TIME AND KNOWLEDGE IN THE INFORMATION ECOCY

Robert Hassan

Abstract

This article considers the effects of neoliberal globalisation and the information technology revolution upon the production and dissemination of knowledge within the university. More broadly, it argues that the nexus between globalisation and computerisation is creating an ‘information ecology’, a growing environment of interconnectivity that has speed and commercialism as its principal dynamics. The paper argues that such an environment is creating a new ‘knowledge epoch’, one that valorises, more than ever before, instrumentalised knowledge over critical forms, and is producing a society that is increasingly unable to think reflexively about the issues and challenges that confront an increasingly complex world.

Introduction

What effect does time have upon the kinds of knowledge a given society produces? No effect? Some effect? Don’t know? Or does it depend? Depend upon what? The question is a difficult one and this article seeks primarily to offer some provisional answers through a synthesis of recent work in this area. The question, however, is increasingly pressing as globalisation and the information communications technology (ICT) revolution continue to affect our relationships with time and space in ways that are not fully comprehended.

We may begin with some more questions: Is it better to ‘acquire’ and ‘transmit’ knowledge slowly or quickly? Do you ‘lose’ something in the accelerated mode, something that is ‘captured’ and ‘understood’ better through the processes of what the German philosophers of the Enlightenment called bildung, that is to say, through a slower, unified and more cumulative production of knowledge? Or, again, it depends? In Tyranny of the Moment, Thomas Hylland Eriksen makes the ostensibly reasonable observation that ‘Whatever can be communicated fast should be communicated fast’ (2001, p. 152). Technically speaking, however, almost everything can be communicated fast, and is increasingly being required to be: but will it still be understood? What about those forms of knowledge that may require more time to develop and communicate effectively? How do these forms ‘compete’ in a real-time
information society that is contributing to what James Gleick (2000) calls ‘the acceleration of just about everything’, a world already deep in an ocean of data and information? To try to gain a useful perspective on these questions, we can begin with an analysis of how we experience and perceive time.

Time (and Space)

Over the last decade or so, much of the relevant literature on social theory, globalisation and the ICT revolution has exhibited a fairly common concern—that of our fast-changing relationship with aspects of time and space. David Harvey was one of the first theorists to give critical attention to the matter in The Condition of Postmodernity (1989, pp. 240–308). Harvey called the process ‘time-space compression’. Principally he was concerned with analysing the shift to ‘postmodernity’ and based his explanation on changes in the economic and technological structures of society, and how these had the effect of ‘compressing’ time and space. A year later, Anthony Giddens spoke to the prevailing zeitgeist in The Consequences of Modernity (1990). Here he introduced the concept of ‘time-space distanciation’ to argue that the processes of modernity and modernisation in the Industrial Revolution ‘dis-embedded’ individuals from the more diverse and localised conceptions of time and space that existed in pre-modern times. Through new communications technologies such as the telegraph, railways and the increasingly pervasive influence of clock-time, concepts of time and space were becoming (almost) universal constants. Ordinary people, Giddens argued, were for the first time able to conceive of the world as one space that was metered by a single time—clock-time.

Although these authors use the terms ‘time’ and ‘space’ in their theories, they tend, in analytical terms at least, to dwell on concepts pertaining more to the latter than the former. The subject of time is largely treated descriptively and historically. Giddens writes on the influence of clock-time upon society and its ‘dis-embedding’ effects on the late feudal peasant and industrial worker. Harvey (1989, p. 201), in his rather more nuanced treatment, concentrates on how the multiplicities of temporality that permeated preindustrial life, such as seasonal time and the body’s own temporal rhythms were ‘bundled up’ into the logic of clock-time. This is perhaps understandable as clock-time until very recently had been the dominating meter of much of life, culture, economy and society. Even in the early 1990s, new ways of experiencing temporality such as in ‘real-time’ were not given much attention by social theorists. This was territory still colonised almost exclusively by the computer programmer and systems analyst, and viewed invariably from a technical efficiency perspective.

When the ideas of globalisation and the ICT revolution did begin to gain currency in the social sciences and humanities, questions of
space and spatiality still dominated. In particular, they were about new communications technologies such as computers, satellites and fibre optics, 'annihilating' space in the creation of the 'global marketplace'. However, the situation began to change swiftly as the 1990s approached their midpoint. The Internet and the influences of the 'network society' more generally were beginning to reorganise, if not revolutionise, the time-space dimensions of people's lives on a scale and with an intensity not seen since the Industrial Revolution. Manuel Castells grappled with the concepts of time and space in the first instalment of his three-volume work, *The Information Age: The Rise of the Network Society* (1996). As the title would suggest, when discussing time and space, Castells treated globalisation and ICTs as central. He remains fairly cautious, however, when he writes that the effect of globalisation and ICTs on time 'is too recent and has been too narrowly experienced at the time of writing' (1995) to have been the object of rigorous, reliable research' (1996, p. 358). Accordingly, much of his discussion on temporality centres on the twenty-four hour cycle of global stock market trading, of just-in-time production techniques and of changing employment patterns, such as 'flexitime' (1996, pp. 429-46). However, he cannot resist tantalising the reader by speculating that globalisation and the information age are heralding the domination of real-time, or what he calls 'timeless time'. More thought provokingly again, Castells' sociologically honed intuition tells him 'linear, measurable, predictable time is being shattered in the network society, in a movement of extraordinary historical significance' (1996, p. 433).

What does real-time constitute, now, in 2002? Before we look at what I argue to be the 'cause and effect' of real-time in terms of the production of knowledge, it is necessary to devote some brief discussion to the history of clock-time in culture and society.

The Rise and the Commodification of Clock-time

Clock-time is still how most people experience time today. Indeed, so commonplace has our relationship to the clock become that it almost seems like a force of nature. So deep is the permeation and domination of the clock that the fact that it is a social construction is often obscured. There have been other socially constructed ways of marking temporal duration. For tens of thousands of years, many differing and irregular temporalities permeated the lives and experiences of preindustrial humanity. Time as a regularised 'measure' is a relatively recent human invention. Prior to the clock, time was not something that could be consciously spent, passed, wasted, saved or something one tried to keep pace with. It was a practice that related in culturally significant ways to work tasks, to seasons, to lunar phases, to movements of the planets and the stars, to rites of passage, initiation ceremonies and so on.

The narrowing of the range of temporalities that exist into a measured, singular and universal form of time is simply another social
construction. More particularly, it stems from the Western tradition and the logic of Western science with its underlying search for meaning and reality through mathematical intelligibility. However, the domination of clock-time was not something that was rapid and all encompassing. It took time. Mechanised clocks first began to appear in Europe at the end of the thirteenth century, and for half a millennium their spread across society was fairly desultory. For the most part they were bulky and mechanically unreliable contraptions. Even with the quantum technical improvements that came about with the invention of the pocket-watch, seconds calibration and anti-shock devices (all before the eighteenth century), timepieces were still largely viewed as ingenious novelties and status symbols, as opposed to something to live by and measure one’s days against.

This began to change rapidly with the Industrial Revolution. The system of logic that developed the concept of measuring time in a forward, linear motion was the same system that helped to generate the birth of the European Enlightenment and the revolution in science. Importantly, it was also the logic around which industrial capitalism was organised. Clock-time came into its own at this point and very quickly changed from being a gold-encased curiosity in a gentleman’s pocket, to becoming the pre-eminent scheduler, measurer and organiser of ordinary people’s daily lives. As increasing numbers were drawn from rural and village life into the logic of industrialism and clock-time, so, too, were they drawn from their pre-modern existence and from what Barbara Adam (1995, p. 12) called the ‘multitude of times that interpenetrated and permeated [their] lives’.

In short, as peasants became workers and as city life and factory work supplanted rural life and work, increasing numbers became synchronised to the rhythm of both clock and machine. So close fitting was the nexus between capitalist production and clock-time that time itself rapidly became a commodified ‘thing’. In retrospect we can see that this process of commodification was unavoidable under capitalism. For example, for the producer of a commodity to be able to compete in the marketplace, they had to produce it more cheaply and more quickly than their competitors. In a competitive environment there was no point (and no possibility if using wage labour) in producing something cheaply when it may take a long time to complete. Clock-time, then, quickly became a cost to production. Bundled into this time-cost factor were, of course, wages. Workers were hired on a timed basis and so, for the employer as well as for the employee, time literally became money, a commodity to be bought and sold on the marketplace.

The Industrial Revolution brought profound transformations to many aspects of life for those who lived through its initial phases. The ways in which the experience and perception of time had changed was a fundamental aspect of this. From abstract measure of temporal duration, clock-time began to embody the linear logic of ‘progress’ that emanated from Enlightenment thinking; it inserted itself deeply as the
scheduler and meter of people's hourly and daily lives, displacing many of the 'multitude of times' that comprised the temporal experiences of preindustrial people; and it became absolutely central to the functioning of capitalism, both as organiser of the processes of production and as a commodity itself.

**Knowledge Epochs**

We now have had well over two hundred years of this process. As capitalism developed and became more encompassing of culture, the economy and society, it also began to shape the forms of knowledge being produced. Capitalist society, through its prominent institutions such as schools, universities, the workplace and the media, shaped a great deal of our understanding about 'the way things are' and how they could be. They produced and disseminated the forms of knowledge that helped us make sense of the world. Other knowledges based upon other forms of production and other temporalities were displaced, lost or forgotten through the gradual domination of science-based knowledge. Much of this is well known. However, what is less well known or understood is the temporal aspect of this process. If we take clock-time to be as central to the functioning of capitalist society as are science, technology and commodity production—and that these play a large part in the forms of knowledge that society produces—then it is arguable that this knowledge has a *temporal dimension*, that is, it is also given shape and form by time, by linear, progressive and open-ended clock-time. Clock-time knowledge production, you might call it.

Across the English-speaking world and beyond, a surfeit of books, articles, policy proposals and laws have emerged over the last decade or so that deal with the arrival of the so-called 'knowledge society'. Implicitly or explicitly, the dawning of this new age is linked to the influence of new technologies, specifically, information technologies (for example, Reich 1992, Tapscott 1996, Burton-Jones 1999). This linking of 'knowledge' with 'information' is significant, I think, and is something I will return to. If one gets behind the veil of hype and rhetoric that surround information technologies, however, it is clear that almost every society, from the earliest civilisations, have been 'knowledge societies'. The development of writing, of the printing press and of the steam engine represented technological forms of knowledge that transformed societies. We can add to these, of course, the important non-technological contributions to what constitutes the totality of human knowledge by disciplines such as philosophy, religion, music, medicine and art. However, what differentiates what might be called *knowledge epochs*, and what determines what kinds of knowledge dominate in these epochs, is what Marx (1975, p. 181) called the 'forces of production' that 'condition the social, political and intellectual life process in general'.
What forms of knowledge were ‘conditioned’ by the clock-time ‘knowledge epoch’ of the industrial society, a society and form of work organisation that lasted from the late 1700s until very recently? I argue that the dominating and shaping forms of knowledge in this period stemmed primarily from the interaction between instrumental and critical thinking. I say ‘interaction’, because the world as we know it would not have developed without a deep and sustained dialectic between these two forms of thinking. Instrumental thinking is what gets things done. As Ronald Barnett (1997, p. 91) observed, instrumental thinking:

takes the world largely as given and attempts to find means of living ever more productively and efficiently in it...instrumentalism works within a horizon of ontological assumptions. The world is objectified: the task is that of securing effects in it and on it. Objects, events, situations, technologies, knowledges and persons are valued so long as they have a use value.

If this were the only form of thinking available to us, then modern humankind would probably not have lasted very long. Our capacity for critical thinking, developed in part from the traditions of Greek philosophy and the Enlightenment, has acted as an important check on the doubtlessly baleful world of pure instrumentalism. Critical thinking utilises our capacities for reflecting on ourselves and the systems in which we live. Through this lens of criticality we are able to appreciate that the world is not simply self-evident and given. This form of thinking provides the intellectual facility to counter purely goal- and action-centred forms, subjecting them to the test of reason and critical evaluation. Such critique would not be constrained by the ‘immediate’ and the ‘ontological assumptions’ that may stem from an uncritical reading of it. It would also draw upon other appropriate knowledges—that may be marginal or new, or old, or alternative—with which to add the critical dimension. A balance between the two is required and, indeed, the interactions between instrumental and critical forms of knowledge are sometimes, as C. Wright Mills (1970, p. 350) put it, ‘in effective touch’. These moments of ‘effective touch’, are, to quote Barnett once more, the optimal moments ‘of the creation of imaginary alternatives’ (1997, p. 6)—the times when humanity does its best work. It is these ‘moments’ that have pushed the frontiers of Western thinking forwards towards the many benefits that have been bestowed upon culture and society.

However, history shows that the balance between instrumental and critical forms of knowledge is not a ‘natural’ one. Under the specific interests that dominate capitalist societies, instrumental reason has exhibited a predisposition towards power concentration and domination (Foucault 1972, 1980; Agger 1992). On a day-to-day level, critical thinking has tended to get in the way of making money and of doing business. Over time, as capitalism became more complex and its domain more comprehensive, the critical dimension gradually became
an unequal partner in the dialectical balance. Theorists such as Theodor Adorno (1944/1986) and Herbert Marcuse (1968) had identified these trends towards instrumentalisation as long ago as the 1940s. However, we can see in retrospect that their world of Fordist capitalism and its clock-time temporality, relatively speaking, afforded both the space and time for the development of critical thinking. It did so, as we shall see, in ways not possible through the totalising nexus of neoliberal globalisation and the ICT revolution.

The Information Ecology

As Harvey hinted at, and as Castells was more explicit about, the unchallenged domination and permeation of linear clock-time was ‘shattered’ by the dynamics of neoliberal globalisation and the ICT revolution—a double revolution that began, not coincidentally, around the late 1970s. However, notwithstanding the vast and growing literature on neoliberal globalisation and the ICT revolution since that time, relatively little critical attention has been given to the deeply interpenetrative nature of these processes. Globalisation, as we presently experience it, could not have existed without the ICT revolution—and vice versa. So far, so obvious, one might venture. Somewhat less evident is that these convergent dynamics have shaped the exigencies and priorities of the other. The overwhelming preponderance in this interaction has rested upon private profit and the ‘free market’, a competition-driven fetish for faster and faster computers, and ever more dense networks of connectivity with the primary objective being the commercialisation and the commodification of ever more aspects of culture and society (Hassan 2000).

The ‘shattering’ of clock-time and its ‘extraordinary historical significance’ that Castells prefigured is only just beginning to emerge, and its consequences to make themselves felt. Digital capitalism has inserted a new temporality into our daily lives, one that is starting to displace the comprehensive dominance of the clock. This new temporal dimension is real-time. Some of the debate on its social, political and cultural effects has stemmed from the works of Paul Virilio who is credited with coining the term ‘dromology’, a neologism he uses for the study of speed (1986). Recently Virilio has concentrated his dromological analysis upon what he calls the ‘twin phenomena of immediacy and instantaneity’ that ICT-based real-time represents. He sees real-time as the ‘limit-acceleration’ of the tendency towards ever increasing speed in culture, economy and society (1995, 2000). Reaching the point of ‘limit-acceleration’ has resulted in a ‘fundamental loss of orientation’ in individuals and in societies, he argues (1995, p. 1). This represents a disconnection from the linearised temporality of clock-time through which specific perspectives on the world had been developed up until this point. Ron Purser (2000, p. 5) has developed this analysis and argues that the ICT revolution
constitutes a perceptually disorienting ‘new temporal regime’, one that ‘completely ignores and marginalizes our situated presence in lived time’.

I want to take these analyses yet further to argue that not only does ICT-generated real-time represent a ‘fundamental loss of orientation’ within a ‘new temporal regime’, it also represents an entirely new environment, an ‘information ecology’. This temporal ecology emerges and is sustained through increasing connectivity and the creation of an increasingly dense ‘network society’. This is an environment of real-time duration that consists not only of the Internet, but also of the growing number of devices and applications that can connect to it now, and will connect to it in the future. The thicket of connectivity is already substantial: real-time video over the Internet, email, SMS, ICQ, mobile phones, digital interactive television, pagers, mobile networkable laptops, PDAs, e-commerce and e-banking are all everyday network applications in the developed world. Importantly, this ‘ecology’ is equivalent in many ways to the natural and built ecologies that surround us in that we (as individuals and societies) shape them, and are in turn shaped by them. However, the preponderance of power at this point in time is with large corporations who shape the dynamics of this information ecology to the imperatives of the market. Accordingly, the information ecology which people largely adapt to is, as Purser (2000, p. 5) contends, ‘riven with technological and economic determinism logic’.

The real-time information ecology and its commercial techno-economic logic is becoming a growing domain in work, in leisure and in the home. It is producing what Rifkin (2000, p. 97) describes as ‘commercial networks of every shape and kind [that] weave a web around the totality of human life, reducing every moment of lived experience to a commodified status’. As I see it, the information ecology is not so much a ‘shattering’ of clock-time as a displacing of it, much as clock-time displaced the irregular temporalities that existed before the Industrial Revolution. This process also signifies a supplanting of the clock-time knowledge epoch with a real-time present, where new knowledge production is geared more than ever before to the highly instrumentalised needs of the economy and the market.

The Political Economy of Knowledge Production

The commercialisation of the university

A growing literature exists on the comprehensive changes that the higher education systems in most English-speaking countries have undergone since the mid-1980s (Slaughter & Leslie 1997, Lingard & Rizvi 1998, Marginson & Considine 2000). However, there is not the space available here to go over much that this literature covers, except some of the salient features that have characterised these changes.
Firstly, the higher education system has become a mass system, bringing in many students who at another period in time would have left high school for skilled or semi-skilled jobs in trades, services and administrative occupations. This ‘massification’ was a conscious policy direction to ‘upskill’ people for life and work in the new ‘knowledge based economies’ that were emerging from the global restructuring of capitalism. A broad and important effect of this was to orient the higher education system, to a much greater extent than ever before, to the needs of the national economy as a means of helping to provide the required skill levels and knowledge base. Orientation towards the market was strengthened through the universities’ need to seek increased amounts of their funding from the business sector to make up for the shortfall in an enormously expanded system. A major corollary has been a fundamental shift in the direction of the research undertaken in the restructured universities. Inquiry for its own sake is no longer seen as a pre-eminent or even desirable function. There has, instead, been a profound shift towards conducting the kind of research and knowledge production that government and business deem economically useful. Academic research has become what Slaughter and Leslie (1997, p. 114) call ‘resource dependent’. This resource dependence has been central to the shift towards what the authors call ‘academic capitalism’ where universities now have to compete and ‘engage in market and marketlike behaviour’ in order to attract resources (Slaughter & Leslie 1997, p. 114). This dependence is skewing research towards that which is commercially viable and profitable—instrumental knowledge production—and away from that which is commercially unviable or has little or no market potential. The result has been a gradual decline in the importance of the humanities and the social sciences, and a burgeoning of studies in tourism, hospitality, computer science, accountancy, marketing and so on. Even amongst those humanities and social science disciplines that survive (and sometimes even thrive), the cost has been to become more ‘entrepreneurial’ and ‘market responsive’, thereby biasing the discipline towards an instrumental logic in order to continue.

From the need to ‘engage in market and marketlike behaviour’, it is of course but a short step to universities considering themselves as businesses. As Marginson and Considine (2000, p. 28) show, this is precisely what has happened, with the ‘bottom line’ having a bearing on everything from curriculum development and employment practices to overseas campus expansion. Lastly, a major question in this literature is that most students need to work for a living as well as try to study. There is even less time to devote to study, and so coping strategies come into play. As a result, student attitudes towards the university experience have greatly changed over the last generation (McInnis 2001). In the main, students now tend to view the process of higher education much more instrumentally and pragmatically. The university is becoming a place and a process to get through as painlessly as possible. The prime
goal for most students is to make themselves ‘job ready’ for the new competitive employment market in the ‘knowledge economy’.

Yet it is important to note that the changes that higher education systems have undergone in most English-speaking countries (and beyond) since the 1980s are not all negative. The university has ceased to be an elite establishment, accessible only to a minority. The democratisation process, ironically, however, has come at the cost of linking the university closely to the distinctly undemocratic interests of business and the market. Even this is not all bad. Linkages with industry and with the market have brought a boon to certain knowledge disciplines such as biotechnology, computer science, medicine and many others. The difficulty is the uncompromising nexus between technology and market-based relations, which compels all disciplines to conform to the same profit-based model.

The informationisation of the university

The ‘information technology revolution’ and the universities came together early on. In keeping with their new status as semi-businesses, and taking into account the concomitant commercial regard for cost savings, efficiencies and achieving the ‘competitive edge’, most universities took to computerisation with enthusiasm. Those multinational ICT corporations Theodor Roszak (1986, p. 31) calls the ‘data merchants’ sold higher education the line that information technology would streamline and make more efficient almost every function in the university. From routine administrative tasks to the online delivery of teaching and learning, computers would revolutionise the ways universities worked. And they have. Universities are possibly some of the most densely informationised spaces in society, with the emerging ‘virtual universities’ being a logical outcome of this process. ICTs’ capabilities and the perceived opportunities afforded by the market are the primary influencers of much of what the university now does. As Robin Mason (1998) notes, ‘the rush to digitise, virtualise and globalise the campus’ is ‘driving pedagogical evolution in higher education’. The density of the informatisation process is indicated by the size of the business. By 2010 the global ICT market value in the education sector is predicted to be $US4.5 trillion. Unsurprisingly, the ‘data merchants’ view the education sector as a gold mine. A European Commission research paper entitled The Globalisation of Education and Training notes that:

with the help of ICTs, the idea of conquering the world market of educational products and services is increasingly attracting business-minded established institutions and profit-based new providers... The emerging market of educational products and service is generally regarded as a gold mine (2000, p. 9).

The creation of this gold mine can be traced back to the efforts of the ‘data merchants’ Roszak identified in the 1980s. The whole process, he
argued, was (and is) about ‘selling’. But what have universities been sold? One thing is an ongoing cost burden. Substantial and ever increasing recurrent spending on ICTs are among the most significant costs that the institutions have to bear. Far from computers representing a convenient way of replacing a few expensive teachers and tidying up some administration processes into the bargain, universities locked themselves into a logic and a recurrent cost structure they could not have imagined in the pre-digital 1980s. Customers’ need for constant upgrading, expansion of capacity or total replacement of obsolete systems has been a central feature of the ICT industry since the revolution began, and is what has made it the largest industry in the world.

A more important issue is the effectiveness of ICTs in the functions of teaching and learning. After almost two decades of serious investment in ICTs by the universities, amounting across the United States, Britain, Australasia, Canada and elsewhere to untold billions of dollars, there is no definitive, demonstrable and empirical research that show the benefits in improved educational outcomes. Indeed, much of the evidence points to the opposite. Todd Oppenheimer cites one study in the United States:

[The study] went so far as to claim that Reader Rabbit, a reading program now used in more than 100,000 schools, caused students to suffer a 50 per cent drop in creativity... After forty-nine students [had] used the program for seven months, they were no longer able to answer open-ended questions and showed a markedly diminished ability to brainstorm with fluency and originality (1997, p. 9).

More recently, a study at Michigan State University found that students who took an online economics course exhibited around 10 per cent less comprehension than those who took the course face-to-face (Chronicle of Higher Education Online 2002). Many studies and surveys have been done in this area, and those that do not display neutral or inconclusive results generally find that the effects of ICTs on teaching and learning are negative. However, so deep is the financial and ideological commitment to ICTs by government and the universities that negative findings run the risk of being disavowed by those who commission them. Researchers from Boston College, commissioned by the Massachusetts Department of Education, found that students who have been taught to write using a computer don’t perform as well on composition exams as students who learned using paper and pencil. The Department ‘resisted’ release of the study, eventually requesting that its name be taken off the published findings altogether (Carlson 2000).

Of course, I don’t argue that there is no place in the university for entrepreneurial links with industry, and there is a very valuable role for computers and for ICTs more generally. The potential inherent in the interconnectivity of thousands of universities and millions of
scholars and students across the world is limitless. The actuality of the gains made in biotechnology, molecular science, chemistry and medicine are, and will continue to be, of tremendous value to humanity. The issue, once more, is that these processes were not instigated to increase and enhance knowledge production and dissemination across a wide range of disciplines—but to make and save money.

**Legitimate Knowledge**

It is clear that the restructured university has moved substantially towards an enterprise model of operation and utilises ICTs to the fullest possible extent to assist in this. To this extent, the university is fully integrated within the nexus of neoliberal globalisation and the ICT revolution. The rule of the bottom line has meant a change in what Langtry (2000, p. 89) calls the ‘background logic’ of the university. This was a logic that generated the ‘intellectual virtues, skills and values’ that permeated the university experience. I don’t here wish to imply that the university has ever been an ideal place for the production of a perfect balance between instrumental and critical thinking. Narrow elitism had been a hallmark of the earlier, pre-massified systems. Nevertheless, there was space and time to devote to the ‘values’ and ‘virtues’ of economically disinterested inquiry because market fitness was not the primary test of a subject’s worth. Adoption of the enterprise model has forced universities to become, primarily, forcing-houses for industry and, as a result, has changed the forms and kinds of knowledge that are produced and disseminated.

Motivated by this new background logic, universities now ‘pursue profit in the guise and name of higher education’, as David Noble puts it, selling a redefined form of education or knowledge, and that is training:

Training...typically entails a radical divorce between knowledge and the self. Here knowledge is usually defined as a set of skills or a body of information designed to put to use, to become operational, only in the context determined by someone other than the trained person; in this context the assertion of self is not only counterproductive, it is subversive to the enterprise. Education is the exact opposite of training in that it entails not the disassociation but the utter integration of knowledge and the self, in a word, self-knowledge (2002, p. 2).

This shift in emphasis towards instrumental knowledge production may be seen as heralding a new ‘knowledge epoch’ where critical knowledge and self-knowledge are more difficult to acquire. In *The Postmodern Condition*, Jean-François Lyotard (1984) gives a prescient account of the growing domination of instrumental or ‘performative’ knowledge through information technologies and the universities. It is a self-legitimising logic that classifies legitimate knowledge as that
which conforms to ‘system’ (market) conditions. The market thus becomes the ‘test’ for that which is admissible as knowledge, with all else deemed esoteric, self-indulgent or, as Lyotard put it, regarded with ‘incredulity’. That which ostensibly ‘works’ is what is considered relevant, with the most important information being that which is able to quickly validate itself within its own logic. Accordingly, critical knowledge—forms of knowledge that take time to develop and can question and critique that which ostensibly ‘works’—becomes marginal and runs the risk of being forgotten, drowned in a sea of instrumentally-oriented information. Barnett puts the argument succinctly:

We live in a knowledge society. This is the case, but more to the point are the changing forms of knowledge. Humanities give way to science; small-scale forms of knowledge production give way to large-scale forms; knowledge for its own sake gives way to applied knowledge; pure inquiry gives way to problem-solving in situ; prepositional knowledge gives way to or at least is supplanted by experiential knowing; and ways of knowing give way to sheer information (1997, p. 5).

The new knowledge economy that has evolved out of the nexus between neoliberal globalisation and the ICT revolution demands that the dominant forms of knowledge produced and disseminated in society are relevant to its specific needs and are able to meet certain market-based criteria. This is the production of knowledge organised on the principle of supply and demand, and the universities have been restructured in such a way as to ensure that this would occur. This nexus has not only led to the ‘acceleration of just about everything’ but to the creation of the information ecology wherein dynamics of knowledge, of society, of the market and of ICTs are bound up within a single logic and geared to a specific end.

Some may see this as a necessary trade-off. The shift towards the domination of instrumental thinking has its benefits, some of which I touched upon earlier. The frontiers of science and technology, to resort to cliché, are continually being pushed forward. Every day, we learn of ‘breakthroughs’ in cancer treatments or genetic engineering or of the implications of this or that piece of DNA. Over the last generation there have been real and measurable advances. We live longer lives, we have access to cheaper and fresher foods, and we own and consume more commodities than our parents or grandparents would have considered possible—or imaginable. This has indeed been made possible through the interactions of globalisation and the ICT revolution—but at a cost to the forms of knowledge our ‘advanced’ societies produce. These ‘advances’ have already met the test of the market and ‘appear’ fully formed to the rest of society through the media or in the universities as confirmation of the ‘way things are’ and the way things will be in the future, shaping our own ‘ontological assumptions’ about the world.
'What would happen if thought no longer had a childhood?'

(Lyotard 1992, p. 5)

Living and learning within the information ecology is producing the
habit of what might be called 'abbreviated thinking'. Daily life in
work, at school and at home is gradually shaped by the 'ontological
assumptions' derived from an instrumental view of the 'way things
are'. Abbreviated thinking is thinking on a surface level, unable or
untrained in ways that would enable one to think more deeply about
a subject or issue or problem. This stems from either lack of time,
through increased immersion in real-time, or from a system-trained
'incrédulité' to forms that are not immediately legitimised through
market or other instrumental criteria.

The domination of instrumental forms of knowledge and the
growing dearth of critical forms has important consequences, not least
for the ongoing development of our civil society. One corollary is that
a lack of a capacity for critical thinking leads inexorably to a lack of
imagination: the individual and collective inability to conceive of
Barnett's 'imaginary alternatives' that can provide us with other pos-
sibilities, other ways of being and seeing.

This abbreviated thinking corresponds to the sharply delineated
blacks and whites of instrumental logic as opposed to the many subtle
shades of grey that are the stuff of critical reason. One effect of the pro-
duction and transmission of knowledges that meet performativity cri-
teria within a real-time environment is that increasingly we find
ourselves unable to 'draw back from our immersion in the here and
now', as Fredric Jameson (1995, p. 284) has put it. We live and work
increasingly in a constant present with no time to engage our thinking
with a subject for sustained periods. We are always attending to the
matters at hand, because this is the way neoliberal globalisation and
the ICT revolution is organising the economy and society. This real-
time 'immersion' makes it more difficult to live through consciousness
in the past or present and be able to project possible futures. In short,
we lose a sense of history, a vital conceptual component to enable us
to situate ourselves historically and to think critically about contem-
porary issues.

Over the last decade or so, educators in most of the developed
countries have acknowledged that there exist gaps in students' under-
standing of history, of politics, of civics and citizenship. Study after
study has indicated that a large proportion of students display a lack
of knowledge of or interest in politics, democratic theory, philosophy,
history, literature and feminism. Accordingly, much time and money
has gone into devising ways and means to encourage such an interest.
Notwithstanding these efforts, there are no shortage of new studies
and surveys to show that that much of this work is failing. The
problem, I argue, is not that young people are stupid or lazy; this is not
a critique that analyses the 'dumbing down' of society. What I argue is
that there exists a structural problem stemming from the nexus between neoliberal globalisation and the ICT revolution and the creation of the information ecology. What I also argue is that the realm of the information ecology is set to become more comprehensive as the importance of information technologies and the knowledge economy becomes more pronounced. The universities, in their turn, will inevitably focus more on producing and disseminating those forms of knowledge that can be commodified and marketed. Accordingly, the scope of our capacity to think critically is set to diminish, and, correspondingly, the dominance of abbreviated thinking to expand.

The pervasiveness of abbreviated thinking may go some way to explain attitudes to contemporary issues such as, say, asylum seekers in Australia. Opinion polls during 2001–02 registered significant majorities who supported the Coalition government’s policies in this matter. The consigning of men, women and children from Iraq and Afghanistan to mandatory detention centres in remote parts of the country was considered fair and reasonable—even though it went against trends elsewhere around the world. There are two aspects to this issue that go to explain the popular support that the government’s policy received. First is the instrumentalism that pervaded the way both the government and much of the media portrayed the issue: the law is the law, even if it is made retrospectively. Asylum seekers were depicted in stark terms. ‘These people’ were well-heeled ‘queue jumpers’, were possible ‘terrorists’, or were plainly not like ‘us’ in that the government claimed, falsely, that these ‘boat people’ would readily throw their children overboard in the attempt to force the navy to rescue them and to land them on Australian territory. Second, habituated into thinking instrumentally and in abbreviated fashion, we lack the imagination to understand (and thus empathise with) the plight of asylum seekers, both in their journey to reach Australia and in their long periods of detention once they arrive. Paul Kelly of the Australian newspaper noted that ‘The difference between the current situation and the 1970s Vietnamese boat people is obvious but unremarked’ (2001). Then, he noted, ‘there was no real dispute about the refugee credentials of the Vietnamese’. Both government and public opinion could understand, empathise and imagine—to at least some degree—what the Vietnamese refugees had been through, both inside Vietnam itself, and on their hazardous trip to Australia. They were real people. Those feelings and that imaginative power seem to have evaporated considerably over the space of a generation.

The same analysis can help to understand the response in countries such as the United States, Britain and Australia to the bombing of the World Trade Centre and the Pentagon Building on 11 September 2001. The response was rationalised and widely accepted in simplistic terms, as a ‘war on terrorism’ and ‘evil’. There was no real attempt to give the events a prehistory, or to see them as being the result of a complex of dynamics that would take time and effort to understand.
and respond to. It is necessary to mention also the ongoing low-intensity war against Iraq. Our *moral imagination* was challenged and found wanting here, too, when in 1996 Secretary of State Madeleine Albright said that the death of half a million Iraqi children due to US-led sanctions was ‘a price worth paying’ for the removal of Saddam Hussein. The quote was widely published to a general indifference.

**Conclusion**

Contemporary society, according to Ulrich Beck, has degenerated into a state of ‘organised irresponsibility’ (1998, p. 15). No one is in charge, argues Beck, in part because the ontological nature of human affairs have been deemed commercial, and so market forces primarily determine its ethos, context and logic. Increased ‘irresponsibility’ leads inexorably to increased incomprehension of the world, its histories, its present and its possible futures. To be able to regain some kind of responsibility over society and its functions, it is imperative that we seek to understand it more fully, and to continually pose the profound questions regarding who we are and what we can be, both as individuals and as societies.

The university has an obvious and central role here. But to fulfil it, it must be given freedom. Not the freedom bequeathed by neoliberalism to flounder or swim in the fast-flowing currents of the enterprise model. This is no freedom at all, but instead a curtailment, a straightening of what universities can be. Freedom has to mean the ability to work with industry and the economy—and also to work without it in realms where there are no necessary commercial ‘pay-offs’, and to be able to do this without the fear of cutbacks, job-losses, or of condemnation for not producing ‘legitimate’ or ‘useful’ knowledge. Students, too, have to be given freedom and choice to see the university as more than a means to a job. The university experience needs to be, for those who wish it, a means to understanding society and themselves, and in turn, a place where they can make their own contribution to how society understands itself. Finally, government has to reassert its own responsibilities. It has to see the university as more than a forcing-house for industry, and view it as a vital part of our social, cultural, political, moral, ethical, artistic and economic well-being. The ‘information ecology’ as I have described it is constituted through the nexus between neoliberal globalisation and the ICT revolution. This needs to be broken, entirely preferably—but at the very least in the context of public education. Governments need to end their fetish for the blanket informationisation of teaching and learning and the commercialisation of the universities’ functions. We need to use ICTs and the market where we know that it works—and properly research those areas and disciplines where we are less sure. More broadly, an end to the obsession with the computer-driven acceleration of ‘just about everything’ in the universities and in society more generally will give us more
time. Time to think, to learn, to ponder, to consider, to critique, to reject, and to accept the ways in which we live our lives and how we might want to change or improve them. Until and unless we do this we will live, paradoxically, as increasingly disconnected individuals in an ever more densely ICT-connected world.

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