological determinists argue that if we reject high technology we will be punished: if we accept it, the prerecorded birds will sing all day, and artificial lighting will abolish night.
>
> (Jones, 1996, p. 219)

One view presents technology as a force operating totally outside human control, changing under its own momentum and 'blindly' shaping society. The fact that it is possible to do something, therefore, becomes the justification for doing it:

> ...technology...is seen as a largely external – 'outside' of society, 'supra-social' or 'exogenous' (as opposed to endogenous'). Rather than as a product of society and an integral part of it, technology is presented as an independent, self-controlling, self-determining, self-generating, self-propelling, self-perpetuating and self-expanding force.
>
> (Chandler, 1995c)

The contrasting view sees technology as neither autonomous or value free, and seldom introduced in neutral fashion.

> ...it is unlikely that technology has been introduced in a neutral or random fashion...technology can always be seen as beneficial to some and detrimental to others. Who benefits and who is disadvantaged reflects in turn the conscious decisions of those in power, which give rise to the particular time and extent of technological innovation.
>
> (Watkins, 1986, p. 9)

Some theorists suggest the most popular explanation with the general public is that most technologies are neutral.

> Most Americans, whether on the political left, centre or right, will argue that technology is neutral, that any technology is merely a benign instrument, a tool, and depending upon the hands into which it falls, it may be used one way or another. There is nothing that prevents a technology from being used well or badly; nothing intrinsic in the technology itself or the circumstances of its emergence which can predetermine its use, its control or its effects upon individual human lives or the social and political forms around us.
>
> (Mander, n.d.)

However, those theorists who accept the notion of technological autonomy tend to argue in support of the '*non*-neutrality' of technology as an agent of social change, "arguing we cannot merely 'use' technology without also, to some extent, being influenced or 'used by' it" (Chandler, 1995e).

This latter view positions technologies as not inherently neutral. In a political sense, they may be designed to enable or dismiss social options, or may, of themselves, be more in keeping with various social options (Winner, 1993). Every technology "carries with it a program, an agenda, and a philosophy, that may or may not be life-enhancing and that therefore require scrutiny, criticism, and control" (Postman, 1993b, p. 185).

Acceptance of the assumption that technology is 'neutral' or 'autonomous' carries with it similar problems as the acceptance of the notion of the technological imperative – that it leads to a pressure to respond to, rather than a questioning of, the role of technology in society.

> Our role as responsible forward-looking citizens is to accept, adjust and adapt without protest to the new technology as a fact of life. As Raymond Williams put it, 'if

technology is a cause, we can at best modify or seek to control its effects. We are not free to accept or reject technological developments'.

(Chandler, 1995c)

2.1.4 Technocracy and Progress

The coupling of technology and progress is linked in the narratives surrounding social development and historical change. Thus humankind has survived the 'print revolution', the 'electric revolution' and the 'technological revolution', while moving from the 'machine age' to the 'industrial age' and the 'information age'. Theorists acknowledge the equation of technology and progress: "in this popular context technological change is viewed as progress while progress is defined in terms of technological change" (Watkins, 1986, p. 3).

This mythos has been especially evident in America, the birthplace of the Internet and home of many major communications empires, including Microsoft and News Corporation. Carey & Quirk argue that forecasts of the American future always suggested wealth, power and productivity would derive from mechanics and industrialisation and that "a special importance was attached periodically to specific technologies that performed key services" (Carey & Quirk, 1992, p. 119), namely printing technologies and a free press. They trace this awe of, and belief, in the progressive power of technology through the development of print, steam engines, machines, electricity and CITs. They also identify other theorists, philosophers and scientists (from England, Scotland, Russia, Germany and Scotland) who had expressed similar sentiments about the potential of electric technologies to revolutionise society.

The discourse of technology-led change is also steeped in notions of technology as the new God (Chandler, 1995g; Ellul, 1964; Hodas, 1995; Jones 1996; Postman, 1992; Postman,1993b), perhaps not surprising if one considers the determinist position that technology is a totally independent element, incapable of being directed by society, influencing every aspects of the economy, culture and society. 'The King (Christianity) is dead, long live the King (technology)' might well be the new catchcry.

> Our politics, education, family life, judiciary and even churches have been adjusted, redesigned and redirected to fit the needs of this new religion...
> Why is this so? In a traditional theocracy the answer is, 'We do what we do because it is the way of God. It is His will, and we must obey.' American culture gives a strikingly similar answer: 'It is the way of technology. It is its will, and we must obey'. Of course, people obey their gods because they believe it is good for them to do so, and there is no denying that the uses of technological thinking and its products have brought unimagined benefits to many people. But to the extent that the benefits have been accompanied by an unquestioned ambition to acquire godlike powers over nature, by the assumption that technological innovation is synonymous with human progress, and by the demonstrably false proposition that technological thinking offers the best solution to our most profound human problems, we make ourselves into childish fanatics, pursuing false hopes and an impotent idol.
>
> (Postman, 1992)

Many theorists closely equate the technology, its deification and human and cultural progress (Carey & Quirk, 1992; Froese-Germain n.d.; Hodas,1995; Postman, 1992; Postman, 1993b; Watkins, 1986). Such notions are easily interwoven with the assumptions of the technological imperative and autonomy, as discussed previously in this chapter.

2.1.5 Towards a social determination of technology

Despite the popularity and general acceptance of technological determinism as *the* theory explaining the relationship between technology and society, there are critics of this school of thought. These critics point out that any mono-causal approach, or as Chandler suggests, the 'billiard-ball model' of technology and society is inadequate to deal with the complexities of political, social and economic change. Any vision of technology as a distinct entity, divorced from its social context is misconceived.

> The way in which technology is designed, developed and utilised is a reflection of the intellectual and creative energy of human beings...technology can only be properly understood by placing it in its human context and questioning the present and potential forms of technological innovation.
>
> (Watkins, 1986, p. 8-9)

Marvin and Winston, discussing the development and impact of media technologies, also reject technological determinist arguments, instead suggesting the social context of the technology must be taken into account. The theory of technological determinism is inadequate and incomplete, failing to explain why developments occur at a particular time, instead presenting simplistic accounts which either hail the "great

man" behind the invention or detail a "seamless sequence of technical events" that resulted in the new technology (Winston, 1990).

Information revolutionists argue the technological imperative – that if technology makes something possible then it will inevitably happen – and yet history is full of evidence that contradicts this position (Winston, 1986). In "How are Media Born?" (Winston, 1990), Winston presents alternate accounts of the development of sound on film, which he argues demonstrates that technology change and development is far more complicated than it often appears. The technological determinist view focuses on the mechanical and technical history of this new technological advance. Sound recording devices had been developed by the turn of the twentieth century, but these were mechanical, with no amplification, and so did not work well in the theatre. By 1906, advances in electric and electronic devices had resulted in specialised tubes that could record and amplify electrical sound signals. Eventually, 20 years later, the technology was applied to silent films, in turn this led to the introduction of faster film stock, with sound and vision recorded on the same film.

Alternate accounts situate the technological change that led to 'talking pictures' in the struggle of a corporation to maintain and grow its business[5]. Warner Brothers was a small studio in the mid-1920s which borrowed money to expand its business by 'vertically integrating', buying theatre chains to distribute its movies and a radio station to promote them. At that time, Warner Bros was a smaller player than the five major studios and it introduced sound in an attempt to gain a competitive advantage – and bring a larger audience into its theatres. Another smaller player, Fox, later showed that sound news films were popular with the public. It was this possible threat to the silent movie business that eventually lead other major studios to introduce sound, until the threat posed by Warner Bros, the "technology was available, but the commercial desire and need were not" (Winston, 1990). Significantly the major studios then

---

[5] This bears elements of Marxist accounts of progress, where technological progress is an expression of the constant need of capital to extract profit (surplus value) from the labour/technology process. These accounts are the subject of significant analysis and discussion in *The Social Shaping of Technology* (Mackenzie & Wajcman, 1993).

agreed on a common system, sound on film, which was complex, expensive and slightly different from the techniques employed by Warner Bros and Fox; the latter two organisations were then forced to come into line with the dominant standard.

While the two accounts are not mutually exclusive, the technological determinist view ignores crucial information that influenced both the role, pace and form of the technological change. The second view is also not complete as it assumes the "main engines of change are the corporation and the market and that the corporation's motive will always be to increase the 'bottom line'" (Winston, 1990). Innovation can be designed specifically to safeguard existing corporations and markets and technological innovation can proceed independently of corporate interest. The key to Winston's argument is that:

> ...all technological communication innovation can be thought of as a series of events taking place in the realm of technology, but influenced by and reacting to events taking place (a) in the realm of pure science and (b) in society in general.
>
> (Winston, 1990)

Commercial interests had also played a significant role in the development and eventual massification of the motion picture. Thomas Edison had produced the necessary technology in the early 1890s, but failed to see any viable market in the commercial projection of films, instead promoting the Kinetoscope, which allowed one person at a time to view short moving images. The most successful of the early picture projectors, the Vitascope, was developed by Edison and Thomas Arnat, after French and English groups projected films in 'salons' and had standing-room only crowds (De Fleur & Ball-Rokeach, 1982, pp. 56-57). Similarly, the Westinghouse Electric and Manufacturing Company established Station KDKA in Pittsburgh in 1920, and began regular broadcasts, in order to sell more radio receiver sets (De Fleur & Ball-Rokeach, 1982, pp. 81-82).

Postman argues the commercial imperative is also evident in the development of the Internet. He says he does not believe anyone has satisfactorily explained what problem is being solved by the huge investment in the information superhighway: "I suspect that an honest answer would be something like this: There *is* no social or intellectual

problem, but we can stimulate the economy by investing in new technologies" (Postman, 1993a).

The development of television exemplifies the complex social, cultural and corporate factors influencing technological development (Winston, 1990). The process known as television was a technical possibility from the turn of the century, but it apparently had no practical use. It was considered of no account because there was no social need for it; theatrical circuits took theatre to the masses and film was mechanising the process. Nor was there any perception of a market demand for the entertainment in the home: "the masses, given the long hours they worked and the poor pay they received, had not yet the means to use it" (Winston, 1990). Film studios and radio corporations were also uninterested, seeing TV as a threat to current business (although with potential for the future), despite the emergence of the basic TV camera tube (and associated technology) in the mid-1920s. By the end of WWII, the consumer society was emerging, the radio market was saturated and there was a significant electronic manufacturing capacity. Winston (1990) suggests it is the emergence of "supervening social necessity" that accelerates the development of media and technology, and that this process is influenced by various factors – including individuals, economic forces, politics and social and cultural forces.

Carolyn Marvin's book *When Old Technologies Were New* explores the origins, predictions, debates and circumstances surrounding the introduction of five technologies in the last 25 years of the nineteenth century – the telephone, phonograph, electric light, wireless and cinema. She suggests that many tend to recognise new media technologies only from those points in the twentieth century when they were promoted to the mass market. Instead, all debates about the modern media have their origins in the development of these five new electric media, which were sources of "endless fascination and fear", and "provided constant fodder for social experimentation" (Marvin, 1988, p. 4). Early histories of electric media are less concerned with technical possibilities and developments than with a series of negotiations concerning power relationships, content and other social issues. New media simply provide different areas to conduct old debates and project existing behaviours.

> The history of media is never more or less than the history of their uses, which always leads us away from them to the social practices and conflicts they illuminate. New media, broadly understood to include the use of new communications technology for old or new purposes, new ways of using old technologies, and, in principle, all other possibilities for the exchange of social meaning, are always introduced into a pattern of tension created by the coexistence of old and new...
>
> (Marvin, 1988, p. 8)

Marvin's argument can be explored via the history of the telephone, which she suggests is one of the two most "technically and socially developed technologies of the late nineteenth century" (Marvin, 1988, p. 6) (the other being the electric light). The telephone was the first mass medium to enter successfully the home and conquer boundaries between the private and the public. Yet, it was first envisaged as an alternative to the dominant communications medium of the time. Alexander Graham Bell's original idea of the telephone was as a mass medium, "transmitting music, Sunday sermons and important public speeches to a paying network of wired up subscribers" (Sterling, 1995, p. 34). However, Bell's system struggled to be taken seriously, viewed as a novelty compared with the established communication network of the telegraph system. Faced with the market dominance of telegrams, Bell and his backers determined the real "selling point" of the telephone was as a personal technology, allowing users to speak to each other (Sterling, 1995, pp. 34-35). Once established, the telephone was used both as a medium for personal speech and a mass medium for public spectacle (Marvin, 1988, pp. 209-216).

Marvin and Winston are not alone in their approach to the social shaping of technology. Others also reject the notion that technology alone drives social change (Barker, 1997; Edge, 1995; ESRC, n.d.; Jones, 1996; MacKenzie & Wajcman, 1993; Rogers, 1985; UNRISD, 1997; Watkins, 1986). MacKenzie & Wajcman claim society directs technology in various ways and cite a list of *social* factors which shape *technology*, including – but not limited to – economics, gender, war, social relations and ideology (MacKenzie & Wajcman, 1993). The social shaping of technology approach allows one to look at factors that influence the speed and direction of technological and change, together with causes and effects (Edge, 1995, p. 14) in a holistic approach that does not attempt to understand technology in isolation. Television systems, for example, are different because of their development in

specific social, economic, cultural and technological contexts and that the "same point needs to be made regarding the 'new' technologies":

> Certainly the capabilities of these technologies to deliver more channels, avoid state control and turn the TV set into a place for shopping, banking and game playing are significant developments, but the driving forces are commercial and political rather than simply technological.
>
> (Barker, 1997, p. 56)

A multi-causal understanding of the shaping of society provides an alternative to the single-mindedness of technological determinism

> What matters is not the technology itself, but the social or economic system in which it is embedded. This maxim, which in a number of variations is the central premise of a theory that can be called the social determination of technology, has an obvious wisdom. It serves as a needed corrective to those who focus uncritically on such things as the 'computer and its social impacts' but who fail to look behind technical things to notice the social circumstances of their development, deployment and use. This view provides an antidote to naive technological determinism – the idea that technology develops as the sole result of an internal dynamic, and then, unmediated by other influence, moulds society to fit its pattern.
>
> (Winner, 1993, p. 26)

Work being done for the United Kingdom's Economic and Social Research Council (ESRC) and the United Nations Research Institute for Social Development (UNRISD) reflects the perceived critical role of the interrelationship of society and technology. The ESRC, which has distributed 58 million pounds in research funds, has a study track which aims to understand how people use, exploit and shape new technologies and their social and economic impacts. The Council argues that new technologies are driven by complex social processes and that technological change has social, economic and physical causes and consequences (ESRC, n.d.).

UNRISD's 1997 discussion paper on CITs, social development and cultural change, argues that there is an imperative to move away from deficient techno-centric and determinist theories to social shaping theories which stress the dynamic interactions between "social forces that shape technological development and technological innovations that affect social relations" (Hamelink, 1997). Those wanting to influence the shape of change need to understand both the forces that shape technology (including social, market, political, cultural, geographical and gender) and the ways in which those forces interact.

2.1.6 Conclusion

Critics point to the way in which technological determinism as a theory reduces complex social, economic, technological, cultural and political factors to a single element: technological change drives social change. The impacts/effects are either positive or negative. The alternate view, that society shapes technology development, is no more complete an answer in itself. Technological and social change is also influenced by other considerations, not least of which are corporate and economic factors. It is far more likely that all these elements interact in a complex and intricate pattern that may be impossible to codify and unravel. In some situations, at some stage, technology may influence society in expected or unexpected ways. At other times, the technology will be a response to various political, economic, commercial or social demands.

> Technology is often seen as a whole which is more than the sum of its parts, or various manifestations...the umbrella term 'mass communication' covers a multitude of very different media. And even categories such as 'writing', 'print', 'literacy', 'television', or 'the computer' encompass considerable diversity. Referring loosely to such abstract categories is hazardous. Some technologies may...be less determining than others; the flexibility or 'openness' of tools varies. And of course a technology cannot be cut off as a separate thing from specific contexts of use: technology has many manifestations in different social contexts. A single technology can serve many quite different purposes.
>
> (Chandler, 1995b)

2.2 Education and new media technologies: the discourses and their histories

This analysis of the historical literature will concentrate on claims made about the revolutionary potential of communications and information technologies and the ways in which they were expected to change education[6]. It will focus on the claimed educative potential of new technologies and assumptions that new communication technologies have the power to 'better' those who are exposed to them and the society

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[6] This section draws heavily on the writings of academic Larry Cuban, whose work on the impact of the media on education is pre-eminent since the mid 1980s. Cuban is extensively cited in this field. While other analysts tend to focus on individual technologies (eg Streeter and cable television), Cuban has examined the discourses and impacts of various technologies (including film, radio, television, cable and latter-day CITs) on educational practice in the past century.

in which they are housed. A society that is advancing is thus perceived to be one making the most use of new and existing technologies. An equally strong reason for corporations and industry to promote the educative use of technology is that it fosters take-up and diffusion of the technologies, as will be discussed later in this chapter.

Communications and information technologies have always carried with them the power to enthral, entertain and educate, as they heralded the conquering of time and space (in a metaphorical sense electricity turns night into day, telephone and television brings the world into the home). CITs were also welcomed as holding the answers to geographic, cultural and social divisions, or the building of better, more open communities.

> Listen to *Scientific American's* glowing prediction in 1880 of the future of the telephone, for which it forsaw
>
> > nothing less than a new organisation of society – a state of things in which every individual, however secluded, will have at call every other individual in the community, to the saving of no end of social and business complications, of needless goings to and fro, of disappointments, delays and a countless host of those great and little evils and annoyances which go so far under present conditions to make life laborious and unsatisfactory.
>
> (Marvin, 1988, p. 65)

2.2.1 Past Practice: the education potential of 'new' technologies

The nexus that technology creates between entertainment and education was obvious early on. A progressive classroom has always been considered to be one that contained the latest technological toys, with each new technological wave heralded as the one that would finally modernise education (Cuban, 1986; Cuban, 1996; Hodas, 1985; Negroponte, 1995; Postman, 1993a; Postman, 1993b).

> Mr Edison says
> That the radio will supplant the teacher.
> Already one may learn languages by means of Victorian records.
> The moving picture will visualise
> What the radio fails to get across.
> Teachers will be relegated to the backwoods,
> With fire-horses,
> And long-haired women;
> Or, perhaps shown in museums.
> Education will become a matter
> Of pressing the button.
> Perhaps I can get a position at the switchboard.
>
> (anon in Cuban, 1986, pp. 4-5)

2.2.2 Moving Pictures

The motion film had been heralded as a technology capable of major social change. Thomas Edison was among those who believed it a revolutionary medium, suggesting it would give new life to the curriculum and motivate students to learn (Heinich, Molenda, Russell, & Smaldino, 1996, p. 204). Edison theorised (in 1913) that "it is possible to touch every branch of human knowledge with the motion picture", that "books will soon be obsolete in the schools" and (again in 1922) that "the motion picture is destined to revolutionise our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks" in (Cuban, 1986, pp. 11, 9).

Motion pictures were first used in American schools in 1910, with thousands of films with 'educative potential' soon made available. Classroom use of films was synonymous with a progressive, modern teaching approach, and that the mere presence of the technology in the classroom gave it an aura of innovativeness (Cuban, 1986, p. 12). However, despite a common belief in the 1920s and 1930s that the motion picture was a superior teaching tool, surveys in the 1930s, 1940s and 1950s showed minimal, and progressively diminishing, usage rates. Despite the public commitment to the technology – and the financial commitment of educational institutions to providing equipment and facilities to integrate the medium as a teaching method – it failed to be other than an occasional tool in traditional classrooms (Cuban, 1986; Daniel, 1995; Hodas, 1995).

Some of the barriers to use included costs (of films, equipment and maintenance), lack of teacher skills with equipment and film, durability of the medium, unavailability or inaccessability of equipment when needed, organisational difficulties (who has the right to operate the movie projector?) and difficulties with 'fit': finding the right film for the right class (Cuban, 1986; Heinich, Molenda, Russell, & Smaldino, 1996). Few of these obstacles related to the performance of the technology but to social, economic and organisational issues connected to its application.

2.2.3 Radio

> Let us not forget that the value of this great system does not lie primarily in its extent or even in its efficiency. Its worth depends on the use that is made of it...For the first time in human history we have available to us the ability to communicate simultaneously with millions of our fellowmen, to furnish entertainment, instruction, widening vision of national problems and national events. An obligation rests on us to see that it is devoted to real service and to develop the material that is transmitted into that which is really worthwhile.
>
> (Herbert Hoover 1924 in Lappin, 1995)

Herbert Hoover's 1924 heralding of the radio as a visionary new medium, which should be devoted to 'real' and 'very worthwhile' material and services, contains echoes of similar statements made before and after the advent of radio – about electricity, the telephone, moving pictures (film), television, cable, satellite and the Internet. Radio engineer David Sarnoff, of the American Marconi Company, wrote a memo to his employers in 1916 outlining the way in which the radio could be developed for the mass market, being brought into every living room by wireless. Sarnoff identified the potential profitable market, focusing on this new technology as a 'radio music box' which would transmit music and be located in the parlour or living room, also highlighting the uses of such a device for education, information and instruction:

> The same principle can be extended to numerous other fields as, for example, receiving lectures at home that can be made perfectly audible; also events of national performance can be simultaneously announced and received...they could enjoy concerts, lectures, music, recitals, etc...
>
> (Sarnoff in De Fleur & Ball-Rokeach, 1982, p. 80)

Sixteen years later, Benjamin Darrow, the founder and first director of the first School of the Air (based in Ohio), made his opinion about the educative use of radio perfectly clear in the title of his 1932 book *Radio: The Assistant Teacher.* Darrow, like Edison, drew comparisons between learning via radio and the traditional textbook, but suggested the most important aim of radio-mediated education was to bring the world into the classroom, making "universally available the services of the finest teachers, the inspiration of the greatest leaders...and unfolding world events through radio may come as a vibrant and challenging textbook of the air" (in Cuban, 1986, p. 19). Roughly 50 years earlier, Edison had made similar claims about the boundary-breaking nature of the phonograph, telling a then US congressman that he would use it

to take him "round the world" without charging him anything (Associated Press, 1996).

Instructional radio flourished from the mid-1920s-1930s with radio being used both in schools and universities. The oldest educational radio station, owned by Wisconsin state and operated by University of Wisconsin had been broadcasting since 1917 and produced programs for school and university students. However, by the late 1930s radio education was on the decline.

Despite early predictions about the educative potential of radio, and the rapid rate that it was assimilated into society as an entertainment and information medium, the promise of ubiquity and educational reform was still unfulfilled in 1945 when Levenson suggested the portable radio receiver could become as "common in the classroom as the blackboard and that radio instruction will be integrated into school life as an accepted educational medium" (in Cuban, 1986, p. 19). And by the 1950s, "patterns in teacher use of both film and radio, once billed as miraculous time-savers, had been set: a small number of serious teacher-users swimming in a sea of non-users" (Cuban, 1996). The hardware necessary to receive radio programs was readily available, and radio programs were more accessible than film, yet the ultimate in technological saturation that promoters dreamed of – having a receiver in each classroom – was never reached and it is now "easier to find a television set than a radio in most schools" (Heinich, Molenda, Russell, & Smaldino, 1996, p. 24).

Radio has, over the years, proved a useful technology to assist in the delivery of distance education but otherwise has failed to make a significant impact on traditional education, despite being heralded as a technology which would profoundly change the classroom and the society in which it operated (Cuban, 1986; Cuban, 1996; De Fleur & Rokeach, 1982; Hodas, 1995; Lappin, 1995). Various reasons have been suggested for the failure of radio to fulfil its perceived promise, again including cost, organisational issues (staff attitudes, staff training, availability of facilities), suitability of medium for the content and lack of available educational programming (Cuban, 1986; Cuban, 1996; Daniel, 1995; Davis, 1996; Froese-Germain, n.d.; Hodas, 1995).

The failure of new technologies, including radio and the moving picture, to reform education may be as much a result of disappointed expectations, when technologies fail to live up to the promises of their promoters, and ignorance of classroom realities, where the teacher is both administrator and sage, as the reasons advanced above. The problem was often the very nature of the reformers promoting the technology revolution: "foundation executives, educational administrators, and **wholesalers**" who saw swift technological advances as the solutions to school problems (Cuban, 1986, pp. 4-5).

Lappin (1995) points out there are striking similarities between the community of enthusiasts and early adopters and claims being made about radio broadcasts (and their potential impact on everything from religion to politics) and the Internet. Concern about the impact on social institutions, including traditional religious and educational institutions, was expressed by the first minister to broadcast a church service by wireless radio:

> Broadcasting of church services will prove something of a disintegrating force on the church organisations...Only the fittest preachers will survive, and struggling churches will, more or less, go to the wall.
>
> (Edwin J. Van Etten, 1923, in Lappin, 1995)

2.2.4 Television

As discussed in Chapter 2, television was technically possible long before it became a household medium, with the first commercial explorations into the medium in the 1930s in America and the UK. Development of this technology as a mass medium was delayed for several reasons, including government restrictions, industry opposition and WWII (De Fleur & Ball-Rokeach, 1982; Winston, 1986; Winston, 1990). However, control of the new medium was based on the model eventually established for radio, with licensing in the hands of the Federal Communications Commission. Home television was approved in 1941 and several small stations began operating, increasing to about 70 by 1948.

The FCC had licensed educational television stations by the early 1950s and educational television experienced tremendous growth in this decade (Cuban, 1986;

Heinich, Molenda, Russell, & Smaldino, 1996). These, too, were accompanied by the grand predictions attached to previous media technologies, with one broadcaster heralding the advent of the "21-inch classroom" (in Cuban, 1996).

> A typical teacher worked in consort with the 'master' teacher beamed into the classroom or simply turned on the set and led a follow-up discussion after turning off the program. Teacher as technician would be a fair description of the role envisioned and carried out in the early decades of television's entry into classrooms.
>
> (Cuban, 1986, p. 36)

Television was to be a cure-all for addressing problems in delivering entertainment, education, religious messages, economic development to both developed and non-developed parts of the world. Television's future was also assured in that a successful financial model had been developed through radio and the public had become accustomed to the notion of 'commercials' (De Fleur & Ball-Rokeach, 1982).

The marriage of picture AND sound was believed to contain the one element that had been missing from previous technological innovations – making it attractive to governments, corporations and other power-brokers. Television was 'radio with eyes' and was heralded by educators like Darrow as being capable of succeeding where radio had failed: "When the eye and ear have been remarried in television then we shall indeed be challenged to open wide the school door" (in Cuban, 1986, p. 26). Historians document the incredible efforts made by David Sarnoff, who had by then risen to lofty heights with RCA, to corner the market and control the development and introduction of television (Attallah, 1991; Winston, 1986). Sarnoff repeatedly referred to the power of the image, saying in 1939 for example, that "the combined emotional results of both seeing and hearing an event or performance at the instant of its occurrence become new forces to be reckoned with...The emotional appeal of pictures to the mass of people is everywhere apparent" (in Atallah, 1991).

Television spread rapidly through America and Britain as an entertainment and information medium, but unfortunately for Sarnoff and the educational reformers, the emotional appeal of pictures did not translate into paradigmatic adoption and use in the tutorial and classroom. Once again, there were pockets of adoption from technology-devotees, but these reflected the sporadic adoption of the technology by

individuals and isolated organisations. Numerous surveys showed that, as with earlier technologies, although educators and administrators embraced television as a new tool in the classroom, subsequent use was limited, despite the promotional activity surrounding their introduction.

> What has been written about motion pictures, radio, and television has concentrated primarily upon what the new device could do to revolutionise (a word frequently used by promoters of technology) the classroom...Claims predicting extraordinary changes in teacher practice and student learning, mixed with promotional tactics, dominated the literature in the initial wave of enthusiasm for each new technology. Seldom were these innovations initiated by teachers.
>
> (Cuban, 1986, pp. 4-5)

Massive amounts of money were spent on educational television – far more than on film and radio. The medium was adopted by the Ford Foundation, which alone provided extensive funding. By 1971, US$100 million had been expended by public and private sources, with one philanthropic foundation investing $20 million in 250 school systems and 50 colleges by 1961 (Cuban, 1986, p. 28). Some estimates put the amount spent by the Ford Foundation alone on educational television from 1950 to 1970 at more than $170 million (Gordon, 1970, p. 21).

Television, claimed its promoters in the 1960s, would provide up to 30 minutes of each hour of college teaching, with up to half the college degree available for credit via television (Murphy et al in Neal, 1998). Yet much of the early material promoting educational television could be considered little more than "propaganda...much of it is hyperthyroid in tone, questionable as history, logic or prose, and, mercifully predictable" (Gordon, 1970, p. 18).

> Most educational TV specialists are uncomfortably aware that *all* ITV activity in all the schools of the nation could vanish tomorrow with hardly a ripple in our schools' functions on any level. Most teaching in the USA today is accomplished by traditional methods.
>
> (Gordon, 1970, p. 28)

One major reason television failed to revolutionise education was because teachers were not driving attempts to incorporate it into the curriculum or determining how it was to be applied (Cuban, 1986; Cuban, 1996; Gordon, 1970; Heinich, Molenda, Russell, & Smaldino, 1996; Neal, 1998). Other social, cultural and organisational barriers to change included difficulties with access to hardware (machines), software

(content, which was variously boring or gimmicky), costs and the implementation of the technology. Teacher knowledge of the equipment was frequently a problem, along with inconvenient broadcast times, lack of facilities, and lack of time. Other concerns included the nature of education, the impact of an 'entertainment' medium in an educational setting and faculty fear of being replaced by the technology (Gordon, 1970, pp. 28-29).

2.2.5 Cable Television

Following on from the failure of radio and television to revolutionise education, technologists, reformers and policymakers concluded there was another missing link – interactivity and the ability to tailor a message to a smaller audience. A revolutionary technology needed to combine sound, image and interaction – and a new medium was apparently available. Cable television had been around since about 1950 under its original title of CATV (DeFleur & Rokeach, 1982; Streeter, 1986; Streeter, 1997; Winston, 1986). Its potential as a social and cultural agent of change blossomed as a subject of discourse in the late 1960s and 1970s, with input from government organisations, community groups, educational foundations and corporations. In 1970, Ralph Lee Smith heralded cable television as a new electronic highway system:

> The stage is being set for a communications revolution...audio, video, and facsimile transmissions...will provide newspapers, mail service, banking and shopping facilities, data from libraries and other storage centres, school curricula and other forms of information too numerous to specify. In short, every home and office will contain a communications centre of a breadth and flexibility to influence every aspect of private and community life.
>
> (in Streeter, 1997)

Cable has also enjoyed several 'lives' being first acclaimed as *the* technological solution in the 1960s and 1970s as Streeter (1986) points out. Then, cable was considered the most important and revolutionary of these new technologies, "a new instrument of social progress capable of ushering in a new era, or creating a new 'wired nation' out of the existing fragmented and disorganised social structure" (Streeter, 1986, p. 1). The discourse of the time reflects the technological determinist tendency to accept new technologies with no question other than making sure the population can access and use it: Streeter suggests the discourse surrounding cable was shaped less by debate than a lack of it. The promotion of the cable tv solution was

taken up by the Rand Corporation, which published more than a dozen reports on the topic in the early 1970s, and other media and corporate groups. Cable was heralded as a revolutionary technology that was spreading into every part of America and transforming communications. The 'new media' tag had a practical commercial application as well, providing the cable tv industry with leverage to use in its ongoing struggle with television broadcasters and allowing it to present itself as an alternative to large media organisations (Streeter, 1997).

The first documented use of interactive cable television for education purposes was in 1971, and was accompanied by the by-now familiar discourse of social, cultural and institutional change (Doheny-Farina 1995). Again, the educative potential was promoted side-by-side with the social and commercial use. A 17-year-old boy, at home, was linked with his history class via interactive cable television. On the same day, the TeleCable Corp showed how a wife 'could shop from home', pressing buttons to order detergent from a local Sears store, after a commercial for the product. It was said the new technology was the first step towards a 'genuine town meeting of the air', and would serve communities in various ways, including direct contact with local politicians.

> Observers and practitioners predicted that the new technology could:
> - provide up to 50 channels of recorded music,
> - offer specialised news services in which a subscriber could enter codes and receive news about areas of interest,
> - enable subscribers to 'dial up' pre-recorded pictures and textual information such as product ratings by consumer organisations,
> - provide 'electronic mail delivery that would, in effect, print out telegrams at home or office', and
> - make the television keyboard and screen a computer terminal 'by which the subscriber could dial up specific reference information and perform mathematical calculations' and have the answers printed on the screen.
>
> (Rensberger in Doheny-Farina, 1995)

Cable television proceeded down the same path as previous technologies, also failing to live up to its early revolutionary promise (Streeter, 1986; Streeter, 1997; Winston, 1986). It failed to make a dint on traditional educational institutions and teaching methods (although it was adopted with limited success by distance education and alternative providers) and it failed to shape society in the manner originally projected in the 1960s and 1970s:

> ...the media systems that have since then emerged fall far short of the vision of the future that the discourses originally projected. In the U.S., cable television has failed to introduce dramatic new levels of diversity and openness into the electronic media system, and it has fallen dramatically short of the social cure-all that some had predicted it would become.
>
> (Streeter, 1986, p. 205)

Streeter (1997) argues that while the discourse suggested cable could eliminate the 'one-way' quality of television, the only "serious effort to develop two-way cable" was abandoned and franchise agreements dropped.

In the 1990s, the rhetoric is resurfacing, with *digital* cable now being greeted with similar acclaim as the answer to bandwidth problems associated with the Internet. Federal Communications Commission (FCC) Commissioner Susan Ness acknowledged the renewed discourse in an address to the Wall Street Journal Technology Summit in October 1997:

> Well, this year we are finally seeing long-promised broadband digital services becoming commercially available, and 1998 looks to be the year that many of these nascent offerings reach critical mass. Of course, I seem to recall that 1993 was going to be the year of the great digital cable conversion. Actually, I remember hearing the same thing about 1994 ... 1995 ... and 1996 -- the future was just around the corner.
>
> (Ness, 1997)

The literature on technological development until the advent and massification of computers and in the developmental phase of the Internet points to the justification of new technologies in terms of their educative potential. Education administrators, reformers and policymakers had pointed to the power of technology – film, radio, television and cable television – to reform the classroom and lecture theatre, to bring educational institutions into the modern age. At the same time, those committed to the development of communication and information technologies have promoted their educative value in order to justify the massification and popularisation of the innovations.

The evidence that technologies have not contained the reformist power with which they have been attributed, whether because of organisational, social or commercial barriers, is incontrovertible (Cuban, 1986; Cuban, 1996; Froese-Germain, n.d.; Hodas, 1995; Winston, 1986). Some teaching practices have changed, where the technology

solved problems the *teachers* had identified as important and where the technologies could be incorporated into routine teacher practice (Cuban, 1986; Gordon, 1970; Neal, 1998). However, attempts to modernise and improve schools by using technology to make them more efficient, have had little effect. The most commonly-used teaching resource is the textbook (Heinich, Molenda, Russell, & Smaldino, 1996, p. 25).

> Textbooks, paperbacks, blackboards, radio, film, film strips, airplanes, television, satellite systems and telecommunications have all in their time been hailed as modernisers of American education (Cuban, 1986). Cohen, for his part, demonstrates how, with the exception of the textbook and the blackboard, none of these much-vaunted exemplars of modern efficiency have had any significant effect on school organisation or practice (Cohen 1987). They have not made schools more modern, more efficient, more congruent with the world outside the school, or had any of the myriad other effects their advocates were sure they would have...
>
> (Hodas, 1995)

However, the 'public good' aspects of technological progress (claims of curing social ills and a better-informed and educated public) have been used to stave off the many critics of the massive investment in technological innovations (television, film and so on): if these media were just to be used as tools of leisure then it would be much more difficult to promote their development and incorporation into everyday life.

As a means of improving or educating the masses, however, they are obviously of far more worth. Such thinking is reflected in the actions and attitudes of leaders like Harold Wilson, who first mooted the idea of a 'University of the Air' in Glasgow in 1963 (Open University, n.d.). Wilson, the eventual founder of the British Open University, promoted the use of broadcasting technologies for education because "he thought this powerful medium of communication was too precious to be used solely for entertainment" (Daniel, 1995, p. 8). Similar sentiments had been expressed across the years; as early as 1933 the BBC Year Book noted the importance of controlling broadcast programming and exchanges to guard against the 'debasement' of programs to delivering amusement only:

> The BBC has always provided entertainment for its listeners but it has set its face resolutely against devoting its programmes entirely to amusement.
>
> (in Winston, 1986, p. 354)

2.2.6 Current new media and education discourses

> Today we are witnessing the early, turbulent days of a revolution as significant as any other in human history. A new medium of human communication is emerging, one that may prove to surpass all previous revolutions – the printing press, the telephone, the television, the computer – in its impact on our economic and social life. Interactive multimedia and the so-called information highway are enabling a new economy based on the networking of human intelligence.
>
> (Tapscott in Oblinger & Rush, 1997, p. 8)

It would be reassuring to consider that policymakers, reformers, educators and technologists had taken note of previous debates surrounding education and technology and were not likely to make the same types of deterministic assumptions and predictions about new technological developments and their impact on society and its institutions. However, considering the underlying mythos that equates technology with progress, it is perhaps not surprising that computers and telecommunications (eg satellite) technologies, and more recently converged forms of these media of delivery (eg the Internet), have been greeted with similar sanguinity.

It would also be reassuring to consider (as many suggest) that the new technologies (computers and the Internet) are 'new' enough that there are grounds for the revolutionary predictions that have accompanied their development. There is a temptation to argue that the discourse associated with computers and the Internet is different, that it reflects the ability of these new converged technologies finally to fulfil the promise of the past and assume the role of radio, television, movie theatre, newspaper, school, doctor, community and mail service It is also tempting to suggest that computers and Internet contain the 'missing link' that will realise the technological promise of the ages. Yet, although the technologies are different, the discourse, in the lead-in to the twenty-first century, is almost interchangeable with that which has been in place since 'old technologies were new'. Expectations of the transformational nature of computers and the Internet on society reflect many earlier claims: Herbert Hoover's 1913 trumpeting of film as the end of the book, Darrow's 1932 nomination of radio as 'The Assistant Teacher' bringing the world into the classroom and Smith's proclamation of cable as the new electronic highway system (1970).

The evidence of technology's earlier failures to fulfil revolutionary promise is not enough to derail the prevailing mythology and governments, corporations, industry and policy-makers find themselves struggling to prepare for the 'information/knowledge age' and the 'knowledge/information economy'. So, too, are the social institutions, including universities.

Seymour Papert, one of the pioneers of Artificial Intelligence, is LEGO Professor of Learning Research at the MIT Media Laboratory and author of several books about computers, learning, education and children. Papert asserts that medicine, transport and communications have been transformed "beyond recognition" during the twentieth century, but, in comparison, "the practices of school have been virtually static" (Papert, 1995).

Papert and Negroponte suggest the need for educational reform is obvious in a comparison of the modern classroom and the operating theatre. If a mid-nineteenth century surgeon was transported through time to a late-twentieth century operating theatre, the doctor would be unable to assist or recognise the environment within which he had landed. However, if a mid-nineteenth century school teacher was transported via the same time machine into a modern classroom, then he or she could take over from their latter-day compatriot (with perhaps some minor tweaking of content).

> There is little fundamental difference between the way we teach today and the way we did one hundred and fifty years ago. The use of technology is almost at the same level. In fact, according to a recent survey by the U.S. Department of Education, 84 percent of America's teachers consider only one type of information technology absolutely 'essential': a photocopier with an adequate paper supply."
>
> (Negroponte, 1995, pp. 219-220)

While recognising the inability of technology to make a significant impact on educational delivery over the past 150 years, Papert, nevertheless, believes the computer will succeed where previous technologies have failed. He suggests the computer is the technological force capable of finally reforming education:

> There won't be schools in the future...I think the computer will blow up the school. That is, the school defined as something where there are classes, teachers running exams, people structured in groups by age, following a curriculum – all of that. The whole

> system is based on a set of structural concepts that are incompatible with the presence of the computer...
>
> (Seymour Papert 1984 in Cuban, 1986, p. 72)

Papert argues that the technology capable of producing the 'megachange' required in education has really only been available in the last 25 years, particularly the last decade. He suggests too much emphasis has been placed on using technologies to improve old ways of doing things, that the future shape of education may bear no resemblance to the past.

Cuban questions the validity of the renewed rhetoric about paradigmatic change in education practice, while recognising the danger of dismissing the communications and information technology 'revolution' as just another passing fad:

> how different is this current enthusiasm from the surge of interest in instructional television three decades ago or in classroom radio and motion pictures over a half century ago? The superficial similarities between periodic gushes in enthusiasm haunt conferences on educational technology like Marley's ghost. The similarities in claims, media interest and investment are too vivid to simply brush aside as cynical mumblings from neanderthal educators.
>
> (Cuban, 1986, p. 73)

But Papert and Negroponte are by no means lone voices in the wilderness. Edward L Davis III is a business development consultant, working to build new commercial markets for public and private education and training institutions, and the founder of the Electronic University Network in 1986. Davis (1996) suggests the convergence of computers, telecommunications and media is "capturing our attention by introducing a plethora of new pathways and modalities for learning". Davis does not accept technology as a panacea to society's ills, but still contemplates the extinction of traditional educational institutions, pointing to the "costly mistakes" that will accompany the "massive transformation" of the education system, while questioning the eventual survival of the educational institution:

> Misguided messiahs will rise and fall. Certainly, technology holds promise. Just as certainly to all but a few propeller heads, it creates a whole new set of problems and pitfalls. Last year's 'next great thing' becomes this year's white elephant.
>
> (Davis, 1996)

A common theme in the current discourse is the death or redefinition of the university. Professor Ron Johnson, managing director of Sydney University's Australian Centre for Innovation and International Competitiveness, is one of those exploring the entertainment-education-technology narrative:

> ...far from being transformed...universities might simply be replaced – by giant corporations such as Microsoft and Time Life establishing their own virtual university, or international research consortiums with hundreds of researchers taking over the role of the traditional university...
>
> (Maslen, 1997)

Similar sentiments have been expressed by Professor Bob Holton of Flinders University who suggests, with respect to higher education, that the "transnational ownership of physical delivery sites may be less important than the ownership of electronic delivery systems" (in Healy, 1997). Holton suggests media-based providers, including Microsoft On-Line Institute, the Virtual On-Line Institute, and the Phoenix University Online, may be just "shadowy presences" in Australian higher education, but

> ...bodies such as these may soon be major players, not simply in the technology of educational delivery, but in the ownership of intellectual property and in the expansion of privately owned university providers.
>
> (Healy, 1997)

Holton, Johnson and others around the world present a new version of an older discourse, one again interlaced with an undeniable inevitability: 'new' media technologies – the Internet, satellite, computers – make it ***possible*** for new models of education to develop, *ergo* new models ***will*** develop and replace the old. Coupled with the belief in the unassailability of technology progress is trepidation connected to the owners and controllers of the technological pathways.

There have been times, in the past, when it was easier to differentiate between the method of delivery (the medium) and the message being delivered (the content). But the ubiquity of communications and information technologies is making those distinctions far less obvious. Thus governments, individuals and organisations mutter about the autocracy and reach of Microsoft's Bill Gates, or about Rupert Murdoch's now-defunct 'Death Star' ASkyB proposal, which would have enabled the media giant to offer more than 500 cable television channels via his own satellite.

Jones argues that media magnates (such as Kerry Packer, Murdoch and Gates) have just one vote each in their national elections but individually wield more power with some world governments (Jones, 1998). There is a strong perception that these technology tzars now control both the mechanisms of delivery ***and*** the content. And there is an equally strong concern that the content itself is blurring – that it is more difficult to separate work-related content from leisure-related, personal or learning-related content. It is harder to distinguish information from education, information from entertainment, and entertainment from education, and as a result we see new categories of content emerging such as 'infotainment' and 'edutainment'.

Postman and McLuhan both identify this blurring between education and entertainment, between media technologies as teacher versus media technologies as a tool of the teacher. New media theorist Postman accepts McLuhan's stance that education and entertainment have become blurred but does not welcome the trend: "all media teach. All media educate – television is a great educator but what it teaches is different from what schools teach" (Postman in Marshall, n.d.). Postman goes on to assert that the distinction once again needs to be established, as there are significant differences between education and entertainment.

> ...entertainment usually has no implications beyond itself...that is: you are entertained by a piece of music or a TV show or even a play —and that's the end of it. You're either amused or you may even be saddened but there are no implications of that for other aspects of your life...of course great plays, I should say, are both entertaining and educational...in the best sense...in that they do have implications for how you go to live your life and in giving you moral guidance or sociological insights which then are useful to you. But, generally speaking, what we mean by entertainment, at least here in America, is something that, in fact, has no implications beyond itself. Whereas education is something that will resonate in all sorts of directions in your life through space and time and unfortunately...even in school now teachers are more and more trying to be entertaining because television has taught the young that learning, whatever it is, must always be fun. And if it's not fun, then it's not worthwhile and you should just change the dial...go to another station. Serious educators know that there are many things people really need to learn that may not be fun to learn...that are arduous and require levels of concentration and simple hard work that need to be done if you're to learn what it is. In addition to that, learning can be a great deal of fun – but it's a different meaning of fun from watching Seinfeld – it's a deeper kind of satisfaction that one feels when one's mind achieves an understanding or an insight or an accomplishment. Now that is, in quotes, fun of sorts but its entirely different from what we normally mean by fun in association with entertainment."
>
> (Postman in Marshall, n.d.)

Yet despite concerns about the role of new media technologies and the questionable success of past 'new' technologies, the discourse continues. Davis talks about instructional technology and the 'course in the box' approach, a familiar picture painted by the technocrats, globalists and educational reformers. The concept goes that a course, for example geography 101, is standardised throughout a nation: it uses the best geography lecturer alive (maybe from the staff of the *National Geographic*), he/she is captured on video, and these 'lectures' are then augmented by interactive CD-ROM games and Internet. Davis argues that the course, while expensive initially, becomes much less so as one master teacher replaces thousands of ordinary lecturers. Not surprisingly, Davis' vision reflects an unquestioning acceptance of the notion of technological progress and inevitability:

> Whether you spend $500,000 or $5,000,000 to create a course in a box, it becomes a bargain compared to the current cost structure for instructional delivery! There can be no doubt that the high quality course-in-a-box and other forms of off-the-shelf learning programs will have a place in K-12 and in higher education. The corporate world is rapidly adopting this kind of learning...
>
> (Davis, 1996)

2.2.7 Conclusion

This then, was the situation in the late 1990s. Statements of paradigmatic change of educational models and delivery are once again linked to the 'magic bullet' of technology. Despite the historical documentation of similar claims in the past century and the failure of earlier technologies to create more than momentary ripples in the educational pond, concerns are growing about the future and viability of traditional models of higher education. At the same time, there is increasing evidence that a complex interplay of factors shape technological and social change and that corporate interests have, in the past, been prime movers in the massification and popularisation of new media technologies. Major barriers to technology-driven educational change have included people, economic and organisational or institutional issues.

In the light of this discussion, the key questions that the following case study needs to address will be:

- Are new technology forms resulting in a paradigmatic change in higher education? (Technological determinist arguments would suggest that the availability of new

technologies for use in higher education would inevitably result in paradigmatic change in the sector.)

- If technology is not driving sectoral change, then a) what is causing the perception of change and b) is any change occurring? (Are there any obvious drivers of change that would throw more light on the relationship of technology and change?)
- Is the perceived blurring between education and entertainment (as suggested by Postman, McLuhan and others) resulting in a similar blurring between education providers and entertainment providers?

Chapter 3: New Media Technologies and Higher Education in the USA

Post-secondary education in the United States of America operates in a free-market setting. In this environment, multiple providers compete on a range of levels – from community college systems to the 'Ivy League'. As a result, there have developed flourishing industries in education and training with diverse offerings, services and target markets. It is from the United States that many of the new providers with global aspirations – including Magellan University, Western Governors' University and International University – are emerging. The relatively low barriers to entry and high uptake of media technology forms (with access to media technologies, especially the Internet, much more available and at far cheaper rates than in other parts of the world) provide what should be an ideal environment for new technology-driven models of education to emerge.

The case study focused on individuals and/or organisations positioned or perceived to be active in or have an interest in media, higher education and/or new technologies and their convergence. These 'key players' were identified via an intensive search of relevant literature and consultations with Australian and overseas media and HE sector leaders, prior to the face-to-face interviews. In most cases, initial contact with the interviewees was made via email. The target individuals and organisations were generally market leaders or experts in their speciality areas (primarily major media corporations or educational providers), thus expected to be the most likely to be involved in technology-driven models of education.

More than 15 interviewees represented communications and information technology groups, targetted because of their positions as providers and controllers of new media technologies, because of perspectives that they and their technologies are driving the changes reflected in the sector and because of their first-hand knowledge of technological capabilities. These individuals and organisations (including international communications corporations like Jones International Limited, specialist technology consultants the Gartner Group and major media corporations including

IBM and the News Corporation New Technology Group). ranged from those primarily targetting local areas and markets to those with worldwide reach and presence. More than 20 interviewees represented existing or emerging higher education providers; at community college, university and 'Ivy League' institutional levels; private providers; corporate providers and for-profit and not-for-profit providers. Representatives from various industry and higher education sector organisations were also interviewed. (A complete list of interviewees is contained in Appendix 1.)

Common themes and issues became apparent as the case study progressed. The research revealed a prevailing belief in imminent and essential change to the education paradigm with common factors identified as the context within which this change was occurring. Significantly, technology was just one of the factors identified (and not the one considered most important). However, media groups and higher education providers reflected similar commitments to technology as a tool in the educational process.

3.1 Virtual visions? Edutainment and mediated education

Interviewees from media technology corporations acknowledge the growth in edu- and info- tainment, but are quick to dismiss any notion that media technologies and their controllers will replace the traditional higher education sector. Most suggest that media technologies can be useful tools in the hands of an experienced or effective teacher, but do not, in and of themselves, constitute 'education'.

News Corporation has global reach and markets. The Rupert Murdoch organisation generated US$9.9 billion revenue in the 95-96 financial year, returning a trading profit of US$953 million. Corporation businesses cover newspapers, magazines, television, cable, satellite, book publishing, film and technology. One business, STAR TV, reaches almost 54 million homes in a range of countries, including Greater China, the Indian sub-continent, ASEAN nations, the Middle East and Pakistan. Murdoch states News Corporation is "the only vertically integrated media company on a global scale" (News Corporation 1996 Annual Report).

The New Technology Group (NTG) comprises a number of companies responsible for technology implementation and innovation throughout News Corporation. NTG supports all News Corporation divisions in implementing new technologies and endeavours to position the company to take advantage of new technologies.

The trend to combine entertainment and education is recognised by NTG, however Vice-President Business Development Michael Henkin (1997) suggests the tendency is to concentrate "more in the area of edutainment". While many technologies are trying to push into the market, consumer adoption is uncertain. "The question has to be whether people will want to use the technologies. They may be able to get education via the Net, but people like to sit in the classroom, they like face-to-face" (Henkin, 1997).

The McGraw-Hill Companies, an international media group, has three major foci: information and media services, education and professional publishing and financial services, which together generated US$3 billion in 1996. It has various businesses dealing with higher education and is the world leader in educational publishing. Despite the corporation's educational initiatives, which includes offering courses through the National Radio Institute, Senior Vice-President Technology And Multimedia Douglas Kubach states technology is "not a substitute for teaching".

> If you take a mediocre teacher, put them on satellite and beam them around the world you haven't improved anything, you've just allowed more people to see the bad teaching. If you take a mediocre pedagogy and beam that around the world in bits and bytes then you still haven't improved anything.
>
> (Kubach 1997)

This view is also reflected at Turner Learning, a division of Time-Warner Inc, a world leader in publishing, entertainment, cable networks and cable systems. The conglomerate is the product of two major media mergers – the integration of Time and Warner Communications in 1989 and a marriage with the CNN parent company Turner Communications in 1995.

Turner Learning's senior vice-president and general manager John Richards suggests that "all the rules are changing...convergence is changing the way we think", that universities are entering a period of major change and that the media technologies will

have an impact. Entertainment is not education and media technology (eg television) can be a "lousy medium for the transfer of information".

> The kind of things we provide have real informational value and can provide a context for a course, but watching television isn't learning – learning involves being active and having time to reflect...If you see this (communication and information technologies) as a more efficient way to deliver information then you're fooling yourself – that's not education...TV gives you a context, emotion, motivation – it's a visual touchstone and reference for information. Used with computer access to information, books and a good teacher, it can have an effective educational use. But it's bringing all those things together that's important.
>
> (Richards, 1997)

Nor is the Internet the solution to improving education, although it may be marginally better than television:

> the Internet is infinitely broad and very thin...educational software for the Internet...(is) useless without the teachers...The computer experience by itself is just an experience. There is a need to recognise that we construct the world as we're learning – it's the teacher as mentor or guide that helps us make sense, learn and apply the experience.
>
> (Richards, 1997)

Telecommunications giant Motorola has its own corporate training arm, titled Motorola University[7], where technology is used as a classroom support tool, but is not viewed as a total alternative delivery system (Sumberg, 1997). Motorola University's primary delivery mode is classroom training, although the organisation aims to have 30 per cent of training delivered to the desktop by the turn of the century. There are many reasons the organisation, which spends more than US$100 million annually on corporate training, has been slower to adopt the technological model:

> While media-delivered education sounds wonderful, it also involves a huge culture change in the way that people think about and view education. It's a major element people have not taken into consideration...in the discussions on education and technology...One of the things we've found is that people don't embrace alternative delivery models as much as we thought – or as they say they will. They may demand that it be available, but whether or not they'll use it is a different matter.
>
> (Sumberg, 1997)

Another organisation that has already discovered the difference between *interest* and *demand*, is Jones Education Company, a subsidiary of the multi-million dollar media

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[7] This is not a university as the term is understood in Australia. It provides in-house training courses in everything from work-related to personal issues and skills. It is not a government-accredited degree-granting institution.

group Jones International Ltd. Jones International has offshoots in America and Europe and operates cable, satellite, media and other companies. Jones Education Company (JEC) owns Knowledge TV and College Connection – both private for-profit providers of educational services. JEC at one stage offered full degrees via cable, but has since abandoned the model in favor of a more traditional combination of technology and hard-copy delivered material.

> Knowledge TV is used as a storefront, a display case, a shopping mall. We showcase the best programs from the course and students then contact us for more information. We started out delivering every course of every degree program on air – this was not an efficient use of resources. Students want to do study in their own time, so they would just video the required courses – now we use Internet and TV.
>
> (Griffin, 1997)

In short, the research shows that while most media corporations accepted the synergies between education and entertainment, which have resulted in the growth of edutainment and infotainment, they rejected any suggestion that media technologies were more than a tool to assist in the teaching and learning process. They also rejected any suggestion that traditional models of education were in danger of disappearing in favour of technology-driven models. In light of this response, they then identified various reasons why media corporations were not likely to get further involved in providing education. The three primary reasons, common to all, were economics, core business and branding (with core business referring to the industry speciality area and branding to consumer recognition of the corporation or provider). Thus, commercial imperatives were identified as limits to the convergence of the two sectors.

The financial 'bottom line' was consistently the first barrier to be identified. ; for Time-Warner would need a "business incentive" to drive any involvement in education (McEnerney, 1997) and there is not "enough money there" (Richards, 1997) for Turner Learning to get involved. Economic viability and the responsibility to return a profit are significant issues, and entertainment tends to pay better than higher education.

> Of course we're interested in viable business opportunities and of course one of our criteria would have to be economic viability. But we also want to be known as good corporate citizens serving the public interest. Our television stations already do this and, as a company, we'd like to maintain that practice. By and large, though, the economics have to be right - because we are a business and we have to meet economic imperatives and answer to shareholders.

(Henkin, 1997)

Computing corporation IBM is playing a significant research, development and partnership role in the integration of technology into higher education. The multinational corporation has clearly defined and developed worldwide strategies for its involvement in the higher education sector and has made significant staff and financial commitments in this area. It features in many current developments in the sector – both through its 'IBM Global Campus' architecture and via products like Lotus Notes. Universities are a major customer focus of the corporation, which also has its own internal education and training program, with 240,000 employees around the world and almost a US$400million/yr operation.

IBM is also "in the business to make money – if not, we wouldn't be in business" (Geoghegan, 1997), but this is not the main reason it has not entered the education market as a provider. Instead, the corporation has a policy not to move into direct profit, rather a corporate position that IBM will not move into direct competition against its major client-groups (Verville, 1997).

Coupled with an economic imperative for most media corporations is a commitment to their core businesses. In America at least, businesses increasingly have been forced to focus on their core business in the last decade and media corporations are "not educators, that's not our core business" (Geoghegan, 1997). Most media corporations are particularly passionate about not being presumed to be educators or in the business of education. Training and education that promoted their core business could be considered relevant to the corporations, but general education was something that should be left to traditional institutions. The research showed many major corporations only had their own corporate arms because they believed the traditional sector had, in the past, been unresponsive to industry requirements. They only moved into education provision if they had to, or if "they get better returns on their investment than they get from making hamburgers" (Verville, 1997). Motorola has its own educational programs for the same reason as it has a legal service, to support the core business of the organisation (Sumberg, 1997).

Broadcasting and computer companies might, and do, consider packages and/or services that complement or provide value-adding for the core business of the organisation. The Turner Learning products and projects aim to build on the platform established by network programs, and to develop and complement existing business through a growth in viewers. If there was market demand and an "economic model that makes sense", then a company like News Corporation might get involved in an alliance to deliver education in order to grow and promote its core business. If the company could offer education by satellite and bundle that with an entertainment package "which is our core business, then it's a win-win situation for the consumer and us" (Henkin, 1997).

Media corporations believe their products are 'branded' in ways that are not synonymous with the provision of education. IBM's branding is associated with the building of computer parts, Microsoft with the development of computers and software and Disney with entertainment. News Corporation does not have a brand in education, but in "news, sports, children and entertainment in general" (Henkin, 1997). In an increasingly-competitive marketplace (with modern CITs, especially the Internet, making products available irrespective of space and time), media corporations see branding is extremely important, as consumers look to use and access products they trust.

Media technology groups are not uninterested in the higher education sector, but point to significant culture clashes interfering with past attempts to work with higher education. However, they suggest they can make major contributions to the work of educational institutions through the development of strong alliances allowing each partner to make the most of its branding and expertise while building on its core business. Corporate partners bring business sense, international market reach, branded quality services and infrastructure and a tradition of meeting market demand. Such relationships carry significant benefits for institutions.

> We're talking about market expansion opportunities for universities – we think we can help that because of the managerialism and technology we bring to the table. We're interested in how universities react – many may see it as a threat, while others will consider it the greatest opportunity.
>
> (Verville, 1997)

Turner Learning has always aimed "to provide teachers with the resources to make their jobs easier – not to replace them in the classroom" (Hickman, 1997). Major media corporations including News Corporation, McGraw-Hill, Microsoft, Apple, Jones International are also committed to growing partnerships and alliances. Corporations see partnerships as "absolutely necessary. Any institution of higher education, government or business which thinks they can exist in isolation...is fooling themselves" (Sumberg, 1997).

Education-based individuals and organisations are familiar with the claims of increasing involvement of media groups in higher education, and many are convinced the higher education sector needed to become more responsive to cultural and societal needs. Despite being selected as part of the case study because they were perceived to be among the most active players in developing or delivering new, technology-enhanced models of higher education, educational representatives agreed that entertainment was not education and technology not a straight substitute for teaching. There were strong perceptions that technology-dependent educational programs, for example those delivered by some cable educational providers, are "just disseminating training programs, not producing education" and "education is more than just the dissemination of information" (Plotkin,[8] 1997).

Media technologies are expected to feature more in education as they became more accessible and affordable, but they are not the sole catalysts of change in the sector:

> if you look back, there are technologies that everyone thought was going to revolutionise education, but nothing has changed traditional education – and we use technology all the time...when the...people who care about pedagogy get nervous they tend to hold on to what they've always done.
>
> (Schrum, 1997)

Like Cuban (1982, 1996), Hodas (1995) and others, the education sector recognises the failure of media technologies in the past to deliver promised changes:

> The promises being made about technology now are the same ones that were being made about tv then. The technology is way ahead of the pedagogy. TV lets you take bad

[8] Ira Plotkin is the Academic Dean International Studies at Colorado's Regis University, a private university delivering accelerated degree programs via workplace- and community-based delivery.

> lectures and scatter them across the US. Now some people are using these enhanced technologies well – and some are using them not so well.
>
> (Jones, 1997)

While technology is recognised as a powerful tool in teaching, educators suggest that it is the application of the technology that is important. Educational use can be empowered through alliances of technology groups and educators, when these have learning as a primary focus:

> If all those technologies could be in a box, under one umbrella, so I (as teacher, learner, individual) could choose the piece I need to use, rather than the satellite company saying everything has to be satellite or the cable company saying you have to use cable, then that would be the ideal. There should be an umbrella organisation with the ability to use all things and enable people to work together. That's why there aren't really any good existing models. Research tends to be specific to particular technologies and trying to prove that technology is the best.
>
> (Schrum, 1997)

The media and higher education sectors are also struggling with the apparent convergence of content and carriage, a flow-on effect of the technological convergence of CITs, which has resulted in the medium versus the message concerns identified in the latter part of Chapter 2. Educators are concerned about the owners of the media technologies becoming the content providers as well as the carriers and the possible "Disneyification of the content. I'm concerned there'd be lots of glitter and bells and whistles, but no deep foundation. I'd prefer that those groups would collaborate with the traditional institutions" (Reeves, 1997). Such concerns have not been allayed by apparent anomalies between the media corporations.

The primary focus of News Corporation, Turner Learning and McGraw Hill is content (Henkin, 1997; Kubach, 1997; Richards, 1997). News Corporation is a "content company rather than a distribution company. We are vertically integrated in some areas..." (Henkin, 1997).

The content versus carriage and content split has been a matter of discussion at News Corporation for more than 12 months. News Corporation has significant distribution/carriage arms – encompassing newspapers, television stations, movies, and satellite companies. The general public could be forgiven for approaching

sceptically any suggestion that News Corporation does not control both the medium and the message. However, there has been a shift in 1997 with News Corporation recognising that "the company could be content-focused and not need to own the distribution systems - as long as we have access to and can make use of others' distribution" (Henkin, 1997). Further evidence of this trend was provided in June 1997 after Rupert Murdoch backed away from the establishment of the 500-channel ASkyB project, and joined forces with a conglomerate of cable television companies which owns the PrimeStar satellite service. Murdoch said the corporation "had to choose: are we a software supplier or a distributor. The choice was obviously to say we were going to be a software supplier." (Murdoch, as reported by Raymond Snoddy, *The Financial Times*, June 23 1997)

McGraw-Hill is also in the content business, "not interested in owning the distribution channels on the networks – we're only interested in publishing the content" (Kubach, 1997), although the issue is not a major one for Turner Learning

> I don't understand the distinction. I think what we are doing is providing content. I think content is something that can be manipulated and used. I think we provide the content – what we don't provide is the pedagogy.
>
> (Richards, 1997)

At the other end of the continuum are Jones International and Apple Computers. Apple has an extensive history of involvement with the higher education sector – but has concentrated in areas that would build sales of core products or foster the development of new hardware via collaborative research. Jones provides a marketing and delivery system: "we're not a content generator (other than International University). Contents don't change, standards don't change – just the delivery system" (Griffin, 1997). However, the corporation is moving more into content development areas

> I've got some mixed feelings about that. I think if you own the content and own the pipe then it doesn't necessarily work the best. Jones Education Company has nothing to do with the Jones Cable Division which carries our content. We try to stay technology and carrier neutral – we use the best media for the situation.
>
> (Griffin, 1997)

Debate is further clouded by the nature of the technologies themselves. Owners of the print media (textbook and newspaper publishers) generally control both the content

(through contracted authors) and the methods and means of distribution (the printing presses). History also records that the successful Hollywood studios at the turn of the century (and since) were those that also controlled both the moviemakers and the movie theatres.

Concerns about entertainment replacing education (as suggested by Postman and McLuhan) or media groups providing education in place of traditional providers appear unjustified, although all groups recognised the potential for powerful partnerships between education providers and media technologies and for new technologies to further enhance the teaching and learning experience.

3.2 New technology forms: new forms of education?

The case study provided an opportunity to examine the available evidence that new technology forms are leading to new technology-based forms of education. The growth of the Internet and placing of satellite footprints across the globe have led many to rhetorically pronounce the death of the bricks-and-mortar university and the birth of 'virtual' education; delivered to the home or workplace, conducted by 'teachers without heartbeats' and independent of time and place constraints. Primary examples of these technology-driven forms of education were held to be the Virtual U, Magellan University, University of Phoenix and the Jones' stable of International University, College Connection and Knowledge TV. Other examples included Africa Virtual University, APEC Virtual University and Western Governors University. (These examples are all examined in more detail in this section.)

A study of these 'innovations in education' reveals that they are, at best, nascent, and there is little that is radically different or technology-inspired about their development.

One of America's largest and most successful private universities is the University of Phoenix (UoP), which has extensive industry partnerships and has been accredited for more than two decades. (According to Accredited Institutions of Post Secondary Education, the University is ranked second largest among the top 10 US private schools based on total enrolment.) UoP is often used as an example of 'new' virtual technology-based methods of educational delivery, with proponents extolling the

institution's success, despite the lack of a central site or a 'bricks and mortar' focus. However, of the 40 000 students enrolled in 1997, more than 90 per cent attended face-to-face classes in decentralised classrooms – local learning centres, workplaces and motel meeting rooms. UoP offers graduate and undergraduate certificate and degree programs using an accelerated learning program which specifically targets its adult student market. The success of the model is due to the institution's focus on student needs:

> Working adult students get treated like 'bastard step-children' by most traditional university programs. Our program is premised 100 per cent on the needs of the adult student, even our enrolments reflect that. Our program is based on the fact that once the student signs-up, every subsequent moment is spent on them working – not on any administration etc.
>
> (Seigal, 1997)

This observation is especially interesting in the light of the tendency of commentators to cite UoP's success as an example of technological innovation, rather than its focus on the personal touch and problem-solving for adult students (treating them as a unique market rather than part of a mass student body).

There are significant differences between the three Jones International' educational services: Knowledge TV, College Connection and International University (established as a not-for-profit 'virtual' institution). Like the proposed APEC Virtual University, College Connection operates as a brokering agency, linking cable viewers with institutions (universities and community colleges) offering various degree, certificate and leisure learning programs. College Connection provides online and telephone registration, administration and pre-enrolment facilities. Classes are 'home-delivered' in various modes, including hard-copy, Internet, videotape and cable.

Knowledge TV is a cable channel available in 25 million American households, which targets the leisure and lifelong learning markets. Its focus is 'self-empowering' programming in four primary areas: business, careers and finance; health and well-being; global culture and language; and computers and technology. It does not grant degrees or provide certificates.

International University (IU) is on its way to becoming an accredited degree-granting institution. Based in Colorado, it offers some certificate courses and a bachelor of arts degree-completion program and master of arts program – both in business communication. Courses are delivered using multiple and mixed modes, including video, audio and Internet technologies, and there is no central campus. The target market is 25-years and up and interested in lifelong learning. IU's model is similar to UoP's in that it consists of accelerated learning models, adjunct faculty and focuses on learning outcomes. IU takes its role seriously in "trying to design education that is available anytime, anyplace, anyhow. It may be unconventional, but I believe it is a prelude to the future" (Pease, 1997).

Several 'virtual' university projects, including the McGraw-Hill 'CyperCampus', Simon Fraser University's 'Virtual U' and IBM's 'Global Campus' have also been of interest to the sector. Analysis reveals the three models share a common purpose – to provide support infrastructure and architectures for teaching and learning. "Virtual U is a learning development model...with conferencing abilities and a pedagogical support base. It's a system for delivering courses that might or might not use collaborative learning." (Fisher, 1997). The Virtual-U (VU) is one of the beacon technologies that has emerged from the Canadian TeleLearning Network of Centres of Excellence collaboration. VU is a server-based multimedia software system that enables customised design, delivery and enhancement of education and training courses delivered over the WWW. Around 4000 to 5000 students are enrolled in 41 Virtual-U courses being offered from 14 field test sites across Canada – including universities, industry and a national union. Most sites are offering 'for-credit' courses, with the Bank of Montreal using it (VU) for professional development and a labour union using it to teach laboratory skills.

IBM's 'Global Campus' is not a university provider of courses, but a facilitation process for those wanting to integrate technology in their teaching, with an emphasis on providing technology tools for university administrators to use in student-institution interaction and for faculty to teach interactively and collaboratively. The purpose of the IBM Global Campus is not to be an education provider, but to "help you (traditional institutions) to become a global campus" (Verville, 1997). Similarly,

McGraw-Hill's 'CyberCampus' is simply an online architecture which provides tools for collaboration and facilitation of administration and teaching and learning (Kubach, 1997).

Another developing education model cited as an example of new technology-driven forms of education is the Western Governors University (WGU). However, detailed examination reveals it to be more an exercise in cooperative education and accessibility than in technology-based teaching and learning – and one which is not assured of success, or even survival. Work on WGU started in 1995-96 with all western American states invited to participate in bringing together their higher education institutions and making education more accessible to all. The institution will function both as degree-granting and as a broker, allowing students to mix-and-match units for various member institutions into the one degree program (Albrecht, 1997). The mode of delivery will vary according to the home institutions and might include face-to-face, hard-copy, Internet, satellite, video and audio teaching methods. Initial funding came from the Western Governors Association, member states and business, however the enterprise must become economically viable to succeed and survive. In mid-1997, problems were already emerging in maintaining the funding base and getting member states and institutions to co-operate in a totally voluntary initiative.

Several government and non-government organisations are working on the WGU, including the National Centre for Higher Education Management Systems (NCHEMS), Western Interstate Commission for Higher Education (WICHE) and Western Cooperative for Educational Telecommunications (WCET). NCHEMS principal Dennis Jones suggests the WGU is "less to do with computers and more to do with putting something back together that means something". Jones (1997) argues that a college degree was once a guarantee of a pretty good job, but this is no longer true: "part of it is the market economy – students and parents of students are much more insistent that there's something to show for the money they spend on their education, they want a set of workplace skills at some level that says they're employable".

Magellan University, Africa and APEC virtual universities are still relatively embyonic in form. And, contrary to common perceptions that the 'virtual' nature of the providers requires them to be computer-based , these are not educational models which primarily rely on the global media infrastructure of the Internet.

Magellan University has a strong World Wide Web presence. President Bill Noyes works out of a suite of offices in Tuscon, Arizona, and is very visibly involved in new models of education provision, including the development of the Western Governors University. Magellan is still in the development and conceptual stages, with no guarantees of success. Noyes developed the concept of the new provider while on staff at University of Arizona, and left the traditional institution in order to implement his ideas. He believed it was not possible to develop the new model within the traditional setting for many reasons, including institutional priorities, organisation issues and staff difficulties. The impetus for Magellan followed Noyes' recognition that the world of delivering education was "changing and changing quickly".

Magellan is a for-profit endeavour, financed with venture capital from a research foundation using endowment money. Staff are employed on a per-job basis (eg 10 staff were employed during a 1997 pilot unit). However, Magellan is not wholly Internet-based, using a combination of the world wide web, IBM's Lotus Notes and video technologies, employing "the best person in the world" in the subject area to deliver the video content.

> I'm a great believer in great teachers. I believe great teachers make a difference and can be served up to students on video and come across on video...The intangibles don't come across on the web, things like facial expressions.
>
> (Noyes, 1997)

At the time of the case study, Magellan had conducted a pilot unit, with 45 students in two classes. The basic framework of the new provider was to "use technology efficiently and not carry too much overhead. We'll provide the same or better quality for teaching for people who don't have to be acclimatised to the world – and we'll do it all for 15 per cent of the normal university teaching cost" (Noyes, 1997). This stripped-down, back-to-basics model of education does not represent a convergence in media and higher education, rather a narrowing of focus and offerings to a smaller

market (those who do not require the social experience of a traditional institution to 'acclimatise them to the world').

Noyes believes investors should recover their money in about two years, but it may be some time before it is possible to determine whether the venture is a success. "Timing is everything and indicative of success. We won't know for another three or four years whether my timing is correct" (Noyes, 1997).

While all models discussed in this chapter so far primarily target the North American market (with varied intentions to 'go global'), Africa and APEC virtual universities have been heralded by those concerned with taking educational services to less developed parts of the world (eg Commonwealth of Learning head Raj Dhanarajan speaks highly of the revolutionary potential of Africa Virtual U to extend education to the African sub-continent). However, these are perhaps in even earlier stages of development. Like the Magellan enterprise, Africa Virtual University is not an Internet-based educational model, instead bringing together satellite, television, computing and hard-copy delivery methods to provide education via learning centres, initially based at African universities. The purpose of the project is to fulfil the unmet demand for education in African countries (Baranshamaje,[9] 1997). It is still in a pilot phase, while supporters endeavour to determine likely costs and the feasibility of success. One of the main issues for the developers is making education economically viable: "you can't provide education if you don't have the economic mass" (Baranshamaje, 1997). Promoters suggest one of the difficulties is convincing commercial interests to rethink their definition of business models, as Western forms of charging do not work in regions like Africa. Therefore, Africa Virtual University is developing as an educational broker:

> Philosophically, you can't plan on a pricing formula like in the US – we're trying to aggregate the market in South Africa to split the cost. That's the trend today...some providers say you can come in as a consortium and they give you all the infrastructure and so on. Technology is changing the way business in the educational industry is being done.

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[9] The World Bank has provided several hundred thousand dollars to assist in the development of Africa Virtual University, Etienne Baranshamje is the World Bank's African Virtual University Project Officer.

(Baranshamaje, 1997)

APEC Virtual University is likely to be more reliant on Internet delivery than Magellan U or Africa Virtual University, but is also still in its infancy. Various content providers will set fees for their modules, with a percentage of the fees retained by the Virtual University (again acting more as a broker of educational courses than a primary provider). Transcripts will be held by the home institution, with each learner provided with an online portfolio certified by APEC Virtual University. Courses will be converted and put on the Internet with the project team working to reduce the turnaround time and keep costs low. The major focus of the project is quality assurance on important pedagogical and ethical issues (Palin, 1997). The university will deliver "a broad spectrum of material" across the Asia Pacific region, and to the United States:

> This is the VISA model of virtual education. If you can demonstrate quality assurance and meet minimum authoring specifications, then come on down.
>
> (Palin, 1997)

The research was unable to identify any clear examples of new forms of technology-based education emerging as a result of the greater spread of communication and information technologies, although many individuals and organisations are experimenting with what they hope or expect to be new forms. It also became apparent that no one media technology is likely to totally subsume other means of delivery, with few institutions and providers committed to just one medium (an aspect of technological development recognised by critics of technological determinism who argue that new technologies do not immediately replace the old, but are laid over the top of them in a type of sedimentary compression).

Media and education groups identified states and organisations that had in the past made commitments to one specific method of delivery and had been 'burned' by the experience, for example, the western States "which put in extensive video technology and are now scratching their heads trying to work out what to do with it" (Olcott, 1997). The tendency was more for institutions to be moving to multiple modes of delivery, including print, satellite, cable, video and audio conferencing, and the Internet. The exception was a handful of providers committed to developing Internet-

only delivery, perhaps because the technology is in itself a converged media form that, with future improvements in bandwidth and structure, might allow the developer to combine appropriate mixes of various modes (including graphics, video, audio, print and interactivity).

The research also identified a notion of technology as a 'trojan horse' causing academic staff to rethink their ideas about the classroom and the teaching and learning process. However, there is concern in the education sector about the stampede to 'technocise' courses and institutions without proper understanding of the media of delivery, the pedagogy of the process or student/teacher demand. At the same time, there is a recognition that institutions that ignored the pressures to change would "just die" (Bates, 1997). There needed to be more emphasis on "educational processes" rather than "just the technology" with an understanding that 'putting things on the web' would probably not expand educational outcomes or improvements:

> This is putting the cart before the horse. We need to be asking how technologies like the WWW, video and cable can be used to help deliver those pedagogies that we want – and how they can enhance the teaching and learning experience.
>
> (Reeves, 1997)

Academics and media technologists are willing to suggest positive aspects and advantages to the use of technology in teaching. First, technology makes a positive contribution to education when it is **applied appropriately**. "In some ways, higher education has grabbed this as the new revival, the new answer, but not everyone has embraced it appropriately...it needs to first be part of individual daily life at three levels: pedagogical, organisational and institutional" (Schrum, 1997). Some difficulties have arisen in the past where the technology has not been implemented or applied appropriately in the classroom

> the system can do fantastic things, but I've become any enemy of normal video-conferencing. The lecturer gives a lecture, there are 30 people sitting at the other end – this is wrong. If there is a brilliant lecture you can tape it, give it to the students ahead of time and spend time online to be online in the real sense – not to replicate what's happening in the classroom...on good days I think there is so much potential which can be channelled into useful areas.
>
> (Veltman, 1997)

Second, technology is most likely to be integrated in education when it is the **solution to a problem:** perhaps freeing the teacher from a blackboard or facilitating small group interaction. One positive outcome of increased educational use of technology is that it can "disrupt the traditional structure of the classroom and allow the teacher to move from behind the podium" (Richards, 1997).

However, there is still a **need for caution** and it is important to remember the human element and not get carried away by extravagant promises. Academics expect that technology will become a mediator of the teaching and learning process over the next 20 years, but "we need to step back and think about technology and learning. We're talking about the use of technology to deliver current content in new ways" (Albrecht, 1997). The integration of technology is most likely to succeed where the technology is applied to solve a problem or meet a need, rather than incorporated just to see what it can do (Verville, 1997).

Recognition of the failure of technology to deliver the promised revolution in education (as discussed in Chapter 2) has led to some disillusionment with the continued discourse of the technology revolution: "there's a lot of yap goes on about the new paradigm, that's all very well, but no-one's using it (technology) in a new way" (McMechan, 1997).

3.3 Higher Education: caught in the change cycle

Given the lack of evidence for concrete new forms of technology-mediated higher education models and for technological convergence driving sectoral convergence between education and media, what is driving the perceptions of paradigmatic change surrounding the sector and are new technologies are the key? Is it simply that the mythos of technological determinism is so ingrained that opposing views are stifled? Perhaps there is a need for traditional forms of education to change, and technology is being seized on as the vehicle of that change? It is significant, then, to realise that education and media representatives agree that media technologies are already sufficiently advanced to make totally 'virtual' education a technical reality – that is, that the Internet, computing networks, satellite and similar broadcast technologies allow for the wall-less and teacher-less classroom to exist – however they do not

believe this is the cause of the impending 'death' of education (as discussed in Chapter 2). Instead, they argue, technology has focused attention on pre-existing sectoral problems, adding an impetus of reality to the discussion:

> What it is doing is making us pay attention to those things we always should have paid attention to: quality in teaching, access and relevance. These are the things you don't pay attention to if you think you have a corner on the market.
>
> (Peace Lenn, 1997)

While technological developments provide a practical foundation for the debate on the changing face of the higher education sector, the research reveals other, more significant, agents of change. Common contexts highlighted as impacting on higher education included decreasing public funding for the higher education sector, increasing student demand at all levels – including lifelong learning and continuing and professional education – and calls for the sector to be more responsive to its various stakeholders – including students, parents, society and industry.

Contrary to the technological determinist perspective that technology is the single-most significant agent of change, the case study revealed a common view that in most institutions the "least important factor" is the technology and the most important shift is that "students are truly becoming consumers":

> That is a hard thing for the academy – the competitiveness. Students now have, and will have, so many options. They will come to us just once and we'll have one opportunity to lay out our program and offerings and if they go away, then I don't believe they'll come back.
>
> (Olcott, 1997)

The student body is becoming one of the major forces for change although "some faculty are of the opinion that they know best for the student, they know best for society and they are not responsive to stakeholder needs/demands" (West, 1997) and some institutions are slow to respond to students:

> Students are causing some of the pull. So is the corporate world. It's not just the technology, it's because of what we need. The single biggest push is from the funding sources – or lack of. Universities need to find new ways to get the job done.
>
> (Verville, 1997)

Universities are primarily in "reactive mode" (Reeves, 1997) but must respond to the various environmental factors, or risk accelerating the change process. "Institutions

which blow this thing off and aren't responsive to student needs are going to make the cultural change easier. If institutions of higher learning don't become more friendly then the change will occur faster" (Sumberg, 1997). Some institutions are starting to accept that they have a problem. "Often, in the past, institutions thought they were the smartest people and could solve all their own problems – now they're starting to get over it. Higher education institutions are starting to look for people who can help" (Geoghegan, 1997).

The mono-causal arguments of technological determinism also appear inadequate to explain a more complex interlinking reflected in the study of social and cultural need for change, new technologies and the drivers of change. Thus, there develops an intricate link between new technologies and demand for traditional educational services (which may or may not be delivered in traditional format). In the information society "the most valuable commodity an employee can have is information and the ability to get information" and this is one thing universities have traditionally taught well (Noyes, 1997). New technologies are "creating an even greater demand for higher education. Everyone is realising they need new education. They need to become lifelong learners" (Wisehart, 1997). This need, for more people to become better educated or to increase their education, may be one of the major challenges facing higher education.

> There's an increase in people who want some kind of learning. Also there are rising costs, more people have to work...The costs of educational provision are rising enormously and traditional institutions are not expanding the number of people and facilities very rapidly...Adults know what they want – they don't have the luxury and time to worship at the feet of the education masters. They want things to be authentic, relevant and necessary. Anyone of these problems by themselves would be substantial – all of them present monumental challenges to the sector.
>
> (Schrum, 1997)

More important, also than technological developments as agents of change, was a view that the sector was failing to stay tuned to the needs of society and culture. There was a perception of strong synergies between higher education and its stakeholders in the 1940s, with universities since failing to keep pace with significant changes to society, especially in the past 10 years.

> There's more job hopping, people tend to have multiple careers, skills become obsolete quickly and there's a need for continued education, with people having to constantly

> learn just to stay even...But higher education is still focussed on the one set of deep learning, it's not focussed on the important things...People graduating are not fitting into the workforce anymore. Higher education isn't developing with the need. This is driving a lot of...dissatisfaction.
>
> (Geoghegan, 1997)

Rather than new media technologies driving sectoral change, an emphasis on lifelong learning is seen to be responsible for much development in the area (Kubach, 1997) and for the general growth in demand for educational services: "if you believe all the hype about lifelong learning, then one out of every seven workers will have to be participating in education" (West, 1997). Private providers cite research showing that "people with college degrees can earn twice as much and have half the chance of unemployment" (Griffin, 1997).

The commitment to higher education as the key requirement for participation in the information age (as distinct from a commitment to technology alone as the pathway to the future) is strong, with nation states recognising the economic and social benefits of an educated workforce (McMechan referred to the "obvious link" for governments between investment in education and economic performance). While there is a mythical nature about many of the promised benefits, some reflect a belief in the power of new technologies – not to force paradigmatic change in culture and society, but to answer problems of access to education for 'third-world' countries. "The idea is to make education more accessible, drive down the costs of education and improve access and quality. A renaissance is required in education" (Griffin, 1997). Information and communications technologies "improve the exchange of knowledge. In China it feels like turning canons into ploughshares" (Griffin, 1997).

The alternative definition of the information age as the 'knowledge age' and the role of higher education in developing knowledge and knowledge workers is also significant. Academics and technologists consider the importance of the "rapid dissemination of information and knowledge" is now apparent: "the information worker today is the knowledge worker of the future" (Lechner, 1997). As a result, higher education is becoming more broadly defined: "we still need a broad liberal exploration of ideas and thinking about thinking, but it is also true we have to prepare

people for real careers. The goal should be to be all things and higher education can certainly be more things to more people – not less" (Schrum, 1997). The imperative *not* technological, but both economic and social:

> the future for employment and prosperity, has to be based on a highly educated workforce. We have to have lifelong learning but that's only possible through the use of technology and distance education. We're talking about economic imperatives, not social issues...if you don't invest you don't get the returns.
>
> (Bates, 1997)

The research revealed demand for educational services has grown so much that there are now economic incentives for traditional and private providers to target non-traditional market sectors and it is this demand that is directing much of the interest in paradigmatic change – not the capabilities of new media technologies. Reference was made to the development of educational models, like the University of Phoenix, which target lifelong learning and continuing and professional education. There was recognition that multiple new forms of higher education will develop and, while traditional education forms are not in imminent danger of disappearing: "the economy is globalising and most of the world doesn't have access. This (increased demand for education) is not a trend, it's a reality" (Peace Lenn, 1997). New providers are targetting lifelong learners and

> 18-23-year-olds who otherwise would not get into the system. That's an exception though, I believe the bulk of it is aimed at the lifelong learner. That's both where the money and the need are. Most schools know how to do the 18-23-year-old thing, which is not just education, but maturation. The model is less broken for 18-23-year-olds, it's working better, although there's always room to improve.
>
> (Verville, 1997)

This creates new tensions as academics and institutions struggle to balance market demand with social priorities. Debate commonly teeters between concerns about the need to return a profit and the commercialisation of education (the culture clash mentioned earlier in this chapter). Noyes developed the Magellan model when he "realised the world of education as we know it couldn't last". Regis University, with its student-centred focus, accelerated learning model, and close ties to industry, walks the "fine line between education and prostitution" (Plotkin, 1997). However, a non-traditional education model is not necessarily an inferior model. "I don't think it's an

either/or situation. I don't think it's a situation of selling out...people on the other side would say that those traditional institutions are out of touch" (West, 1997).

3.4 Conclusion

The study set out to gather evidence on the impact of technology on higher education delivery. More specifically, it asked whether new technology forms were resulting in a paradigmatic change in higher education; whether the perceived blurring between education and entertainment was resulting in a similar blurring between education providers and entertainment providers; and if technology is not driving sectoral change, then a) what was causing the perception of change and b) was any change occurring?

It became apparent that new technologies were *not* resulting in a paradigmatic change in higher education, although they were one of a number of factors contributing to perceptions of the need for sectoral change. Other factors driving the perceived change include economic pressures, increased student demand for education at all levels and concerns that the sector has failed to keep pace with community and corporate needs. The research found no evidence that the perceived blurring between education and entertainment has resulted in a similar blurring of education and entertainment *providers*, although there was strong attention drawn to the powerful potential of partnerships and alliances to benefit both sectors.

Chapter 4: Discussion and Conclusion

The aim of this research was to examine the theory that technological change drives social change, through an examination of the impact of technology on higher education models in the United States of America. In so doing, the thesis has considered various theories concerning the relationship of technological and social change, histories of promised educative potential of technologies and evaluated the impact of 'new media' technologies on higher education in America.

The literature and the primary data gathered in the course of interviews with American media and higher education representatives makes it clear that, despite concerns about the shape of education in the future, new media technologies have not resulted in any major new educational forms. Specifically, converged forms of CITs (eg the Internet) have not, as yet, revolutionalised the delivery of higher education regardless of the promises of its many promoters that it will do so. This should not be a surprise, reflecting as it does the historical pattern of the introduction of new media technologies accompanied by similar claims, which were also largely unfulfilled (see section 2.2). In their time, the telephone, moving pictures, radio, television, cable television, computers and the Internet have all been acclaimed for their ability to conquer space and time, make more efficient and effective the classroom environment, and expand the boundaries of student and social knowledge.

The underlying mythos of technology and education can be seen to be largely technological determinist. Themes of technological determinism are obvious in the discourses of the twentieth century surrounding the relationship of technology and education.

The notion of the 'technological imperative' is present in the discourse. Technology-driven change to educational models was considered inevitable, therefore much of the debate was focused on how best to equip educators and institutions – at policy, organisational and individual levels – for these changes, rather than whether they were

desired or required. The 'lack of choice' theme of technological determinism is also reflected, with evidence that educators have felt disempowered in the face of supposedly-inevitable technological change.

Conceptions that innovation and modernity in the classroom are reflected by the presence of the latest technologies are founded on the technological determinist notion that equates technology with progress. If the measure of a modern and progressive society is defined in terms of technological change (as Watkins (1986) suggests), then educational systems which have not changed to incorporate technology are seen to be failing to progress. The presence of a movie projector or radio receiver was considered the mark of a modern classroom in the early 1900s; in the 1990s, progress is measured by the number of online courses, or computers and laptops on campus.

New media technologies have continually failed to bring about paradigmatic changes in education. Promoters have successively identified technical reasons for this failure: radio lacked vision, television had sound and vision, but no interactivity. In the late 1990s, the Internet is considered to finally contain all the required ingredients: sound, vision, interactivity, information retrieval, communications facilities and the ability to display text, graphics, sound and moving images. The modernisation of education is finally at hand! However, the case study of higher education models in America revealed that while it was already technically and technologically possible for new forms of education using communications and information technologies to exist, the revolution is still not happening.

The research suggested various reasons – a complex interrelationship of social, economic, cultural, individual and organisational factors – for this latest hiccup in the educational evolution. Demand for technology-based or technology-enhanced models is one issue. Students, academics, parents, governments, industry and the community have, at times, differing expectations of the education system. Do students want to 'virtually' learn, never attending face-to-face classes or spending time in the library building? Are academics willing to 'teach from a box' using generic courseware and assessment tools? Are the desired outcomes of a university education the same for

industry groups as for the general community? These three sample questions alone have been the subject of considerable debate, and variable response.

What then, of economic considerations? If demand is variable, then what financial model provides the impetus to, or will enable, technology-driven change in education? Again, responses vary according to stakeholder group and individual circumstance. It may be there is a financial gain for governments in 'virtualising education' and reducing face-to-face course delivery (although there are usually at least significant up-front cost burdens). There may also be a financial cost for students, forced to spend more money on technology to access course materials and participate in education. There is obviously a financial benefit to the CIT manufacturers in selling more product, how is this balanced against education spending? One of the difficulties is that it is difficult to quantify financially service institutions, especially where profit and loss may need to be measured less in terms of economic gain and more with regard to long-term outcomes and community benefit.

Institutions, governments and organisations may have different educational priorities which affect the rate or likelihood for technological change. While developed nations may be competing to provide the best graduate and postgraduate programs, about one-fifth of the world's population is illiterate and another 900 million can read and write "but are for all intents and purposes functionally illiterate" (Dhanarajan in de la Harpe 1998). Different technologies will have varied applications in delivering education to these people. Socially and philosophically there are many questions to be answered about access, equity, the place of the 'hot body' in the classroom, the purpose of education and related matters.

The literature and the case study also reflected growing concerns about the powers of those that own and control new media technologies. The effect of ownership of news media has long been a popular subject of discussion and research, but the emergence of 'technology tzars' controlling and owning converged media groups has lifted this concern to new heights. Coupling these general concerns with the technological or media determinist theme that the 'medium is the message' positions the controllers of the media as the drivers of change, and the shapers of society. If technology drives

social change, and the major media corporations control the technology, then *ipso facto,* they control society. If technology is going to reshape radically the way a university functions and operates then, by extension, the major media corporations become the architects of that reshaping, the engineers of the future.

However, the North American case study shows that these major media corporations are not interested in becoming the education providers of the future. They are interested in growing their core businesses (selling computer boxes, books, advertising space on their networks and so on), in making a profit and in partnerships and alliances. They are not about to become educational providers themselves, although their products may be used to deliver and support education. Social, economic and cultural factors were cited reasons for this lack of interest.

This study aimed to examine the theory of technological determinism. It has done so and found the theory to be inadequate in describing the relationship between technology, change and higher education. Beliefs that technological change alone drives social change present, at best, only a superficial account for the intricate web of circumstance and need that drives social and technological development. However, the expression of the theory (and its examination) provides a valuable base from which to evaluate other claims being made about impending technological, educational and social reformation.

4.1 Avenues for further exploration

This thesis began with an exploration of some of the discourse now surrounding the Internet and the 'information age'. Here, too, an underlying acceptance of the tenets of technological determinism is obvious. Policymakers acknowledge the need to work out ways to best deal with the new age, (not: "Is this the way we want society to be?" but: "We need to get people ready, the change is happening and we need to deal with it.") as government, industry and business leaders prepare to capitalise on the new information economy, a result of "the global communications and online technology age that is dramatically and rapidly changing our economy and society" (*Investing for Growth*, 1997, p. 65).

The challenge for education and government policymakers is to balance somehow needs or desires for change with appropriate solutions, avoiding the temptation either to use technology just because it is there or to continue doings things as they have always been done. A useful way to approach the problem maybe by beginning with a schema suggested by Neil Postman in the presentation "Defending Ourselves Against Technology" at the *Education and Technology: Asking the Right Questions* Conference, September 17-20, 1997 at Penn State University, Pennsylvania (Lewis, 1997):

1) What is the problem to which this technology is a solution?
2) Whose problem is it?
3) Who will benefit from the solutions?
4) What new problems might be created because we solve this problem?
5) What people and institutions would be most seriously harmed by this solution?
6) How will power be shifted and who will gain power?

Postman's schema in no way simplifies the difficulties for those trying to discern a path to the future that balances social need and technological opportunity. Obviously, answers to the questions above will vary according to the perspective of the groups involved – even when they are speaking about the same problem or technological solution. However, the schema does suggest ways to broaden the debate about the future and lessen the likelihood of perpetuating the myth of technological determinism.

Society and its institutions (including higher education) are sure to change in the information age, but just as surely, they will not change overnight. CITs have enabled significant social, personal and organisational change, however this change has occurred both in spite of, and because of, the technology. Attempts to unravel action, cause and effect, and to disaggregate social, technological, economic and cultural contexts surrounding the development of new technologies can end up being

somewhat akin as a debate on which came first, the chicken or the egg? In the end, it all depends on your point of view.

Appendices

Appendix 1: List of Interviewees

USA/Canada	Organisation	Person interviewed	Position/Section
Computing/Software	Apple Canada	Frank Lechner	Education Manager, Canada
	IBM	William Geoghegan	
		Anne-Lee Verville	General Manager
Higher Education	Athabasca University	Jon Baggaley	
	Colorado Community College & Occupational Educational System	Rick Dobbs	Manager, Information Technology Network Services
		Mary Beth Susman	Executive Director
	Harvard University	Scott Bradner	Consultant, Harvard University Information Systems
	Potchefstroomse Universiteit (S Africa)	Paul de Plessis	Director, Bureau of Academic Support Services
		A.J. Viljoen	Vice-Principal
	Regis University	Ira L. Plotkin	Academic Dean, International Studies
	Telelearning, NCE	Tom Calvert	Network Co-Leader and Professor
		Joanne Curry	Executive Director
	The California State University	Thomas W. West	Asst Vice Chancellor, Information Resources and Technology
	The College Board	John L. Deupree	Director, International Education
	The University of Georgia	Michael J. Hannafin	Director, Learning and Performance Support Laboratory
		Thomas C. Reeves	Professor
		Lynne M. Schrum	Associate Professor
	UBC Access Guided Independent Study	Tony Bates	Director, Distance Education and Technology
	University of Alberta	Terry Anderson	
	University of New Mexico	Scott Robbins	
	University of Toronto	Kim Veltman	The McLuhan Project
	Virtual	Fiona Buss, BA	Project Administrator
Publisher	John Wiley and Sons	Vernon Church	
	The McGraw Hill Companies	Douglas G. Kubach	Snr Vice President – Technology and Multimedia
Media	Fox Interactive	David Wisehart	Producer
	Intelstat	Tony A. Trujillo, Jr.	Corp. & Comms Dir., Corporate & Marketing Communications

USA/Canada	Organisation	Person interviewed	Position/Section
	International University	Pamela S. Pease	Vice President and Dean of Academic Programs
	Iowa Public Television	Wayne Bruns	
	Jones	David Stone	Producer
	Jones Education Company	Paul R. Stone	Vice President – International Business Development
		Wally Griffin	Group President - Jones Int'l Ltd, President – Jones Edu. Co.
	News Technology Group	Michael Henkin	Vice President - Business Development
	Time Warner Inc	Virginia McEnerney	Manager, Community Relations
	Turner Learning	Terri Hickman	Senior Publicist
		John Richards	Snr Vice President and General Manager
Non-Government Organisations	Academy for Educational Development	Kurt D. Moses	Vice President and Director, System Services Division
		Jody K. Olsen	Snr Vice President, Human Resources and Institutional
	Global Alliance for Transnational Education	Bradley D. Miller	Development
	GATE & Centre for Qual. Assurance in Int'l Ed	Marjorie Peace Lenn	Associate Director
		Jennifer A. Reason	Executive Director
	National Ed Telecomns Organization/Edu. Satellite	Shelly Weinstein	Communications Coordinator
	The Commonwealth of Learning	Peter McMechan	President/CEO
	The Laurasian Institution	Philip J. Palin	Executive Director
	The World Bank	Etienne Baranshamaje	Director, Regions
	Western Interstate Commission for Higher Education	Evans Craig	Senior Partner
	Western Co-Operative for Ed Telecom. & WICHE	Don Olcott, Jr	Assistant Catalog Coordinator
			Manager, Member Services
Private Provider	AXIA Partners, Lic	David R. Michael	Principal
	Apollo Group	Charles Seigal	
	Gartner Group	Mike Zastrocky	
	Motorola University	Brenda S. Sumberg	Director, Education Systems Alliances
	Magellan University	Bill Noyes	President
	NCHEMS/WGU	Bob Albrecht	
		Dennis Jones	
	J. Alssid Associates	Julian L. Alssid	Principal

Appendix 2: Question Bank

The question bank was designed to provide a resource in the face-to-face interview situation and provide some a set of data based on common answers to questions. Interviewees were first asked questions from the 'General' bank and then from the relevant category. It was an aid, only, not intended to be a survey or to be given to interviewees.

General

G1. If you were to characterise the industry you're in, would you say that it's the information, communications or knowledge industry? (Would you want to make a distinction between them?)
G2. What do you consider the function of higher education to be? (Is that function the same as it always was or has it/is it changing?)
G3. What are the strengths of the current system -- what are the weaknesses?
G4. Do you see a role for media networks generally in the provision of higher education – what role is that? (Content or carrier – or both?)
G5. From a distance it appears there is a convergence of media/telcos and higher education: what's driving that convergence? (Demand for access, ability to access, economic imperatives, demand for change etc?)
G6. In speaking to a number of universities, I've heard comments about non-traditional models resulting in a 'commercialisation or commodification' of knowledge. Is this an issue? (Why/why not?)
G7. The concept of lifelong learning as an economic necessity has been picked up around the world in the past few years -- is it this concept of training and reskilling that is being picked up (exploited) by corporations?
G8. Is it possible for one organisation or alliance to truly deliver a global higher education program? Do you consider that anyone is currently doing this?
G9. What about the associated ethical issues: eg concerns re cultural difference in relation to content areas (eg business ethics means something different in Japan and in Australia).
G10. When considering a global degree program, on what basis do you compare and accredit offerings? How does one organisation or country get its degree recognised as a worthwhile course of study? (If exporting overseas how establish the worthwhileness of the instituition/degree and get it recognised in those other countries?)
G11. What do you consider to be the major target market of global education: postgraduate students, continuing professional education students or undergraduate students?
G12. Is this a discussion we could have had 10 years ago? How important has the convergence of technology been to developments in this area?

The Practicalities for Institutions/Organisations involved in or potentially involved in non-conventional delivery

1. In what ways do converged media models (Magellan/ U of Phoenix) differ from traditional distance education courses?
2. In Australia all student numbers are reduced to EFTSUs -- which reflects a formula based on full-time student load. In US, private providers either give raw student numbers or 'hours of instruction' (may not reflect true picture -- may not reflect those who complete -- no distinction between part-time/full-time). Oz EFTSUs based on eight subjects per year x credit

point value to give equivalent full-time student number. How do you estimate student enrolments in your country/organisation?
3. If you were to compare your offerings with a normal subject offered by conventional universities in your country, how would you measure them? (For example: equivalent to a full subject or a module or set of modules that would then be equivalent to a full unit).
4. What arrangements have/will your organisation made/make to provide local student on-the-ground support?
5. Who owns the content in your degree/offering or that you produce? When companies, corporations, new providers buy content from traditional universities or specialists/academics do they make a one-off payment or pay ongoing royalties?
6. How do you assure the quality of program/content being offered?
7. When you start discussing non-traditional/conventional models of delivery, almost the first response is 'what about access, what about equity?'. Any comments on these aspects of the equation?

Virtual Education Providers

V1. What is distinctive about your mission compared to a traditional face to face university?
V2. Where do you see your organisation in 5 years?
V3. Where do you see the sector in five years?
V4. Should government be involving itself in these areas (education and technology infrastructure)
V5. To what extent have you pulled traditional institutions and media networks into new directions/partnerships/models? Are you driving change or are they? Are these new directions ideologically based or commercially-founded ('everyone deserves a good education' vs 'paying the bills')

Category Specific

Media (TV/Computing companies/telcos)

M1. Is there a place for media in higher education other than just supplying the medium or distribution system to carry the message?
M2. From your point of view, what issues arise if/when media participate in new models of education provision?
M3. From your point of view, what strengths would/do media bring to new models of education provision?
M3a. Do you believe media networks want to participate in new models of higher education provision? Why/Why not?
M4. To what extent have you pulled higher education into new directions/partnerships/models? Are the higher educational institutions driving change or are you? Are these new directions ideologically based or commercially-founded ('everyone deserves a good education' vs 'paying the bills')
M5. Should government be involving itself in higher education and any convergence between media networks and higher education? Why?/Why not?
M6. Incompatibility of equipment/systems has been an impediment in the past. How much of an influence is this likely to be in the future?

Higher Education

HE1. What do you/your organisation consider to be the major challenges fronting higher education?
HE2. Is there a place for media networks in higher education other than their conventional roles? (publishers: textbooks, computing companies: software/hardware, telcos: telephone lines, media: cables/entertainment/broadcast media)
HE3. From your point of view, what issues arise if/when media networks (publishers/computing companies/broadcasters) participate in new models of education provision?
HE4. From your point of view, what strengths would/do media networks (publishers/computing companies/broadcasters) bring to new models of education provision?
HE4a. Do you believe media networks want to participate in new models of higher education provision? Why/Why not?
HE5. To what extent have you pulled media networks (computer companies, cable, tv, publishers) into new directions/partnerships/models? Are these networks driving change or are you? Are these new directions ideologically based or commercially-founded ('everyone deserves a good education' vs 'paying the bills')
HE6. Should government be involving itself in higher education and any convergence between media networks and higher education? Why?/Why not?
HE7. How do you find/think that staff and students react to these new models?
HE8. Who is/should be responsible for awarding the degree? Traditional university or the new provider/broker?
HE9. Who sets the standards and who does the marking?
HE10. Who gets the money – who does the student pay?
HE11. Where do you see your organisation in 5 years?
HE12. Where do you see the sector in five years?

Publishers

P1. Is there a place for publishers in higher education other than their conventional role of just supplying textbooks?
P2. From your point of view, what issues arise if publishers participate in new models of education provision?
P3. From your point of view, what strengths would publishers bring to new models of education provision?
P3a. Do you believe media networks want to participate in new models of higher education provision? Why/Why not?
P4. To what extent have you pulled higher education into new directions/partnerships/models? Are the higher educational institutions driving change or are you? Are these new directions ideologically based or commercially-founded ('everyone deserves a good education' vs 'paying the bills')
P5. Should government be involving itself in higher education and any convergence between media networks and higher education? Why?/Why not?

Government

Go1. Should government be involving itself in higher education and any convergence between media networks and higher education? Why?/Why not?
Go2. Is there increasing pressure for governments to get involved in the converged world of media networks/higher education?

Go3. Who is responsible for maintaining educational standards and determining whether or not an organisation is 'fit' to offer and award degrees? (Government, business, community or all?)
Go4. Do governments need education systems that protect and promote the national distinctives of their nation state? If so, how does one ensure this in a converged, globalised world?
Go5. Does your government/organisation have a higher education /IT implementation plan? If so, what are the key elements of it?

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