eLearning and the crisis of mission in British universities

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To Heather, Erica and Owen: for their understanding

To Professor Mike Bottery: for his friendship and cheerful encouragement

To Google.co.uk: for its utility!

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Terms and Conventions

■ **Internal referencing**	References to other sections within the thesis are indicated as in this example: [§3.4.2]
■ **Modern** ■ **Modernity**	Used in this thesis to refer to the post-Enlightenment era, and characterised by a postivist belief in the power of human reason, manifested in science and technology, to shape the environment to society's needs.
■ **post-Modern** ■ **post-Modernity**	Used as 'after **Modern**': accepting that there has been a significant shift in cultural attitudes associated with the rise of consumerism and the electronic media, but not accepting unquestioningly the ideas and assertions of **Postmodernism**.
■ **Postmodern** ■ **Postmodernism**	A body of social and philosophical theory which refutes claims to Truth such as the scientific rationalism of **Modernism** and religious fundamentalist beliefs. Notions of authority, the sovereign individual and the creation of new knowledge, are replaced by anarchic rejection, anonymous collectivism and the indefinite recombination of past ideas and images.
■ **University**	Used in the sense of 'The Academy'.

Chapter 1 *Introduction*

The future always arrives too fast … and in the wrong order.
Alvin Toffler

1.1 Thesis

In the first decade of the twenty-first century Higher Education in Britain faces an uncertain future, in what, as will be discussed, some commentators have referred to as a 'crisis of mission'. The period of relative homogeneity and state-funded protection of the previous century is over, and universities now find themselves exposed to hostile external forces. The sector may be approaching a major point of fracture. Elite, research-led universities are positioning themselves in lucrative niche markets and can command high tuition fees; they are pulling away from the more vulnerable, teaching-led regional institutions left to survive in the mass market. Moreover, rapid developments in the educational use of information and communications technology (ICT) – known loosely as eLearning – have the potential to transform pedagogical practice, and are making this market an increasingly globalised one.

This thesis examines the complex of factors which threaten the traditional mission of the University and which have already begun to reshape its ways of working. It views the British university in an historical context, charting the changes from universities as successively: associations of scholars, teaching

monasteries, agents of the state, and corporations driven by financial imperatives. It examines the nature of eLearning, linking this to the explosive growth in the popular use of ICT and to wider epistemological and social changes. Scenario projections of the future are compared, leading to the synthesis, from a wide range of causal factors and viewpoints, of a comprehensive and longitudinal projection of the ways in which Higher Education is likely to develop over the next three decades.

In making this analysis the thesis draws upon a diversity of perspectives, embracing the six contexts identified in Figure 1.1 and reflecting eclectic research from a broad range of recent literature.

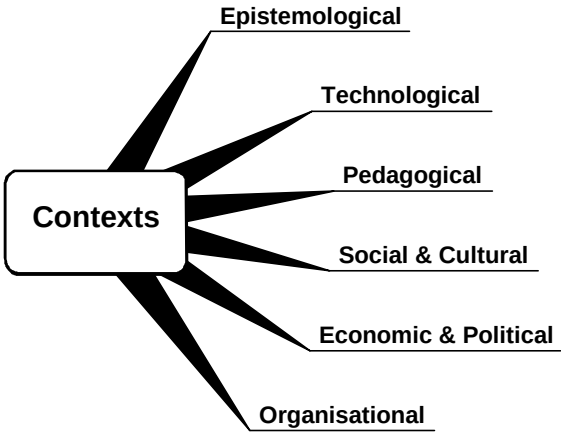


Figure 1.1 – Contexts for the Study

Some of the sources consulted have heralded the arrival of a 'new knowledge' to displace the traditional contemplative knowledge of the University, and other commentators have seen this as part of a wider episteme of post-Modernity which frames the Individual's relationship with Authority. Other sources have emphasised the catalytic effect of ICT in destablising the static,

hierarchical organisations of the past and making possible the transient and networked flows of a knowledge-based economy. The potential of eLearning is a recurrent theme in much of the literature predicting the early demise of the Academy; universities are seen as under threat not only as institutions representing 'old knowledge' and authority, but as organisations which have been slow to adapt to the vocational needs of the knowledge economy and to educational innovation.

This thesis makes an original contribution to the crisis of mission debate by integrating these heterogeneous perspectives into the multidimensional conceptual model which is articulated in Chapter 8. In this, ten development strands are identified within and across the six contexts introduced above, and these are instantiated in three 15-year phases extending to 2040. Within the second of these phases a New Learning Landscape is detailed, envisioning a commoditised and corporate future characterised by the local franchising of globally-branded educational materials. Chapter 9 returns to the question of a crisis of mission raised in Chapter 2, but focuses upon the last of the three phases. It anticipates the start of a decline in corporate and commercial control, as educational content becomes increasingly 'open source' and discrete corporations begin to be displaced by transient, virtualised and diffuse associations of interests. This environment sees a return to the original realisation of the University as a charitable association of scholars existing outwith the boundaries of institutional control. The wheel will have turned full circle.

The purpose of this detailed and extensively researched view of the future is to inform current decision-making in Higher Education. Strategic planning at international, national, regional and institutional levels should seek to anticipate and to accommodate change. The New Learning Landscape of Chapter 8 may appear dystopian, but it is argued that this is the most likely outcome of the current national policies which impose rigid and sluggish curricula endorsed by outdated qualifications frameworks (Williams, 2007). At institutional level, change must be embraced in a strategic rather than piecemeal fashion. Yet innovations in teaching and learning – and the opportunities of eLearning – are too often the enthusiasms of isolated pioneers rather than the concerns of senior management teams (Salmon, 2006). The job of senior managers is increasingly to make the books balance, so investment in research capacity always seems to take precedence over improving pedagogy (Jarvis, 2001). And for individual academics too, there is great incentive to engage in research, but little to expend time and effort in educational projects. Perhaps only imaginative, visionary leadership and radical change will be enough to surmount these obstacles at national, institutional and individual levels. But it is the contention of this thesis that without such proactive interventions, unanticipated, unwelcome and destructive change will be the inevitable result.

1.2 Structure

Chapter 2 provides an historical perspective of the origins of European universities, noting their durability in surviving the crises of mission of the Enlightenment and the Industrial Revolution. It poses the question of whether

the Information Revolution and the demands of the post-Modern world will prove to be the crisis which finally results in the University's demise.

Chapter 3 explores the wider context of contemporary Higher Education, detailing changes in patterns of demand and consumerist expectations, finance and funding, commercial and market pressures, and the growth of corporate managerialism.

Chapter 4 examines the nature and applications of eLearning, from its origins in distance education, its various contemporary manifestations, and the contexts for its use in Higher Education, Further Education and corporate education and training. The early promise of eLearning as a transforming force in Education has yet to be realised, and reasons are explored for why this has been the case and under what conditions breakthrough might take place.

Chapter 5 assesses the potential of emerging technologies for eLearning, considering how the continuing growth in computer processing power has been and continues to be a potent driver of change in hardware and software applications. The combination of new technologies and widespread popular engagement in social networking with information sharing tools opens the possibility of intelligent, personalised learning environments to rival conventional face-to-face teaching.

Chapter 6 discusses how the introduction of ICT into universities to cut the costs of conventional teaching might have a Trojan Horse effect, destabilising

the institutional *status quo*. Ways are examined in which ICT can act as a subversive and transforming force, enabling epistemological, educational, social and political challenges to the traditional university.

Chapter 7 reviews the notion of technological determinism and assesses the value of scenario projections as tools for predicting the future. A number of scenarios and other forecasts of the future for Education are discussed.

Chapter 8 presents a comprehensive model of the future of Higher Education to 2040; this is based upon the projections of ten development strands located within the six contexts of Figure 1.1 and extending over three 15-year phases (Collegiate to Corporate; Corporate; Neo-corporate). A detailed description of Further and Higher Education in the Corporate phase is offered as a New Learning Landscape for Tertiary Education in 2025; evidence for these projections is referenced to earlier discussion.

Chapter 9 returns to the question of a crisis of mission. It argues that although only a few remaining elite universities might be able to maintain their mission through the Corporate phase, the Neo-corporate phase which succeeds it could see a return of the original, pre-institutional model of the University as a learning association.

Chapter 2 *A 'Crisis of Mission'?*

2.1 Origins of the European University

British universities developed from the medieval northern European model. The first European university is generally acknowledged to have been founded in 1088 in Bologna. Students here were very much in charge, employing their teachers and choosing to study secular subjects such as Law. The University of Paris, founded in 1150 had a markedly different style, retaining characteristics of the cathedral school which had preceded it. Here, the Church paid the teachers and determined the theologically-oriented curriculum (Schachner, 1983). The early universities of continental Europe – which broadly followed either the southern, Bologna model or the northern, Paris model – were associations rather than organisations; communities of scholars rather than specific locations with purpose-built campuses. Staff and students lived in the towns, in sometimes uneasy and violent relationships with local communities. Many universities applied to rulers or popes to grant a *universitas* or academic guild, affording them the legal protection of the Church; however, as this effectively gave students immunity from secular laws, resentment between 'town and gown' continued and universities came to be seen as the preserve of an elite (Cobban, 1999). The first British university was founded in Oxford in 1167 by a group of scholars which included migrants from the University of Paris. However, Oxford, and later,

Cambridge, developed physically in ways quite different from Paris. Enclosed quadrangles resembled monastic cloisters whose self-contained collegiality was underpinned by special buildings for study, worship, communal dining and austere accommodation. Over the medieval period, however, this Augustinian orientation slowly gave ground to more secular concerns.

> *The Aristotelian view, which came to dominate, was that scholars had to be of the world. Indeed, familiarisation with monetary ideas such as fees for examination and tuition, and the increasingly competitive ambience, especially in the 13th and 14th centuries, led many of the masters to seek, and by the 15th Century find, a financially comfortable way of life.*
> (Preston, 2001a, p.91)

Universities gradually adapted to meet the needs of the increasingly complex and sophisticated administrations of both church and state, providing training for lawyers and schoolmasters as well as for clerics.

Through the Enlightenment and the Industrial Revolution, British universities became more worldly and utilitarian, and their original ecclesiastical mission was further fractured. Newman's vision of a liberal education in which universities concentrated upon the teaching of the Humanities came under challenge from practice in continental Europe, influenced by Humboldt, which in fulfilment of a duty to further national cultural identity (Readings, 1996) laid emphasis upon research, science and the inclusion of Practical Vocational Education (Preston, 2001a). In contrast to Bologna and Paris, the Humboldt vision saw the University as a single, unified institution with a clearly defined practical mission. Universities in the nineteenth century underwent further diversification, with scientifically or technologically oriented institutions growing to serve the industrial and commercial needs of the new cities, while

the traditional Oxford and Cambridge institutions preserved their liberal mission and superior status.

The twentieth century saw the inception of three-quarters of the universities currently operating in Europe, and Scott (1998, p.123) makes the point that *"The contemporary university is the creature of the nation state not of medieval civilisation"*. Throughout most of the century universities in Britain enjoyed considerable autonomy, both externally and internally. External autonomy granted by Royal Charter meant they could remain almost wholly funded (pre-1989) by the University Grants Committee (UGC) with little state interference. As Scott (1995, p.15) notes, *"The UGC was seen as an ingenious institution which, uniquely, allowed British universities to be both publicly funded and insulated from political pressure".* However, Douglas Hague, a former adviser to the Thatcher government's Policy Unit, saw this as a cosy 'closed shop' in which student quotas, fees and salaries were fixed in the manner of a classic cartel (Hague, 1991). As the next chapter will show, such an agreeable arrangement would shortly come to an end.

2.2 Epistemes and Crises of Mission

The term *episteme* is used by Foucault to mean a paradigm, *"an all-encompassing body of unconscious knowledge peculiar to a particular time and place"* (Tiffin & Rajasingham, 2003, p.4). To Foucault, this is a world-view so comprehensive that it is difficult for people in one episteme to comprehend the way people in another episteme think. By this analysis, the medieval university episteme was one in which knowledge was to be revealed

in the study of theology, and textually validated in the Bible. The Enlightenment episteme of Rationalism which superseded it can be found in the ideas of Descartes as the independence of reason from the physical world, and one which saw Man as determining his own destiny through the power of rationality (Kant, 1963). According to Preston (2001a), this complex of beliefs was reinforced through the nineteenth century, managing to embrace the contrasting scientific/technological and liberal/humanitarian missions which emerged. But by the mid twentieth century, he argues, this episteme *"became not so much fractured as shattered into pieces"* (*ibid.*, p.102). Characterising these changes was a failing conviction in the power of science as panacea for all the ills of society. This view was argued forcefully by Horkheimer & Adorno (1973) in *Dialectic of Enlightenment,* originally published shortly after the Second World War, in which the authors saw adherence to blind 'instrumentalisation of reason' in the efficient but emotionally detached logic of the Nazi Holocaust. Rationality does not exist in a value-free vacuum, they argued, and the old view of the Enlightenment as 'myth-free' must itself become enlightened. Hence, we have entered a post-Enlightenment episteme and, to use Preston's terminology, the University is experiencing a new 'crisis of mission'.

Historical analysis can show that the idea of the University is a durable one which has survived epistemic changes in society's world-view; it is perhaps the core functions upon which the University idea is built that constitute this enduring base. Noam (1996) identifies three core functions of university scholarship, arguing that they have continued to be discharged – but over the

years by institutions which have reflected the technology and economics of their times.

> *Scholarly activity, viewed dispassionately, consists primarily of three elements: the creation of knowledge and evaluation of its validity; the preservation of information; and the transmission of this information to others. Accomplishing each of these functions is based on a set of technologies and economics. Together with history and politics, they give rise to a set of institutions. Change the technology and economics, and the institutions must change, eventually.*
> (*ibid.*)

However, Noam observes that each of these three elements is not an exclusive preserve of universities. Jarvis (2001) discusses four features of traditional universities which he argues are distinctive, if not exclusive: the nature of their access for (post-school) learners irrespective of their age; the extremely broad range of curricula which they offer, when compared to other educational services and institutions; the broad range of academic awards which may be earned; and, as identified by Noam, the extent of their scholarship and stewardship of academic knowledge. Given that universities since medieval times have fulfilled these roles irrespective of the currently prevailing climate, it is reasonable to make a distinction between *epistemes* – as systems of discourse, belief and cultural transmission which seek to make sense of the world – and the *core functions* of universities, providing the scholastic and pedagogic infrastructures through which such belief systems are transmitted. From this viewpoint, the institution of the University as episteme might be seen to be secure: as an adaptive organisation which has sought to safeguard, advance and disseminate knowledge. However, as will be explored in the next section, the latest threat to the University challenges not only its monopoly in the performance of core functions, but also

considerably erodes its standing, reputation and perceived purpose within society.

2.3 A New Crisis?

Tehranian's paper *The End of University?* (1996) and Readings' book *The University in Ruins* (1996) were among the first of a number heralding a final crisis of mission which would bring about the demise of the Modern university. Readings argues that the "University of Culture", of community, has been replaced by the "University of Excellence", of consumerism. Similarly, Preston (2001b) asserts that the culture of the University as a collegiate and general fraternity has splintered into a scattering of particular, localised communities and *"the university as such has become more a shared bureaucratic system than a community"* (*ibid*., p.358). Preston attributes this in part to the *managerialism* of strategic target-setting which has infiltrated British universities, eroding the sense of worth which had previously derived from the pursuit of scholasticism. The other *"catalysts of university crisis"* he identifies as technology, globalisation and the nature of work, and *"the consequences of the Enlightenment"* (*ibid*., p.351). Blustain *et al.* (in Katz and Associates, 1999, pp.70-71) also warn of the pressures of globalisation in creating a new competitive landscape. Traditional universities would be at a grave disadvantage in this commercial environment, beset by mounting costs, a *"pre-Gutenberg pedagogical methodology"* and staff resistance to technological innovation. The threat posed by new information and communications technologies to both the pedagogical methodology and

internal practice of traditional universities, and to their institutional viability in a globalised world of deregulated markets, is substantial and far reaching and will be examined in greater detail in later chapters. It may be useful in the present context, however, to note Tehranian's (1996) observation that network technologies have blurred the institutional boundaries between government, corporate, and academic worlds and have exerted a globalising effect upon Education. There is a need, therefore, for universities to reinvent themselves in this changing environment and to become more responsive to the needs of other institutions in society – in effect, to leave the cloister and become full members of the wider community. However, Readings is pessimistic as to whether such a change of identity is possible:

> *... the wider social role of the University as an institution is now up for grabs. It is no longer clear what the place of the University within society nor what the exact nature of that society is.*
> (Readings, 1996, p.2)

In this last phrase Readings touches on what Preston calls *"the consequences of the Enlightenment"*, the post-Enlightenment uncertainty articulated by Horkheimer & Adorno (1973) and subsequently developed into the diffuse ideas of Postmodernism. In Postmodernist discourse, the relationships and hierarchies which had previously defined the institutions of society no longer have meaning. Webster observes,

> *A recurrent theme* [in Postmodernism] *is opposition to anything which smacks of arrangements ordered by groups – planners, bureaucrats, politicians – who claim an authority (of expertise, of higher knowledge, of 'truth') to impose their favoured 'rationalities' on others. ... it contains a strong streak of, as it were, democratic impudence, something manifested in ready rejection of those who would define standards for the rest of us.*
> (Webster, 2002, p.233)

From a Postmodern standpoint, the twentieth century University is a creature of Modernism, as Scott (1998) says, codifying the values of the nation state and embodying an establishment authority which Postmodernism seeks to oppose. Hence, anticipation of the impending decline of the nation state was a major driver in Readings' view of the University as an institution which has outlived the context for its usefulness. A related idea is the Postmodernist rejection of 'authenticity', as its relativistic orientation denies the possibility of certain styles, experiences or genres being more worthy or more 'genuine' than others. The Enlightenment search for an absolute truth through the exercise of reason is therefore seen by Postmodernists as equally illusory. They challenge the legitimation of knowledge, in both its research and pedagogical functions: it ceases to become an end in itself and its worth can now be realised only in terms of its exchange value. Lyotard (1983) argues that knowledge becomes no more than an economic commodity, and the learner-teacher relationship no more than that between supplier and consumer. In fact, formal education and the idea of a common curriculum is seen as an elaborate attempt by the establishment to maintain social control through perpetuating the icons of a cultural heritage. Although this rejection of Enlightenment thinking is an intellectual argument which strikes at the heart of the traditional university, perhaps few people would claim to be Postmodernists or to be articulating such extreme views. A case can be made, however, that Postmodernist discourse has to some extent caught the *Zeitgeist*, which Lyotard dubs the *postmodern condition* (1983). Hence, a more generally acceptable position may be adopted in which the complex of events which led to a loss of faith in the power of science has had widespread influence on social attitudes. Webster (1995; 2002) – who is not a

Postmodernist – distinguishes between the intellectual and the social characteristics of Postmodernism, making the point that in our everyday lives, in the media and popular culture and in the choices we make as consumers, we are to some extent exhibiting Postmodern characteristics. Some commentators (*e.g.* Raschke, 2003) see in *Les événements* of May 1968 in Paris a signal event which encapsulated a growing tension between the emerging, self-confident and brash youth culture of a stable post-war economy and the staid and conventional older generation which had experienced the uncertainties and austerity of the war years. Hence, the youth culture genres of the 1960s and 1970s were characterised by a rejection of the values of deference to authority and community, 'democratic impudence' and an adolescent self absorption. This view sees the individualism of today's youth as driven in part by this rejection, by globalisation and by the multiple media of the consumer society. And so we live technologically insulated lives in the era of disposable plastic cutlery in identical McDonald's franchises; our foreign tourist resorts are somehow no longer authentic; and as the *Rolling Stones* sang, we just 'can't get no satisfaction'. Many of today's media-saturated prospective students are therefore likely to be less impressed by the status, collegiality and cultural trappings of traditional universities, but more responsive to sharply targeted advertising which emphasises flexibility, individual ownership and choice from a range of attractively-packaged alternatives. If the provision of such educational services can be sustained by commercial organisations, then universities may find themselves under a novel threat.

This social interpretation of the *Zeitgeist* should not be equated with the body of Postmodern theory characteristic of Jean-François Lyotard, Jacques Derrida and others (as described, for example, by Docherty, 1993; Drolet, 2003). For the purposes of clarity of discussion a distinction is drawn between this theory – which is referred to hereafter as *Postmodernism* – and *post-Modernism*, which refers to the social interpretation.

This section of the chapter has examined evidence underpinning what various writers have described as a 'crisis of mission'. The University has proved adaptable through previous epistemic changes, but the issue is whether the present post-Modern episteme – embodied in profound social, technological, commercial and organisational innovations – now presents such a central challenge to the University's authority, status and reputation as social institution as to render it obsolete. A second, and related challenge is to the exclusiveness – and indeed the *appropriateness* – of the University in the discharge of its core functions of scholarship as identified by Noam: of knowledge creation and validation, knowledge preservation, and knowledge transmission. As will be examined later in the thesis, those representations of knowledge in formal codifications as subject-based academic disciplines – which have been a central underpinning of university scholarship – are now in danger of being displaced by representations of non-formal, applied and context-based 'know-how'. Much important research, particularly in science and technology, is now conducted by organisations outwith Higher Education, and much of the knowledge generated falls into this second, applied category (Gibbons *et al.*, 1994). The digitisation of physical and printed information into electronically indexed and accessible formats proceeds apace, obviating

the need for academic libraries to be situated adjacent to 'seats of learning'. Finally, the process of knowledge transmission is no longer the preserve of academic gatekeepers employing the *"pre-Gutenberg pedagogical methodology"* described by Blustain *et al*. Instead, new knowledge is increasingly being generated without the mediation of universities, and the Internet is now far and away the world's largest information repository and system of dissemination. The growing versatility and effectiveness of eLearning could prove the final enabler, as the development of a digital learning object economy supported by the wide prevalence of 'any time, anywhere' learning (to be discussed in later chapters) has the potential to displace formal, course-based pedagogy and the institutions in which it has been employed.

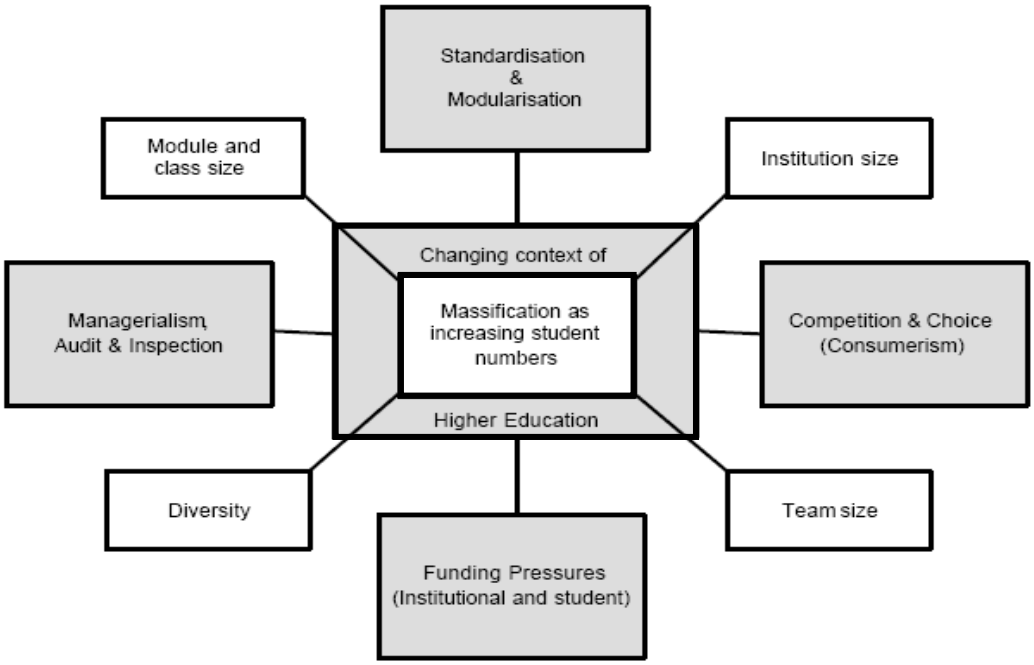
Chapter 3 *The Wider Context of Higher Education*

3.1 Overview

The previous chapter served as an historical preface and introduction to what will be discussed here, which is an examination of the current context of British Higher Education.

In their analysis of the context within which universities in many countries must now operate, Moran and Myringer (in Harry, 1999, p.58) identify three main triggers for change in Higher Education: declining funds, advancing technology, and changing student demography (*i.e.* a move from elite to mass Higher Education with a growing demand for recurrent, lifelong education). These triggers, it is argued, will result in a paradigm shift from conventional to more diverse methods of teaching and learning in Higher Education. Booth *et al.* (2000) also see changing student demography as a major driver of change: both quantitatively, in what they term *massification*, and qualitatively, in the way this move from an elite to a mass system has differentially impacted upon academic subjects and institutions – with vocationally-oriented courses such as business management forced by pressure of numbers to radically change their teaching methods. A significant concomitant of massification, they argue, has been the increase in the number of graduates entering the job market, with a consequent erosion of

the links between university education and the elite status of certain jobs. This trend has resulted in greater competition for student places at those universities considered to have the highest reputations, and a view of Higher Education as a commodity to be selected in the process of gaining entry to well paid employment. Booth *et al.* also view the falling state funding of university places as a major pressure to be set against massification and the commercial orientation of Higher Education, and they identify two further factors, operating at national and institutional levels. At national level is the move to 'product standardisation' imposed through quality control systems by government bodies; at institutional level is a growing *managerialism* in moves from the collegiate to corporate direction of universities. Figure 3.1 illustrates the interrelationship of these four factors and some of their effects.



(Booth *et al.*, 2000, p.63)

Figure 3.1 – Massification and the Institutional Context of Higher Education

The factors identified by Moran and Myringer and by Booth *et al.* are reflected in the seven areas of change listed by Jarvis (2001, p.3):

- *the changing status of the university;*
- *changing student clientele;*
- *the universities and the marketplace for learning;*
- *the changing forms of knowledge;*
- *the changing nature of research;*
- *changing methods of delivery of programmes;*
- *the changing role of the academic.*

Like Booth *et al.*, Jarvis includes the 'marketplace for learning', drawing the conclusion that not only will teaching and learning diversify, but that this will be accompanied by radical changes in the finances, and ultimately in the status and identity of universities as institutions.

This chapter will examine these pressures in more detail, encompassing a wider brief to address other factors, but saving the technological issues and possible impacts of eLearning for discussion in later chapters. Thus, the aim of this chapter is to explore the current context within which British universities operate, taking particular regard of the following drivers for change:

- the changing demand for Higher Education
- finance and funding
- globalisation, commercialisation and commodification
- Information Society imperatives
- consumerist and post-Modernist expectations
- managerialism and corporatism.

3.2 The Changing Demand for Higher Education

Perhaps the most important pressure upon Higher Education, in Britain and across the world, is rapid growth in demand. The Higher Education Policy Institute (HEPI) projects a rise of up to 240 000 in the number of undergraduate places needed in Britain from 2004-2010 (Aston, 2004) – which is the equivalent of 16 new universities. Half of this is attributed to rising numbers of 18 year olds, and up to 100 000 more places will be the result of continued improvements in the A-Level results of university applicants, making it likely that the British Government target for 50% of the population to experience Higher Education by the age of 30 will be met. However, this target is relatively modest; Higher Education participation in the USA is currently 60% and in Australia over 70% (Moser, 2004). The vocationally-oriented two-year Foundation Degrees introduced in 2001 have proved less popular than the Government hoped, but have nevertheless contributed over 24 000 students (DfES, 2005a). Of the additional places predicted by HEPI, 43 000 will be for the growing number of full-time and part-time mature students; already, 40% of Higher Education students are part-time (Moser, 2004). In addition, the study predicts an increased postgraduate demand of 60 000 places, up to a third of which will be from the EU Accession Countries of Eastern Europe. The 'Bologna process', to be discussed in a later section, may result in even greater numbers. The combination of these increases is the 'massification' of the increased student population referred to in Figure 3.1.

These improving school results seem part of a qualifications inflation and a growing demand for degree courses. The UK Office for National Statistics reports a 50% increase in earnings as the length of education rises, from leaving full-time education at 16 to leaving at 21 (ONS, 2004). This more competitive pursuit of better-paid jobs is also apparent in the USA, where Cross (2004, p.15) reports:

> *According to a US Department of Labor study,*
> - *Fundamental change in the workplace is that the best new jobs require highly educated and highly skilled workers*
> - *1950 skilled workers = 28%. 2005 estimate is 85%*
> - *Workers are changing jobs approximately every 2.5 years*
> - *Employees now list "the opportunity to learn" as one of the Top 5 job criteria*
> - *In two years, education will be among the most valuable differentiators for partners, employees, and customers.*

This analysis is echoed in Britain in the more recent publications of the Future of Work Programme, funded by the Economic and Social Research Council, in which Taylor (2004) predicts that knowledge and skills in new technologies will increasingly be at a premium and that successful employers will be those who provide continuing opportunities for their development. A belief in the need to update skills in what is perceived to be an increasingly competitive job market appears to be widespread in Britain and America, and seems to be fuelling the demand for continuing learning as well as for undergraduate Higher Education.

The applied and vocational orientation of Further Education seems better aligned than Higher Education with these changing patterns of demand. The two sectors are converging and Further Education already provides 40% of university entrants (Bekhradnia, 2003). In addition to the Foundation Degrees route whereby Further Education students are able to commence

courses validated by universities, the National Validation Consortium will act as a national awarding body giving Further Education colleges the independence to compete with universities in operating their own degree programmes (Tysome, 2005; UVAC, 2005).

3.3 Finance and Funding

Although demand is currently booming, the *pro rata* public funding of Higher Education is in decline. One of the points made in the HEPI report (Aston, 2004) is that the projected increase in Higher Education capacity is unlikely to be adequately funded by the Government, and this is represented in the Funding Pressures part of the diagram in Figure 3.1 (above). The report *Achieving our Vision* produced by the independent association UniversitiesUK (2004) views the prospect of poor funding in the future in the light of a continuing decline in the unit of resource in past years. These problems are more acute in some universities than others, and the report quotes from a study by the equity research analysts Standard and Poor, which concludes

> *"The sector's financial strength is concentrated among a small number of institutions, while for the remainder the general picture is one of a tough operating environment. Moreover, the financial gap between institutions that are doing well and those that are less successful is gradually widening".*
> (*ibid.,* para 47)

In a speech to the British Academy, Lord Moser (2004) presented a strong case for two changes in Government policy. The first was a major increase in the top-up fees which universities should be allowed to charge – but he stressed this must be partnered with strong scholarship and bursary schemes. The second was for a substantial increase in direct taxation, and Moser noted

that the UK invests only 1.1% of its Gross Domestic Product in Higher Education – half that of the USA and one of the lowest in the group of (30) OECD countries. In an analogy to British Rail, he argued that without adequate investment, the national coherence of the present system could be compromised, resulting in uneven and inequitable provision. A survey of 72 Higher Education institutions, conducted by the *Times Higher Education Supplement* with the auditing firm KPMG, and reported by Hill (2005), predicts that the increase in course fees which universities will be permitted to charge will be likely to increase income, but will not be enough to halt the course closures which have begun to take place across the sector, raising fears of 'subject wastelands' in mathematics and science (MacLeod, 2004; 2005a).

Coping with the combination of growing demand and shrinking funding is proving difficult for all universities, including the well-endowed elite institutions which are able to draw a significant proportion of their income from externally-funded research. For universities with regional missions and little research pedigree, questions of institutional viability are beginning to emerge. Moser (2004) questions the rationale for which full university status had been conferred upon some 'post-92' institutions, taking the view that a clear distinction between universities – conducting research as well as teaching – and teaching-only colleges can be beneficial, and he cites the success of the California system. Here, the ten institutions which comprise the California State University recruit from the highest achieving school-leavers and from students who have completed two-year courses in the 109 community colleges. With 2.5 million students, this is the largest Higher

Education system in the world (CCCCO, 2007) and has been considered a model for how British Higher Education might be restructured (Ryan, 2003).

3.4 Globalisation, Commercialisation and Commodification

3.4.1 Globalisation and the knowledge economy

It is a matter of broad consensus that Western societies have entered some form of 'post-industrial' phase, although there is continuing debate as to how to characterise and name it. Webster (1995) describes the period from the Second World War to the early 1970s as *Fordism* (after Henry Ford, the US industrialist). Mass production was the norm, made possible by the standardisation of manufacturing processes and products, and by the standardised activities of vast numbers of industrial workers. These were employed by large companies which typically were hierarchically structured and *vertically integrated*, supplying most of their needs in-house by specialised service departments. Mass consumption of companies' products was encouraged by advertising and the rise of mass media, and through a 'planned obsolescence' of products. The nation state was an important force in maintaining stability, and in postwar Britain its involvement in economic planning and management – through nationalisation and central planning – was broadly accepted (Barney, 2004, p.12). Webster sees the current 'post-industrial' phase as one of post-Fordism, although he prefers the term *neo-Fordism* as carrying less implication of a total break with the past. Neo-Fordism is characterised, he says, through *flexibility*: principally of employees, production and consumption. Barney (2004) refers to it as 'Toyotism', reflecting the *kaizen* principles of Japanese manufacturing (Imai,

1986). Through the 1970s and 80s the improving utility of computer systems in managing information flows was one factor in the restructuring of company organisations. There was a 'downsizing' of the large companies of the Fordist era through the shedding of staff generally and the 'delayering' of middle managers, who were no longer needed as communication agents within companies moving to the use of electronic mail. The computer communication which was enabling internal restructuring was also facilitating outsourcing and the demise of vertical integration. Computer communication was also facilitating the opening up of international markets and the weakening of the strong nation state which paralleled Fordism. Efficient information infrastructures enabled transnational corporations to grow: through the orchestration of global production and marketing, through rapid and distributed financial trading, and through the imposition of common frameworks of quality control (Webster, 1995). There was increasing awareness of a new player, termed *globalisation*. According to Barney (2004, p.72), globalisation is more than just economic, as the move to a pervasive neo-liberal market inevitably constrains the interventionist and redistributive powers of nation states. The close relationship between globalisation and the commercial use of information and communications technologies – leading to what is here called the knowledge economy – is said to be resulting in knowledge itself becoming a key commodity. Castells (2001, p.77) calls this new economy *"informational, global and networked"*, to reflect the diversity of its origins, asserting that the information technology 'revolution' *"has given birth to a new, distinctive economic system".*

3.4.2 The commercialising of Higher Education

The Institute of Directors, a British employers' organisation, takes a very different view of Higher Education recruitment and costing to that of the Government. In its paper *Education and Training: A Business Blueprint for Reform* it calls for a halt to and reversal of the *"ludicrous 50% target of school leavers going into HE by 2010"* asserting that more directly vocational courses should instead be promoted (IoD, 2002, p.1). The paper claims that a 'comprehensivisation' of Higher Education is being imposed through quality audit and assessment carried out on behalf of the government by the Higher Education Quality Council and the Quality Assurance Agency for Higher Education. These bureaucratic demands are stifling innovation and institutional distinctiveness, and the paper calls for clear institutional differentiation within the sector:

> *One approach would be to classify universities into:*
> *(1) Elite academic universities, which would be both teaching and research institutions (and would include the traditional "university" vocational subjects such as medicine, law and engineering).*
> *(2) Good, respectable academic universities, concentrating on teaching sound academic courses.*
> *(3) High quality vocational universities, concentrating on teaching solid vocational courses such as business studies.*
> *(4) Other HEIs should either be closed down or moved into the FE sector.*
> (IoD, 2002, p.188)

Elite universities should be allowed 'earned autonomy' and financial independence by being allowed to set their own course fees, free of government capping. The paper also calls for a shift in funding, from institutions to students.

> *In conclusion, we would emphasise the need for universities to* [be] *"let off the leash" and be allowed to charge top-up fees. Otherwise our finest academic institutions will remain denuded of funds and unable to compete globally. Moreover, vouchers, given directly to the students, would help the student to*

> *appreciate the size of subsidy he/she received and could also help to reduce bureaucracy.*
> (*ibid.*, p.189)

The possibility of removing the cap on university fees in 2010, after the current Parliament (Hansard, 2004), now poses a significant threat to the tidiness of national systems, and ICT makes this easier to achieve. Chait (2002) argues that consumerism, capitalism, and for-profit competition are having significant adverse effects upon American Higher Education. He speculates that 'academic ATM cards for students' may not be far away, granting admission to multiple affiliated private providers. Such increased competition will result in a greater differentiation between universities so that strongly-branded institutions will prosper at the expense of less well promoted ones. Chait also notes the appearance of for-profit transnational corporations. Previously operating only in the school sector, syndicates such as Sylvan – known as the 'McDonald's of Education' and now trading as Educate, Inc. (Educate, 2007) – are making inroads into private Higher Education. But of greater significance than the encroachment of for-profit providers is the concern that in this competition universities may lose their ethos and identity, and their monopoly as custodians of knowledge.

A redefinition – or at least re-examination – of the identity of universities as creators of new knowledge may also be necessary. Chapter 6 will examine this topic in more detail, but for the purposes of this overview of the current context of Higher Education it may be sufficient to note the following points. Firstly, in the knowledge economy greater store is now given to more vocationally-oriented formulations of knowledge, and as discussed earlier this is reflected in changing patterns of course demand. Secondly, process

knowledge, or knowledge-in-action, and the ability to solve problems in real contexts – as distinct from the formal discipline-based knowledge of universities – is becoming an important success factor (Gibbons *et al.*, 1994). Thirdly, and in relation to the previous point, knowledge-intensive corporations are beginning to rival universities in the creation of strategically valuable knowledge in the new economy. So, in both teaching and research, the status of the university may be seen to be challenged; but more significantly, as Jarvis (2001, p.29) puts it, *"Globalization is changing the nature of education and calling for a redefinition of the university."*

Some vice-chancellors have looked to the open and distance methods of course delivery offered by eLearning, comparing their costs with conventional teaching. Rajasingham (2005) reviews various studies into comparative costs (which will be subject to more detailed analysis in Chapter 4) and concludes that the cost advantage of virtual universities is likely to increase further as technology infrastructures become established. Baer (1999) sees eLearning as a 'catalyst for competition' in Higher Education in the USA, financially benefiting non-profit as well as for-profit universities, knowledge economy companies and new types of commercial content and training companies. The adoption of eLearning by traditional universities might also be a catalyst for organisational change, and Baer recommends the vertical disintegration of universities into 'right-sized' units, employing the same cost benefits of outsourcing as in the commercial sector.

> *E-learning also encourages the unbundling of different instructional elements: content development; course delivery; testing and evaluation; and administrative functions such as registration, payment and student record-keeping. Traditionally, each academic institution has provided all these services for every area in which it offers instruction. E-learning*

> *makes it easier to separate them, so that an institution can concentrate on the components and substantive fields in which it does best, and outsource others.*
> (Baer, 1999)

Unbundling is also recommended by Duderstadt (1999) arguing that universities in the USA have traditionally been faculty-centric and poorly oriented to the needs of their students. Substantial restructuring would be needed to force the change to learner-centred organisation, and the resulting 'course provider' might be partly virtual. He cites the 'Nike approach' whereby this transnational supplier of athletic shoes does not manufacture the products it markets, but is essentially a brand. Both Duderstatdt and Baer also discuss the development of closer links between universities and commercial partners, and Baer cites several examples of successful practice. His optimism is not shared by others, however, and Giroux (2003) warns that the expansion of neo-liberal capitalism not only threatens the social and civic values of universities but, in displacing justice and law by market forces, represents a global assault upon democracy and civil society. Frase & O'Sullivan (1999) take a similar position, arguing that the World Trade Organization (WTO) has not been an impartial broker in its advocacy of the deregulation of Higher Education, but has favoured US-based transnational corporations, which are now investing heavily in the 1 trillion US$ global education market. The authors contend that the power of national governments to oppose these corporations will diminish as the WTO imposes a 'free trade' policy for education and training.

> *Governments may be forced to allow private companies to issue accredited diplomas, even if there is little control over what is being taught by these private institutions. The quality of education will suffer. But perhaps more disturbing is the potential for education to increasingly serve only as a corporate training-ground, rather than encouraging critical inquiry and other democratically agreed-upon ends.*
> (Frase & O'Sullivan, 1999 [unpaginated])

To these global pressures must be added local ones. Jarvis (2001) makes the point that McDonaldised homogenisation exists alongside a simultaneous cultural fragmentation, and refers to the notion of *glocalization* popularised by Robertson (1995), in which universalising tendencies co-act with particularising tendencies. Universities have obligations to their local communities and regions, and experience tensions between these and competing demands at global, national and local levels. For example, Hayward & Hedge (2002) discuss the choices facing the University of Glasgow in reconciling its commercial activities as a member of the global association *Universitas 21*, with its civic and community duties.

3.5 Information Society Imperatives

The changes and increases in demand for Higher Education, together with the British Government's policy to fund expansion (albeit at a declining unit rate) may be attributed in part to a perception that we have moved from a post-industrial to an 'Information Society'. This notion has been subject to many interpretations since Machlup's (1962) identification of emerging knowledge-based industries. Building upon ideas of post-industrialism argued by Bell (1973) and others, the futurist Yoneji Masuda (1981) formulated the model of

joho shakai (loosely: information society) in which 'information values' would replace 'material values'. The ensuing *Computopia* would be an egalitarian world of enhanced community and democratic engagement, built upon the computer-supported manipulation of abstract information. In an examination of various definitions of 'Information Society', Webster (1995) expresses serious doubts as to the validity of the notion, but observes a strong polarisation of views for and against. It is not the purpose of this chapter to enter into the debate, but to note that the Information Society idea has had strong resonances with policy-makers, at national and European levels, who are anxious to meet a perceived new skills race in a globalised knowledge economy, as will be discussed shortly. Castells (1997a, p.340) identifies two types of labour in this knowledge economy: *generic* and *self-programmable*. The latter has the *"capacity constantly to redefine the necessary skills for a given task, and to access the sources for learning these skills. Whoever is educated in the proper learning environment, can reprogram him/herself toward the endlessly changing tasks of the production process."* For such self-programmable workers the prospect of multiple concurrent jobs and multiple careers in a lifetime is almost inevitable. Reich (2004) makes a similar distinction, but defines three categories of jobs: *routine production services, in-person services* and *symbolic-analytic services*. The first category includes repetitive production tasks involving the enforcement of standard operating procedures. Workers may be in large groups and are likely to be closely supervised. Into Reich's third category of symbolic-analytic services fall occupations such as research scientists, civil engineers, management consultants and writers. Their work involves strategic brokering and the identification and solution of problems – services which can be traded

worldwide. Working alone or in small teams, they make and manipulate symbolic representations of real situations. Symbolic analysts are the most highly educated and highly paid of the three categories. Reich takes pains to distinguish between this group and the traditional professions, placing Law into the in-person services category on the grounds that it does not entail original and creative construction of knowledge. Where in the past professional persons acquired status from their mastery of a specialist body of knowledge, he maintains that the key skills of the future will be the value-added extension of knowledge rather than merely its acquisition and employment.

The European Union's Education Council stresses the value of worker adaptability in an emerging knowledge economy for the maintenance of economic competitiveness, arguing for continuing lifelong learning in order to maintain and develop employable skills (EC, 2001a, p.5). Teichler (1998) discusses a number of initiatives in Western Europe which preceded the inception of the EU and focused on the potential of Higher Education in drawing together diverse national agendas. Early projects such as SOCRATES (eLearning Europa, 2005) were followed by many more, in which increasingly the economic potential of Higher Education came to be linked to the needs of the knowledge economy and, through ICT, to eLearning. The range of recent initiatives is extensive and a summary overview is provided in Table 3.5; this conveys an idea of the high priority which is afforded to realisation of the Information Society ideal.

Discourse within the EU has extended from economic considerations to those of social and community cohesion. The Information Society idea as it came to be formulated is not just a driver of changing work practices but is seen as an important social counter-balance to economic exigencies. In her speech *i2010: Europe Must Seize the Opportunities of the Digital Economy* which launched the EU's i2010 (European Information Society 2010) initiative, Viviane Reding, the EC Member responsible for Information Society and Media, outlined the three pillars of the i2010 initiative:

> - *The first pillar of i2010 combines all the **regulatory instruments** at the Commission's disposal which will allow us to create a modern, market-oriented regulatory framework for the digital economy.*
> - *The second pillar of i2010 brings the **EU's research and development instruments** into reinforcing the capacity of European industry to innovate, and to bring this innovation then to industrial application. Our objective is to ensure **technological leadership** of Europe in the field of ICT.*
> - *The third pillar of i2010 seeks to promote, with the tools available to the Commission, **an inclusive European Information Society**.*
>
> (EUROPA, 2005) [original emphases]

The significance here, as in other EU documents on this subject, is upon a regulated and managed progression towards a knowledge economy, so that the nation states of Europe may be protected against the untrammelled powers of transnational corporations operating in globalised markets. By this analysis, it is of crucial importance that European citizens receive high quality education and training to enable them not only to work effectively in the knowledge economy in competition with the USA and the rapidly growing economic power of China and India, but also to be able to contribute to the social, cultural and communitarian ideals of the EU as realised in the Information Society. These aims are brought together in the EU's Lisbon Strategy: "*… to make Europe the most dynamic and competitive, knowledge-*

based economy in the world, capable of sustaining economic growth, employment and social cohesion" (EC, 2005b, p.1). In order to realise this strategy, the three components of a *"knowledge triangle of research, education and innovation"* must be brought together in a way that means *"introducing fiscal incentives for research and innovation, revisiting state aid rules to foster research and innovation, improving and adapting intellectual property rights regimes, facilitating risk capital operations at the European level and strengthening links between universities and industry"* (*ibid.*, p.3).

A parallel process, effected through the SOCRATES and ERASMUS programmes (eLearning Europa, 2005) has been to strengthen links between European universities and encourage student and staff mobility across nation states. This was taken a stage further in the Bologna Declaration of European Ministers of Education (UNESCO-CEPES, 1999) to establish a common three-cycle degree structure and credits system to facilitate academic mobility. While the Bologna initiative appears to be progressing at institutional level (Reichert & Tauch, 2005), some academics see in these moves to harmonise systems a covert de-nationalisation and Europeanisation of Higher Education curricula (Teichler, 1998; Livingston, 2003). Others, such as Peters (2003), challenge the equating of the knowledge economy with 'knowledge capitalism' and posit an alternative 'knowledge socialism'.

Table 3.5 – Higher Education and eLearning Initiatives in the European Union		
Title	Summary description	Source
SOCRATES	Originally an EC student exchange programme; now "the backbone of the European Union education initiatives" and described as the "Community action programme in education"	eLearning Europa (2005)
MINERVA	Initiative within the SOCRATES Programme to promote cooperative projects in ICT and ODL at all levels of Education within the EU	Minerva (2005)
eLearning Action Plan	*Designing Tomorrow's Education*: EC strategy for the development of eLearning infrastructure as part of the eEurope initiative	EC (2001b)
eEurope 2005	EC strategy for the use of eLearning as a key component in the creation of a pan-European information society	eEurope (2005)
eLearning Programme	€36 million EC programme for 2004-2006 to support developments in the eLearning Action Plan	EC (2003)
European ODL Liaison Committee	"A co-operation forum for the European organisations of open and distance learning"; non-EC body monitoring the progress of eLearning initiatives	ODL-Liaison (2007)
European Distance and E-Learning Network	Non-EC association open to individuals and organisations; activities similar to ODL Liaison Committee	EDEN (2007)
EuroPACE	Non-EC pan-European network of (45) universities and regional partners; part of the cEVU collaboration	EuroPACE (2007)
cEVU	Collaborative European Virtual University Project: Web portal for EC-supported pilot project to develop a European virtual university; coordinated by EuroPACE and completed in 2003.	cEVU (2003)
EUNITE	Non-EC European Network for IT in Education; part of the cEVU collaboration	EUNITE (2007)
PLOTEUS	"Portal on Learning Opportunities throughout the European Space": EC Web portal with information on courses, national education systems and study exchanges	Ploteus (2007)
EURYDICE	Part of SOCRATES: an "institutional network for gathering, monitoring, processing and circulating reliable and readily comparable information on education systems and policies throughout Europe".	Eurydice (2007)
i2010	European Information Society 2010 initiative	i2010 (2007)

In Britain, there has been an increasing awareness of the need for Higher Education to recognise and adapt to the knowledge economy. Williams (2007) argues that universities which fail to address the knowledge and skills needed for the emerging professions of the twenty-first century run the risk of fracture and eventual collapse. The Leitch Review of Skills *Prosperity for All in*

the Global Economy (Leitch, 2006) sets ambitious targets to make Britain a *"world leader in skills by 2020"*. Although the British economy is currently strong, the review argues that its workforce is comparatively poorly skilled and less productive than in other Western nations, and the considerable investment required at all levels of Education will be essential in order to maintain the current level of prosperity.

There is substantial evidence, then, of pan-European pressures upon universities urgently to engage with meeting the twin needs of the knowledge economy and the Information Society. These pressures focus upon the fostering of applied research and technological innovation, and also upon the growth of a mass and interoperating Europe-wide system of Higher Education which is strongly reliant upon the perceived potential benefits of eLearning. These pressures act in the same direction as those of the growing demand for vocationally-oriented courses from potential students, and challenge the elite purity of universities' traditional strengths in the Arts and Humanities.

3.6 Consumerist and Post-Modernist Expectations

> *The future is a busy portrait of onrushing economic, technological, and ecological forces that demand integration and uniformity and that mesmerize peoples everywhere with fast music, fast computers, and fast food – MTV, Macintosh, and McDonald's – pressing nations into one homogeneous global theme park, one McWorld tied together by communications, information, entertainment, and commerce.*
> (Barber, 1995, p.4)

Barber's vision of a 'global theme park' is akin to certain scenario models of the future to be examined later in the thesis. While many may find this vision of the future alarming – and it is not without its challengers (*e.g.* Hunter,

2000; May, 2002) – it is nevertheless persuasive. This section of the chapter complements the earlier discussion of student demand, globalisation and commercialisation of Education and considers a number of ideas brought together under the heading of *post-Modernism* – as distinct from the related *Postmodernism*, using these terms as defined in Chapter 2.

Ritzer (2000) compares his concept of *McDonaldism* (after the transnational restaurant chain) with Fordism and post-Fordism. Features such as homogeneous products, assembly-line technologies and standardised work routines are common to Fordism and to McDonaldism, but the McDonald's chain appears to have successfully reinvented itself for the post-Fordist, post-Modern world, through substantial marketing (annually over 2 billion US$ according to McSpotlight, 2007) and a distinctive brand identity, to foster a pervasive consumer base. The point has been made in the previous chapter that traditional universities which are unwilling or unable to undergo a similar reinvention run the risk of losing market share to such well-branded commercial competitors.

A less bleak but more comprehensive view is taken by Castells (2001) in a major analysis of what he dubs the *Network Society* (similarly titled, but quite different in nature to the EU view of an Information Society discussed earlier). Echoing some of the points already made in this chapter, Castells argues that three forces – the 'IT Revolution' from the 1970s, the restructuring of capitalism and statism in the 1980s, and the cultural and social movements of the 1960s & 70s – have shaped a new world which is a significant step-change from the old. For the dominant (ICT-enabled) groups within this

Network Society, the key features of this world are its transformed temporal and spatial dynamics. Time, says Castells, is being compressed by the action of global electronic transactions and communications such that events may no longer occur in their natural sequence; this eliminates the "*'succession of things' that, according to Leibniz, characterizes time, so that without things and their sequential ordering, there is no longer time in society"* (Castells, 1997b, in Webster, 2004, p.145). This *timeless time* as he calls it is associated with a transformation of space, in which to the 'space of places' (our conventional physical experience) must be added the *space of flows*. By this, Castells means the conceptual space which is the substrate for the networking of (electronically-borne) information flows. But timeless time and the space of flows validate and underpin the power of the ICT-enabled, maintaining social domination as *"the prevalence of the logic of the space of flows over the space of places"* (*ibid*.) In the Network Society the old (Modernist / Fordist) indicators of wealth and status – such as property and physical scale – no longer obtain, as flexibility and originality (Reich's symbolic analysis) become the new currency.

> *The dynamics of networks push society towards an endless escape from its own constraints and controls, towards an endless supersession and reconstruction of its values and institutions, towards a meta-social, constant rearrangement of human institutions and organizations. ... the power of flows in the networks prevails over the flows of power.*
> (Castells, 1997b, in Webster, 2004, p.148)

Thus, the 'flows of power' which characterised the old order are now subsumed by this unpredictable dynamic, affecting corporations, workers and nation states alike.

3.7 Managerialism and Corporatism

This section examines how the pressures upon universities arising externally from government and elsewhere are being supplemented by internal pressures from a changing institutional ethos and identity. The traditional collegiate models of the university discussed in Chapter 2 are being supplanted by corporate structures, and the rather loose, democratic forms of governance of the past are giving way to tight, finance-driven managerialist controls.

Scott (1998) argues that the journey from an elite to a mass Higher Education system has led universities to an increased dependence upon the state for funding, and that this in turn has resulted in tighter accountability and subordination to national political purposes. Furthermore, where elite systems were what Scott calls exclusionary, mass systems are being forced to become inclusionary, as is exemplified in Britain by a Government agenda for widening Higher Education participation, with the 'carrot' of selective funding for under-represented groups through the Aimhigher programme (Aimhigher, 2007) being coupled with the 'stick' of the Office for Fair Access, (OFFA, 2007). Scott identifies other effects of diversification as both the inputs and outputs of Higher Education are transformed: there will be a weakening of the links between universities and elite occupations, and a 'demystification' of the university within society. The traditional university will cease to be the dominant institutional model within Higher Education, and Scott cites the growing importance of Colleges of Advanced Education and Technical And Further Education (TAFE) in Australia, in which distinctions between further

and Higher Education are being eroded. As will be discussed later, these trends are increasingly apparent on the British scene. With the erosion of their elite status and 'restrictive practices cartel' funding (Hague, 1991), universities are being drawn into a less protected open market in which, as is evident in the USA, competitive advantage is won through financial investment, strong branding and proactive entrepreneurial leadership. It has become increasingly apparent that there is a disjoint between traditional governance in universities and the exigencies of this new environment. Scott comments

> *… universities have to be managed in a new kind of way. Donnish collegiality will no longer do. Instead a cadre of professional managers must be developed. The university must now be regarded, and purposefully managed, as a large complex organization rather than being regarded as a loose-knit aggregation of incommensurable special interests and cliques of experts called faculties, departments, institutes and so on.*
> (Scott, 1998, p.115)

This notion of a 'cadre of professional managers' reflects a belief that the problems of organisations can be solved by informed, rational planning, control of outputs and corporate direction. The origins of what came to be known as *managerialism* are well documented (*e.g.* Peters & Waterman, 1982; Clarke & Newman, 1997; Bottery, 2000) and can be associated with the rise of Neo-Fordism and moves to 'reinvent government' (Osborne & Gaebler, 1992) in the 1980s. McNay (1995) applies these ideas to Higher Education in a two-dimensional model of universities as organisations (Fig. 3.7).

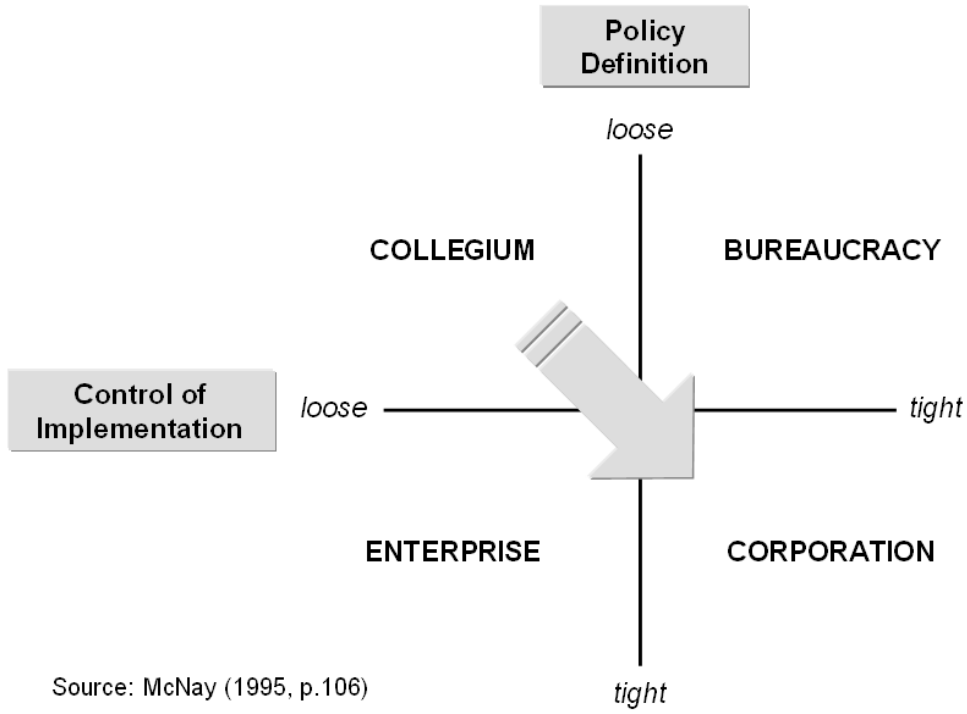


Figure 3.7 – Four University Models

In this, the *Collegium*, inherited from the medieval universities, is characterised by loose control over policy and practice. As has been discussed in Chapter 2, twentieth century universities also exhibited elements of *Bureaucracy*. The *Enterprise* is seen as an organisation with a clear mission and focus, but with the flexibility to adapt practice; by contrast, the *Corporation* exerts tight control over mission as well as practice, and can be seen as managerialist. Using this model, the pressures of the open market can be seen as pulling universities towards both the Enterprise and Corporation quadrants.

The various demands of government, as discussed earlier, including its quality targets and attempts at the 'micro-management' of Higher Education (Jarvis, 2001, p.14; Preston, 2001b; Moser, 2004) create considerable administrative overheads and can be seen as pulling universities in the direction of the Bureaucracy quadrant. As Preston (2001a, p.347) argues, this has the effect of *"enforcing concern only for those things that can be measured …* [and] *is therefore essentially instrumental rationalism, concern only for that which we can compile numbers. It is the modern ethic of spreadsheets and cost-benefit analyses"*. In McNay's model, the net effect of these forces is to impel the university from the Collegium sector to the Corporation, giving rise to the questions of a 'crisis of legitimation' (Preston, 2001b) raised in Chapter 2.

From the foregoing analysis, it might be interpreted that it is Fordism – rather than Neo-Fordism – that is making inroads into universities. Commenting on developments in American universities, Diehr & Montanari (2002) argue that the new breed of US university 'corporate chancellors' have introduced scientific management techniques which have been abandoned in the commercial world (with the move to Neo-Fordism). In contrast, universities have seen the growth of administrative bureaucracies, in much the same way as in the private sector of the early 1980s. The transnational management consultancy company PricewaterhouseCoopers has seen business opportunity in the provision of advice to universities. It has been active in the USA through the EDUCAUSE organisation (PWC 2005) and its Higher Education Industry Group have recommended that the employment of incremental change strategies by university managements be abandoned in favour of

transformational change based closely upon 'business process reengineering' methods employed by corporations in the commercial world (PWC, 1998). Thus, the process of change which is taking place in universities may be at the beginning rather than the end, and more far-reaching upheavals may lie in store.

3.8 Discussion

This chapter has considered the current context within which British universities operate, through an examination of six categories of drivers for change. Many implications are present in this analysis, and are brought together for discussion here in three sets of issues.

The first set of issues concerns the institutional future of individual British universities. The reported 'subject wastelands' arising through departmental closures may threaten the integrity and viability of regional comprehensive universities. The move towards corporatism and the adoption of managerialist methods could result in delayering, downsizing and outsourcing, as massified vertically-integrated institutions are radically restructured to follow commercial models. And as will be discussed later in the thesis, the adoption of eLearning may prove a vigorous catalyst in the commodification of Higher Education.

The second, and related, set of issues concerns the continuing viability of the British university sector as a whole. Factors threatening this include the uneven effects of funding shortfalls on some institutions, the financial

uncertainty of top-up tuition fee charging and the changing balance of power between the state and the global Higher Education market. There is increasing pressure upon the small number of prestigious elite universities seeking to compete internationally. Release from state control would benefit these institutions, and the setting of sufficiently high tuition fees could enable them to thrive without government funding to emerge as independent players. Unlike the successfully integrated Californian Higher Education system discussed earlier, this would leave an asset-stripped state-funded system of universities and competing Further Education colleges to cope with the (low profit) mass market demand. Government spending priorities in Education currently lie outside Higher Education, and it is unlikely that this will change in the short term. In the future, however, if the situation deteriorates rapidly matters could go beyond the point of government rescue.

The third set of issues could prove the most radical, as they concern the status and identity of universities both as 'course providers' in a commodified Higher Education market and as creators of new, economically strategic knowledge. The appearance of for-profit organisations employing eLearning methods has been noted, and they may prove more quick and adaptable than universities in deploying the educational technologies to be discussed in later chapters. They are also likely to be more prepared than traditional universities to flexibly meet the heterogeneous demands of a diversified range of learners and to breach the traditionally safeguarded boundaries between Higher Education and Further Education. And in an increasingly post-Modernist society, they are likely also to have developed strong branding and effective systems of 'customer care'.

The last twenty years have seen considerable changes in the *milieu* of British universities, and their place as elite and securely funded institutions has come under threat. However, whether or not these changes have precipitated a 'crisis', as suggested in Chapter 2, turns to some extent upon the definition of that term. The next twenty years may see comparably dramatic changes, and this chapter has outlined some ways in which these might take place.

Chapter 4 *The Nature and Applications of eLearning*

4.1 Overview

Developing out of Distance Education but now far more broad and diversified, eLearning pervades education and training at all levels, enabled and supported by ICT and strongly associated with neo-liberal ideas for electronic commerce, a knowledge economy and an 'Information Society' of the future. A number of false starts and recent failed ventures have sounded warning bells but have not shaken corporate and government views of eLearning as an educational panacea. This chapter aims to analyse the nature of eLearning and various models for its implementation; to review the British contexts in which it is used in Further Education, Higher Education and corporate education and training; and to evaluate the success of attempts in Britain and North America to establish commercially successful eLearning ventures.

4.2 The Nature of eLearning

4.2.1 Definitions

eLearning is an umbrella term for a variety of methods and practices in education and training in which electronic systems are employed. Characteristically, this involves extensive communication: between learners and between learners and tutors. The umbrella is a large one, extending from

the training of basic vocational skills in commercial and corporate environments to the postgraduate study of the arts and humanities in universities. The following definitions are as revealing of the different orientations of the organisations involved as they are of the nature of eLearning.

From a vocational preparation perspective there is a 'systems' focus on using technology for the *delivery* of training: "*e-Learning means the delivery of learning with the assistance of interactive, electronic technology, whether offline or online.*" (IITT, 2005). By contrast, from a software sales perspective there is a tendency towards upbeat prophecy of the potential of eLearning for transforming the educational process itself:

> *e-Learning describes the way new information and communications technologies (ICT) are set to re-invent education and learning in a digital world. In short, it means Internet enabled learning: an exciting range of opportunities for educators and learners alike to use new skills and tools to prosper in an information society.*
> (Microsoft/Arthur Andersen, 2000)

Closely related to eLearning are *open learning* (otherwise known as flexible learning) and *Distance Education* (otherwise known as distance learning). Although often grouped together as 'open and distance learning', or even in the misleading conflation of 'open distance learning', they are distinct and different. The *Oxford New English Dictionary* offers the following definitions: of open learning as *"learning based on independent study or initiative rather than formal classroom practice"* and Distance Education, as *"a method of study in which lectures are broadcast or conducted by correspondence, without the student needing to attend a school or college"*. There is a substantial qualitative difference between the two. For example, all of the UK

Open University's courses (UKOU, 2007) happen to be taught at a distance, but this is not a necessary condition for its openness, as the same courses could be taught face-to-face through a flexible 'drop-in' arrangement. And neither open learning nor Distance Education necessarily involve computers; the largest Distance Education institutions in the world – in China and Turkey – use satellite television as the principal method of delivering course content (Keegan, 1996). However, in Western countries, both open learning and Distance Education are most commonly conducted through ICT, and it is for this that the inclusive term eLearning is used.

In their study of eLearning in US college campuses and for-profit corporations Zemsky & Massy (2004, p.5) identify three broad domains as the principal niches of the eLearning market:

- eLearning as Distance Education
- eLearning as facilitated transactions software
- eLearning as electronically mediated learning

The first of these has already been introduced. The second refers to the success of commercial virtual learning environments (VLEs), which are used as online course management systems; these will be the focus of discussion later in the chapter. The third category of eLearning centres upon the learning materials themselves. This is the use of eLearning which holds the greatest significance for the future of Higher Education. This thesis adopts the definition offered by Meredith & Newton (2003, p. 44) which emphasises the social aspects of learning:

> *E-learning is learning facilitated by internet and web technologies, delivered via end-user computing that creates connectivity between people and information, and offers opportunities for social learning approaches.*

Related to this and making possible 'any time, anywhere' social learning is the employment of *end-user computing* (*i.e.* access by personal computer rather than institution-based terminal) to facilitate communication across a connective web; these are important issues which will be revisited elsewhere in the thesis. This brief definition provides a starting point from which to study the variety of more detailed models for eLearning later in the chapter.

4.2.2 Historical perspectives

eLearning developed from Distance Education, conducted initially by printed and written means. Nipper (1989) defines three generations of Distance Education, which are summarised in Table 4.2.2. It is notable that each generation was enabled by developments in technology, and that with improvements in communications came improved quality and frequency of feedback, and the potential for greater social learning.

Table 4.2.2 – Three Generations of Distance Education

Generation	Period	Technologies	Communication
First: correspondence teaching	1840-1969	Print; pen & paper; postal service; radio broadcasting	Infrequent feedback to learner; minimal inter-learner contact
Second: multimedia Distance Education	1970-1984	Television broadcasting; audio- & video-cassettes; telephone	Improved feedback to learner; minimal inter-learner contact
Third: Distance Education employing computer-mediated communication	1985-	Computer networks; Internet & online conferencing; email, videoconferencing	High potential for feedback to learner and for social learning contact

Adapted from Nipper (1989)

Third generation developments were made possible by improvements in computer hardware and software. Through the 1980s the cost of desktop computers fell and their usability improved as a result of the introduction of graphical user interfaces. Using mouse, screen pointer, 'visual shorthand'

icons, graphics and colours to replace the monochrome text-only interfaces of the past, these new operating systems, commercially pioneered by Apple Computer and subsequently adopted by Microsoft Corporation (Edwards, 1995) considerably simplified computer use and facilitated eLearning. This combination of increased computing power, affordability and usability will be examined more closely in the next chapter.

Increasingly in university practice the techniques characteristic of open learning and Distance Education are being brought together with face-to-face methods in a novel eLearning mix which erodes old distinctions of the pre-electronic communication era. Moran & Myringer (1999, p.60) foresee a time when:

> *… distance education and face-to-face teaching disappear as separate constructs, to be replaced by flexible, networked learning. We define the ideal of flexible learning as approaches to teaching and learning which are learner-centred, free up the time, place and methods of learning and teaching, and use appropriate technologies in a networked environment.*
> (*ibid*., p.60).

This notion of flexible learning combining elements of online and face-to-face teaching seems even more difficult to pin down than eLearning itself. In the *Horizon Report* (NMC, 2005) the term used to a US audience is *extended learning*, and such courses

> *can be conceptualized as hybrid courses with an extended set of communication tools and strategies. The classroom serves as a home base for exploration, and integrates online instruction, traditional instruction, and study groups, all supported by a variety of communication tools.*
> (NMC, 2005, p.3)

The term which has been adopted in Britain for this convergence is *blended learning*, and in a report of the Higher Education Policy Institute, Slater

(2005, para. 1), commenting on eLearning regards blended learning as likely to become mainstream within Higher Education Institutions. Blended learning was certainly in evidence in the British case studies made by de Freitas & Attewell (2004), where in five of the six examples drawn from Higher Education, commercial training and informal learning, blended methods were used as part of a wide range of pedagogies.

4.2.3 Models of eLearning

It has been stated that eLearning is an umbrella term drawing together a range of educational traditions and approaches. One of these – 'learning with computers' – is in itself an extensive area of study supported by hundreds of academic journals. A mature field of enquiry within this is human-computer interaction, informing the design of educational software through research into the structure of communication between humans and computers (Dix, *et al.*, 1998) and this has resulted in generally recognised usability guidelines for effective interface and website design (*e.g.* Apple, 2005; IBM, 2005). As mentioned in the previous section, the arrival of multimedia computers not only simplified operation and extended their use to a wider section of the public (Tuck, 2001), but also opened new possibilities for learning. Advocates of multimedia argue that the reinforcing effect of multi-sensory experience makes for effective learning – especially for individuals with particular predispositions. Thus, multimedia presentations typically incorporate visual, auditory and – more usually in the case of computer games – haptic stimuli. Mayer (2001) has documented evidence on learning through multimedia showing that certain sensory combinations, such as voice commentary over visual animation, result in superior learner retention over voice or print alone,

and Carlson-Pickering (1999) provides examples of how ICT may be used variously in schools to appeal to students with visual-, auditory- and haptic-oriented learning predispositions. However, the issue of learning styles is a complex one, as shown in the *Learning Styles and Pedagogy in Post-16 Learning* survey (Coffield *et al.,* 2004). Here, although the notion of learning styles held a "strong intuitive appeal" to teachers, over 70 models of learning styles had been identified and there were very few studies in which the validity and reliability of particular models could be established with a satisfactory degree of rigour. While this does not negate the idea that different learners may have preferred modes of learning and particular strengths – consonant with the notion of multiple intelligences (Gardner, 1999) – it does advise caution in making ambitious claims. In any case, educational technology cannot be evaluated in isolation, but should be viewed in context. As an early advocate of multimedia in universities, Laurillard (1993) stressed the need for the introduction of technology to be 'situated' in the context of Higher Education as part of a radical reappraisal of the learning process. There was a need, she argued, to move from conventional didactic pedagogy towards a more conversational framework in which the tutor became a facilitator rather than a transmitter of knowledge, helping the student to construct a personal understanding. Salmon (2000) proposes a five-stage process whereby students using computer-mediated communication (CMC) are encouraged and motivated by experienced online tutors so that online socialisation and information exchange lead to knowledge construction and the synthesis of learning. Constructivist ideas are also evident in Boot & Hodgson's (1987) categorisation of Distance Education courses by their *Dissemination/ Instructional* or *Development/Constructionist*

orientations (see also Hodgson, 2001). An alternative typology was developed by Coomey & Stephenson (2001) in an O*nline Paradigm Grid* (Figure 4.2.3a) creating four quadrants. An analysis of published accounts of Web-based learning and teaching was then used to create rich descriptions of the four paradigms. The analysis revealed four common features regarded as essential to good practice in online learning:

- *Dialogue* – communication between learners in a variety of forms
- *Involvement* – active engagement by learners in course tasks
- *Support* – tutorial supervision and peer support
- *Control* – learners' control over pace, content and study management.

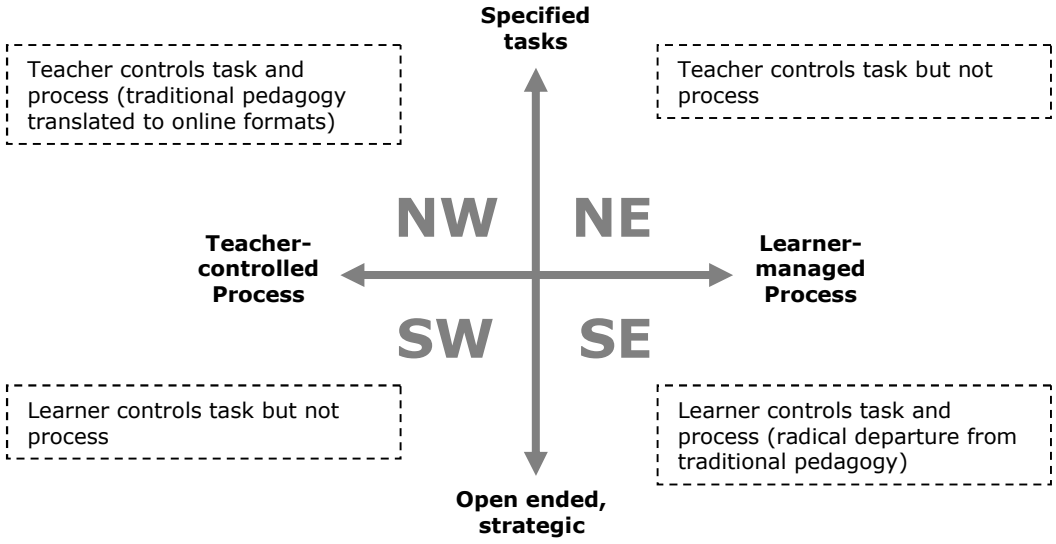


Figure 4.2.3a – Online Paradigm Grid
Adapted from Coomey & Stephenson (2001, p.41)

Incorporating elements of the two previous models but oriented towards the learner's perspective is Williams' (2006) *4D Model*. This integrative construct consists of four dimensions: *course utility, study flexibility, delivery technology* and *learning paradigm*; each is conceived as independent of the

others, comprises three strands and is represented on a four-point scale, as shown in Table 4.2.3a. *Course Utility* is concerned essentially with the 'entry ticket' that utilitarian courses provide to enable students to attain extrinsic goals (*e.g.* vocational qualifications leading to better-paid jobs) and relate to students' general orientations to education (Morgan, 1993). At the '0' end of the scale is the type of liberal arts course in which the important outcomes are experiential rather than extrinsic. Between these extremes is, for example, a degree course undertaken out of personal interest, but which carries some vocational credit. *Study Flexibility* comprises three indicators of the overall flexibility of a course. At the '3' end of *Materials and sources* would be open-ended "*frameworks or shells of support materials surrounding loosely defined fields of study"* (Stephenson, 2001, p.223). Here, the *Tasks* strand is the same as the vertical dimension of the *Online Paradigm Grid*. *Delivery Technology* considers the types of eLearning activities from the learner's perspective: from a computer-centred type of course to one in which there is a high degree of face-to-face interaction with teachers and peers. The intermediate blended learning category, discussed in the previous section, shares components from both extremes of the dimension. *Learning Paradigm* includes the *Control* strand, which is the same as the horizontal dimension of the *Online Paradigm Grid*; however, it is broader than this. *Interaction stance* incorporates the notions of *hyperlearning* and intensive peer interaction (which receive detailed discussion in Chapter 6); these relate also to an active constructionist orientation (Boot & Hodgson, 1987). *Cognitive style* is an important descriptor for potential course clients seeking activities to match their own preferred learning orientations, and these two end-point descriptors relate to the continuum model of cognitive styles devised by Witkin *et al.*

(1977) in which learners range from *field-independent*: serialists / splitters / 'logical theorists', to *field-dependent*: holists / lumpers/ 'imaginative divergers'.

Table 4.2.3a – *4D Model*

Dimension	*Strand*	-0-	-1- -2-	-3-
Course Utility (CU)	*Purpose*	'liberal education'	*e.g.* traditional arts or humanities degree	vocational, utilitarian
	Outcome	intrinsic, experiential		extrinsic, transferable
	Assessment	credit accumulation unimportant		credit accumulation crucially important
Study Flexibility (SF)	*Materials and sources*	predetermined, tightly-defined	sharing some of the components of 0 and 3	indicative, loosely-defined
	Scheduling	lockstep, sequential		flexible, variable
	Tasks	specified		open-ended, strategic
Delivery Technology (DT)	*Media*	technology-supported face-to-face learning	blended learning	online only
	Communication	technology-supported face-to-face		online, asynchronous
	Support	face-to-face only		online only
Learning Paradigm (LP)	*Interaction stance*	passively receiving 'accepted wisdom'	sharing some of the components of 0 and 3	contributing actively and collaboratively to new knowledge
	Cognitive style	field-independent		field-dependent
	Control	teacher controlled		learner managed

Adapted from Williams (2006)

The four-point scales of the *4D Model* are now employed to compare different applications of eLearning. For the sake of illustration three hypothetical scenarios have been categorised. The first – called *Blended* – is an example of technology-supported learning within a traditional university in which a virtual learning environment is used to follow up activities initiated in conventional lead lectures. The second – called *Corporate* – describes a vocational training course delivered by a corporate university to moderately-skilled employees to train them in new work procedures. The third – called *Active* – is not a formal course but an ongoing process of research and development undertaken by a group of 'blue sky' researchers based in universities across three continents

and communicating through a variety of sophisticated technologies. Table 4.2.3b shows how these have been rated on the numerical scales of the 4D model, and Figure 4.2.3b presents this data in a graphical form in which the profiles of the three scenarios may be visually compared.

Table 4.2.3b – Comparison of Scenarios	CU	SF	DT	LP
Blended: technology-supported face-to-face module in a traditional university	2	0	0	2
Corporate: vocational training in a corporate university	3	1	3	0
Active: flexible and collaborative learning by a globally-distributed research group	1	3	3	3

Adapted from Williams (2006)

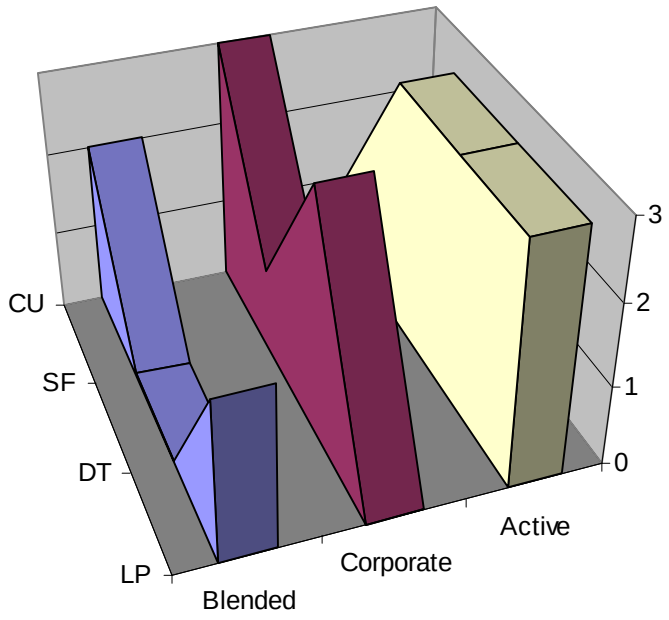


Figure 4.2.3b – Profile Comparison of Blended, Corporate and Active Scenarios
(Williams, 2006)

These examples provide some view of the variety of conceptualisations of eLearning but make up a small proportion of the number of models presented in current literature (for example: Baber, 1995; Nichols, 2003; Mayes & de Freitas, 2004; JISC, 2004).

4.2.4 eLearning implementations

Other models in the literature focus upon how eLearning originates and develops within institutions and upon different styles of implementation. The *Pedagogic Evolution Model* of Mason (1998) relates to the *Delivery Technology* and *Study Flexibility* dimensions of Williams' *4D Model*, presenting three clusters of eLearning implementation on a single continuum along which it is hypothesised that eLearning implementation evolves and matures. In the first cluster, situated at the 'early' end of the continuum, is a type of implementation in which learning activities and tutorial support are separate, course materials are still in hard copy, and CMC, makes up less than 20% of learner time. At the opposite end is the evolved, fully integrated implementation of eLearning in which content and support are strongly related and there is extensive online discussion and collaboration (CMC) between learners. In the middle of the continuum, and intermediate in terms of integration as well as evolution, is a 'wraparound' structure in which multimedia materials enfold existing course content and CMC comprises about 50% of learner time. Rashty (1999) proposes a similar three-group continuum, of *Adjunct*, in which eLearning is an extra to enhance and extend course delivery by traditional means, *Mixed/Blended*, and *Fully Online*. In order to progress from immature to mature levels of eLearning integration, educational institutions need enthusiastic champions who are prepared to innovate, as well as senior policy-makers who are prepared to support. Collis (1997) presents a staged 'bottom-up' model in which eLearning takes root and "1 000 flowers bloom" prior to the development of institutional policy; this is contrasted with a staged 'top-down' model in which policy precedes local implementation.

In their survey of ten British university business schools, Morris & Rippin (2002) found successful eLearning implementation to be associated with local enthusiasts, responsive to the demands of students and allowed to take different forms. In many cases the energies of these "e-xplorers" and "e-nthusiasts" did lead to the development of institutional policies. Meredith & Newton (2004) performed a similar study of four business schools, rating them against the Collis and other models, seeing different stages of development and adoption rationales and concluding that eLearning appeared still to be in an early phase of multiple styles of implementation. To conceptualise this Meredith & Newton (*ibid.*) propose a *Convergence of 3 Factors Model* in which it is hypothesised that fully successful implementation of eLearning can only occur as the result of an 'ideal convergence' of the key factors of *Pedagogy*, *Technology* and *Learner capability*; this is illustrated in Figure 4.2.4a.

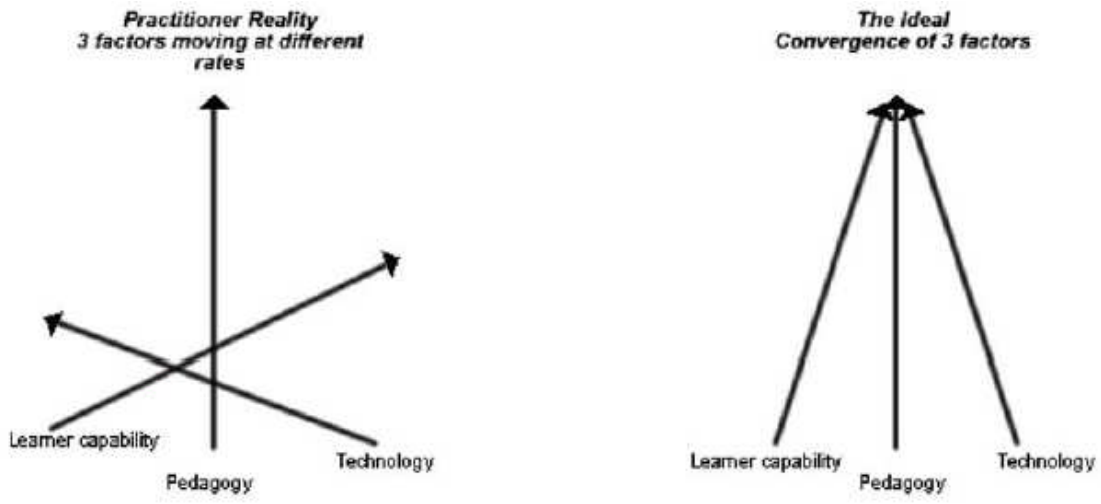


Figure 4.2.4a – Convergence of 3 Factors Model
(Meredith & Newton, 2003, p.53)

Zemsky & Massy (2004) also see factors moving at different rates, but in four *adoption cycles*, reflecting their three broad domains introduced earlier in this chapter. The first cycle is one in which enhancements are made to traditional courses without changing their direction or structure – in many ways the same as Rashty's *Adjunct* cluster, and incorporating blended learning. The second cycle is the implementation of course management systems such as the virtual learning environments (VLEs) which will be discussed later in this chapter. The third cycle is course materials focused, involving the importation of third-party components as learning and teaching resources into existing courses to supplement traditional in-house materials; this relates to the notion of *learning objects*, which are an important focus of the next chapter. The fourth cycle is that of redesigning ("reengineering") course structures and pedagogical processes in order to take best advantage of new educational technologies. Figure 4.2.4b illustrates the relative stage of adoption of these four cycles, showing the first two comparatively well advanced, but awaiting the widespread use of learning objects and the reconfiguring of course designs.

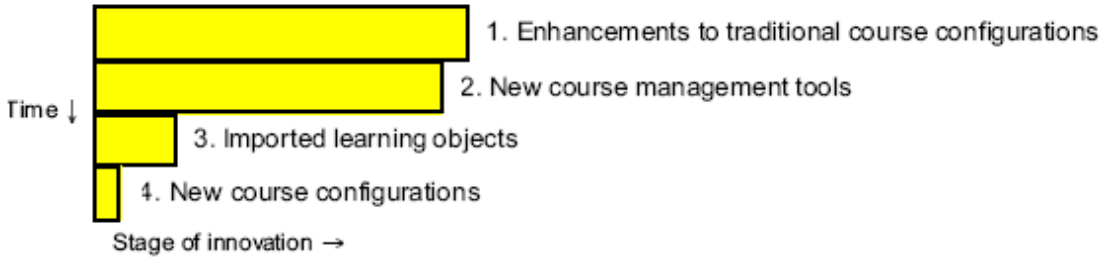


Figure 4.2.4b – eLearning Adoption Cycles
(Zemsky & Massy, 2004)

There is evidence to support this model in British contexts, in which various eLearning blends are being successfully developed, but the importation of

learning objects and re-engineering of course structures has yet to take place (JISC, 2004; de Freitas & Attewell, 2004). Graves (1999) sets out general principles by which universities might structure and optimise their ICT investment, relating examples to the life-cycle, or S-curve model of technology. In many respects eLearning can be seen to be at the *Innovators* and *Early adopters* end of this S-curve of technology adoption illustrated in Figure 4.2.4c. At this early stage, as Collis (1997) says, "1 000 flowers bloom" and many initiatives grow and die. It is at the *Early* and *Late majority* stages of the curve that implementations which have survived as the more successful early innovations are developed into full products.

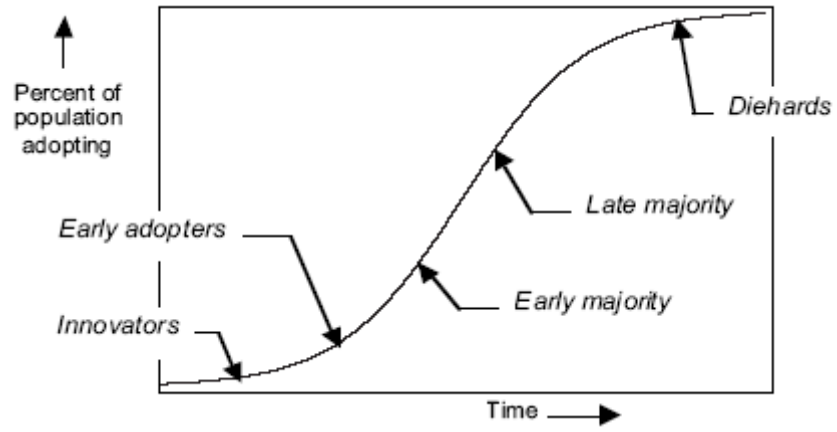


Figure 4.2.4c – Stages of Technology Adoption
Adapted from Zemsky & Massy (2004)

In their analysis of the present stage of eLearning development, Zemsky & Massy (2004, p.8) report

> *MIT's James Utterback, a leading authority on technology-based innovation, points out that, in the early days of a radical innovation, "Market and . . . industry are in a fluid stage of development. Everyone—producers and customers—is learning as they move along." But the fluidity is not sustained. Ultimately, as Utterback notes, in the case of a successful innovation, "Within this rich mixture of experimentation and competition some center of gravity eventually forms in the*

> *shape of a dominant product design. Once the dominant design emerges, the basis of competition changes radically, and firms are put to tests that very few will pass." What emerges from this competitive process is an innovation in a newly standardized format that readily attracts new users. The early days of automobiles were characterized by just such a cycle.*

In the language of the computer software market, the winner at this stage can become a *killer app* (application) which in the late stage of the cycle becomes a widely-used *de facto* standard. Arguably, killer apps exist for the first two – more mature – adoption cycles, as Zemsky & Massy suggest.

> *Within the realm of e-learning in general, two dominant designs have emerged. PowerPoint now supplies the dominant design for course enhancement materials—that is, for e-learning's first adoption cycle. For elearning's second adoption cycle focusing on transactions, Blackboard and WebCT course management systems supply the dominant design. But in the realm of learning objects, anything goes.*
> (*ibid.*, p.47)

As will be examined later in the chapter, this crucial stage of eLearning is still awaiting its major breakthrough and its killer app.

4.3 Contexts for eLearning

4.3.1 Further Education

The Further Education sector has been slower to adopt eLearning, but the Post-16 e-Learning Strategy Task Force made strong recommendations in *Get on with IT* (DfES, 2002) for ICT as a basic entitlement through the medium of eLearning. As a means to achieve this was the recommendation for expansion of the Curriculum Online scheme to cater for post-16 learners; this was called College Online. As a result, many local College Online initiatives have been created in which *virtual learning environments* (described in the next section)

have been employed to support and extend conventional Further Education courses. In 2006 the Learning and Skills Network built upon earlier initiatives through a requirement for all new teachers in the post-compulsory sector to receive training in the use of eLearning (LSN, 2007). In addition, the Further Education sector shares with Higher Education the support of the government-funded Joint Information Systems Committee (JISC, 2007), providing central coordination and infrastructure and strategic advice for eLearning.

As discussed in the previous chapter, some aspects of Further and Higher Education provision appear to be converging, and a common information systems infrastructure with Higher Education supports the government-initiated move to offer degree courses in Further Education colleges. The integrated policy for eLearning across both the Higher Education and post-compulsory sectors, which will be outlined later in the chapter, is likely to further blur the boundaries.

4.3.2 Higher Education

eLearning in various forms has been employed in Higher Education for forty years, being the focus of research as well as pedagogy. Keegan (1996) chronicles early research into Distance Education in the 1960s by Peters and Dohmen of the Tübingen Group in Sweden. Through the 1970s the inception of distance institutions such as the UK Open University prompted further enquiry, and the following decade saw a rapid growth in the literature on Distance Education and the first courses for university credit in this emerging discipline. As discussed earlier, it was the availability of affordable desktop

computers which enabled the development of eLearning: initially subsumed under Distance Education and associated with Web-based CMC. By the late 1990s the academic literature in this area was typified by case studies of successful CMC in North America. A number of web-based networked learning environments were developed, such as Virtual-U (Harasim *et al.*, 1997), but these were difficult and expensive to create and maintain. Commercial virtual learning environments such as WebCT or Blackboard made 'off the peg' functions widely available. The British Educational Communications and Technology Agency (Becta, 2003, p.6) describe these as typically including:

- *notice-board/bulletin board*
- *course outline (course structure, assignments, assessment dates)*
- *email facility*
- *conferencing tools (asynchronous conferencing or discussion groups)*
- *student home pages*
- *metadata (ability to add metadata to resources)*
- *assignments (ability for tutor to create assignments)*
- *assessments*
- *synchronous collaboration tools (such as whiteboards, chat and video*
- *conferencing)*
- *multimedia resources (accessing, storing and creation)*
- *file upload area (ability for students to upload their resources to a shared area)*
- *calendar.*

Take-up of VLEs has been rapid since the appearance in 1996 of WebCT (now bought out by Blackboard). From a longitudinal survey made between 2001 and 2003, 86% of British universities and almost 50% of academic staff across all subjects were using VLEs, primarily as a supplement to conventional course delivery (Browne & Jenkins, 2003). Blackboard Inc., the global market leader, claims that its Academic Suite VLE is used by 3,800 institutions in 59 countries (Blackboard, 2007). Recent developments seek to integrate VLEs within institutional information infrastructures, and a growing

trend has been towards Managed Learning Environments (MLEs) which seek to provide a service – often in the form of a web portal – to not only support teaching and learning, but also to manage its delivery, assessment and recording. The use of VLEs and MLEs ranges from the posting up of 'lecture notes' or *PowerPoint* presentations, to a more interactive engagement through computer conferencing, shared folders for file exchange, and online quizzes. One of the findings of a case study at Oxford Brookes University, as part of the JISC E-learning Pedagogy Programme (JISC, 2004), was that successful eLearning does not necessitate the large-scale creation of online content, but could involve the presentation of self-assessment activities. The case study reported significant gains in student achievement through the sustained use of these approaches over the university's VLE.

Rolling out its first courses in 1971, the Open University pioneered distance learning in Higher Education and its success led to many imitators. *Virtual universities* have subsequently been established which employ many of the systems and procedures of the Open University but use eLearning via the Internet and VLE features as the chief medium for delivery and communication. There can be substantial cost savings through this form of organisation. Erlendsson (2001) reports the U.S.A. Air Force claim of a cost avoidance figure of US$5 million through the employment of Distance Education in a satellite training course in 1992-3. Analyses of university costs in distance learning have shown that when once the initial fixed costs of course and materials development have been met, the variable costs of scaling up the number of students are significantly lower than for traditional face-to-face delivery (Hülsmann, 1999, in Harry, 1999, p.74); however, large

cohorts must be recruited in order for start-up costs to be recouped. In addition, there are many more factors affecting success than course costs, and the somewhat chequered career of virtual universities will be discussed later in the chapter.

The Higher Education *Strategy for e-Learning* (HEFCE, 2005b) coordinates the technical support of JISC with the experience of the Higher Education Academy (HEA, 2007) in the areas of pedagogy and human resources. The strategy paper notes that *"institutions are still struggling to 'normalise' e-learning as part of Higher Education processes"* (para. 14). Early strategies to address 'open and distance learning' had led universities to launch courses with substantial online components, but for reasons outlined above, high start-up costs had been a deterrent, and lack of expertise in creating effective course materials and supporting learners had resulted in limited success. The new strategy reflects lessons learned, and *"Distance learning is now seen as one end of a continuum where e-learning offers opportunities across all programmes and all education sectors"* (*ibid*.). A more detailed analysis of the strategy will be made in Chapter 6.

4.3.3 Corporate education and training

The term 'corporate university' has been used to describe corporatising trends in the administration and structures of conventional universities (Aronovitz, 2000). However, in this thesis, corporate university refers to employment of the term 'university' to the training centres of commercial and public corporations. With the growth of knowledge-based work, many corporations have sought competitive advantage in promoting the skills levels of their

workforce. The first such centre was the McDonald's Hamburger University, established in 1961 by the US fast food corporation. Its *"faculty of 30 resident professors"* at the McDonald's Home Office Campus now use eLearning methods to provide training in 22 languages for the ten Hamburger Universities around the world (McDonald's, 2007). The technology transnational corporation Motorola established its corporate university in 1989 to extend the work of its training arm (MU, 2000), and large corporations such as Ford, Unipart, Lloyds TSB and PricewaterhouseCoopers now have their own 'universities' delivering training and education at a variety of levels (Jarvis, 2001). While the nature of much corporate university work is skills training at sub-degree level, some high technology institutions such as the British Aerospace Virtual University offer undergraduate and postgraduate courses in partnership with conventional universities (BAE, 2007). As the new technologies have been a driver, eLearning is a major mode of delivery. Barnett (2000, p.412) observes

> *Especially in the USA, but also elsewhere (including the UK), we are seeing private sector companies - whose main business is the production of knowledge-based products - establish their own universities. At one extreme, so to speak, such 'universities' are just the skills training centres of the companies concerned. At the other extreme, such 'universities' are the research and development arms of the companies but now with educational functions attached.*

However, unlike public-funded universities the priority is on meeting company needs rather than the individual needs of learners (Prince & Beaver, 2001, p.18). Chase (1998) draws the same conclusion, listing seven functions of corporate universities as being to:

1. *teach corporate culture;*
2. *foster cross-functional skills;*
3. *utilize technology-based training;*
4. *cut cycle times;*
5. *operate training as a line of business;*

6. *educate outsiders;*
7. *develop partnerships with traditional universities.*

(Chase, 1998, quoted in Jarvis, 2001, p.118)

Chase notes here that some corporate universities are entering the general virtual university market and so may pose a threat to public Higher Education, as discussed in the previous chapter. Goddard (1999) reports that transnational multimedia companies, with the investment capability and the publishing rights to course material, are encroaching on the market for MBAs and courses of English as a foreign language, and Jarvis (2001) discusses some implications of this: for the choices which will be available to students in the future, and for the responses which may need to be made by academic staff and educational managers. From another perspective, Davis & Botkin (1995) warn of the *"monster under the bed"* of the commercial knowledge industry's targeting of profitable business education courses. And in the analysis of Tiffin & Rajasingham (2003) the traditional universities, which have been slow to meet the growing demands for Tertiary Education outlined in the previous chapter, will find more of their courses under threat from a new generation of for-profit global universities which see the expanding demand for university education as a business opportunity in a sellers' market.

4.4 Waiting for Breakthrough

This section will explore the question of whether eLearning can be a 'silver bullet' to solve many of the pressures on governments and educational institutions. Abortive projects are examined in which innovations have failed to take root. Constraining forces are considered and key conditions are

advanced for the future successful implementation of eLearning in Higher Education.

4.4.1 A silver bullet

There is a view that eLearning can be a 'silver bullet' (Twigg, 1996) to solve many of the pressures on governments and educational institutions outlined in the previous chapter. However, despite a number of initiatives the advance of eLearning has not been without difficulties – due in part to somewhat overblown claims and high levels of expectation for its success. This may be due to its relative immaturity, lack of institutional coordination and the absence of a killer app. It seems that until a substantial knowledge base of successful use and product development is in place, eLearning is unlikely to meet the burgeoning needs for Higher Education and the 'Information Society' imperatives of British and European governments examined in Chapter 3. On the other hand, it may be that key developments within eLearning – notably learning objects, intelligent software agents and hyperlearning – might combine into such a catalyst for change, and this is a topic for detailed discussion later in the thesis.

4.4.2 False starts

Many of the false starts which have characterised eLearning ventures occurred in the 'dot.com era' in which huge profits seemed the inevitable outcome of all new technology investments. An example was the for-profit business NYUonline, which was established in 1998 as the Distance Education arm of New York University. Buoyant with optimism, NYUonline seemed destined for success – yet the project collapsed within three years. In the

analysis of Carlson & Carnevale (2001), this failure was due not only to changes in the prevailing economic climate as the dot.com bubble burst, but to the tensions of trying to operate as a business while being run by a university. As mentioned earlier, Hayward & Hedge (2002) note similar tensions apparent within the University of Glasgow, striving to reconcile its community commitment to "the delivery of social justice" with its membership of Universitas 21, an international consortium of universities engaged in for-profit deals to market materials for MBA courses (U-21 Global, 2004). Existing also for no more than three years was the Fathom Knowledge Network. Based at Columbia University in the USA this was a grouping of 14 educational partners, including the London School of Economics and the British Museum, with the aim of developing a web-based collection of learning resources. While the website is still available the project proved unprofitable and was wound up in 2003 *"as part of a reorganization of Columbia University's digital media activities"* (Fathom, 2003). Other initiatives have managed to survive by resort to 'makeover' restructurings. For example, the Unext corporation created the online Cardean University in 2000, in 2003 shifted capital to the online Ellis College of New York Institute of Technology and in February 2005 reorganised again to re-brand Unext as the Cardean Learning Group. While not experiencing the academic-commercial conflicts of NYUonline and Fathom, this wholly commercial American company has still found Distance Education to be far less lucrative and secure than it originally hoped.

Arguably the most expensive mistake was the UKeU. Set up in 2000 by the British government's Department for Education and Skills, UK eUniversities

Worldwide Limited – trading as UKeU – received €91 million of HEFCE funding to create a British competitor in what was widely regarded to be the profitable global business education market, which government ministers feared was becoming dominated by US companies. UKeU was to act as a British Higher Education showcase, and by the end of 2003 was involved in course developments with 16 universities. However, after considerable infrastructure expenditure to develop a VLE 'learning platform' and an impressive promotion campaign, UKeU was in 2003 able to recruit only 900 students from a target 5 600 and failed to attract the matched funding which the government had believed would be forthcoming from the private sector. In 2004 the project was scrapped and an enquiry mounted into what had gone so embarrassingly wrong. The House of Commons Education and Skills Committee (Select Committee, 2005) reported that the project had been supply-driven rather than demand-led, with no formal market research conducted. Thus, the assumption that the wholly-online form of delivery would be appropriate had not been tested – at a time when blended learning was beginning to take firm hold. From the Report it appears that the government's commitment to eLearning is undiminished but has now been reshaped, in ways which will be discussed later in the chapter.

The British precedent for UKeU was Clyde Virtual University (CVU, 2005). Founded in 1995 by five Higher Education institutions in the Glasgow area, it was Europe's first virtual university, but has now ceased operations. Yet in Edinburgh, less than 80 km to the east, the Interactive University (IU, 2005) established in 2002 has met with success and continues to expand, having recently launched SCHOLAR, the world's largest eLearning programme, to

supply science materials and resources to over 4 000 school students in India. Although CVU and IU have strong similarities, their differences are more dramatic, and questions must be asked as to what factors were at work in the two initiatives. Other examples exist outside Britain of mature and successful virtual universities; for example, Athabasca University in Canada was founded in 1970 and annually serves 30 000 distance learners through its myAU web portal and national network of learning centres (AU, 2007). Meredith & Newton's (2003) *Convergence of 3 Factors Model* is relevant here, as it is apparent that convergence of *Pedagogy*, *Technology* and *Learner capability* is present in the targeting by IU and AU of large and stable markets in which their online materials can be employed as an adjunct to traditional teaching. By contrast, the UKeU and other failed ventures had been unable to establish a viable mix. The salutary lesson from this analysis is that eLearning must be well researched, carefully planned – and implemented with caution.

4.4.3 Constraining forces

Stiles (2002) may be voicing the concern of many university staff in urging caution in the introduction of course management systems such as VLEs. He argues that the 'top-down' imposition of such systems may constrain rather than enhance pedagogy. The important first need is for staff development for academic teachers in more student-centred active learning – which should precede rather than follow the introduction of new technologies. Zemsky & Massy (2004) take a harder line, noting institutional and individual resistance, and they call for a commitment on the part of university teachers to improve educational effectiveness and quality. The findings of Schmidt *et al.* (2000) support this view: in a US national survey of the use of Distance Education in

university political science departments, academic staff exhibited little involvement or interest in new ways of working, with some being actively hostile and sceptical of the educational effectiveness of Distance Education methods. Raschke (2003) regards such individual and institutional resistance to change as a fear of losing control: at the individual level this is in the power relationship between teacher and student; at the institutional level it is fear of compromising the authority of the university as sole arbiter and validator of knowledge (as will be discussed in Chapter 6). Another concern of academic staff is that of intellectual property rights. As Wentling *et al.* (2000) note, staff may be reluctant to allow their teaching content and materials to be converted into forms which may be reused indefinitely without their control. Bureaucratic inertia creates another problem, as changing the ways of working in British universities is made particularly difficult by arcane administrative procedures which tie up academic time and by high levels of government regulation and bureaucracy. By contrast, universities in the USA employ more professional administrators and business managers and enjoy more autonomy from external directives (Henderson, 2000).

In situations where 'bottom-up' activities are being facilitated and teachers and tutors feel empowered, a variety of eLearning blends have been successfully developed (for example, Morris & Rippin, 2002; JISC, 2003; JISC, 2004; de Freitas & Attewell, 2004; CVU, 2005). As Zemsky & Massy (2004) argue, some constraints seem to be operating more at the level of institutional culture than at pedagogical or technological levels, and this is an issue which will receive examination later in the thesis. However. significant issues remain in the considerable investment required for developing

eLearning materials, and for courses to achieve long term viability such time and resource costs must be recouped. This can be done by a scaling up of student numbers, as discussed by Hülsmann earlier in the chapter, and/or by the flexible reuse and sharing of learning materials, which will be examined in Chapter 5.

4.4.4 Conditions for success

In their analysis of case studies of successful practice, de Freitas & Attewell (2004) noted that the adoption of eLearning has prompted transitions in the roles of learners and teachers. They identify seven needs, focused mainly upon pedagogical considerations, but including an awareness of the potential of new types of eLearning materials:

> *Key issues highlighted by the consultations included the need:*
> - *for tutors to develop new skills when developing and implementing e-learning in their organisations*
> - *for tutor and learner support – both pedagogically and technically*
> - *to consider different forms of assessment*
> - *to consider the new uses of multichannel and multimedia materials*
> - *for a consideration of informal learning*
> - *to consider the cost and time implications of developing e-learning materials.*

Slater (2005, para. 59) draws a similar conclusion, but stresses the need for successful pedagogy to be enabled by improved course management. The targets should be to make courses more cost effective, more learner centred, more quality controlled, and more efficiently assessed. Needs identified by Zemsky & Massy (2004, p.58) include the 'killer app' for their third cycle of eLearning adoption:

> *First, there needs to emerge a dominant design, particularly for the learning objects that are e-learning's building blocks. It is not just a matter of making them more easy to create—*

although that end is important—but also more interchangeable and more easily linked with one another.

Their other requirements are for eLearning materials to meet students' real needs and to be responsive to market demand. They list three practical steps to facilitate this process: to develop a catalogue of lessons learned; to identify obstacles still to be overcome and plan for them; and to make progress in developing dominant designs and learning networks.

4.5 Summary

This chapter has established an operational definition for eLearning and has traced its origins from Distance Education. Various conceptual models have been compared and it has been noted that blended learning, in its various forms, is emerging as the commonest style of implementation in British HEIs, with breakthroughs to more advanced forms of eLearning possibly contingent on the development of killer app dominant designs. The contexts of schools, Further and Higher Education have been shown to be related through attempts at national level to establish common infrastructures and more recently, an integrated policy. Implications of the growth of virtual universities and corporate provision have also been noted. For traditional universities there remain constraining forces, from individuals through to institutional conservatism, which resist change. However, there is evidence that where these forces have been overcome eLearning has been successfully embedded, and a clearer picture is now emerging of what combinations of factors are likely to make for success.

The final word is from Zemsky & Massy (2004, p.60) and anticipates the examination to be made in the next chapter of the potential of emerging technologies.

> *We believe the story of e-learning is still unfolding—no one really knows what tomorrow will bring, although we suspect that computer based learning technologies will continue to serve as a major catalyst of innovation. The underlying information technologies on which elearning depends are themselves too ubiquitous, and the people attracted to having them serve as learning platforms too smart, for us not to take seriously the prospect that major changes will flow from their efforts.*

Chapter 5 *The Potential of Emerging Technologies*

Students can no longer prepare bark to calculate problems. They depend instead on expensive slates. What will they do when the slate is dropped and breaks?
(Teachers' Conference, USA, 1703)

Students depend on paper too much. They no longer know how to write on a slate without getting dust all over themselves. What will happen when they run out of paper?
(Principals' Association Meeting, USA, 1815)

Students depend too much upon ink. They no longer know how to use a knife or sharpen a pencil.
(National Association of Teachers, USA, 1907)

5.1 Introduction

From the distrust with which Socrates viewed writing – as deleterious to language and memory – successive generations of teachers have regarded the adoption of new modes of teaching with apprehension and scepticism; but educational technologies have so far made only marginal impacts upon pedagogy. This chapter complements the previous one by presenting an evaluation of the potential of current technologies for eLearning. An examination of major innovations and trends in hardware and software development is followed by projections of possible learning environments of the future. Here, significant pedagogical changes may come, with wider repercussions for the viability of the educational institution. Three criteria

have been employed for the selection of the innovations: recency, consensus and predicted significance. Those emerging technologies and products which are currently attracting the greatest attention and which are generally considered to hold the most significant educational potential are the ones which have been chosen for comment.

5.2 Hardware and Infrastructure Developments

5.2.1 Processing power

In 1973, Gordon Moore, one of the founders of the microprocessor manufacturer Intel, predicted that the emerging pattern by which the number of transistors integrated as a microprocessor onto a single silicon chip was doubling every 18 months would continue until fundamental physical limits were reached. Over thirty years later this pattern, dubbed 'Moore's Law', is still in evidence and the graph in Figure 5.2.1 shows how computer processing power has increased by a factor of 100 000 over this time.

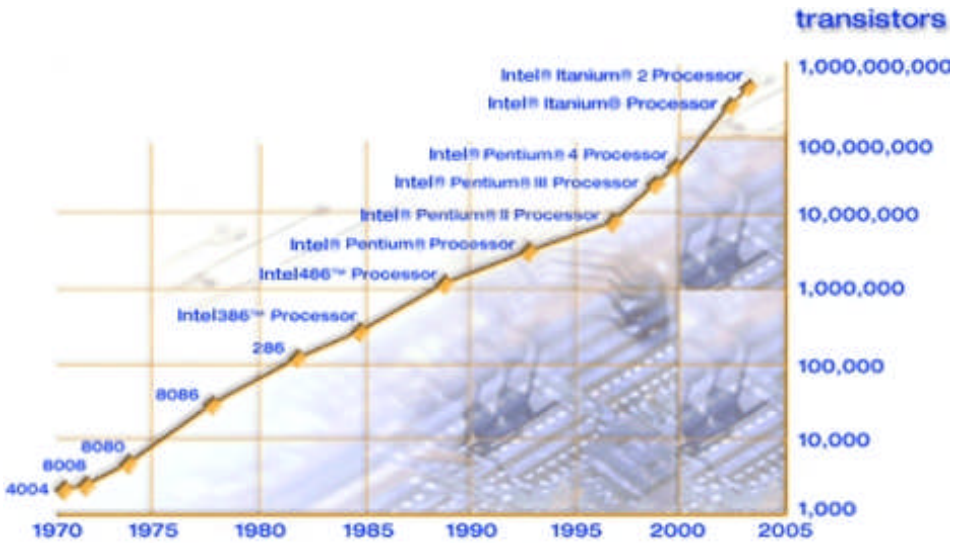


Figure 5.2.1 – Moore's Law (Intel, 2007)

Thus, it has proved possible to make increasingly powerful computers, with the multimedia features discussed in the previous chapter, widely available at modest cost. Polyviou & Levas (1998) estimate that Moore's Law will continue to be valid for the next three to four microprocessor generations, but that maintaining this increase in transistor counts would then become extremely difficult and expensive. Instead, they point to the possibilities of optical computing or quantum computing as alternatives to silicon technologies within the next thirty years. In the immediate future, there is evidence that parallel processing and grid computing may be reaching maturity. The Cell chip, announced in 2005, employs nine microprocessors in a parallel array to process streamed video at unprecedented speeds (Orlowski, 2005). Targeted initially at the fast, high-resolution computer games sector, the Cell chip's low power consumption will make it a strong contender in the mass consumer electronics market for handheld devices such as videophones (to be discussed later). But perhaps the most significant and novel feature of the Cell is its inbuilt *grid computing* architecture, which enables it to share processing power with the Cell chips of other devices connected over a network (the grid). This load distribution has the effect of reducing processing bottlenecks and greatly enhancing the speed and versatility of multimedia-quality communications. To technological determinists (to be discussed in Chapter 7), Moore's Law is the force driving some of the wider contextual developments in Higher Education – and ultimately, driving eLearning.

5.2.2 Convergence and connectivity

A hundred years ago, a telephone was a static and bulky electrical apparatus of dubious utility – as ownership was limited. By contrast, a camera was portable, but required a large tripod and box of ancillary equipment, and used chemical processes to create static monochrome images on sheets of glass. Apart from being rare, expensive, and constructed of mahogany and brass, the telephone and the camera had little in common. A hundred years later, the telephone is light, pocket-sized and immensely versatile. In addition to their voice-call function, many mobile phones contain a digital video camera for transmitting images and a colour screen for multimedia messaging; there are text messaging functions, with electronic mail and Internet access, an appointments calendar with alarm settings, a calculator, a radio and extensive information storage facilities. In Britain, 70% of adults (ICM, 2002), 58% of 10 year olds and 95% of 15-16 year olds now own one (Campbell, 2005). This is an example of technological *convergence*, by which the dominant technology (here, digital computing) replaces other technologies (here, analogue telephony and chemical image processing) in a multi-purpose product which mass production has made affordable to an extensive consumer market. The common underlying digital technology, burgeoning processing speed and a global market has proved a powerful combination which has been a catalyst in the changing habits and expectations of a generation. In their study of the widespread and enthusiastic adoption of mobile phones by young people, Katz & Aakhus (2002) postulate the notion of *Apparatgeist* to model the ways in which personal and social identities and practices have changed so dramatically alongside the use of this ubiquitous technology which now seems such a natural part of our everyday lives.

Targeted marketing has matched the pace of technical innovation, promoting the latest new features of digital consumer products. However, the third generation (3G) into which mobile telephony has moved offers more than 'must-have' gimmicks, and mobile communications will become central rather than peripheral in social and work environments. As telephone networks develop faster Internet connection, computer networks are employing Internet telephony (known as VoIP – voice over Internet Protocol), and free software products such as *Skype* are making possible free international conference calls. The *iTunes* product developed by Apple Computer is a website aggregating 'Internet radio' broadcasts, music for retail, and *podcasts* downloadable to personal digital music (MP3) players such as the Apple *iPod* (Biever, 2005a, 2005b; Apple, 2007a). Such trends are likely to develop further with the growth of domestic broadband Internet connection, reported by Graham-Rowe (2005a) as rising from the current 5% to 100% of European homes by 2020. Alongside this cable connection are new wireless Internet technologies such as WiMAX (2007), extending reception range from 50 metres to over 15 kilometres (Diaz & Takahashi, 2004).

5.2.3 Portability and ubiquity

Fourth-generation (4G) mobile phones are expected from 2010; these will differ from existing third-generation phones in that they will be full Internet devices, operating flexibly in a variety of networking environments. They will have connection speeds faster than today's broadband Internet and will support virtual reality interfaces. 'Feature creep' is evident in third-generation phones, with the latest models now supporting MP3 audio players, MP4 video players and digital TV, geographical location maps, haptic (motion) sensors –

exemplified in the multi-touch interface of the Apple iPhone (Apple, 2007b) - and swipe-able mobile wallet functions. Boyd (2005) reports these developments, describing the mobile phone as becoming a ubiquitous 'Swiss Army knife', essential for modern life. Efforts are also being made to overcome the limiting factor of screen size on mobile phones and MP3 players – which must essentially remain light and pocket-sized – through development of NanoChromic displays on unrolling 'electronic paper' (Graham-Rowe, 2005b). 'Bluetooth wearables' have developed from the early stereo headsets to systems which fit into the inner ear. The prototype wristwatch PDA displayed at the CeBIT international trade fair in 2004 incorporates a high-definition widescreen display, video playback, video phone conferencing, voice recognition software, and *Bluetooth* wireless technology (Bluetooth, 2006). Advances in E-textiles now make it possible for digital devices to be woven into clothing, as with the O'Neill H2 Communication and Entertainment Jacket (Eleksen, 2007).

Such technical advances have profound educational potential. The notion of *ubiquitous computing* propounded by Weiser (1991, 1996) was that widespread access to computers would 'de-technologise' their use, making them a normal and everyday part of life rather than be viewed like the 'new-fangled' technologies of slate, paper and ink in the preface to this chapter. Further social and cultural implications of the similar *pervasive computing* are envisioned by Ark (1999) and Agoston *et al.* (2000). The authoritative *Horizon Report* (NMC, 2005) supported by EDUCAUSE regarded *ubiquitous wireless* (*i.e.* mobile access to wireless networking services) as having a 'time-to-significant-adoption', in Higher Education in the USA, of one year or

less, and events have borne out this prediction. A number of examples evidence this: from mobile phone access to lectures at a German university (Chapman, 2003); to the Mobile Author system under development in Greece to create and distribute Intelligent Tutoring Systems to students' mobile phones (Virvou & Alepis, 2005); to the use of SMS text messaging and digital pictures in Finnish teacher training (Seppälä & Alamäki, 2003); to the 27 mobile phone and 'palmtop' computer (otherwise known as personal digital assistant or PDA) projects in European education and training reported at the MLEARN conference (Attewell & Savill-Smith, 2004); to the Californian school applications discussed by Roschelle (2003); to the growing number of 'laptop universities' (McVay *et al.*, 2005). The Handheld Devices for Ubiquitous Learning project at Harvard Graduate School of Education (HDUL, 2004) has examined a number of applications for PDAs. One of these is *situated learning*, a form of learning-in-action (to be discussed in the next chapter) where online communication with teachers and other learners can be used to illuminate direct experience. Related to this is *distributed cognition*, in which information exchange between handheld – or wearable – PDAs and active digital systems embedded in the environment, such as books or noticeboards, can also contribute to interactive learning; this topic will be revisited later in the chapter.

5.3 Software Developments

5.3.1 Reusable Learning Objects and Open Courseware

Otherwise known as an electronic shareable content object, a Reusable Learning Object (RLO) is defined by Rehak & Mason (2003, p.21) as *"a*

digitized entity which can be used, reused or referenced during technology supported learning". An RLO might be an electronic multimedia slideshow (for example, a Microsoft *PowerPoint* file) on the origins of the First World War, or a set of digitised photographs of woodwind instruments with accompanying text and sound clips, or an interactive accounting spreadsheet illustrating double-entry book-keeping. Their storage in a common file format makes it possible to put together any selection of RLOs to work in combination (known as *interoperability*) and the same object may be employed a number of times in different contexts (known as *reusability*). RLOs are stored in digital repositories and – like library books – require careful indexing. The *metadata* description accompanying each object in a repository must specify its content, level and range of application (Duncan & Ekmekcioglu, 2003; Kraan, 2005), and the educational materials must be structured in a common format to ensure technical interoperability with other learning objects (Olivier & Liber, 2003; CETIS, 2007; IMS, 2007).

Common standards are being developed in Europe for metadata and interoperability (CEN/ISSS, 2005), and models for the design and evaluation of effective learning objects are emerging (Broumley, 2002; Smith, 2004). Experience gained from use of the extensive digital repository MERLOT (2007) in California has been employed in the design of JORUM, the JISC Online Repository for Learning and Teaching Materials in the UK. Multi-disciplinary and spanning Further and Higher Education, the JORUM brief includes student learning materials; staff teaching materials, such as lesson and lecture plans; and the encouragement of sharing, re-use and re-purposing of materials between teaching staff (JORUM, 2007).

The potential of RLOs is immense, especially in combination with other developments to be discussed later. In Chapter 4 a major constraint for eLearning was seen to be the time and resource costs in developing effective materials, and two solutions were proffered. The first solution was to scale up the number of students; for largely online courses this is possible, providing the course meets real market demand, but for blended courses involving the provision of teaching staff and physical accommodation, this may not be feasible. The second solution was to somehow reuse and share eLearning materials – and herein lies the attraction of RLOs (Littlejohn *et al.*, 2003).

As Figure 5.3.1 illustrates, the reusability and smaller *granularity* (or scale of application) of RLOs offer the possibility for better matching to need, greater return on investment (RoI) for developers – so lower unit costs to learners – and a lower level of commitment required by learners (poor retention being one of the drawbacks of many conventional eLearning courses). While these may be attractive prospects for government and senior managers, some educationalists see limitations. Williams (2005) questions whether RLOs might commodify education to the extent that eLearning would be reduced to a one-way delivery system of packaged content rather than a process of active dialogue, and he sees the problem as being that of teasing apart content from context. Parrish (2004) is sceptical of the claims for RLOs in terms of scalability and adaptability. Like Williams, he argues that the replacement of a craft model of pedagogy by an industrial one will result in an impoverished learning experience which *"turns learners into consumers, and instruction into a commodity to be manufactured, with an implication that*

knowledge gain is simply a matter of access, rather than a personal commitment to a process." (*ibid.*, p.64).

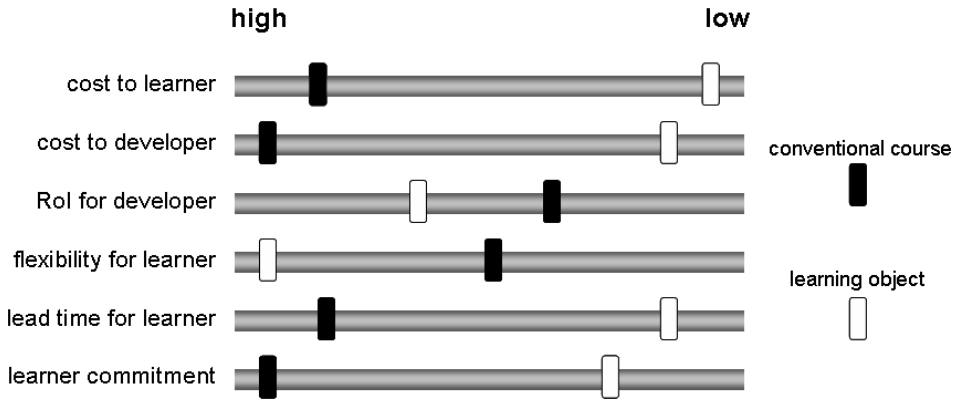


Figure 5.3.1 – Comparison of RLOs with Conventional eLearning Courses

McNaught (2003) questions whether it will be possible to maintain the best of traditional teaching while moving to RLOs, regarding the craft/industrial divide more in terms of instructivist and constructivist pedagogical approaches (introduced in the previous chapter) and hypothesising that learning object authors may be predisposed to creating materials which embody their personal conceptions of learning. A similar concern is raised by Rehak & Mason (2003) about the sharing of RLOs between education and training applications, with the latter more oriented towards 'content aggregation' and commercial opportunities. Campbell agrees, observing that RLOs might be less suitable alongside more active and exploratory pedagogical approaches.

> *Some academics are of the opinion that while it may be relatively easy to stitch learning objects together to produce linear competency-based resources for individual learners, they are unsuitable for accommodating diverse pedagogical scenarios and for constructing more complex learning*

> *activities involving groups of learners engaging in task-based learning, discussion and dialogue.*
> (Campbell, 2003, p.43)

A further obstacle to take-up might be the 'not-invented-here syndrome', in which teachers are reluctant to use materials devised by others, preferring the – in some cases inferior, but at least familiar – materials they have developed themselves. Despite these objections, it is widely expected that present issues of quality and reusability will be overcome, through experience gained in design and application, and that a *learning object economy* will result (Malcolm, 2005). Slater (2005) refers to this as the quest for a 'Holy Grail' and, as outlined in the previous chapter, Zemsky & Massy (2004) identify it as the next eLearning adoption cycle. Multiple learning object economies might emerge, some specialising in the commercial training market, others in Higher Education and others in schools. Campbell (2003, p.44) predicts:

> *It is likely that in some sectors global economies of commercially produced learning objects will predominate. However, within public sector education, we are more likely to see the emergence of micro trading economies where resources are exchanged within and between recognized communities of practice.*

There is growing evidence of such exchange. The Creative Commons organisation (*e.g.* CCUK, 2007) issues licences which extend the legal sharing of digital materials, and the related Open Educational Resources Commons (OER, 2007) is a collection of freely-available teaching and learning materials created, categorised (tagged) and shared by teachers in the K-12 schools sector in the USA. These developments build upon a longstanding 'open source' tradition in the sharing of computer software, which is now extending to other areas. At Higher Education level is the OpenCourseWare project at the Massachusetts Institute of Technology (MIT, 2007) which makes learning

materials from all its courses and programmes freely available. In Britain, the Open University has launched a similar scheme: *OpenLearn*, with an online *LearningSpace* providing free access to a range of existing Open University course materials (OpenLearn, 2007a). The other component of OpenLearn is *LabSpace*, a website with instructions and software tools for the remixing, uploading and reuse of LearningSpace materials under a CCUK licence (OpenLearn, 2007b).

Wikipedia (2007) the online free encyclopedia, has grown rapidly to become the world's largest, with almost 8 million articles in over 250 languages. As an open content *wiki* it provides a shared workspace allowing any user to edit existing articles or to post new ones. There is some degree of editorial control, so that inaccurate or defamatory material is edited or removed, but importantly, this is performed by volunteers from the user community rather than by a central authority. The logical development of *Wikipedia* is the Wikiversity (2007), which differs from other virtual universities in that all its learning materials and courses – effectively RLOs – are open content. In its constitution and operation, the Wikimedia Foundation, a non-profit charity which loosely coordinates these activities, provides a thought-provoking alternative to commercially-driven eLearning, and will be the subject of discussion in the final chapter.

Given that specialist software and systems for the creation of learning objects – for example, the *Learning Object Design Assistant* (Shepherd & Kori, 2003) – are likely to become more widely available, it is also likely that, as with the expansion of social networking in areas such as digital video, enthusiastic

amateurs at 'grassroots' level will be creating and exchanging their own materials (*e.g.* YouTube, 2007). Table 5.3.1 presents a speculative look at aspects of a learning object economy and how it might develop in a commercial/corporate and in grassroots/non-corporate sectors.

Table 5.3.1 – Possible Features of a Learning Object Economy

Reusable Learning Objects might be . . .
Commercial/corporate • …'designer' branded and heavily promoted to target markets • …widely available (*e.g.* 'Amazon'/e-commerce, high street, bundled as promotional offers with sales of consumer electronics) • …purchased against eLearning credits or credit card payments • …available in cheaper run-time (*e.g.* five uses) or more expensive full-licence versions • …underwritten in development costs by transnational corporations: software companies and 'edutainment' publishers (*e.g.* Microsoft, AOL Time Warner, IBM, Disney) • …developed by large corporations for their in-house employee training
'Grassroots'/non-corporate • …heavily bootlegged (like music MP3s) on a learning black market • …bought and sold privately in Internet auctions (*e.g.* eBay) • …swapped and redistributed by students (like mobile phone ringtones or second-hand textbooks) in peer-to-peer networks of informal learning • …developed and distributed by 'amateurs', special interest groups and 'smart mobs' (Rheingold, 2002)
Design features • …context-sensitive for flexible use on 3G & 4G phones/PDAs and desktop computers • …visually attractive and easy to use • …similar in 'look & feel' to games software, with pause, replay and difficulty level functions
Appeal • …particularly popular with younger learners • …branded: to offer the kitemarking and security of 'McDonaldised sameness' • …a familiar part of life, being used to replace instruction manuals and other non-interactive formats for presenting information
Support • …obtainable through free proprietary web-based software agents: to help customers/learners find suitable products • …(in commercial/corporate environments) supported by subscription services to websites, tutorial helplines and run-time 'classes' (using webcams and familiar MSN Messenger-style interfaces) • …in 'grassroots'/non-corporate environments) supported by voluntary bulletin boards and informal peer communication

The value of a mass learning object economy would seem to be contingent upon not only the quality and reusability of the materials but also the matching of objects to individual educational need. Attention to wider 'psychopedagogical' concerns of integrating learning objects into a blended approach is apparent in the model proposed by Alonso *et al.* (2005) and the issue of personalising RLOs to meet individual needs is also the subject of recent research and development (Tavangarian *et al.*, 2004; Santally & Senteni, 2005). In a possible learning object economy of the future, millions of such resources would be accessible via the Internet in thousands of digital repositories, requiring sophisticated adaptive software to identify needs, locate, broker and pay for appropriate content. Duncan & Ekmekcioglu (2003) anticipate that software agents akin to Internet search engines will be the main 'users' of digital libraries and virtual learning environments, acting on behalf of people rather than the people themselves. An early example of this can be found in the *Stellar* course management system at the Massachusetts Institute of Technology (Stellar, 2005) which integrates digital library materials with related courseware through the matching of metadata descriptors. The role of adaptive systems such as this is the topic of the next section.

5.3.2 Intelligent software agents

Intelligent software agents (ISAs) are more than the simple robot search programs (known as 'bots') which collect information from the Internet. In one definition,

> *Intelligent Agents ... have the ability to take over human tasks and interact with people in human like ways. ... A more definitive description of intelligent agents are* [that they are] *software entities that carry out some set of operations on behalf of a user or another program with some degree of independence or autonomy, and in so doing, employ some knowledge or representation of the user's goals or desires.*
> (Rhem, 1999)

In addition to being adaptive, ISAs can interact with other ISAs on behalf of their human 'owners'. Cross (2004) talks of Personal Knowledge Management systems with 'alter-ego agents' proactively seeking relevant knowledge connections and using what is known as 'pull technologies', rather than awaiting the 'push' of broadcast information, and Hagel & Singer (1999) predict that 'infomediary' agents between vendor and consumer will be increasingly important in all aspects of electronic commerce. The personalised web services offered by the major Internet search engines Yahoo, MSN and Google are one form of this; others include syndication applications such as *RSS*. Variously known as Rich Site Summary or Really Simple Syndication, RSS is a means whereby frequently updated information on selected websites selected by a human user may be 'pulled' to the user's computer. Typical syndicated content includes news feeds, events listings and project updates (WebRef, 2005). Adaptive software exhibiting forms of 'intelligence' has been a speculation since the famous Turing Machine thought experiment in the early days of computing (Turing, 1950), but a considerable amount of subsequent research and development has brought this possibility closer, and Artificial Intelligence (AI) is an area of extensive study. In their intriguingly-titled paper *How to Wreck a Nice Beach You Sing Calm Incense*, Lieberman *et al.* (2005) describe how a speech recognition system augmented by 'Commonsense Knowledge' can spot its own nonsensical errors, and proactively correct them; hence "how to recognize speech using common

sense". Using an adaptive system of this nature for eLearning is proposed by Ya Tang (2005) in which the learner's expressed interest and background knowledge are employed to locate and filter appropriate educational resources from the Internet. The system proposed by Chen *et al.* (2005) would perform a similar task, but by also matching learner ability with course material difficulty in order to provide students with individual learning paths.

The idea of *"intelligent writing which ... can defend itself, and knows when to answer and when to be silent"* was anticipated by Socrates in *The Phaedrus*, and is explored again by Tiffin & Rajasingham (2003). They envisage that JITAITs – Just In Time Artificially Intelligent Tutors – will be available in Higher Education whenever students need them. Some JITAITs would have formal knowledge and 'know-how' in specialist fields; others might act as personal tutors, offering more generic study management advice. Like reflective teachers, JITAITs would develop experience which, with appropriate feedback, could enable them to improve their tutorial performance. Tiffin & Rajasingham also see JITAITs as being useful secretarial assistants for university teachers. With a modicum of irony and wishful thinking, they speculate that

> *… if everyone in a particular university could have the same model of artificially intelligent secretary, it might be possible to have happy universities where AI secretaries endlessly write to each other in bureaucratic harmony about bureaucratic things, while teachers get on with teaching.*
> (*ibid.*, p.35)

The *Horizon Report* (NMC, 2005, p.21) links 'context aware computing' and 'augmented reality' technologies and predicts a time-to-significant-adoption horizon (in US Higher Education) of four to five years.

Finally, Roberts (2002) notes wider social and cultural implications – which he calls 'the politics of networked learning' – in what could be a radically transformed learning environment of the future. In place of existing constraints upon the tidy curricula of formal courses and assessment systems would be millions of eclectic and personalised study pathways taken by ISAs (or JITAITs) through globally available and possibly 'unapproved' learning objects.

5.3.3 Gaming and simulations

Chapter 6 will discuss how the formal knowledge of academic subject disciplines is being complemented by "problemsolving" knowledge which is "transdisciplinary" (Gibbons *et al.*, 1994). Such practical knowledge is naturally acquired in work situations in which the focus is on solving real problems. Simulation software creates an interactive environment which represents real situations and poses realistic problems, and the creation of computer simulations is now a large and profitable global industry. An Internet search for "simulation software" using the Google.co.uk search engine located over 16 million English-language pages (1 August 2007) and reported specialist companies and authoring software for simulations in diverse areas including environmental systems, economics, physiology, engineering, pharmaceuticals, business management and education.
Based upon his commercial experience, Aldrich (2003) presents a detailed case study of the creation and deployment of an eLearning simulation for business leadership development and identifies the potential of models and simulations in a variety of educational applications. Paris (2003) claims that *"simulation authoring tools are at the heart of the next generation of e-learning courseware development products"* such that *"by 2006 70% of all*

off-the-shelf as well as custom e-learning content will include some application of simulations". Part of the attraction of computer-based simulations for younger learners is that they resemble games software, and some simulations are designed with this aim. The *Horizon Report* (NMC, 2005, p.15) endorses this cooperative social dimension of gaming:

> *Cooperative play lends another dimension to learning through games. Not all games are zero-sum; especially in education, there is room for games where the goal is to solve a problem cooperatively, and everyone can win. If the outcome of a game is not to have a single winner, but to have a group come up with a perfect solution to a problem, more than one group may achieve this outcome. Thus the point becomes problem-solving and working together rather than winning or defeating opponents.*

In a more cautious prediction than that of Paris, the Report rates Educational Gaming as having a time-to-significant-adoption horizon (in US Higher Education) of two to three years.

5.3.4 Social networks and knowledge webs

This chapter has so far highlighted the prospect of ubiquitous access to mobile computing and communications hardware. On the software side, the mediation of ISAs could facilitate the construction of personal pathways through online repositories of learning objects, including games and simulations. The underlying common factor is that of *social networking*, and this body of evidence suggests a future in which eLearning may become a far more collaborative affair than in its early use in Distance Education. There is also a likelihood that the extent of social networking (also known as peer-to-peer networking) may exert a transformative effect upon the power balance between learner and institution – and this will be a major topic of the next chapter. There is evidence that the new technologies can simultaneously

support personalisation and socialisation. In the context of eLearning, as has been seen from educational gaming software, interactivity takes place between the learner, the content materials and other learners, making a good fit to the definition of Meredith & Newton (2003), adopted for this thesis and introduced in Chapter 4, in which:

> *E-learning is learning facilitated by internet and web technologies, delivered via end-user computing that creates connectivity between people and information, and offers opportunities for social learning approaches.*

Tavangarian *et al.* (2004) discuss similar definitions which emphasise this trend, and formulate *desiderata* for the creation of future eLearning materials, experiences and activities, which will employ social constructivism and help learners create an 'individual information landscape' from personalised 'individual learning documents'. Similar research by Häkkinen (2003) has investigated the social construction of knowledge in the Computer-Supported Collaborative Learning settings of shared virtual environments. In the first project reported, the focus was upon creating cognitive tools to support the co-construction of understanding by Finnish secondary school students; in the second, pedagogical models were developed to facilitate deep interaction and argumentation in networked communication. In 2005 the *Horizon Report* (NMC, 2005) predicted a time-to-significant-adoption (in Higher Education in the USA) for social networks and knowledge webs of four to five years, commenting:

> *What makes these networks interesting is that the technology-enabled interactions are generally founded on a set of intuitive strategies that foster high-quality and efficient communication. A variety of simple but easily accessible tools make these interactions possible over a wide variety of modalities. The result is more effective knowledge generation, knowledge sharing, collaboration, learning, and collective decision-making, and is especially applicable to distributed learning, research, and work settings.*
> (*ibid.*, p.18)

The Report also noted that when used by groups of students, academic researchers or other communities of practice, software applications such as wikis can result in higher levels of teamwork and exchange than conventional forms of communication. This is reflected in Higher Education by a number of new products and initiatives such as *Confluence* (Atlassian, 2007) and *Sakai* (Sakai, 2005) which are extending the range of functions and possibilities of collaborative knowledge webs.

In the area of popular leisure there has been rapid growth in the use of Internet applications known loosely as *Web 2.0* (Anderson, 2007). Unlike conventional application programs (such as the Microsoft Office suite), these software tools have not been installed on the user's computer, but are operated online, in both public and private spaces. Green & Hannon (2007, p.13) define Web 2.0 as

> *a 'second generation' of internet-based services that emphasise online collaboration and sharing among users, often allowing users to build connections between themselves and others.*

Other commentators see Web 2.0 as embodying the original spirit of the World Wide Web as articulated by its inventor, Tim Berners-Lee:

> *We should be able not only to interact with other people, but to create with other people. Intercreativity is the process of making things or solving problems together. If interactivity is not just sitting there passively in front of a display screen, then intercreativity is not just sitting there in front of something 'interactive'.*
> (Berners-Lee, 1999, p. 182)

In addition to blogs and wikis, Web 2.0 applications include:

- *social bookmarking* – the tagging of Web pages with brief descriptions, as a mutual way of organising information, for example *del.icio.us* (2007);
- *folksonomies* and *collabularies* – an extension of the above, for the development of collaborative taxonomies and collective vocabularies for Internet-based information;
- *media sharing* – in which users contribute photographs and videoclips to websites such as *YouTube* (2007);
- *social networking* – services such as *MySpace* (2007) through which users post personal information and may join communities sharing common interests; and
- *virtual worlds* – websites such as *Second Life* (2007), which are three-dimensional immersive virtual reality environments where users operate personal avatars to interact with others in communities, build environments, join social events and engage in forms of trading (while some commentators would not classify *Second Life* as a Web 2.0 application on the grounds that it requires an application program to be installed on the user's computer, it is included here because it shares many of the social networking characteristics of Web 2.0).

The use of social networking applications by people in the age group which typifies Higher Education students is considerable. For example, in 2005 the online network *CyWorld* in South Korea, which combines social networking with homepage building and a variety of online activities, was subscribed to by 25% of the country's population, including 90% of the 24-29 age group (Evans, 2005). In Britain, the Demos report *Their Space* (Green & Hannon,

2007) presents a picture of secondary school students who are completely confident with the Web, using it recreationally and productively to create, maintain friendship networks, and to assist with their school studies. However, the report comments upon a gulf which is growing between this emerging digital youth culture and the institutional culture of schools, a view articulated in the prefacing observation "*Young people are spending their time in a space which adults find difficult to supervise or understand*". The notion of a generation gap between students and older adults in their attitudes to and use of ICT was first advanced by Prensky (2001). He saw young people who have never known a world without computers as *digital natives* whose early experience with ICT has shaped neural patterns to the extent that they really do think and learn differently to their *digital immigrant* parents. This notion is developed by Oblinger & Oblinger (2005) in their book *Educating the Net Generation*, which reports a similar facility with ICT among 'Net Gen' university students in the USA, and a gap between those students' preferred methods and the practices of their teachers. The voracious, multi-tasking media consumption of this age group has been the subject of a large-scale study by Roberts *et al.* (2005), concluding that young people are comfortable with the simultaneous use of two or more media inputs to an extent which their parents would find intolerable. Digital immigrant parents grew up in a print-dominated world of one-thing-at-a-time linear narratives, so by this account are less likely to be able to cope in complex situations involving multiple and fast-moving sensory inputs. Conversely, they are more comfortable with lecture-style teaching methods which their children would find unstimulating.

5.4 New Learning Environments

New learning environments – where social networking complements access mediated through ISAs to learning objects and knowledge webs – seem likely to enable a less formal style of learning in which predetermined curricula and institutional control become less important players. The logical extension of this preference for less didactic delivery is fully *informal learning*, to be examined in Chapter 6 alongside *non-formal learning*, where students not affiliated to educational institutions may successfully achieve qualifications through self-managed open learning. Some commentators see a need for radical change of the type known as *business process re-engineering* (introduced in Chapter 3 and to receive further elaboration in Chapter 6). Kirschner (2004), for example, argues that bolting on technological 'solutions' to existing educational practices is of limited value, and that a fresh approach is needed to integrate pedagogical, technical, social, and organisational factors. Cross (2004), discussing learning in the workplace, takes the same radical view as Perelman (1992; 1993; to be discussed in the next chapter), that instead of investing in systems of formal training, companies should be seeking to develop ways in which informal learning might be encouraged. Wentling *et al.* (2000) cite evidence to suggest that eLearning can be a catalyst in the development of companies as learning organisations (Senge, 1993) and could become the major form of training and development in more interactive and humanised corporate environments of the future (to be discussed in Chapter 8).

The design of new spaces to foster effective learning environments is therefore an important consideration. Ward & Holtham (2003) note how the medieval monastery used diverse, customised spaces for group gatherings, individual quiet work, serendipitous meetings and private reflection, and argue for similar care in the design of spaces to optimise knowledge management. Here, Ward & Holtham draw upon earlier work by Acker (1995), who chronicles the history of city space and the history of academic space and concludes that the collaborative university of the future must be structured so that *"the pleasures of physical space are preserved, and the efficiencies of reaching across distances with telecommunications can be leveraged"*. Both Chang *et al.* (2003) and Liu *et al.* (2003) relate the ideas of design for effective collaboration to schools in Taiwan where wireless and mobile technologies are used. In the first study, ideas are advanced for Ad Hoc and Mobile classrooms – which might be sited indoors or outdoors – and the use of an 'electronic schoolbag' of tools to encourage social networking beyond the physical classroom. The second study focuses upon the implementation of project-based learning within a highly interactive 'wireless technology enhanced classroom' in which students' mobile touch-screen devices with handwriting recognition are wireless networked to interactive whiteboards and classroom management systems. As computer processing power develops further, it will be possible to make virtual reality systems more widely available, in which *avatars* – the virtual representations of human users – interact in a shared virtual space. Tiffin & Rajasingham (2003) report experiments involving universities in New Zealand, Australia and Japan, where students interacted in real time via avatars. It is upon these experiences that they base the idea of *HyperClass*: a conventional class

intertwined with a virtual class in "*...a form of teleconferencing where the avatars, the setting and the objects of study were three dimensional and virtual objects could be handled by and passed between the virtual and real people"* (*ibid.*, p.32). Also involving avatars, and akin to the distributed cognition experiments at the Harvard Ubiquitous Learning project mentioned earlier, is the idea of *ambient intelligence,* examined by ISTAG, the European Union Information Society Technologies Advisory Group. In their report *Scenarios for Ambient Intelligence in 2010*, Ducatel, *et al.* (2001) envisage an 'information society' in which

> *People are surrounded by intelligent intuitive interfaces that are embedded in all kinds of objects and an environment that is capable of recognising and responding to the presence of different individuals in a seamless, unobtrusive and often invisible way.*
> (*ibid.* p.1)

In the scenarios explored, people wear clothes containing voice-activated digital avatars which communicate with surrounding systems on their behalf in order to reduce information overload. Via these gatekeepers it is possible to maintain contact with family members while abroad, to make automatic electronic payments for goods and services and to manage the functions of domestic robot systems. The final scenario describes how an 'Ambient' – a set of customised spaces plus a plenary room resembling a hotel foyer – supports a group of learners and their human mentor in a social learning activity.

These developments mirror the creations of science fiction writers, here resembling the 'Metaverse' of Neal Stephenson's novel *Snow Crash* (1992), a virtual reality Internet where people meet through their avatars for work and leisure in an electronically constructed interactive world. *Snow Crash* was the inspiration for the online virtual world *Second Life*, mentioned in the previous section, which now claims over 8.5 million 'Residents' (Second Life, 2007).

5.5 Conclusion

If a very conservative interpretation is made of the *Horizon Report* predictions (NMC, 2005; NMC, 2007) such that their time-to-significant-adoption estimates are doubled, it would still be the case that by 2015 the following technologies would be in widespread use across Higher Education in the USA:

- Extended (blended) Learning
- Ubiquitous Wireless connection to mobile devices
- Intelligent Searching 'bots'
- Educational Gaming
- Social Networks and Knowledge Webs
- Context-aware Computing and Augmented Reality.

There is, however, no specific mention of learning objects or reusable content, although it could be inferred that these might be gaming and simulation components. Zemsky & Massy (2004), as discussed in the previous chapter, see learning objects more centrally as the next adoption cycle of eLearning, and place technological change within the wider context in which universities operate. Stephenson's (British) predictions for the future of eLearning (2001, p.222), summarised here, centre more upon the quality of the learning experience.

- *There will be a switch from packaging of content by the teacher to selection of external materials by the learner, and learners will acquire greater responsibility for their own management*
- *Interactions between learners, teachers and experts will be a major source of information as networking and collaboration become a key learning activity*
- *The facilitation of interactions will be an important part of the teacher's role as this extends beyond pedagogy to include systems management*
- *A new role of educational producer will emerge, to link educational needs to major growth in the design and delivery of online learning objects and assessment materials*
- *Assessment will more flexibly accommodate a wide range of learning outcomes.*

This combination of technological innovation, increased social networking and pedagogical developments will make a more significant impact than the incremental changes from bark to slates, paper and ink of previous centuries, and could be the 'silver bullet' of eLearning breakthrough. In Higher Education the extent to which these emerging technologies may be harnessed to effect successful institutional development will depend crucially upon the decisions made by the senior management teams of universities. Technological solutions may appear highly attractive to managers in addressing the pressures and problems outlined in Chapter 3; however, as will be examined next, ICT in conjunction with other factors will prove a subversive agency with very adverse consequences for the continued viability of the traditional campus university. It is the contention of this thesis that British universities have largely failed to respond strategically to the opportunities and challenges of ICT, eLearning and the associated technologies outlined in previous chapters; there has been reactivity, but little proactivity. The external pressures may prove too great, and many universities seem fated to become the casualties of developments they failed to anticipate.

Chapter 6 *ICT – a Trojan Horse?*

6.1 Overview

This chapter begins by examining the eLearning policy options for British universities at institutional, regional and national levels, and is informed by issues introduced in Chapter 4. It argues that although a body of evidence and expertise is now amassing to inform strategic management, the actions likely to be taken will be too little and too late in order to protect the regional campus university from the external forces of radical transformation outlined in earlier chapters. By welcoming the new technologies – in the hope they might provide protection through cost savings and 'rationalisation' – university managers may be ushering in a Trojan Horse with the potential to destabilise rather than support. An exploration is made of ways in which the new technologies can be said to be subverting the pedagogical base of the traditional university, and of how they are being used in a post-Modern climate which challenges the university's claim to authority as the exclusive validator of truth.

6.2 Options for University Managers

From the preceding chapters it is evident that eLearning is seen in the European Union and by the British government as the solution to the problems of funding an expanded Higher Education sector. Universities must

tread warily, however, as the development of effective and profitable eLearning ventures requires careful planning if expensive failures such as the UKeU are not to be repeated. Kanter (1999) postulates three key attributes of change-adept organisations: they must have the imagination to innovate, the professionalism to perform, and the openness to collaborate. For these attributes to be brought into play, she argues, requires outstanding leadership, and seven essential skills are outlined which organisational leaders must possess. These include a willingness to consult and to take complaints seriously, a preparedness to challenge conventional wisdoms and procedures, and the ability to present clear aspirations and attract strong support. However, the study made by Allen & Fifield (1999) of the process of change in British universities reports a reluctance to contemplate radical structural change of the type known as *business process re-engineering*, introduced in previous chapters. Hammer & Champy (1993, p.32) define business process re-engineering (BPR) as *"the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed"* and claim that it can result in such benefits as:

- a move from hierarchical to flat organisational structures, in which supervisors become facilitators, empowering employees
- the creation of process teams with the authority to make judgements and take more strategic decisions – rather than simply follow rules
- a shift from training to education, to help employees undertake multidimensional jobs
- performance based on results, not activity

- a change in organisational culture, with employees basing actions on customer satisfaction, not self-protection.

In the view of Allen & Fifield, universities' organisational cultures and systems of governance inhibit this degree of change, and they report that the few tentative attempts to date to implement a BPR approach have in any case been restricted to the streamlining of administrative systems rather than to the organisation of teaching and learning. As examined in Chapter 4, there exists also a level of resistance in individual academic staff, which seems to combine a wariness of new technologies with a reluctance to adopt more student-centred pedagogies, perceived as leading to a loss of status and control.

There is no shortage of external advice and support for university managers. Drawing membership from universities in over 30 countries including the UK is EDUCAUSE (2007), a US-based non-profit association with the mission to *"advance Higher Education by the intelligent use of IT"*. It should be noted, however, that the largest sponsor of EDUCAUSE is the management consultants PricewaterhouseCoopers (PWC, 2005), and as discussed in Chapter 3, this industry is keen for universities to adopt BPR (PWC, 1998). The Center for Academic Transformation also provides *"a source of expertise and support for those in Higher Education who wish to take advantage of the capabilities of information technology to transform their academic practices"* (CAT, 2007), but appears to have fewer commercial entanglements, concentrating on cost reduction through the redesign of courses. In Britain, Further and Higher Education institutions receive strategic guidance and a range of services from the Joint Information Systems Committee (introduced

in Chapter 4). JISC has a key role to support eLearning through development projects, and its recent reports include *Effective Networked Learning in Higher Education* (JISC, 2001), *Embedding Learning Technologies Institutionally* (JISC, 2003) and *Effective Practice with e-Learning* (JISC, 2004). And, also in Chapter 4, a partnership between JISC and the Higher Education Agency (HEA) is at the centre of the revised *Strategy for e-Learning*. More generally, as seen from Chapter 3, the Higher Education Policy Institute in the UK (HEPI) supplies policy research briefings, and UniversitiesUK – essentially a lobby group for universities – seeks to coordinate the efforts of its members through a corporate plan and structure of strategy groups (UniversitiesUK, 2005). Operating at regional level within the UK are partnerships such as the White Rose University Consortium (White Rose, 2007), sharing "eScience resources" and computational capacity for its three university members through the high-speed Internet infrastructure of the White Rose Grid.

These various forms of support will assist vice-chancellors and their senior management teams in locating institutional development plans for eLearning within regional and national strategies. The national position is now clearer from the March 2005 publication of the HEFCE/JISC/HEA *Strategy for e-Learning* (HEFCE, 2005b) mentioned earlier. Written with the hindsight of the UKeU collapse, the revised strategy was developed by the funding council in conjunction with JISC and HEA, and it integrates with the corresponding e-strategies for schools (DfES, 2003) and Further Education (DfES, 2002). The Higher Education strategy comprises seven strands:

Strand 1 – Pedagogy, curriculum design and development

Strand 2 – Learning resources and networked learning

Strand 3 – Student support, progression and collaboration

Strand 4 – Strategic management, human resources and capacity development

Strand 5 – Quality

Strand 6 – Research and evaluation

Strand 7 – Infrastructure and technical standards

There is a resolution to implement the strategy in partnership with Higher Education institutions (HEIs) and not to set up new organisations. In contrast to the more technological and product focus of the previous strategy, a recognition is evident in strands 3 & 4 of the importance of human factors "*to ensure that e-learning is integral to institutions' broader strategies for learning and teaching, and to work with the grain of a 'whole institution' approach to embedding e-learning*" (HEFCE, 2005b, para. 23), and it is HEA's role to take regard of such issues. In order to 'develop a catalogue of lessons learned', as recommended in Chapter 4 by Zemsky & Massy, a new national e-learning advisory and support centre will be established (Strand 6), *"to manage a national dissemination programme involving nominated e-learning 'champions' from HEIs and further education colleges, and* [to] *create and supply online resources for staff development."* (*ibid.*, para.30).

In the HEPI report *Spent force or revolution in progress? eLearning after the eUniversity,* Slater (2005, para. 59) recommends to universities that *"The answer should not be referenced to eL* [eLearning] *but to management and*

learning objectives and to finance" and he provides four examples of management aims:

- to apply methodologies to ensure courses are cost effective
- to improve the learner-centredness of courses through diagnosis and iterative refinement
- to improve course management and organisation through quality assurance and the careful monitoring of learners
- to improve assessment through formative methods and effective feedback.

The focus of the UKeU project was on technology and content; instead, Slater agrees this should be shifted to people and pedagogy. The job of senior managers within universities should be analogous to that of JISC and HEA: to set up systems and arbitrate, rather than to lead from the front. Finally, Slater summarises the institutional reforms needed for HEIs:

> *To benefit most, an HEI needs appropriate pedagogy, professional resource, and structures that allow planning of the ongoing development of eL within a coherent institutional framework and infrastructure. The HEI must enunciate that framework for itself and then implement it through appropriate HEI infrastructure. However there is much excellent national help available and there is a lot of good practice on which to draw. Management push can be matched by central support pull.*
> (Slater, 2005, para. 72)

It is evident from the discussion in Chapter 4 and also from recent and authoritative forecasts such as the EDUCAUSE *Horizon Report* (NMC, 2005) and from the DfES and HEFCE eLearning strategies (DfES, 2005b; HEFCE, 2005b) that blended (known in the *Horizon Report* as 'extended') learning will gain rapid adoption, at least in the medium term. While not offering the attractive cost savings of virtual universities and mega-universities, this is a

lower-risk strategy which would not be incompatible with the hoped-for bottom-up initiatives at regional level. However, this is far from business process re-engineering and could well be seen in future years as the half-hearted stop-gap which briefly postponed the inevitable collapse of the residential campus university. Whether senior management teams will be able to create a climate in which Kanter's key attributes of 'the imagination to innovate, the professionalism to perform, and the openness to collaborate' can flourish is by no means clear. As Allen & Fifield found, transformational change is a rarity, and many university communities perhaps remain to be convinced at both institutional and individual levels that moves towards eLearning are either necessary or desirable. However, it is the main thrust of this thesis that change will come anyway, whether or not it will be managed (or is indeed capable of being managed) within existing institutional, national and European strategies.

6.3 ICT as a Subversive Force

ICT is commonly seen as a tool of the big battalions of corporation and state, providing new extensions to their power to control individuals and communities, and evidence for this view has been discussed in previous chapters. There is another view, however, of ICT as empowering individuals and serving to support community interests. ICT can be considered as a subversive and transformative force in Education, affecting curriculum content as well as learning and teaching, and overturning existing power balances. This section discusses the different nature of the new communication media enabled by ICT, noting how their alternative

epistemological underpinnings provide a 'levelling' potential which has far reaching implications, not only within Education, but also in its external social and political *milieu*.

6.3.1 Nature of the new media

Many commentators, ranging from educational practitioners to Postmodernist theorists, have noted a radical difference between the nature of the information modalities made possible by the new technologies of ICT, and the old print and broadcast technologies. The latter are seen as static, relatively permanent, corporeal, linear, closed and *massified* in the Tofflerian sense (Toffler, 1980), in comparison to the dynamic, relatively provisional, evanescent, multi-branched, multisensory and – from an educational perspective – open and interactive features of hypermedia. Importantly, the system which presents the information doubles as the one which supports multi-way communication in a manner that top-down print (and broadcast) media cannot. Turkle (1997) claims that each medium has its own distinctive 'interface values', and those embodied in print inculcate a measured, linear, introspective type of consciousness and a sequential way of working. Instead, the new media are associated with greater provisionality, experimentation and diversity. Burnett & Marshall (2003) express the view that some Internet content is more raw material than finished product, and certainly the range of formats – from *blogs* (*i.e.* personal 'web-logs' on individuals' websites), podcasts and wikis (discussed in Chapter 5), through online magazines, music and video sites, to academically respectable refereed journals, eBooks and official reports – is far wider and more extensive than that which is readily available in print. Websites are more transient and *malleable* than their

corresponding hard copy, and perform different functions; for example, some academic offerings are drafts or 'works in progress'. But the more significant property of the new technology is that *"The Web, instead of providing only the single authoritative version of information, actually presents multiples of information sources."* (*ibid.*, p.33) and as such can be seen as embodying a rather unsettling post-Modern plurality in which there may be no 'authorised version' – and indeed, no Authority. Expressed in another way, the underlying metaphor for traditional learning has been the museum, with the curator in control of presenting selected exhibits to the public, but ensuring that *"nothing is exhibited in its rude or raw form"* (Raschke, 2003, p.64); instead, learners using the Internet are presented with a motley collection of materials from an enormous diversity of uncontrolled sources. The notion of convergence, discussed in Chapter 5, means it is now possible to digitise almost all forms of informational and cultural expression to a common configuration, allowing the new media to ingest all previous formats and retransmit them as their own (Burnett & Marshall, 2003).

6.3.2 Epistemological challenges

The weighty permanence of a large, hard-bound academic volume might lead one to believe that the knowledge it contained was somehow sacrosanct, enduring and iconic. It would follow then that the optimal transmission of this knowledge – the educational process – would result in a perfect 'copy' of this message being received and stored within the mind of the learner; Raschke (2003) refers to this as 'metaphysical realism' with the observation that its associated 'tablets of stone' view of education has dominated universities since the Middle Ages. For MacIntyre (1996) this tradition of 'oracular texts'

began to decline after the Enlightenment, resulting in the diversification of specialist subject disciplines, and these changes may have been driven by a gradual shift in power from church to state.

Lankshear *et al.* (2002) identify two significant challenges to the assumptions underpinning our print-bound view of knowledge. The first is to the linguistic construction and expression of knowledge in propositions and theories, which in itself is not surprising, given the oral and written communication formats available in the past; indeed, McLuhan saw the development of the phonetic alphabet as the key breakthrough, *"as a translator of man out of the closed tribal echo-chamber into the neutral visual world of lineal organization."* (1964, p.93). However, the new formats which are now commonplace open fresh possibilities, and Heim (1998) foresees a 'new mode of truth' in which the multiple media of ICT will displace more static forms of expression. This relates to the second challenge of Lankshear *et al.* who believe we may come to conceptualise knowledge more as process and performance (as direct action within the interactive modalities of ICT) than as reliance upon propositional – and past tense – codifications of external 'givens'. From the ideological standpoint of Postmodern theorists, print media are the tools of an outdated, massified Modernism, described by Duffy (1969, p.137, commenting on the work of Marshall McLuhan) as bound up with: *"an outmoded insistence on the logical, ABCD minded, causality mad, one-thing-at-time method that the electronic age and its prophet have rendered obsolete".* It should be noted that McLuhan, although predating 'the informational society' (Castells, 2000), was an important influence upon Postmodernists such as Jean Baudrillard (Lister *et al.*, 2003).

Closely related to these ideas are the notions of *Mode 1* and *Mode 2* knowledge propounded by Gibbons *et al.* (1994). Mode 1 is described as characteristic of systematic corpuses of knowledge contained within subject disciplines. As such it is propositional in form, disseminated through academic journals and conferences, and validated by peer scrutiny. Traditionally, this has been the dominant form of knowledge, but Gibbons *et al.* identify an emerging form. Mode 2 knowledge is knowledge-in-action, united with its situation – rather than knowledge existing separately in a codified format, which has then to be 'applied'. Jarvis (2001) makes a similar distinction between *knowledge that* and *knowledge how*. Gibbons *et al.* see Mode 2 as characteristic of knowledge-based work, where what counts is that which helps solve real life problems – what they refer to as "problemsolving" knowledge. This interpretation resembles Schön's notion of reflection-in-action, in which by thinking-on-their-feet, working 'professionals' devise solutions and build understandings in response to novel and puzzling situations (Schön, 1983). Nyiri (1988, p.20) makes the similar point that "human experts … gradually absorb 'a repertoire of working rules of thumb, or "heuristics", that, combined with book knowledge, make them expert practitioners.'" As Delanty succinctly puts it (2001, p.105),

> *Knowledge, in other words, has ceased to be something standing outside society, a goal to be pursued by a community of scholars dedicated to the truth, but is shaped by many social actors under the conditions of the essential contestability of truth.*

In contrast to Mode 1, Gibbons *et al.* conceive Mode 2 knowledge as exhibiting "transdisciplinarity", drawing eclectically from traditional subject areas in order to achieve practical goals. Furthermore, Mode 2 knowledge is said to be typically generated by groups rather than individuals: in the

context of knowledge-based working, by short-term project teams. Gibbons *et al.* see the transition from Mode 1 to Mode 2 as "irreversible", and predict that growth in the number and diversity of sites of knowledge production will challenge the monopoly of universities for the certification of valid knowledge. Barnett (2000) finds this thesis 'beguiling' but not 'compelling', and overdrawn in the implicit assumption of an eventual end to Mode 1 knowledge. However, he does adopt the broad idea, anticipating that a unitary view of knowledge will give way to a plurality of 'contemplative' and 'performative' *knowledges*.

> *Essentially, the university has been a site in which forms of contemplative knowledge have been prized; forms of knowledge that sought to describe the world, to represent the world. The new forms of knowledge, in contrast, are performative knowledges: now, what are held to be valid ways of coming into a relationship with the world are forms of action and engagement with and in the world.*
> (*ibid.*, p.410)

He reports how these notions have been linked to the dramatic Postmodern thesis of the 'end of knowledge', discussed in Chapter 2, and its implications for the legitimacy of the university. However, as will be argued in the final chapter, Barnett rejects the implication that an 'end of knowledge' necessarily means an 'end of university'.

6.3.3 Educational challenges

One type of educational challenge presented by these changing views of knowledge concerns the nature of academic scholarship in an environment in which the printed text is only one of many media for dissemination. The *Horizon Report* (NMC, 2007, p.21) predicts 'new scholarship and emerging forms of publication' within a time-to-adoption horizon of four to five years, and discusses academic blogging and various forms of online participation

including conferences and symposia held in virtual words. Discussed in the previous chapter, the 3D virtual world *Second Life* has been the venue of much recent academic activity of this type, as evidenced by the Education section of its website (Second Life: Education, 2007).

With a changing view of what constitutes knowledge and subject disciplines, it becomes important to reconsider educational theory and practice. Edwards, *et al.* (2002), p.199) argue that the context and process of Web-based learning

> *… can blur distinctions between courses and between information and knowledge. In addition, the increased emphasis on computer-mediated learning creates considerable changes in curriculum and pedagogy, with attendant new forms of textual context and practices and, with that, changing literacies.*

Similarly, Tiffin & Rajasingham (2003) claim that the non-linear and interconnected nature of hypertext (whereby in-text hyperlinks lead to related documents and resources), together with the sheer scope of available material makes it easier for students to select their own study pathways and remap knowledge in individual ways. It is the provisional and somewhat anarchic nature of Web-based information which has led to calls for 'changing literacies', and Gilster's (1997) concept of 'knowledge assembly' is a reflection of the need for a new *digital literacy* involving, as has been argued above, a more active and creative process for the critical synthesis of knowledge, and from a far larger information pool, than the relatively passive reception of a more static and formalised curriculum. The ideas of Gardner (1999) and the other learning style theorists, introduced in Chapter 4, are relevant here – although again with the caveats of Coffield *et al.* (2004). But in addition to the variety of presentational formats offered by ICT, it is the business of assessment which can also involve multiple media to counterbalance the

reliance – some would say obsession – with essays and (hand-) written examinations as the predominant vehicle for evaluating the quality of learning in Higher Education. The issue of assessment will be returned to later in this section.

Lester's (1997) *Model A / Model B* typology of learning is in some ways a development from and application of the Mode 1 and Mode 2 forms of knowledge discussed in the previous section. Model A learning, he says, is predicated upon a linear view of knowledge in which empirical research and deductive logic reveal theoretical or scientific findings which are stable and external to the learner. Model B 'meta-learning', however, "*works from an epistemology of unique, personal knowledge ...* [in which] *people must be able to step outside taken-for-granted assumptions and accepted norms."* This type of learning is more likely to take place through an active process of doing, including action research and reflective practice. The point here is that Model A learning is the legacy of the print era in which action is temporally disengaged from its print representation – whereas Model B learning can be enabled by the interactive, real-time and empirically grounded nature of the new media. Hence, the orientation of Model A learning is logical and convergent, specifically focused and based upon an enduring epistemology (comparable to Mode 1 knowledge) which exists separately to contexts for its use. Model B is creative, divergent and holistic, with an epistemological base (comparable to Mode 2 knowledge) in which knowledge is particular to situations and therefore likely to be relatively transient. And where the cognitive processes of Model A learning are linear, systematic, formal and unlikely to involve intuitive leaps, Model B learning uses inductive and

abductive reasoning (which can include the intuitive creation of explanatory hypotheses). The differences in these characteristics are summarised in Table 6.3.3.

Table 6.3.3 – Characteristics of Model A and Model B Learning

Characteristic	Model A	Model B
Orientation	technical, logical, convergent	creative, interpretive, divergent
Focus	specific	holistic
Epistemology	knowledge is stable and general	knowledge is transient, situational, personal and unique
Cognitive Process	primarily deductive / analytical; sceptical of intuition	inductive, deductive and abductive; uses 'intelligent intuition'

Adapted from Lester (1997)

The idea of a 'new type of learning' is also apparent in Perelman's similar notion of *hyperlearning*: as an asynchronous and non-linear process involving the *"transformation of knowledge and behaviour through experience"* in the increasingly 'smart' environment of pervasive ICT systems. In this world there will be less need for initial education – the 'just-in-case' learning of Moe *et al.* (1999) – as a preparation for life in the future, as not only will that future be more fluid and dynamic – and so more difficult to anticipate – but also the ICT-enhanced environment will provide many more support systems (using Intelligent Software Agents such as the ones discussed in Chapter 5) enabling 'just-in-time' learning (*ibid.*) at point of need. Systems of what Perelman (1992) calls 'academic credentialism', with their attendant testing and assessment, will no longer be relevant. Furthermore, in relation to this process of needs analysis leading to the deployment of 'efficient learning resources', is the issue of personalisation, with the assertion that

> *broadband, intelligent, multimedia systems permit anyone to learn anything, anywhere, anytime - and with grade A results - by matching learning resources precisely with personal needs and learning styles.*
> (*ibid.*)

Perelman's views are influenced by an American libertarian tradition of Dewey, Illich and Freire (1972) in which the needs of the individual were held up as more important than those of the community. As a 'de-schooler', Illich was suspicious of the motivations of teachers, whom he saw as enforcers of social conformity. The ideal instead was upon the personalisation of learning, with learners empowered to consult informal community members and resources as well as the 'official' ones, and to start and stop learning whenever they chose. Providing this access would be "opportunity webs": "… *new networks, readily available to the public and designed to spread equal opportunity for learning and teaching"* (Illich, 1971, ch.6). In the technology of the time, Illich thought this peer-matching network to link learners of complementary interests might be facilitated by computer, but only through a form of 'computer dating' to put learners into contact with each other. To complement such interpersonal education he envisaged collections of audiotapes and microfilms (although interestingly, not books) as resources for independent learning. So even within this limited scope the ambivalent potential of technology was recognised by Illich as *"available to develop either independence and learning or bureaucracy and teaching"* (*ibid.*). For both Illich and Freire, education should be an informal, dialogic process, grounded in the community rather than institutionalised in schools. Thirty-five years later, and with significant advances in the versatility and availability of learning technology, it may be that these radical ideas are now closer to realisation, and Kahn & Kellner (2007) argue for their reappraisal. They bear interesting similarity to those of peer-to-peer learning, social networking and informal knowledge webs discussed in Chapter 5. There is similarity also with Vannevar Bush's conception of a *Memex*: *"a sort of mechanized private file*

and library" (Bush, 1945), which is now regarded as a major influence on the development of hypermedia. However, the technological visions of both Illich and Bush were for systems which would enable 'read-only' access to large information banks rather than for systems which would also permit interactive engagement and contribution. Berners-Lee – the inventor of the World Wide Web – was strongly influenced by the practical realisation of hypermedia in the work of early pioneers such as Engelbart, Nelson and Kay, making possible a more active role for the human user (Gillies & Cailliau, 2000). He designed the Web so that

> *We should be able not only to interact with other people, but to create with other people. Intercreativity is the process of making things or solving problems together. If interactivity is not just sitting there passively in front of a display screen, then intercreativity is not just sitting there in front of something 'interactive'.*
> (Berners-Lee, quoted in Burnett & Marshall, 2003, p.58)

From here, there is still a step-change to the use of hypermedia to enable learners to remap their knowledge, and a further step-change to the Intelligent Software Agents of JITAIT avatars in Tiffin & Rajasingham's (2003) virtual reality HyperClass, discussed in Chapter 5.

There are many similarities between Model B / hyperlearning and what is known as *informal learning*. This is a term subject to various interpretations, and Smith (1999a) synthesises some features of informal and non-formal learning and the associated forms of *tacit* and *situated* knowledge which might be seen to relate to Mode 2 knowledge. For the purposes of this thesis the following definition is adopted; in terms of context, informal learning refers to situations outside those in which the learner is registered at a dedicated education/training institution; in terms of process, informal learning

is more likely to be unplanned and driven by conversation (in contrast to the predetermined and curriculum-driven nature of formal learning). The most significant finding of Coffield's (2000) report *The Necessity of Informal Learning,* conducted for the UK Economic and Social Research Council, was the key importance of informal learning in the formation of knowledge and skills in the workplace. In comparison to this, the formal learning conducted in educational institutions was merely *"the tip of the iceberg"*, and *"largely dispensible"* (Coffield, 2000). In a wider context, Cullen *et al.* (2000, p.5) see a social and 'widening participation' role in informal learning as *"the active engagement by citizens in the construction, interpretation and, often, re-shaping of their own social identity and social reality"*. These ideas bear similarity to the notion of *social capital*: the collective value of social networks – groups of friends, acquaintances, neighbours, fellow-workers and learners – and the mutually beneficial initiatives which they undertake. Putnam (2000) sees effective information flows as an important means of developing and sustaining social capital manifested, in an educational context, in free exchange and mutual help and support between learners.

So far the focus of this section has been on learning and learners; what will now be considered is whether there may be corresponding impacts upon teaching and teachers. The examination made in Chapter 4 of conceptual models for eLearning showed a range of orientations, supporting the view that the implementation of eLearning was still very much in transition – and this range of conceptions can be seen reflected in a range of pedagogical practices. In the 'deficit model' of traditional pedagogy – what Freire (1972) called the 'banking' of educational deposits in the educatee – the respective

roles and power relationship between teacher and student are clear: the teacher is there to oversee and control the process by which the student gains mastery over a specific body of knowledge, likely to be as Lester (1997) says, *"expressed in terms of curricula, syllabi, lists of skills or attributes and more recently, competence frameworks..."*. However, there is a view that emerging pedagogies, predicated upon the greater interactivity and plurality of ICT, are beginning to transform communication between teacher and student, changing their roles and eroding the traditional power relationship. Pea (1994) contrasts a *ritual view* in which shared understandings are communicated to perpetuate tradition, with a *transformative view* in which communication between teacher and students is generative of new understandings. In this transformative process teachers learn alongside students in ways characteristic of Model B learning, drawing upon the extensive and multiple sources of information of the Internet and employing online communication. Collis (1996, p.xxiv) takes a wider perspective, embracing these ideas together with the new skills of digital literacy and a call for radical change in assessment and evaluation.

- *Tele-learning will blur the distinction between expert and non-expert in the learning context;*
- *Tele-learning will support competition and diversity in institution, course, resource and teacher selection;*
- *Tele-learning will lead to a break with the dominance of the textbook and pre-determined curriculum toward an expectation that part of learning is to sort between a wide range of resources, extracting and synthesizing from many sources rather than mastering what one person or team has written.*
- *Assessment and evaluation will have to evolve to handle the individual's intellectual discoveries that are not known in advance to a test developer.*
- Being an effective teacher in a tele-learning world will require skill and insight into linking: linking of persons, of ideas, of concepts; and of helping one's students, and one's self, see an idea or person as part of a learning web whose boundaries are continually changing, and whose attributes vary depending on one's vantage point.

The observation was made earlier that essays and examinations are still the predominant forms of assessment in Higher Education, and that these do not involve the graphical and interactive modes of representation which are increasingly a part of undergraduates' learning experiences. Traditional assessment is also predominantly summative – taking place weeks or even months after the learning experience, and often as a formal exercise to test retention of Mode 1 knowledge. By contrast, formative assessment – situated within the learning context and conducted in a 'timely manner' – would seem far better suited to the evaluation of Mode 2 knowledge, although, as discussed by Williams (2008), this does present considerable practical difficulties. Lave & Wenger (1991) contend that such *situated learning* is vivid, relevant and highly effective. The *legitimate peripheral participation* in which learning takes place through a form of apprenticeship is augmented by what Wenger calls a *community of practice* involving communication between other learners and mentors. As discussed in the previous chapter, this can be supported through access to portable networked devices. Similar pedagogical methods which seem consonant with Mode 2 knowledge and Model B approaches include problem-based learning and work-based learning. Problem-based learning has been successfully pioneered in medical schools and is increasingly used in education for other professions (Jarvis, 2001). Sinnott & Johnson (1996) even argue for the whole of the university to be transformed into a problem-focused institution in which such active forms of enquiry could be undertaken alongside the more traditional acquisition of (Mode 1) knowledge. Work-based learning is also employed in some Higher Education courses, but would prove difficult to make more widely available; it is, however, a key feature of corporate education and training. Here, as in

problem-based learning, students acquire understanding embedded in context, often as a result of intensive interaction in peer groups facilitated and moderated by a mentor (Salmon, 2000; Jarvis, 2001). This group focus is also characteristic of computer-mediated communication (CMC) discussed in Chapter 4, and both problem-based and work-based learning can take place partly online as forms of blended learning within the social networks and knowledge webs outlined in Chapter 5. Here also, the use of computer-based gaming and simulations, also examined in Chapter 5, is an increasingly important feature of problem-based learning.

A move to different styles of learning, teaching and assessment would seem to require critical review of curricular structures. It was noted in Chapter 4 that new course configurations is the last of the four eLearning adoption cycles proposed by Zemsky & Massy (2004). In this model, substantial moves in the adoption of new eLearning materials – including the learning objects introduced in Chapter 5 – would need to precede the re-engineering of course structures and assessment systems to make best use of new technologies. What seems likely is that the structures of the future will afford considerably greater optionality in content and pathways and will incorporate shorter and more frequent learning and assessment activities. Sloman (2001), talking of professional management training, sees this shift in emphasis as being from the delivery of large, discrete and infrequent blocks of instruction towards a more fine-grained and continuous learning, and Stephenson (2001, p.223) predicts that:

> *Courses, as organizing structures for learning – with fixed syllabi, predetermined outcomes and assessment, and strictly timetabled activities imposed by programme managers – will give way to loosely defined areas of study, generalized outcomes and activities pursued by the learners.*

This thesis takes the position that such radical change is both inevitable and long overdue. It is inevitable because the versatility and availability of ICT makes it increasingly practicable, and evidence has been presented in earlier chapters of how such change is already taking place. It is long overdue in part because of the pervasive conservatism which characterises Education at all levels; this has perpetuated an asymmetric power relationship between teacher and learner, authority and individual in which, as Illich and Freire argue, its potential to liberate the learner has been too often negated by the institutional use of formal teaching as a tool of social control. These wider social and political challenges are examined next.

6.3.4 Social and political challenges

It is difficult to discuss learning and learners divorced from their social and political context; this section explores some of the implications for schools and universities of ongoing and projected changes in learning practices and considers also the viability of the educational institution – built, many would say, upon a twentieth century industrial model – in a twenty-first century world of information, transience and plurality. A brief examination of what form the university might take in the future introduces the more extensive discussion which will be the focus of the remainder of this thesis.

The economic historian Harold Innis saw a dialectical distinction between 'space-bound' and 'time-bound' cultures, shaped by the nature of their communications technologies. Babe (2000) [unpaginated]) summarises:

> *According to Innis, space-bound cultures use predominantly space-binding media – media that are light, transportable, easy to work with, and have a large capacity to carry and store messages. Time-bound or traditional cultures, conversely, rely predominantly on time-binding media – media with low message capacity, intractable, difficult to move, and enduring.*

In the oral-based cultures of the past, transportation was difficult, making the exchange of ideas and learning a slow process. By contrast the success of the Roman Empire, for example, was advanced by the superior communications technology of paper messages transported at unprecedented speed along an extensive network of direct roads. History provides other examples in which cultures with superior transport and communications technologies (space-binding media) were able to invade and colonise time-bound cultures. The Internet may be seen as an extreme form of this cultural colonisation, rooted firmly in a technology in which the global exchange of information and knowledge has become almost instantaneous and the concept of territorial borders almost irrelevant. The relationship between the hypermedia technologies of ICT and the print media of Gutenberg can therefore be seen as analogous to that in Innis' historical examples – in which the space-bound cultures prove adaptive and dominant.

It has been argued earlier that new communications technologies hold the potential to be considerably more symmetric than print or broadcast media. Printing and distributing a book, or setting up and operating a television station, are not cheap or easy tasks for individuals. But publishing a book on the Internet, participating in an online conference or contributing multimedia

materials to an international special interest group are as cheap, easy and technically feasible for individuals as they are for large organisations. As discussed in earlier chapters, the social construction of learning through student-to-student communication has been an integral feature of eLearning for many years. This has so far been conducted within the confines of courses in which the locus of control has resided with the organisation providing the course and 'managing' its students. However, the cocktail of emerging technologies and new learning environments outlined in Chapter 5, together with the different nature and employment of new media, can potentially democratise (and commercialise) the educational process in ways which many regard as transformational and even subversive. These are power relationships with political overtones.

Lankshear *et al.* (2002, p.18) report Weston's view (1994) that the Internet was seen by governments and corporations as a technology to strengthen their control and that, far from an 'information revolution', what was envisaged was a way, in Weston's words, to *"digitize the modern industrial state"*, and was *"certainly* not *supposed to be about a technological adventure that would reconfigure social relations* [of communications and media] *or blur the well-constructed boundaries between the public and the private ground."* (*ibid.*). Rheingold (2002) takes a similar stance, pointing to the emergence of *smart mobs* – interest groups enabled by pervasive electronic communication – and cites examples of how they have already effected political change. But perhaps the greatest challenge to conventional corporations could be their eventual virtualisation, in ways predicted by Castells (1997a) or Holtham (2001), leading to the transient, dynamic interplay to be envisaged in Chapter 8.

Lester (1997 [unpaginated]) argues that his Model B 'meta-learning' "… *represents a major challenge to curriculum- or standards-driven models of education and training, and poses some questions which will be uncomfortable for anyone not accustomed to thinking in terms of second- or third-order change".* Raschke is more dismissive, regarding attempts in both American schools and universities to move to a more learner-centred way of working through the accommodation of ICT as unlikely to succeed, asserting that: *"Trying to impose a regime of computer instruction on the traditional, lecture-centred, 'sage on the stage' style of classroom is like outfitting a pull-cart with wings, aerons and a jet engine."* (2003, p.32). As seen in the previous chapter, Kirschner (2004) and Cross (2004) are of the same opinion, arguing against attempts for an add-on technological fix and instead advocating an integrated approach to change, addressing pedagogical, technical, social, and organisational factors. Seymour Papert, a veteran commentator on ICT in Education, sees conventional notions of schooling challenged by children's home use of computers. Strongly critical of the emphasis in the USA on school standards and standardised tests, he regards the piecemeal and controlled adoption of ICT in schools as a 'safe' institutional reaction to hold in check its potential to transform or even replace conventional schools (Papert, 1999). The situation in European schools, as reported by Kirschner & Selinger (2003) appears little different, where despite year-on-year increases in ICT resourcing and the extent of ICT usage, there seem to be 'institutional brakes' to inhibit the sort of transformational process predicted by some. Cuban (1993, in Kirschner & Selinger) believes this to be due to teachers' appropriations of ICT to incorporate them into their personally favoured pedagogical styles. Perelman's (1993) stance on this issue (somewhat coloured by his radical neo-conservative views) is to regard state-controlled education in

the USA, as *"the last great bastion of socialist economics"* making schools and colleges *"as productive and innovative as Soviet collective farms"* (*ibid.*, p.1). His solution to the problem is clear:

> *Government-controlled institutions need to be replaced by private enterprises; although "privatization" is not sufficient, either. In addition, the profit motive is essential to driving technical innovation forward.*
> (*ibid.*, p.5)

And to make this just-in-time learning work we shall need just-in-time payment:

> *Using modern electronic card-account technology, microvouchers can allow individual families or students to choose specific learning products and services not just once a year or once a semester, but by the week, day, or hour. Unlike vouchers for school or college tuition, microvouchers will create a true, wide-open, location-free, competitive market for learning which has the elasticity to efficiently and quickly match supply and demand.*
> (*ibid.* p.5)

Raschke (2003) also foresees radical change in the structures as well as the pedagogical practices of universities in the future – which he calls 'hyperuniversities'. In these 'virtually enhanced' physical universities the learning and teaching styles reflect Model B learning and Mode 2 knowledge. Hyperuniversities are structured around courses and their associated learning resources, rather than hierarchically by subject disciplines. The focus of assessment is the certification of competencies, with associated payments made at frequent stages. However, unlike Perelman, Raschke believes that the universities of the future will not necessarily be completely commercial, but may be able to balance social and community aims against the exigencies of economic survival. The *hyperuniversity* model is summarised in Table 6.3.4.

Table 6.3.4 – Traditional and Hyperuniversities		
	Traditional university	Hyperuniversity
Instructional pattern	Course credits, class schedules, contact hours	Competency exams, tutorials, certification
Classroom formats	Instructor meets same group of students during class period, courses held at 'central campus'	Instructor interacts with students over networks and face-to-face at *ad hoc* times and places, courses 'online' and at various locations
Administrative structure	Universities divided into schools and departments, which reflect divisional specialties and programmes	Universities built around 'pathways of study' and certification programmes, faculty clustered in 'learning centres' and professional groups, as in medical and law practice
Student life	Baccalaureate and graduate degrees with majors and minors, residency or commuter campuses, student services geared to physical concentration of enrollees	Competency-related degrees and certification programmes, 'hypercampuses' that make attendance in physical classrooms less frequent as well as crucial, increasing integration of school with the workplace
Economic structure	Income mostly from credit-hour tuition and sponsored research in large schools	Income from flat-rate, modular charges for degree progress and information industry 'entrepreneurship'

Adapted from Raschke (2003, p.23)

Noam's three core functions of the University (1996) include knowledge creation and validation, knowledge preservation, and knowledge transmission – yet Raschke's hyperuniveristy concentrates only on this final one. Can there be any future for scholarship? While universities no longer hold a monopoly in this area, there is a continuing need for the categorisation of knowledge obtained from a variety of privately- as well as publicly-funded organisations, especially in the burgeoning field of scientific research. Where traditionally, this knowledge has been exchanged through specialist journals edited by eminent academics, many journals nowadays are available online and there is a trend towards (fully-refereed) open content. So although the medium of the printed journal may eventually become a historical curiosity, the continuing role of academic specialists as validators and custodians of Mode 1 knowledge seems secure.

This chapter has examined the contention that ICT in Higher Education will prove to be a Trojan Horse, subverting rather than supporting the print-based and time-bound culture of classroom and campus, and tipping the power balance significantly from teacher and formal institution to individual learner and informal knowledge networks. It has been speculated that perhaps the teaching function of universities will diminish as access to high quality eLearning materials gains ground. The question of whether British universities will be able to accommodate these epistemological and practical challenges and turn them to advantage is considered in the next chapter; however, the view taken in this thesis is that the likelihood of using ICT to shore up the *status quo* is bleak.

Chapter 7 *Future Scenarios*

If I had asked people what they wanted, they would have said faster horses.
Henry Ford.

7.1 Overview

Thomas J. Watson the founder of IBM was alleged to have said in 1943, *"I think there is a world market for maybe five computers"*, and Ken Olson, founder of the Digital Equipment Corporation, said in 1977, *"There is no reason anyone would want a computer in their home"*. Predicting the future has an uneven track record, but in a world increasingly influenced by fast-moving ICT developments, predictions and future scenarios are assuming greater importance. This chapter begins by examining *technological determinism* and its related concepts: built around the common-sense assumption that new inventions drive social change, and which is encapsulated in the phrase 'the wheels of progress'. Much of the literature in the area of new technologies is imbued by a *techno-evolutionism* which views progress in terms of stages or 'revolutions' of technological development, and care must be taken in its analysis. The second part of the chapter evaluates the purpose and benefits of future scenarios as a conceptual and planning tool, and examines a number of recent scenarios and other predictions for the future of schools and universities. The chapter concludes by synthesising

some common themes as a preliminary to the comprehensive picture of a British Tertiary Education landscape presented in Chapter 8.

7.2 Predicting the Future

7.2.1 Technology and change

Alvin Toffler's book *The Third Wave* (Toffler, 1980) was influential in raising into wider public consciousness the notion of a 'computer revolution', which in many ways can be seen as a precursor to the European Union goal of an Information Society (as formulated in the i2010 initiative discussed in Chapter 3). In Toffler's socio-economic model of history were three waves of development: the Agrarian Revolution, the Industrial Revolution, and the Information Age, which we have recently entered. In the Agrarian Revolution, humans moved from a nomadic hunter-gatherer existence to grow crops in settled communities, leading to division of labour and the emergence of castes and classes. The Industrial Revolution was characterised by mass production in large factories, resulting in large cities, centralisation, 'big-state' bureaucracy, the 'massification' of the media and social organisations – and a standardised public education system. The Information Age has led to some degree of 'post-industrial' decentralisation, de-massification of the media, weakening of state power, a growth of individualism – and an uncertain future for public education (as discussed in greater detail in Chapter 3). Each Wave was associated with a technological invention – respectively, the plough, the steam engine and the digital computer – with the technological determinist implication that the invention had in some way been a causal factor. But this view of technology as driver of social change was not a new

one. The ideas of Innis, on time-bound and space-bound cultures, have been discussed in the previous chapter with the contention that communication media exert an influence upon their users – and in the more extreme *media determinist* formulation of McLuhan that "the medium is the message" (McLuhan & Fiore, 1967). Negroponte's views are characteristic of a *hard determinism* position in which new technologies are firmly equated with desirable social progress; in his book *Being Digital* he asserts

> *… being digital … does give much cause for optimism. Like a force of nature, the digital age cannot be denied or stopped. It has four very powerful qualities that will result in its ultimate triumph: decentralizing, globalizing, harmonizing, and empowering.*
> (Negroponte, 1995, p.231)

Other American writers are more overtly political; Fukuyama (2000) extols the Internet as a democratising force which will exert pressure upon authoritarian governments to engender (US-style) economic and cultural liberalisation, and Friedman's (2005) Dell Theory of Conflict Prevention argues that the economic benefits of high technology globalised trade will be a force for world peace and prosperity.

A flat rejection of such positivism was made by Raymond Williams, claiming that

> *The sense of some new technology as inevitable or unstoppable is a product of the overt and covert marketing of the relevant interests.*
> (Williams, 1985, p.133)

Arguing from a socialist perspective, Williams saw technological determinism as disguising politically motivated moves by powerful groups to gain further advantage. This stance, known as the 'social shaping of technology', lies at the opposite end of an interpretive spectrum to the hard determinism or

technology-push of McLuhan and Negroponte. Between these endpoints lie degrees of *soft determinism* in which technology is seen to be a catalyst enabling or accompanying change; through ideas of the neutrality of technology; to a *demand-pull* position in which market pressures influence the refinement of existing products (Chandler, 1995; Burnett & Marshall, 2003, ch.1). Perez (2004) adopts a neo-Schumpeterian position in which transformative technological change is conceived in fairly regular cycles, as *techno-economic paradigms*. Comprising a cluster of technological innovations, a techno-economic paradigm has *"all-pervasive character, its capacity to go beyond the industries it creates and to provide generic technologies that modernize the whole economic structure"* (Perez, 2004, p.6).

> *Thus, one could see successive technological revolutions involving an interrelated set of new technologies, industries and infrastructures, establishing a set of innovative routines in the form of a techno-economic paradigm and lasting about half a century ... Each set, however, can only become the standard after overcoming the resistance of those who had adopted and practiced the previous paradigm, who will fiercely hold on to it, even if it is no longer effective.*
> (*ibid.*)

In this model, each techno-economic paradigm has a trajectory beginning with the aggregated technology-push of a cluster of innovations in a "*gale of creative destruction*"; at this early stage a market for these new products does not exist and has to be pioneered by the Innovators and Early Adopters in the Stages of Technology Adoption model presented in Chapter 4. This is followed by a period of incremental development and product refinement to meet the demand-pull of a market which has adapted to and adopted the paradigm *en masse*. Finally, the market reaches saturation and the innovation becomes subject to diminishing returns. This is a persuasive

model, escaping from the technological determinism dialectic by admitting both positions, and it is the stance adopted in this thesis. The predictions of Watson and Olson which began the chapter can now be seen in a different light, and it is possible also to place all of the technologies discussed in Chapter 5 within this trajectory model: from the ubiquitous (and hardly any more regarded as 'technological') commonplace of mobile telephones, to the emerging technologies of intelligent systems. The trajectory model is returned to in the next chapter, in which the trajectories of ten development strands are mapped over an extended timescale.

7.2.2 Scenario planning

The practice of preparing for the future through scenario planning originated in commercial corporations and, as will be seen later in this chapter, is now widely used in Education. In an article on the use of scenarios in decision-making in American colleges and universities, Morrison & Wilson (1997 [unpaginated]) define the term and provide a rationale.

> *The term scenario, taken from the world of theater and film, refers to a brief synopsis of the plot of a play or movie. In a planning context, scenarios can be described as "stories of possible futures that the institution might encounter." Scenarios are graphic and dynamic, revealing an evolving future. They are holistic, combining social, technological, economic, environmental, and political (STEEP) trends and events, the qualitative as well as the quantitative. They focus our attention on potential contingencies and discontinuities, thereby stimulating us to think more creatively and productively about the future.*

The European Foundation for Knowledge Society Foresight stress that scenarios are not simply attempts at prediction but *"internally consistent descriptions of possible future states and development paths, organised in a systematic way"* to serve as planning tools (Foresight, 2003, p.88). The

Foundation distinguish between *diachronic* and *synchronic* scenarios; the first being in the form of a narrative describing a sequence of future events, and the second portraying the state of affairs at a particular point in the future. The following section examines two groups of scenarios for Education in the future, which will be synthesised into the main components of the new learning landscape proposed in Chapter 8.

7.3 Predictions for Education

7.3.1 Scenarios for schooling

The Universities Council for the Education of Teachers (UCET) – a body representing almost all university departments of education in the UK, but independent of government – engaged with the Teacher Training Agency in England and Wales (from 2005 the Training and Development Agency for Schools (TDA)) in the creation of three models for the future of teacher education (TTA, 2004). Based upon a set of six scenarios for schools originated by the Organisation for Economic Co-operation and Development (OECD, 2001) and adapted to the projected context of England in 2020, these three scenarios are:

- Scenario 1: an extended market for education
- Scenario 2: learning networks with a diversified workforce
- Scenario 3: schools as social centres.

For reasons which will become apparent later, these scenarios will be discussed in reverse order.

In Scenario 3 (schools as social centres), the school system has been charged with the duty of redressing the deficit in social capital mentioned in the previous chapter. Anxious to arrest a continuing slide in family breakdown and civic and community involvement, the government has expanded the role of schools to provide services for their local communities. Dissatisfaction with the failure of national policies of social inclusion to raise the aspirations of school students has led to a refocusing of the mission of secondary schools and greater local direction in their management. The growing collection of ICT-based learning materials complements the involvement of community organisations and their members to help students develop the competencies needed for the labour market. Strong evidence to support this scenario can be found in recent Department for Education and Skills policies: in both the *Five Year Strategy for Children and Learners* (DfES, 2004) and in *Harnessing Technology* (DfES, 2005b) discussed in Chapter 4, which heralds a tighter integration between schools and social services in the provision of support to children.

In Scenario 2 (learning networks with a diversified workforce), the state school system has failed to meet the consumerist expectations of educated parents for the preparation of their children for a rapidly changing knowledge economy. Such parents (Castells' self-programmable workers discussed in Chapter 3) demand individualised teaching and a curriculum which is up to date and adaptable, and they are increasingly turning to alternatives to public provision. These arrangements employ ICT support for networked learning with online materials and private tutors, and are having the effect of further weakening and de-institutionalising the state system. Although the public

system would continue, it would cater principally for the children of Castells' 'generic workers', who would lack the understanding and resources to seek alternatives.

Scenario 1 (an extended market for education) is the most radical of all three scenarios. Like the previous one, dissatisfaction with traditional provision has led to shrinkage in the public-funded schools sector and a growth of private education services including national not-for-profit educational trusts and local public/private partnerships. What sets the extended market scenario apart is the extent to which the new alternatives to schooling have become dominated by globally operating for-profit companies with unalloyed commercial interests. Here, Education has been turned into a commodity, and its deliverables – courses and services – are branded and promoted in highly competitive, highly lucrative and diverse market places. Evidence for this trend can be seen in the operation of multinational corporations such as Educate, Inc (Educate, 2007) mentioned in Chapter 3, which provide a schools function with over 950 Sylvan Learning Centers in North America and Europe, offering a quality-assured 'McDonaldised' form of learner support (Ritzer, 2000).

Halstead (2003) used another scenario model, devised by Snoek *et al.* (2003) to chart changes in national initial teacher education policy in England over the last thirty years; this is presented in Figure 7.3.1a. In Halstead's analysis, there has been a cyclical tour: from teacher education policies being situated in Quadrant 2 in the 1970s, moving through Quadrants 4 to 3 in the 1980s

and 1990s, and with evidence of a continuing movement further into Quadrant 1 in the new century.

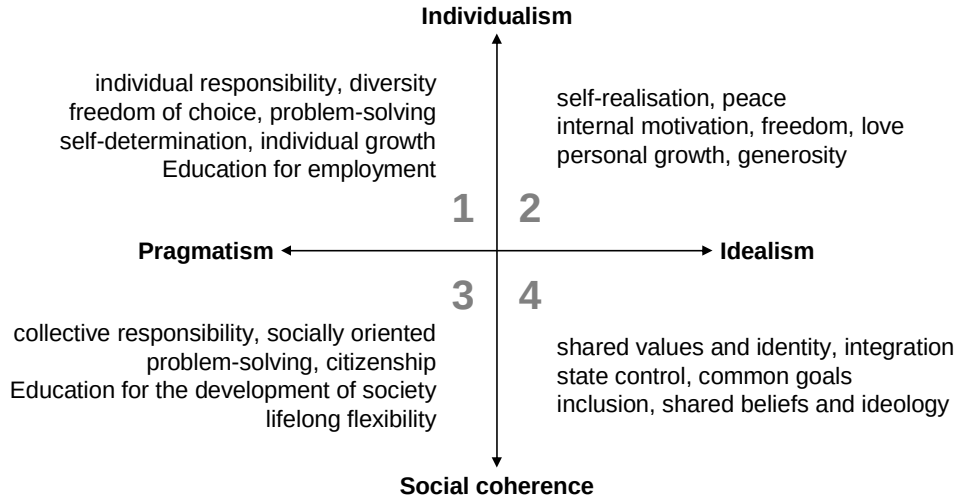


Figure 7.3.1a – Initial Teacher Education Scenario Model
Adapted from Snoek *et al.* (2003)

To the extent that policies for teacher education mirror those for schools, it is possible to relate this trend to the UCET/TDA scenarios discussed earlier. In the 'meta-scenario' view of Williams (2005) illustrated in Figure 7.3.1b, the trend arrow indicates the general movements in policy, underpinned by wider changes in social orientation, over the last thirty years and the 2020 scenarios have been placed in order of their degree of Pragmatic Individualism along this diagonal dimension. Following the logic of this arrangement, it follows that all three of the Futures 2020 Scenarios would be visited: in sequence. As evidence for this, it can be argued that if the DfES plans are implemented as anticipated by 2010, then the ground will have been substantially prepared for the first scenario. And if the diversity of provision envisaged in the learning networks scenario develops as described,

a deteriorating state schools sector would coexist with a growing demand for individualised learning.

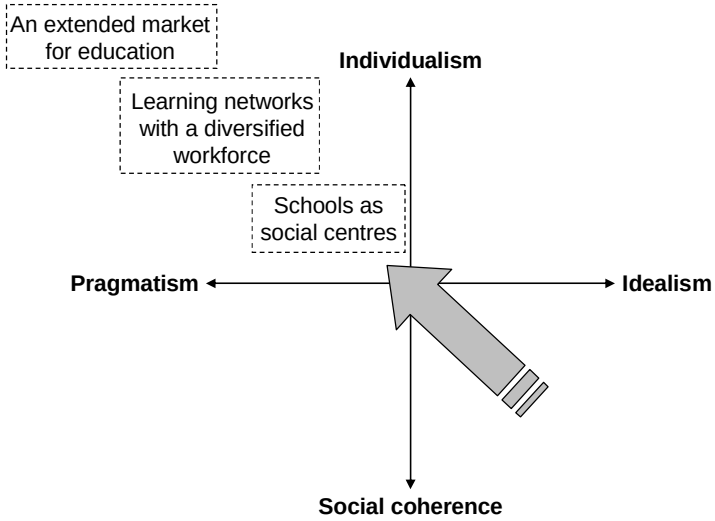


Figure 7.3.1b – Mapping the UCET/TDA Scenarios to the Initial Teacher Education Model
(Williams, 2005, p. 327)

The extended market scenario would be an incremental development of this situation over time: a tipping point at which the balance shifts overwhelmingly in the direction of private provision, and the shrinking influence of the state is no longer able to contain the pressures of a full-blown market. Interestingly, the three scenarios fall into the same sequence in terms of the extent of their use of ICT, and parallels may be drawn with the predictions timescale of the *Horizon Report* (NMC, 2005).

7.3.2 Scenarios for Higher Education

Concerns that state-funded educational institutions might come under threat from the for-profit sector are echoed in the two alternative futures proposed by Oblinger & Kidwell (2000) for Higher Education in the USA. In the first scenario the organisation and pedagogical methods of Higher Education

remain unchanged and the focus remains on the traditional 18-24 year old student market. In the second scenario, Higher Education seeks to meet growing demands from all age groups for the flexible delivery of Higher Education to a wider market, through institutional restructuring, outsourcing of services, and the use of new technologies in pedagogy and administration. The first scenario sees a decline in the market share of traditional universities, and the second predicts healthy growth. Liber's (2001) model of five alternative futures for British universities also has 'business as usual' and 'hyper-expansion' scenarios and makes the same point regarding the need for a radical reappraisal of traditional ways of working.

Wentling *et al.* (2000) report the outcomes of a scenario-building exercise by the National Center for Supercomputing Applications (NCSA) at the University of Illinois in which commercial, academic and technology professionals independently created two sets of scenarios, for corporate and academic futures, and identified common themes. In Table 7.3.2 the main findings have been abstracted and grouped under four headings. These findings echo many of the educational challenges identified in the previous chapter. From the student's perspective, distinctions between learning and working will become blurred, there will be greater study autonomy and flexibility in time and space, and extensive use will be made of eLearning materials. From the provider's perspective, institutions will have disaggregated into smaller units and staff roles will have become more specialised: into supporting learners, developing materials, or conducting research. Kovel-Jarboe (1999) uses a model of four alternative Higher Education futures to make similar points, but in her final scenario of 'Consortia Versus Entrepreneurs' addresses the same

competitive market share issues as Oblinger & Kidwell. In this scenario, a shift in funding from institutions to students has resulted in the closure of many less competitive universities and the growth of commercial Higher Education providers.

Table 7.3.2 – Summary of NCSA Academic Scenarios	
Learners and Learning	• 'eLearning' and 'student' may become obsolete terms, as technology becomes ubiquitous – and invisible – and continuing learning will have become such a common part of everyday life. • The lines between doing and learning will become blurred. • Learners will be self-directed and self-paced, with the freedom to select courses from many providers. • Virtual reality simulations and group learning will be widely employed.
Learning Support	• There will be virtual as well as physical local learning support centres, replacing universities and the public school systems. • Learning centres will provide social interaction opportunities and face-to-face classes, and attendance will be optional. • There may be small schools within schools, where learners with similar interests can meet.
Materials and Technology	• Learning materials will be "highly interactive, entertaining, three-dimensional and much more powerful!" • Portable, lightweight eBooks and wireless networked devices will be in common use. • Just-in-time course materials will be created 'on the fly'.
Staffing	• There will be fewer traditional teachers and more staff employed in new roles such as instructional design. • There will be a sharper divide between university staff focused on research, and those focused on teaching. • Issues of intellectual property rights in Higher Education will have been resolved through reward systems based upon those in the private sector.

Adapted from Wentling *et al.* (2000)

The remaining universities have formed consortia to meet the wider range of student needs and to share costs. In a similar prediction to the NCSA study, students are free to select courses from a variety of providers in the market, but this exacerbates tensions between consumer choice and course quality. Kovel-Jarboe (1999 [unpaginated]) argues:

> *The challenge to policy makers has been to determine what interests are not well served by allowing market forces to operate freely. With the stream of financial resources for Higher Education following the student rather than the institution, legislatures have developed a new level of sophistication about learning (as opposed to education), and regulatory agencies have had to completely revamp their approaches to financial aid, program approval, and assessment.*

Striking a balance between markets and quality is a central concern of the last scenarios to be considered in this section. The US National Education Association (NEA, 2002a; 2002b) has drawn up two contrasting scenarios for the future of American Higher Education, in which demand-pull from the national political climate determines events – aided by technology rather than subject to the pressures of technology-push. The first scenario portrays a market-driven future dominated by commercial interests and for-profit organisations. The federal and state governments have relinquished authority over Higher Education, which is now the responsibility of the individual. State funding has been reduced to the bare essentials and it is expected that students will support themselves through part-time work. Five types of Higher Education providers are included in this model:

- MacCollege, Inc.
- Wired U.
- Outsourced Tech
- Warehouse A&M
- Education Maintenance Organization.

The *MacCollege, Inc.* type of provider is a consortium of community colleges. Already enjoying the advantages of outreach centres and staffing flexibility, the consortium rationalises provision and shares resources, selling college

buildings to lease retail space in shopping malls for the sale of its eLearning materials and services. The consortium's education debit cards for online courses prove very popular and the enterprise thrives. The *Wired U.* provider typifies traditional universities which have moved aggressively into eLearning, but differentiate their products from MacCollege by making their more photogenic teachers into celebrities in an academic star system. Other staff are grouped into research teams studying aspects of popular culture. The unwanted campus buildings are converted into minimum-security prisons (!). Universities in the style of *Outsourced Tech* seek economies through radical privatisation and outsourcing. However, following the abolition of academic staff tenure, it becomes possible for the companies which contracted services for their corporate training to invert the process and buy out the universities and their management teams. The *Warehouse A&M* model is based upon existing US universities such as Phoenix and Western Governors, but these new institutions are even larger, with 100 000 students. Their purpose is as 'holding pens' to keep young people out of the depressed labour market for as long as possible. The huge student numbers lead to enhanced social and sporting activities but a poor quality of educational provision. The last type of market-driven provider, the *Education Maintenance Organization*, has used the national legislation to vest intellectual property rights with employers rather than individuals to make it possible for universities to become education services contractors with companies and state governments. Other savings are made by downsizing staffing and plant. Students are used as a test bed for new eLearning materials, which have been developed in conjunction with commercial publishers.

The second scenario portrays a quality-driven future arising from national decisions to promote and integrate educational provision at federal, state and community levels and to provide a universal entitlement to two years worth of government-funded Higher Education managed through an education debit card system. Four types of Higher Education providers are included in this model:

- Access Community College
- Community U.
- Global Tech
- Cutting Edge U.

In the *Access Community College* model, access to services in the existing network of community colleges is extended to local learning centres in public areas and is paid for by students' education debit cards. There is a seamless integration of provision from Secondary through to Tertiary Education. Institutions form consortia to rationalise provision and share resources, and eLearning is employed to cope with increased demand. Included in the *Community U.* type of providers are the old state universities which have undergone restructuring; students now reside on campus for only part of their undergraduate years, leaving intermittently for work or community duties. Extended community service (*e.g.* as school assistants) is rewarded with educational access credits. The *Global Tech* university is one where a residential requirement remains at undergraduate level, and students experience traditional as well as eLearning activities. Postgraduates are taught more by videoconferencing managed by a global consortium of universities, and the use of intercontinental study teams requires round-the-clock access to facilities. The *Cutting Edge U.* is more vocationally oriented,

with a mission to provide professional updating for workers in post. A combination of generic and individualised eLearning materials is employed, and each student is supported by a learning advisor. Most study is undertaken online in the workplace, or at local franchised institutions.

Comparing these two scenarios, it is apparent that various types of eLearning are employed to accommodate demand. Other common themes are the redundancy of some campus space and of some categories of university staff; however, this is a less significant issue in the more generously funded quality-driven regime. Some readers would view the first scenario as dystopic and the second as utopic, but others might take the contrary view. There is perhaps a political dimension here, and in the American context the market-driven scenario might be more consistent with a neo-conservative Republican administration, and the quality-driven scenario with an ultra-liberal Democratic one.

7.3.3 Other views of the future for Higher Education

A complementary view of future developments in Higher Education is provided in a collection of papers published by the UK Foresight programme (Thorne, 1999). Here, various papers identify ICT as a key driver of change. For Hills (1999), ICT will enable a 'new style learning' in an 'intensely supported learning environment'; for Sperling (1999), technology-driven demand will lead to an 'unbundling of faculty roles' as universities move from being state-operated non-profit institutions to publicly trading corporations. Abeles (1999) sees the Internet as exposing teaching staff and institutions to international competition, predicting that the 'long, half-life knowledge of

university education' will be replaced by more transient, commercially-successful and vocationally-oriented content, and Wildman (1999) prescribes the transition from an institutionally-focused bureaucratic model to ways of learning which embrace inner knowing and relationships with others. Assessment will also be more flexible, escaping from the "*tyranny of certification as a device of control"* (Abeles) and becoming more modularised and personalised through credit accumulation and transfer schemes (Brynin, 1999). Both Smith (1999b) and Brynin foresee a closer integration of Higher Education and other provision, with greater home-based study supported through colleges and schools acting as local branches of universities.

The Delta Scan forum (IFTF, 2007) is also related to the UK Foresight programme and provides a view of how new technologies for cooperation will enable *"rapid, ad hoc, and distributed decision making"* which may radically reshape the nature of organisations. Key to these changes will be social software of the types discussed in Chapter 5, plus 'self-organization mesh networks' and knowledge collectives. Considered alongside the ubiquitous, mobile and ambient computing developments (also discussed in Chapter 5), it seems likely that these new cooperation fora will reduce the need for large and permanent physical infrastructures to support organisations. The implications for universities as enduring, campus-based institutions could be profound, and are the subject of further examination in the next chapter.

Moves are already being made in the regional integration of distributed provision in the newest British tertiary institutions. The proposed new University of Doncaster forms part of a wider Doncaster Education City

project planned in consultation with regional government, economic regeneration agencies and business and community representatives. In this initiative, the knowledge hub of the proposed university will integrate with "*a number of vocational campuses built across the Borough to upskill learners in vital technological and vocational skills, linked realistically to the job market*", and "*a network of learning Gateways, situated in a diverse range of community locations*" (DEC, 2006). Significantly, the central campus bears greater resemblance to a shopping mall than to an ivy-clad institution, with the objective of attracting learners of all ages and backgrounds. Vocational orientation is also explicit in the newly-branded Southampton Solent University (before 2005 the Southampton Institute):

> *We're no ordinary academic institution. We'll be your direct link to the world of business. The world of industry. The world of work. How can we be so sure? We do research, training and consultancy work for business and industry every day, so we know what it takes for you to succeed.*
> (Solent, 2007)

7.4 Synthesis

The previous sections have discussed the purpose and value of scenario planning, and models for the future of schools and universities have been outlined. A general trend in British educational policy in the past appears to have been towards Pragmatism and Individualism – from the social to the personal and from state control to individual responsibility (although some recent legislation such as *Every Child Matters* (DfES, 2005c) has run counter to this trend). Over this thirty-year period, as has been seen in Chapter 3, some aspects of the influence of the state have weakened and consumer power has grown. The world is now a more competitive one, in which global

markets have emerged, prompting an urgent demand for vocationally oriented education and the updating of skills. In the face of these exigencies the scalability of provision offered by eLearning – with or without a silver bullet – makes it increasingly attractive to governments and educational providers. The nature and scale of demand call into question whether the residential campus university model can continue to be an appropriate one, and this is reflected in the scenarios provided by Oblinger & Kidwell, Liber, the NCSA, Kovel-Jarboe and the NEA. In addition to the chronic problem of declining state funding against an expansion of demand are the concerns of vocational orientation and flexible delivery. In addition, as will be examined in Chapter 9, fissures may widen within universities between the mass production of learning materials and the more traditional functions of course provision, research and development (Hagel & Singer, 1999). The selective regime of the Research Assessment Exercise (RAE, 2007) – whereby the quality of research in universities is regularly assessed in order to inform the distribution of funding – is having the effect of emphasising a divide between teaching and research functions. Some well established prestigious universities define themselves by their contribution to knowledge; for example, the mission statement of the University of Cambridge is *"to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence"* (Cambridge, 2007). By contrast, Bournemouth University, a more recent arrival with a regional rather than international focus, aims *"to be a pre-eminent vocational university, well founded in terms of educational quality and student appeal"* (Bournemouth, 2005), and the new Doncaster and Southampton Solent universities are adopting similar regional missions. For the large proportion of

universities occupying the middle ground between these extremes there are indications of a widening gulf between 'research active' and 'teaching only' staff. The UK model of the university as an autonomous, comprehensive institution is further eroded by the rise of consortia and commercial partnerships for new ventures, and related to these is the unresolved problem of intellectual property rights. In Britain, the blurring of the boundaries between Higher Education and the post-compulsory (Further Education) sector discussed in Chapter 4 may well follow the Doncaster model, extending Higher Education into outreach and community centres to provide a local, social complement to the growing use of eLearning. The last three scenarios all assume that the campuses of universities which have failed to adapt to the new environment will be split up and sold off, and the design of new types of spaces for information working has been the subject of discussion in Chapter 5. British institutions most under threat would be what might be called 'regional-mission comprehensive' universities, attempting to balance the pursuit of research excellence against teaching quality, inclusive entry, a vocational focus and regional economic services. Some of their academic departments might be very good, and some of their vocational and regional services of a high order; however, being relatively small and highly reliant upon national public funding they would be more vulnerable than the elite, research-led universities and less well-placed than the more vocational and locally-supported distributed tertiary organisations. In all the scenarios examined, the economic driver of the market has been an important factor, and this has been closely linked to the exploitation of ICT through eLearning. However, as discussed in Chapters 5 and 6, the pace of hardware and software development applied to eLearning may be such that, in Perez' terms,

a new techno-economic paradigm with an 'all-pervasive character' will overtake the decision making of university managers and impose a market-driven future in the ways anticipated by the NEA.

This chapter has sought to complement earlier ones in presenting a view of the traditional university as beset on all sides by a complex of pressures, and now approaching crisis. The scenarios and predictions examined have each addressed aspects of this complexity but none has incorporated all. The next chapter will attempt to synthesise a comprehensive model of how the post-18 educational landscape might develop over the next thirty years.

Chapter 8 *A New Learning Landscape*

8.1 Overview

> *There is little evidence that HE … will be able to mobilize its resources and concert its investment and product strategies to compete with the global organizations that already exist such as News Corporation and Microsoft. … In the infotainment industry of the future universities will be niche providers, trading in relatively conventional academic goods and services. … So perhaps the most likely outcome is a highly differentiated development – of a few world-class universities (or, more probably, of world-class elements within them); of networks of existing universities that trade in this global market-place … of the growth of hybrid institutions that combine elements of universities with elements of other kinds of 'knowledge' organization (probably global corporations and perhaps through joint enterprises; of the emergence of 'virtual' universities organized along corporate lines … ; and, inevitably, of a few global universities on a News Corporation or Microsoft pattern.*
>
> (Scott, 1998, p.128)

Scott is not alone in this vision of the future, and previous chapters have reported the views of many commentators from technical, educational, social and cultural perspectives making similar predictions. However, what is missing in this literature is an overarching synthesis to relate these different perspectives. In this chapter an attempt has been made to draw together, to construct and to present a composite and developmental view of the future which derives from the different scenario models examined in Chapter 7 and from the pressures and trends discussed in Chapters 4, 5 and 6. Using the terminology of the European Foundation for Knowledge Society Foresight, the two models which will be presented are, respectively, diachronic and

synchronic. The principal categories within which this view of the future is described are six *Contexts*: epistemological, technological, pedagogical, social & cultural, economic & political, and organisational. The developmental timescale for the analysis falls in three 15-year *Phases*: of Collegiate to Corporate (1995-2010), Corporate (2010-2025), and Neo-corporate (2025-2040). Across this period a number of *Development Strands* are described – many of them related to eLearning – which have been mapped to the Contexts. The purpose of this three-phase model is to go beyond the comparatively static scenarios described in Chapter 7 and to present the future as a complex, evolving process which is the product of the dynamic interplay of key drivers – in the form of the ten Development Strands. The model also serves to situate the middle, Corporate phase within a wider perspective of change. The remainder of the chapter focuses upon this middle phase, constructing a more detailed and inter-related model of Tertiary Education by the end of the phase in 2025. This new learning landscape reflects the convergence of Further and Higher Education discussed in Chapter 3. It accommodates three types of agents: *Students*, *Staff* and *Providers*, who engage with eLearning materials through diverse learning activities. Relationships between these agents, materials and activities are discussed from the perspectives of students and providers, and are presented in tabular and diagrammatic formats. Finally, a review of the third, Neo-corporate phase links forward to the crisis of mission discussion in Chapter 9.

8.2 Contexts

The new learning landscape to be outlined has been constructed within the six categories, introduced in Chapter 1, contextualising the development of British Higher Education over the next twenty years. These Contexts are summarised in Figure 8.2 and their component trends are discussed in turn below, referencing (in square brackets) the points made to sections in earlier chapters of the thesis in which they were introduced.

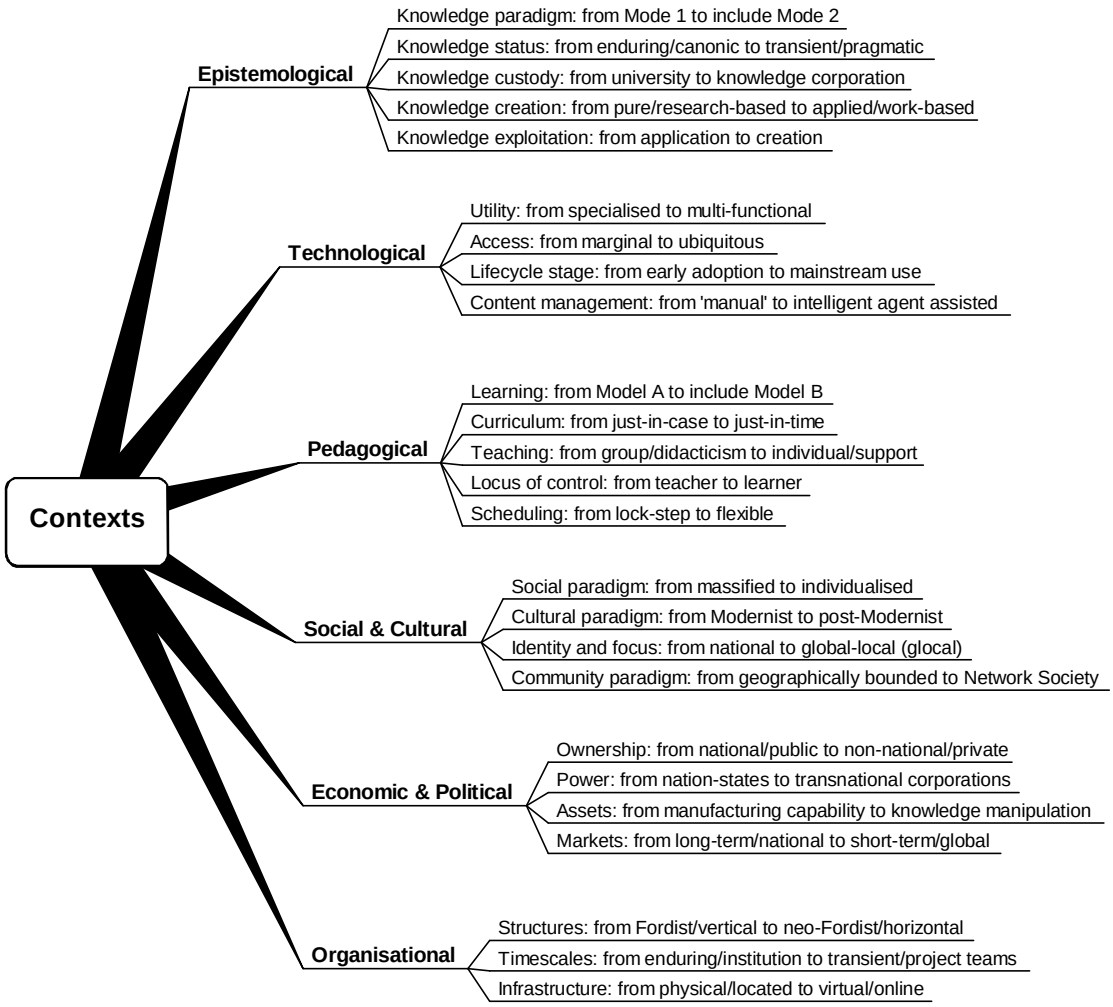


Figure 8.2 – Contexts and Component Trends

8.2.1 Epistemological trends

The epistemological component trends listed in Figure 8.2 reflect the changing ways in which knowledge will be created, employed and valued over the timescale of the three Phases addressed in this model. The problem-solving, contextually embedded know-how of Mode 2 knowledge will be seen as increasingly important alongside the formal, academic Mode 1 knowledge [§6.3.2]. Related to this, ready public access to extensive collections of digitally-stored information will erode the status of enduring, canonic knowledge in favour of transient but currently relevant pragmatic knowledge [§6.3.2]. Thus universities, traditionally the sole custodians of knowledge, will be rivalled by corporations operating in the for-profit education and knowledge economy [§4.3.4; §6.3.3]. These corporations will compete also in knowledge creation, as the traditional research and scholarship undertaken by universities vies with applied and work-based knowledge generation [§3.4.2].

8.2.2 Technological trends

Over the three Phases, the power, ease of use, convergence and connectivity of digital consumer electronics [§4.2.2; §5.2.1; §5.2.2] will make ambient, handheld and wearable all-purpose devices the ubiquitous tools of everyday life [§5.2.3]. In the first few years of the century these devices – previously the sole province of 'early adopters' – will become mainstream [§4.2.4] and their educational function will be enhanced by intelligent software agents, selecting from an extensive range of learning resources [§5.3.2]. The digital augmentation of reality through 'always on' audiovisual systems (developed from the comparatively primitive Bluetooth headsets of the previous decade

[§5.2.3]) will blur the boundaries between work and leisure, and between direct experience and digitally processed perception.

8.2.3 Pedagogical trends

There will be a growing trend towards Model B learning [§6.3.3], reflecting the importance of Mode 2 knowledge and the prevalence of the Web and hypertext-based information. The formal (Model A) learning leading to extrinsic qualifications will be displaced by learning activities related to the performance of 'real world' tasks, as the inflexible 'just-in-case' curriculum of the past is displaced by a 'just-in-time' model [§6.3.3]. Teaching as a 'batch' process involving didactic presentation to a group of learners will become less common as the quality, effectiveness and individual targeting of eLearning materials improves [§5.3.1; §5.3.2]. Instead, contact with learners will more likely include online and face-to-face tutorials to support personalised pathways through loose aggregations [§4.2.3] of problem-based materials including games and simulations [§5.3.3]. Over the period, lock-step classroom-centred pedagogy [§4.2.4] will become almost completely replaced by flexible and intensive social communication in virtual and 'intelligent' physical environments [§5.4].

8.2.4 Social and cultural trends

The massification of social institutions characteristic of Fordism will be regarded as consigned to history; instead, digital 'infomediaries' will personalise the individual's interface with the world to limit the information overload of continual option selection [§2.4; §5.3.2]. This personalised interface will be particularly important in facilitating the sourcing and

consumption of educational services [§5.4]. The post-Modern climate of cultural relativity, and a sharp decrease in public deference to authority, will shape rejection by an increasing number of learners of the old institutions of school, state and corporation, and the formal regimens they prescribe. 'Do It Yourself' learning will become much easier to undertake, attracting a far higher proportion of learners than in the days when there was no real alternative. Informal learning [§6.3], facilitated by intensive peer-to-peer communication with portable technology (*i.e.* social networking), will provide an important social and motivational substitute for the face-to-face support of learning coaches. The same *ad hoc* networking will also facilitate free access to black market bootlegged and wiki-based learning materials for non-formal students not registered on accredited courses. People will see themselves more as members of communities and regions than as national citizens [§3.4.1; §3.4.2], and will forge further identities through online social networks which compress the limitations of time and space [§5.3.4].

8.2.5 Economic and political trends

Over the three Phases the power and role of the British state will diminish, becoming limited to arbitration between regional governments and participation in the affairs of the expanding European Union [§3.5]. Responsibility for almost all state functions will be ceded to agencies and private providers [§6.3.4], and transnational corporations will play an increasingly important role as partners in national economic affairs [§3.4.1]. The fortunes of Europe will lie squarely with the knowledge economy and there will be heavy emphasis upon maintaining this focus through increased public spending on Education. Most symbolic analyst knowledge workers will

be employed through networks of agencies on short-term projects, dividing their time between working at home and working in locations across Europe which combine tele-centre office infrastructures with easy access to recreational pursuits [§3.5]. Public dissatisfaction with secondary schools will create a climate in which provision at other levels will come under scrutiny. The larger proportion of parents with experience of universities, who graduated in the early years of the new millennium as a result of the policy for wider access, will have children approaching university age. They will be an articulate and informed pressure group, reacting to the rising cost of university tuition fees and campus-based education, and driving a shift in the funding mechanism from education institutions direct to students. The idea of individual learning accounts will be revisited and adopted, empowering students as consumers of educational commodities – including cheap eLearning materials – in the reassuringly familiar environment of the marketplace.

8.2.6 Organisational trends

The downsizing and virtualisation of organisations over the period will be evident at local level in the neighbourhood provision of franchised services [§7.3.3]. The rising environmental costs of private transport will force a replacement of out-of-town shopping malls and hypermarkets by online ordering supported by delivery networks using low-pollution vehicles. The global branding of goods and services will continue, but the brands will develop a greater quality assurance function, displacing the 'consumer watchdog' organisations of the past [§3.4.1]. These trends will be reflected in Education, where economic and organisational pressures will accelerate the

closure of unprofitable university departments – a trend which began at the turn of the century [§7.3.2]. In the early years of the period, managerialism will become more firmly embedded in university cultures, but the new managers will find themselves presiding over organisational disintegration and may be unable to find creative solutions. Instead, vacated buildings on the campuses of the old 'regional-mission comprehensive' universities [§7.4] will be leased to the private sector and to learning hubs supported by devolved regional and community funding. Growing commercial involvement in Tertiary Education will support the emergence of local colleges with franchises to employ branded learning materials and resources; these will be based in the science / technology / business parks which are developing around the 'regional-mission comprehensive' campuses [§7.3]. Smaller, and operating at district level, will be community learning centres, with leisure and social facilities and access to learning coaches catering to individual and small group needs. Some elite universities will manage to survive almost intact, as their reputations will ensure lucrative research income and enable them to command high tuition fees.

8.3 Development Strands

The six Contexts provide a conceptual framework within which to locate a number of Development Strands: these are processes which extend across all three Phases and across the component trends within the Contexts. Ten strands, labelled A to J, have been identified in Table 8.3. Specific ways in which the Development Strands have been instantiated in each of the three Phases are summarised in the successive Tables 8.3.1, 8.3.2 and 8.3.3; these

Table 8.3 – Development Strands	
A	institutional management
B	external funding
C	economic utility of courses
D	commercial competition
E	institutional structures / downsizing
F	educational partnerships
G	research & development
H	educational technology impacts / eLearning
I	Higher Education clients / demographics
J	social networking / community involvement

tables also map phase instantiations to the Contextual Factors. Taken together with the Contextual Factors, the Development Strand instantiations provide a richer and longitudinal picture of change trajectories across the three Phases.

8.3.1 Development Strands in the Collegiate to Corporate Phase (1995-2010)

The Collegiate to Corporate Phase (1995-2010) is seen as the period in which a transition takes place in the way universities organise and govern themselves. These issues are discussed in section 3.7 and draw in particular upon McNay's (1995) four university models (Figure 3.7) which hypothesise a shift from the loose, democratic association of the Collegium to the tightly defined policy and implementation imperatives of the Corporation. Table 8.3.1 presents 14 instantiations of the Development Strands within this phase; some of these instantiations are Organisational, but many map to other Contextual Trends. The use of Reusable Learning Objects [§5.3.1], simulations and 3D virtual worlds [§5.3.3] becomes more commonplace as lessons are learned about how to design and employ these resources for greater effectiveness. This phase also sees the emergence of open content

Table 8.3.1 – Mapping of Development Strands to Contextual Trends: Collegiate to Corporate Phase (1995-2010)							
Development Strand and Phase Instantiations		Contextual Trends					
		Epistemo-logical	Techno-logical	Peda-gogical	Social & Cultural	Economic & Political	Organis-ational
A	increasing control and strategic direction by university senior managements						✓
B	continuing decline in state funding increases financial pressure and accountability					✓	
B	inception of (capped) tuition fees and growing consumerism				✓	✓	
C	unprofitable university activities and departments closed					✓	✓
C	knowledge economy / '21st century skills' agenda drives move from propositional to procedural knowledge	✓		✓	✓		
D	profitable courses (*e.g.* MBAs) offered at lower cost by Corporate and Virtual Universities					✓	
D	intellectual property rights (IPR) of digital learning materials becomes of growing importance		✓			✓	
E	investment in centralised ICT infrastructures		✓				✓
F	closer partnerships develop between universities, schools and colleges			✓	✓		✓
G	dedicated research-only institutes begin to outstrip the best HE research					✓	
H	growing availability of Reusable Learning Objects (RLOs)		✓	✓			
H	growth in popularity of simulations and 3D virtual worlds		✓	✓	✓		
I	demographic bulge and widening participation policies result in growing university populations and a higher proportion of older/part-time students				✓	✓	
J	emergence of (free) open content and informal learning through social networking		✓	✓	✓		
J	emerging 'personalisation by participation' initiatives begin to exert pressure on HE curricula				✓		

learning materials from their pioneering origins at MIT and the Open University [§5.3.1].

8.3.2 Development Strands in the Corporate Phase (2010-2025)

In terms of university organisation, the Corporate Phase (2010-2025) is characterised by growing management efficiency within an increasingly competitive Higher Education marketplace [§3.4.2]; Scott's 'cadres of professional managers' [§3.7] are now in charge. The uncapping of university top-up fees [§3.3] has led to further diversification in the sector, with prestigious universities now able to command high fees and pulling away from mainstream institutions with regional missions. The stark recommendations of the Institute of Directors for universities to be 'let off the leash' [§3.4.2] are realised; institutions which fail to adapt rapidly to these new conditions lose more of their courses, and the closure of unpopular departments is accelerated. Virtual and for-profit universities are moving aggressively into a marketplace previously the reserve of state-funded bodies. Many campus universities are forced to downsize, in response to these factors and to the increasing availability of online learning resources. A demographic dip in the traditional age-range [§3.1] has tipped the balance towards older students, who are typically home-based, part-time and in work; what these clients demand is flexible learning without the necessity for frequent journeys to campus. The mainstream universities which survive in this climate have done so through business partnerships with commercial companies and with regional and community bodies. Although large parts of their main campuses have been sold off, their presence has been extended through franchises with local colleges and high street 'learning shops'. The

Table 8.3.2 – Mapping of Development Strands to Contextual Trends: Corporate Phase (2010-2025)							
Development Strand and Phase Instantiations		Contextual Trends					
		Epistemo-logical	Techno-logical	Peda-gogical	Social & Cultural	Economic & Political	Organis-ational
A	more effective (and profitable) management of courses and resources			✓			✓
B	uncapping of tuition fees increases diversification – and specialisation – of HE sector					✓	
C	restrictions on state funding of HE to economically strategic initiatives				✓	✓	✓
C	identification of changing knowledge economy needs establishes procedural knowledge as *de facto*	✓		✓	✓		
D	development of a highly competitive global market					✓	
E	physical universities increasingly under threat from corporate and Virtual Universities, leading to further closures of courses and departments					✓	✓
E	growth in part-time contract home-based working; universities employ fewer full-time staff to work on site			✓			✓
F	greater integration with regional tertiary enterprises and commercial partners				✓	✓	
F	decline in core (UG) business and research incomes leads to break-up of many universities and the franchising of prestigious university brands to colleges and learning centres				✓	✓	✓
G	prestigious universities move to the provision of specialist PG courses and contract research					✓	✓
H	ICT infrastructures investment switched to accommodate mobile, flexible and blended learning			✓	✓		✓
H	improved digital watermarking, usage tracking and automated 'pay per view' systems minimise IPR theft and stimulate commercial learning materials market		✓	✓		✓	
H	simulations, 3D virtual worlds and self-managed learning supplant didactic methods		✓			✓	
H	continuing growth of open content course materials and RLOs		✓	✓	✓		
I	demographic changes (falling proportion of school leavers and later retirement) tip the balance from 'conventional' to older/part-time students (mostly in work)				✓	✓	
J	'personalisation by participation' becomes an important criterion in consumers' choice of course products			✓	✓	✓	✓

Table 8.3.3 – Mapping of Development Strands to Contextual Trends: Neo-corporate Phase (2025-2040)								
Development Strand and Phase Instantiations		Contextual Trends						
		Epistemo-logical	Techno-logical	Peda-gogical	Social & Cultural	Economic & Political	Organis-ational
A	scope of institution-based senior management reduced; decision-making more collective and distributed						✓
B	state funding of mass education entirely by eVoucher; greater employer contributions					✓	
B	state funding now constitutes a minor part of HE turnover					✓	
C	improved learner achievement profiling leads to decline of formal qualifications (as external to work contexts)		✓	✓		✓	
D	emergence of complex, dynamic, transient learning agencies and services		✓	✓	✓	✓	✓
D	prestigious university names remain as brands and quality kitemarks					✓	✓
E	static, centre-based provision now constitutes less than half of the time spent on learning			✓	✓		✓
E	HE learning specialists spend less than half their time in physical centres			✓			✓
E	only a very small number of physical universities remain						✓
F	development of networked 'multiversities', 'wikiversities', 'communiversities' and corporate knowledge exchanges	✓	✓		✓		
G	research conducted almost entirely on contract basis by virtual teams					✓	✓
H	all learning is now personalised – using ISAs – from a vast palette of RLOs		✓	✓	✓	✓	
H	24/7 ubiquitous connection and ambient systems erode boundaries between work, learning and leisure		✓	✓	✓		
H	didactic methods largely disappear			✓	✓		
H	development of intelligent software agents (ISAs) leads to lower levels of (expensive) face-to-face tutoring		✓	✓		✓	✓
I	HE provision extends from late primary to post-retirement age, requiring diversified learning provision and resources		✓	✓	✓		✓
J	direct social and community involvement in learning provision, content, support and process becomes the norm			✓	✓	✓	✓

ubiquitous use of eLearning in a variety of forms is now standard, facilitated by solutions to the problems of intellectual property rights (IPR) for digital materials [§7.3.2] and by the falling cost of versatile mobile technologies.

8.3.3 Development Strands in the Neo-corporate Phase (2025-2040)

In the Neo-corporate Phase (2025-2040) the Fordist corporations of the past have been largely replaced by transient and flexible networked alliances of interested parties [§3.4.1; §3.6; §6.3.4; §7.3.3]. Boundaries between public and private are no longer easy to identify, and only the few prestigious universities which remain can claim to be 'institutions' with physical locations – but to most learners they are eLearning brand names rather than actual places (in a Baudrillardian sense, the signifiers rather than the signified [§6.3.2]). With the decline of physical corporations has come the decline of proprietory companies. Some remain as global brands, but behind these facades are multiple shared-ownership collectives; the heavy commercial focus of the Corporate Phase is being displaced by communitarian and charitable involvement. The old regional campuses have gone but their regional and community missions remain, being now the business of interconnected knowledge development and transfer groups. Learners in the mainstream majority rarely attend formal classes in large buildings, but instead fit in meetings with learning coaches and motivation-building groups (rather akin to Weight Watchers or hobbyists' events) in neighbourhood or workplace centres [§7.3.3]. A combination of high oil costs and environmental taxation have in any case made longer-distance travel expensive. Networked 'multiversities', 'wikiversities', 'communiversities' and corporate knowledge exchanges are the *de facto* creators and custodians of

working knowledge [§7.3.2]; this is the collective product of the "*wisdom of crowds*" [§5.3.4] rather than the rarefied stuff which was previously the preserve of academic scholars and university libraries. Education professionals still exist – indeed, they are key to these new developments – but their roles and employment patterns have radically changed. Personalisation of learning is the norm, and highly sophisticated intelligent software agents (ISAs) manage individual pathways through vast collections of reusable learning objects (RLOs). Tiffin & Rajasingham's JITAITs have arrived [§5.3.4].

8.4 Tertiary Education 2025

8.4.1 Components of the new learning landscape

The new learning landscape model details the nature of British Tertiary Education in 2025, at the end of the Corporate Phase. It comprises five main components, each with subcategories, some of which have already been mentioned in earlier discussion in this chapter. The components are summarised in Table 8.4.1 and discussed in more detail in the sections which follow.

8.4.2 Students

The relatively small number of **full-time students** are academic high-flyers, either from affluent backgrounds or supported by bursaries or commercial sponsorships. They are based in *elite universities* studying *accredited courses* at undergraduate or postgraduate levels in any subjects or academic disciplines for which there is a market. They have *conventional face-to-face*

contact, mainly with *teachers who also research*, and postgraduates have some contact with *researchers who also teach*. Complementing taught sessions are *blended learning* using *in-house /specialist* and *eLearning branded* materials and *flexible/mobile /domestic* contact.

Table 8.4.1 – Components of the New Learning Landscape				
Students	Staff	Providers/ Locations	Learning Activities	eLearning Materials
• *Full-time students* • *Part-time students* • *Corporate trainees* • *Non-formal students*	• *Researchers who also teach (and pure researchers)* • *Teachers who also research* • *Learning transfer specialists* • *Educational materials developers* • *Learning coaches* • *Corporate trainers*	• *Elite universities* • *Old regional-mission comprehensive university campuses* • *Virtual universities* • *Corporate universities* • *Regional learning hubs* • *Franchised colleges* • *Community learning centres* • *Flexible/mobile/ domestic*	• *Conventional face-to-face* • *Fully online* • *Personalised pathway* • *Blended learning* • *Peer-to-peer/non-formal*	• *Accredited course* • *eLearning branded* • *In-house/ specialist* • *Ad hoc/amateur*

Part-time students make up the bulk of learners in 2025, but they are of all ages, circumstances and backgrounds, reflecting how continuing and lifelong learning has become the norm. Typically, they are in part-time employment or have negotiated with their employers for flexible remission of duties in exchange for temporary pay reductions. Some are on day or block release, or they have *flexible/mobile/domestic* videoconferencing contact with the online support centres of *virtual universities*. Those attending *franchised colleges* are studying at undergraduate or foundation degree level and have contact with *teachers who also research*. Others are taking *accredited courses* in applied and vocationally-oriented subjects with the help of *learning coaches* in

community learning centres. *Blended learning* and *personalised pathways* through *eLearning branded* materials accompany *peer-to-peer/non-formal* learning and *flexible/mobile/domestic* contact.

Corporate trainees are not an exclusive group, but share much in common with part-time students. What marks them out is that their education and training is directed and provided by their employers, and tends to be very specifically focused upon work applications. Some study in *corporate universities* which employ corporate trainers for *personalised pathway* and *blended learning* using *in-house/ specialist* and *eLearning branded* materials. There is some *flexible/mobile/domestic* access but less *peer-to-peer/non-formal* contact than other learners.

Non-formal students are not registered on *accredited courses*, and include 'lifelong' and older learners. They study applied or vocationally-oriented subjects, or out of personal or leisure interest. Some make use of *community learning centres* and *eLearning branded* products, but others rely on *peer-to-peer/non-formal learning*, with *flexible/mobile/domestic* access to *ad hoc/amateur* materials obtained through social and black market sources.

8.4.3 Staff

Working in research centres on the well-funded campuses of a small number of *elite universities* are **researchers who also teach** – a relatively rare breed of 'first division' academics at the forefront of their disciplines. They conduct blue-sky and applied research projects and participate in some postgraduate/doctoral teaching and tuition. In addition they liaise with

teachers who also research to inform the development of new *in-house/ specialist* educational materials. Some of their research centre colleagues are *pure researchers* who have no educational role.

Teachers who also research are 'second division' academic subject specialists. Some work in the teaching and learning centres of *elite universities*, leading the teaching of *full-time students*, liaising with *researchers who also teach* and participating in some research projects. However, the majority of staff in this category telework on contract to *virtual universities* and/or work in *franchised colleges* where they support *part-time students* and liaise with *learning transfer specialists*.

On a par with *teachers who also research* are the **learning transfer specialists**. With research and educational experience and working rather like educational journalists, they monitor new research developments in their subject area, in liaison with *pure researchers, teachers who also research and educational materials developers*, to inform the creation of new eLearning resources. Many are freelance or employed by the *eLearning brand* corporations.

Educational materials developers comprise pedagogical specialists, graphic and media designers and technical specialists and work with *learning transfer specialists, learning coaches* and the *eLearning brands* to create and update materials for learners and tutor support resources for *learning coaches*. They work in freelance teams and are contracted by the *eLearning*

brands or other corporate clients for the creation of *in-house/specialist* learning and support materials.

Learning coaches have well developed education and counselling skills, and many are ex-schoolteachers or Further Education college lecturers. They work freelance or are employed by *franchised colleges* or *community learning centres* to support *part-time students* through group and individual contact using tutor support resources from the *eLearning brands*. They employ *personalised pathway* and *blended learning* approaches in *conventional/face-to-face* and online modes.

Based in *corporate universities*, **corporate trainers** are persons with education and training skills and experience of corporate work practices. They deliver *conventional/face-to-face* education and training, *personalised pathway* and *blended learning* using *in-house/specialist* and eLearning branded materials.

8.4.4 Providers and locations

Insulated by their wealth and reputations the prestigious world-class **elite universities** have survived the economic and technological winds and emerge almost intact. Their income is assured from research grants from European Union, government and commercial sources, together with the high tuition fees they can command in their international recruitment of students. They are staffed by *teachers who also research* and *researchers who also teach*, to provide traditionally taught *accredited courses* at undergraduate and (mainly) postgraduate levels, typically for *full-time students*. As reputation

and branding are of crucial importance in the global market, these universities are in prestigious and extensively promoted transnational groupings, such as the existing *Universitas 21* (U-21 Global, 2007) and the *Worldwide Universities Network* (WUN, 2007). Raschke (2003) makes the analogy with trans-oceanic liners: when supplanted by air travel in the 1950s, the largest and grandest were converted into floating hotels for the wealthy.

On the **old 'regional-mission comprehensive' university campuses** are now *franchised colleges*, research centres, science/technology/business park enterprises, *regional learning hubs* and the small administrative bases of some *virtual universities*. The names of a few regional universities continue in the branding of downsized 'university colleges' providing specialist courses in partnerships with *elite universities,* but the great majority have simply been priced out of their traditional missions. Some of the universities which sought survival through mergers (for example, Victoria University of Manchester and UMIST (Manchester, 2007)) have managed to retain postgraduate schools and some related research functions. Others, which formed strategic partnerships to establish enterprises such as medical schools – for example, Hull with York (HYMS, 2007); Brunel with Buckingham (MacLeod, 2005b) – have seen their specialist offspring thrive as their own generic provision declines. Although a far cry from their previous identities, the holding companies that continue are financially viable and make good business sense to their corporate managers.

Virtual universities are staffed by *teachers who also research* and *learning coaches*. They provide a variety of typically vocational sub-degree,

undergraduate and postgraduate *accredited courses*, typically to *part-time students*. These are offered online through *personalised pathways* and complemented by *blended learning* in franchised colleges. Some *virtual universities* have established commercial partnerships with *eLearning brands, corporate universities* and the *elite universities* and some have small administrative bases on *old 'regional-mission comprehensive' university campuses.*

Corporate universities are based in training centres on work premises and also online. They are staffed by *corporate trainers* to support in-house training and some are in commercial partnerships with *virtual universities* and the *eLearning brands*.

Jointly funded by central and regional government and the private sector, the **regional learning hubs** are organisations supporting public access learning, community and local business development. Based upon existing learning partnerships operating under the aegis of the Learning and Skills Council (Learning Partnerships, 2007), they are managed through franchised colleges and community learning centres.

Some of the **franchised colleges** are privately owned by the *eLearning brands*, but most receive regional government funding and fee income from students' Individual Learning Accounts. They cater for the volume market in Higher Education, franchising *accredited courses* at undergraduate level from *virtual universities*, *elite universities* and the *eLearning brands*. They are staffed by *teachers who also research* and *learning coaches*.

Community learning centres are small local centres staffed by *learning coaches* to support a variety of educational and community activities, mostly at sub-degree level. Many centres combine catering, sports and recreation facilities. Some are located within old school buildings which have been transformed into social and community centres; others are commercially owned as 'high street' franchises for the eLearning brands. These physical centres also have virtual manifestations as 'gated communities' within 3D virtual worlds [§5.3.3]. Here, the avatars of members of the centre who are not physically present can still socialise, participate in study groups and consult their *learning coach* avatars on a flexible basis.

The **flexible/mobile/domestic** use of portable ICT devices is commonplace and particularly well suited to the *part-time students* who make up the majority of learners in Tertiary Education. In addition to the accessing of eLearning materials and activities these devices are used for leisure and for peer-to-peer communication.

8.4.5 Learning activities

Five types of learning activities are defined in Table 8.4.5

Table 8.4.5 – Definitions of Learning Activities	
Activity	Definition
Conventional face-to-face	Learning conducted through lectures, seminars and tutorials.
Fully online	The remote delivery of an *accredited course* or other programme of study with no *conventional face-to-face* contact.
Personalised pathway	The selection of options to suit the needs of individual learners, made within an *accredited course* or other programme of study and typically employing reusable learning objects and/or *blended learning.* Intelligent software agents and *learning coaches* may assist in the determination of the pathway.
Blended learning	A combination of *conventional face-to-face* and online learning, often incorporating *personalised pathways.*
Peer-to-peer/non-formal	Learning which is undertaken by learners not registered on *accredited courses* and typically using *flexible/mobile/domestic* access to *eLearning branded* and *ad hoc/amateur materials.* Social networks [§5.3.4] support all the above categories of learning activities, but are particularly important in this one.

8.4.6 eLearning materials

Four types of eLearning materials are defined in Table 8.4.6

Table 8.4.6 – Definitions of Learning Materials	
Materials	Definition
Accredited course	A formal course (typically with considerable optionality) leading to a nationally recognised qualification.
eLearning branded	Materials (*accredited courses* and reusable learning objects) produced by internationally-promoted 'designer' brands owned by corporations including *elite universities* (*e.g.* Harvard, Yale) and 'edutainment providers' (*e.g.* AOL Time Warner, Microsoft) who sponsor sports and youth culture. Top brands maintain extensive online aftercare and subscription learning support services.
In-house/specialist	Materials produced for internal corporate use by corporate universities and *elite universities*, so not externally available.
Ad hoc/amateur	Materials (mainly reusable learning objects) produced by individuals or local 'cottage industries'; some are cheap versions of *eLearning branded* materials.

8.4.7 Relationships between components

Figure 8.4.7 illustrates key relationships between students and providers.

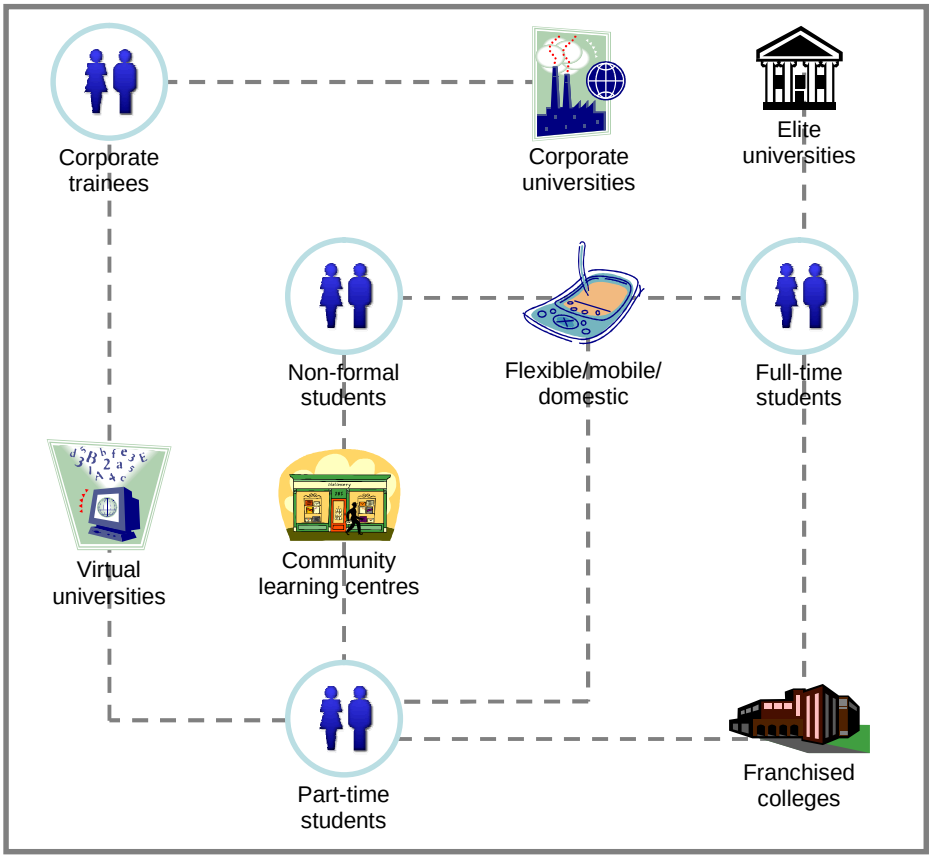


Figure 8.4.7 – Student-Provider Relationships

8.5 Discussion

Any view of the future of education must be multi-faceted in order to sufficiently reflect the complexity of inter-relationships which exist, and earlier chapters have attempted to analyse the key factors which have been incorporated into this new learning landscape. The difficulties of making a multi-faceted prediction which extrapolates from emergent trends is not only that such trends may progress at different rates, but that developments in one area may have impacts upon others; this makes the chronology of events particularly difficult to forecast. However, the siting of the new learning landscape within a broader progression of developments has increased the

likelihood that the detailed predictions of Tertiary Education in 2025 are well grounded in what has gone before, and anticipate the continuing trajectories of the final, Neo-corporate Phase. In this respect the model consolidates the various scenarios and projections discussed in Chapter 7, but also makes an original contribution to the field.

The view of the future which has been presented might be seen by some as dystopian (although by others as a business opportunity). The factors grouped in Figure 8.2 under the headings of Political and Economic, Technological and Educational, and Commercial, are external pressures over which individual universities will have no influence; however, at the Organisational level, today's universities do have the potential for control if they are prepared to act radically.

Chapter 9 identifies 'winners' and 'losers' in the new learning landscape model and returns to the questions posed in Chapter 2 regarding a crisis of mission. It looks beyond the Corporate Phase into the more speculative territory of 2025-2040, predicting further radical transformation, but with a perhaps unexpected outcome.

Chapter 9 *A New Mission*

> *Thirty years from now, the big university campuses will be relics. Universities won't survive… Do you realize that the cost of Higher Education has risen as fast as the cost of health care? … Such totally uncontrollable expenditures, without any visible improvement in either the content or the quality of education, means that the system is rapidly becoming untenable. Higher Education is in deep crisis.*
> Peter Drucker (in Lenzner & Johnson, 1997, p.7)

9.1 'Winners' and 'Losers'

In the model of Tertiary Education in the previous chapter some players might be seen to have gained at the expense of others. As the model can only be a schematic attempt to describe the complexities of the future learning landscape, it is permissible at this level to consider 'winners' and 'losers' in mutually exclusive categories.

The first winners will be students of all types: presented with a much wider and more flexible variety of learning opportunities which engage them actively in situated learning and collaborative activities, helping to underpin their understanding of abstract concepts. Local communities will also gain, as they are empowered to develop involvement in education and training and to enhance community identity and functioning. *Elite universities* will be seen to have gained important freedoms from central government control by setting their own fee levels and operating more entrepreneurially as educational

corporations. *Virtual universities* will find benefit from the revenue of learning credits and the popularity of reusable learning objects, although they may find themselves in an increasingly crowded and competitive market. Finally, *educational materials developers* and *eLearning brands* will be able to use the greater return on investment from reusable learning objects to expand their aftercare services and to develop their share of the learning market.

National government will be a major loser of its centralised powers, as voters demand greater consumer choice in Education. National quality assurance bodies, such as the Qualifications and Curriculum Authority and the Quality Assurance Agency for Higher Education, will lose their monopolies over qualifications and educational benchmarks as the *eLearning brands* establish *de facto* market standards. The *old 'regional-mission comprehensive' universities* will have been priced out of the game and forced into roles as holding companies leasing their facilities to knowledge enterprises. This fate will be shared by many Further Education colleges and upper Secondary schools, restructured into *franchised colleges* and *community learning centres* – although like the universities, some specialist academies and 'sixth form colleges' might survive as local brands offering specialist facilities.

9.2 The Final Crisis?

In Chapter 2 the question was asked whether the University is entering a new crisis which might prove to be its last. The views of Tehranian (1996), Readings (1996) and Preston (2001a) were discussed: these are uniformly pessimistic as to the continuation of campus universities in their present

form, and the weight of evidence presented elsewhere in this thesis points to the same conclusion. However, the key question is whether the episteme of the University can continue separately from the present residential campus paradigm. The continuing success of the Open University – with the largest student population of any institution in the UK but with by far the smallest campus – seems to indicate that Higher Education is not constrained within a particular physical embodiment. Moreover, evidence examined in Chapter 4 supports the idea that, given a sustainable business model, virtual universities can thrive. It can be argued, however, that existing virtual universities, such as Phoenix and Western Governors discussed in Chapter 7, restrict themselves to profitable courses and the pursuit of similarly limited research, and they do not match the distinctive features of traditional institutions identified by Jarvis (2001), discussed in Chapter 2. The nub of the question is what defines the University. The three core functions of the University identified by Noam (1996) are:

- knowledge creation and validation
- knowledge preservation
- knowledge transmission.

Noam did, however, see these functions as descriptions rather than definitions of what universities do, acknowledging that none was an exclusive preserve. Earlier chapters have examined substantial evidence of how ICT supports the creation and exchange of work-based knowledge known by Gibbons *et al.* (1994) as Mode 2. The vocational relevance of such knowledge has made it increasingly in demand by Higher Education students, and consequences of the slow response of traditional universities have also been explored. As noted in Chapter 6, Barnett (1999, 2000) takes the view that

although contemplative knowledge will be displaced by a plurality of performative knowledges, this does not necessarily imply an 'end of university'. It has been argued in Chapter 6 that there is likely to be a continuing need for the validation and custodianship of new knowledge, so that although Higher Education may change radically in other ways, the scholarship function of academic specialists will remain. It is in the creation of knowledge through systematic research that universities will find themselves in a weaker position. In 2006, Cambridge was placed as the world's top science university on the basis of a score of 7.6 citations per academic paper; by the same criterion, the Max Planck Institute in Germany was placed top of the non-university science research organisations with a score of 12.4. Figures for technology were 3.2 for the top university (Massachusetts Institute of Technology), compared with 4.1 for the top non-university organisation (AT&T corporation) (THES, 2006). Knowledge preservation is the second of Noam's core functions. In the European medieval period this was the prerogative of the teaching monasteries which were the model for the first British universities. The technology of the medium – the physical manuscript – made it a rare commodity which needed to be safeguarded in a library and read by a select few. The technology of the new media is such that much knowledge is now widely and freely available to everyone; thus, the University has been reduced to just one of a number of players in the performance of this function. Noam's third core function is knowledge transmission – and again, the monopoly once held by the University is being eroded by the growing take up and effectiveness of eLearning. If universities are losing their monopoly of these core functions then it could be argued that they are losing their usefulness; an alternative view is that universities need

to adapt to a new mission which reflects changing times and technologies. In the past the University was necessarily a self-contained institution, becoming through the twentieth century more vertically integrated like a Fordist organisation with all functions provided in-house, and British universities enjoyed considerable autonomy in this period. The analysis in Chapter 3 has revealed substantial changes to this *milieu*, Chapter 6 identified options for senior managers which were relevant to the needs of the Corporate Phase, but as the University enters the next phase it must adapt to a more interdependent environment in which unilateral relationship with the state is replaced by multilateral partnerships. An anticipation of the possible nature of this new mission follows in the final section of the thesis, which anticipates developments in the Neo-corporate Phase identified in Chapter 8. Here, the commercially-focused corporate landscape of 2025 is beginning to adapt to new styles of social organisation which, like the notion of glocalization (Robertson, 1995) are simultaneously global/virtual, and community-focused at local level.

9.3 Towards a New Mission: higher education in the neo-corporate phase

Far from being under threat, Delanty (2001, p.158) regards universities as *"on the threshold of a new beginning, which can be characterised as the renewal of the cosmopolitan project".* An important component of the knowledge society, he maintains, is the extension of knowledge into the cultural domain as part of a reflexive process.

> *In this reflexive application of knowledge to itself, something else is also being generated: the production of new cognitive*

> *fields. These extend beyond knowledge as such, that is knowledge in the sense of what is or what might be known, bodies or branches of knowledge or what might be more generally characterized as information, to include new schemes of classification in the sense of cultural models making possible the interpretation of the natural, social and subjective worlds. In the knowledge society, cognitive processes not only produce knowledge as content but also give rise to new cognitive structures and identities, a deeper and more far-reaching shift in horizons.*
> (*ibid.*, p.152)

Hence, while the University may have lost its monopoly position as knowledge producer, Delanty maintains that its role is *"enhanced, not undermined, in the knowledge society, for the university occupies a space in which different sources interconnect"* (*ibid.*, p.152). To some extent, this role anticipates the wikis, folksonomies and collabularies discussed in Chapter 5. But Delanty's concept of reflexivity in a refashioned mission goes further than this, embracing 'the cosmopolitan project' which has replaced the Modernist bond between University and state, and taking over the role of the state in *"giving society a cultural direction"* (*ibid.*, p.155).

Delanty draws upon Barnett's (1999, 2000) idea of the university in a future of supercomplexity. This supercomplex world is one of epistemological and ontological uncertainties which defy lay attempts to understand it, a rootless Postmodern and post-historical era of competing narratives which have swept away old beliefs and touchstones. For Barnett, the resulting 'epistemological pandemonium' is the opportunity for Education to *"create epistemological and ontological disturbance in the minds and in the* being *of students"* (*ibid*., p.154). The University must progress past the transmission of knowledge (a thing of Modernism), to *"enable students to live at ease with this perplexing*

and unsettling environment" (p.154), and its wider mission is to help society come to a more secure understanding of its supercomplex *milieu*.

This thesis shares the view of MacDonald-Ross (2003) that Barnett's notion of supercomplexity is loosely described and not fully convincing. Barnett's Postmodern orientation also fails to embrace some of the practical contextual issues discussed in Chapter 3; MacDonald-Ross lists Government and European policies, for-profit universities, eLearning and the greater use of ICT. Barnett's selective viewpoint is also apparent in Delanty's thesis. Here, there seems an assumption that the products of the knowledge society are in some way 'technological' and will need to be enculturated by the University in order to be understood – as though 'digital culture' was in some way not really 'true culture' and ICT was only used and understood by a minority (Delanty's work clearly precedes Prensky's (2001) notion of digital natives and the rise of social computing). Both Barnett and Delanty also appear to assume that universities will continue in much the same way as at present – or at least, this is not a topic they discuss at any length.

Wildman (1999) presents a different view of a new mission for the University, and one which fits well with the idea of 'transient and flexible networked alliances of interested parties' in the Neo-corporate Phase. Universities, he says, are currently *"knowledge control vehicles for the dominant orthodoxy"* (p.244). Against a model of five types of knowledge, they concentrate on only the first three: practical knowledge (*techne*), propositional or scientific knowledge (*scientia*), and experiential knowledge (*praxis*). The neglected areas are: metaphoric knowledge (*gnosis*) and the knowledge of relationship and communication (*relatio*). The first three are exoteric – concerned with

knowledge of external things – but *gnosis* and *relatio* are esoteric, concerned with inner knowledge and what might be regarded as closer to wisdom. Wildman's new egalitarian role for Higher Education would be *"to harmonise diversity rather than centralise conformity"* (p.243), with an esoteric rather than exoteric focus, and concerned with growth and enhancement of the whole person rather than just cognitive development.

Taking all of these views into account, and within the context defined in the Neo-corporate Phase, it is envisaged that the new manifestation of the University will take the form of loose associations of networked enterprises, perhaps operating under the banner of prestigious university names that might once have been physical institutions. They will be dynamic and transient rather than static and permanent; this will not seem unusual, as advances in technology-supported communication will mean that collaborative groups no longer need to be 'under one roof' [§7.3.3]. Although global, charitable, liberal and egalitarian in purpose, they might retain a certain elite cachet, being largely the preserve of academic specialists, operating on a freelance basis rather than as employees. Unlike present-day universities (which are corporate employers), a many-to-many relationship between members and groups would be likely. As virtual academies, these associations might differ from the learned societies of the past in embracing open membership. Some might only exceptionally deal directly with the equivalent of undergraduate students, but would share more in common with 'blue-skies think-tanks' exploring the boundaries of knowledge and, as Delanty envisages, contributing to cultural as well as epistemological understanding, and perhaps embracing Wildman's esoteric forms. The Wikimedia Foundation

which oversees *Wikipedia* and the Wikiversity provides the closest current model: more like an 'academic ant colony' than a proprietary, centrally managed institution. Barnett (1999) observes that universities were originally associations of scholars rather than managed organisations with tightly defined purposes, and these new enterprises would share more in common with the original University of Bologna than with today's corporate, campus-bound institutions.

The previous chapter has presented a dystopian view of Higher Education in a Corporate Phase which seems to bring to an end the episteme of scholarship and collaborative seeking after truth which is at the heart of the university mission. But if the trends identified develop along the expected trajectories, it can be seen that this condition would be but a temporary one: a painful transition from corporate to neo-corporate forms of social organisation. This final chapter has set its sights further ahead to a time when the low-cost availability of intelligent learning tools and a rich variety of open content have made the production and sale of educational products and services unprofitable – effectively freeing Education from proprietary control. Moreover, the old boundaries between public, private and not-for-profit bodies have been eroded, together with the paradigm of organisations as discrete and stable entities. Hence, the notion of a 'crisis of mission', in the sense of the defined purpose of an institution, will become largely irrelevant; but in these times the episteme of the University as a community seeking after truth and serving the community will endure, and will thrive again in new surroundings.

These new environments offer universities unique opportunities, alongside the obvious threats. So, too, do the more democratic distribution of scientific and scholarly production; the crumbling of the walls that once protected academic citadels, so that universities and communities grow into each other; and the emergence of global learning economies and of new cultures, and technologies, of Higher Education. The genius of the University lies in its adaptability; in that lie its real resilience and true continuity. And it is in that spirit that new definitions of general education should be constructed, by confronting without fear the realities of modern – or even post-modern – Higher Education, by looking to the future – not by looking back with lingering regret to a probably imagined past.

(Scott, 2002, p.70)

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