

Valid knowledge: the economy and the academy

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Abstract. The future of Western universities as public institutions is the subject of extensive continuing debate, underpinned by the issue of what constitutes *valid knowledge*. Where in the past only propositional knowledge codified by academics was considered valid, in the new economy enabled by information and communications technology, the procedural knowledge of expertise has become a key commodity, and the acquisition of this expertise is increasingly seen as a priority by intending university students. Universities have traditionally proved adaptable to changing circumstances, but there is little evidence to date of their success in accommodating to the scale and unprecedented pace of change of the Knowledge Economy or to the new vocationally-oriented demands of their course clients. And in addition to these external factors, internal ones are now at work. Recent developments in eLearning have enabled the infiltration of commercial providers who are cherry-picking the most lucrative subject areas. The prospect is of a fracturing higher education system, with the less adaptable universities consigned to a shrinking public-funded sector supporting less vocationally saleable courses, and the more enterprising universities developing commercial partnerships in eLearning and knowledge transfer. This paper analyses pressures upon universities, their attempts to adapt to changing circumstances, and the institutional transformations which may result. It is concluded that a diversity of partnerships will emerge for the capture and transfer of knowledge, combining expertise from the economy with the conceptual frameworks of the academy.

Keywords: forms of knowledge, Knowledge Economy, learning technologies, university futures

Valid knowledge in the Knowledge Economy

Needs of the knowledge economy

The notion of a Knowledge Economy has been subject to many interpretations. Enthusiasm for the idea ranges from a view of its reification in benign forces of American-owned free market capitalism (e.g. Friedman, 2005), to scepticism as to its real impact on everyday life (May, 2002). A common feature, however, has been the identification of new information-handling skills and knowledge expertise, requiring more specialised and educated employees. Porat & Rubin (1977) predicted the key importance of workers such as scientists and writers for a new 'primary information sector'. Similar categorisations were made by Reich (1991) of 'symbolic-analytic workers', and Castells (1997) of 'self-programmable workers'. These roles require the abilities to identify and solve problems and to create new knowledge products through the analysis and synthesis of existing information, and Reich (1991) distinguished them from the mere possession and application of knowledge and expertise, consigning lawyers to a secondary employment category. Where in the past professional persons derived status from their mastery of a specialist body of knowledge, he argued that the key skills of the future are the value-added extension of knowledge, rather than merely its acquisition and employment. Another important feature of knowledge working is the greater frequency and extent of communication and team collaboration. In the knowledge intensive services sector problem resolution by project teams is a critical success factor, and effective collaboration requires both the cognitive abilities fostered by formal education and a range of general and interpersonal abilities (Ducatel, 1998). Indeed, this more multidimensional view of the learning process, drawing upon learners' prior experiences and individual differences, is widely regarded as characteristic of good pedagogical practice (Prosser & Trigwell, 1999). In a UK study of changes in work patterns and their implications for

education, Bayliss (2003) identifies increasing limitations in the present subject-based curricula in schools and higher education, and refers to the recommendations in *Opening Minds* (RSA, 1999) for a competence-based curriculum for schools focusing on learning, citizenship, relating to people, managing situations and managing information. In many respects, the ready availability of knowledge via the Internet is eroding the value of subject-based knowledge and so the status of the professions. Websites now offer advice on legal, consumer, medical, technical and educational matters, and email has made it easier for clients to bypass local professionals to reach a wider, competitive services market. The rapid development of information and communications technologies (ICT) has been a significant catalyst in the Knowledge Economy, and as access to knowledge has changed there has been a shift in emphasis in what might be considered *valid knowledge*.

ICT and forms of knowledge

Valid knowledge in the past was knowledge which had undergone confirmation and codification. University academics were the curators of such knowledge, and the university library was where it was safeguarded. However, with the rise of ICT the situation has become more complex, for in addition to providing powerful organisational and creative tools, ICT facilitates new forms of conceptualisation, new media for expression and alternative ways of thinking. Turkle (1997) argued 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. Electronic media, by contrast, are associated with greater provisionality, experimentation, 'random access' and multiple usage (Poster, 1995). Where the knowledge metaphor of the past was the leather-bound and reassuringly authoritative set of *Encyclopædia Britannica*, the emerging metaphor today is the egalitarian and transient shared knowledge

space of *Wikipedia* (2006). Moreover, for young people thoroughly familiar with computer games and mobile (cell) phones the printed encyclopedia seems strange. Prensky (2001) sees such people as *digital natives*, not viewing the world in the same way as their parents; and he cites evidence on neuroplasticity to support the idea that their brains have developed differently as a result of their early experiences.

If it is the corporeal nature of printed texts which has influenced the relatively static codification of traditional knowledge, then the enabling medium of unlimited digital copies – and variants – of original works throws open opportunities for dynamic knowledge expression and also challenges the *status quo*. Heim (1998) foresees a 'new mode of truth' in which the multiple media of ICT will displace the older forms of discourse, and Lankshear *et al.* (2002) predict a transformational role in which we may come to conceptualise knowledge more as process and performance and less as an 'authorised version' of external givens. In a similar way, Scott (2002) speculates that we may be moving from dependence upon objective, empirically verifiable knowledge to a socially robust knowledge which, rather than existing as a separate abstraction from the world, is embedded in specific contexts. 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.

A bipolar view of knowledge is not new, and can be found in Polanyi's (1958) *tacit* and *explicit*; Schön's (1983) *propositional* and *procedural*; and Barnett's (2000) *contemplative* and *performative* knowledges. Developing the notion that expertise is realised through the act of reflection upon personal understanding, Schön stressed the importance of *reflection-in-action* and *reflection-on-action* as essential in professional practice for the development of procedural know-how

and a repertoire of practice. This 'working knowledge', he said, is particular to the context in which it is developed, and distinct from the external propositional knowledge of the textbook and training course. Leinhardt *et al.* (1995) conceptualise the development of expertise as a reciprocal process, involving not only *particularising theory* through the application of propositional knowledge, but also *theorising practice* through the abstraction of general rules from particular instances. A link between these ideas and the Knowledge Economy is to be found in the *Mode 1 / Mode 2* typology of Gibbons *et al.* (1994). Mode 1 knowledge they describe as typically the traditional knowledge of subject disciplines: propositional in form, validated by peer scrutiny and disseminated through academic discourse. Mode 2 knowledge is knowledge-in-action: procedural in form, and rather than existing separately in a codified format, embedded in its situation. Mode 2 they say is characteristic of knowledge-based work, where what counts is that which helps solve real-life problems, and what they refer to as *problemsolving* knowledge.

The learning process can be seen to reflect these different facets of knowledge, as in the distinction by Moe *et al.* (1999) between *just-in-case* and *just-in-time* learning. Propositional knowledge, argues Nguyen (2004), is the dominant currency in just-in-case learning; but in order to meet the needs of organisations in the knowledge intensive services sector, appropriate systems and procedures must be employed on a just-in-time basis to access the procedural knowledge which constitutes the organisation's collective memory and contributes to its market position.

From this standpoint the rise of the Knowledge Economy – accompanied by increasing use of new interactive media and the 'validity by utility' of procedural knowledge and just-in-time learning – has contributed to an erosion of the

traditional professions in what Scott (2002) calls a 'democratisation of expertise'. The effect of these changes on universities is twofold: at one level, the exclusive validity of propositional knowledge (and hence of academic scholarship) is being eroded; at another level, the status of universities as the established providers of education and training for the professions (and hence of university teaching) is being brought into question. The issue is not merely one of the economic value of procedural knowledge, in the sense of the utilitarian focus of the mechanics' institutes of Victorian England (Kelly, 1952), but knowledge in the sense of Jarvis' (2001, chapter 3) *practical knowledge*: including content knowledge but in an integrated way freed from the boundaries of subject disciplines. In this way, a direct challenge is made to the monopoly of the university as sole authority in the creation, validation and dissemination of knowledge.

Pressures for university change

Political/national and economic pressures

At international and national levels, the Knowledge Economy and well documented pressures of globalisation (e.g. Evans, 1997; Petras & Veltmeyer, 2001) are bearing down upon nation-states and the universities within their borders. Delanty (2001, ch. 7) identifies three themes: the changing role of the state from provision to regulation, the rise of new sites of knowledge production outwith universities, and a process of democratisation of knowledge ownership and application. Relating these ideas to education, Green (1997) questions how long governments will be able to maintain distinctive national systems of education, with universities preparing professionals for distinctively national labour markets (Välilmaa, 2001).

At institutional level, Tynjälä *et al.* (2003) distinguish between the market-positioning and entrepreneurial responses of individual universities to *economic globalisation*, and their reactions to *cultural globalisation* through changes in the structure and content of curricula. In these terms, the principal change factors identified by Moran & Myringer (1999) include elements of both. They list declining funds, advancing technology and changing student demography (*i.e.* the move from an elite to mass higher education with growing demand for recurrent, lifelong provision), and these, they argue, will result in a paradigm shift from conventional to more diverse methods of teaching and learning. Bargh *et al.* (1996) anticipate that massification will mean not just more students in the system, but a greater variation in institutional type, organisational structure and focus. Booth *et al.* (2000) also see changing student demography as a major driver of change; a significant concomitant of massification, they argue, has been an increase in the number of graduates entering the job market, with a consequent erosion of 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. In the UK this perception is reported by the Higher Education Policy Institute (Bekhradnia, 2006).

Technological pressures

Universities are experiencing technological pressures in addition to political and economic ones. Today's 'digital native' students carry increasingly sophisticated 'Swiss Army knife' devices combining mobile (cell) phone, MP3 audio player, radio, digital television/multimedia player and personal organiser functions, and 95% of British teenagers now own and use such equipment on a daily basis (Boyd, 2005). What the *Horizon Report* (NMC/EDUCAUSE, 2006) calls *social*

computing is predicted to have considerable implications for universities, embracing peer-to-peer networks, wikis, blogs and a diversity of social network services. It is clear that young people entering university are thoroughly at home in games and communications environments which in many ways resemble the symbolic-analytic and collaborative occupations of the Knowledge Economy. Indeed, many may feel more at ease in learning through websites and podcasts (Campbell, 2005) than in the traditional campus environment of lectures, textbooks and handwritten examinations.

A significant property of *eLearning* (learning via electronic media) is its scalability. Unlike conventional forms of course delivery which require physical plant of limited capacity, many Internet-based eLearning courses have theoretically unlimited capacities. If the substantial initial costs of course creation can be invested then there is the potential for significant return on investment. However, as will be discussed in more detail later, some high-profile eLearning projects have collapsed, and it is vitally important for the underlying business model to be sound. But given these caveats, eLearning remains an attractive proposition to the senior managers of universities, beset by the pressures discussed earlier; moreover, the growth of learning materials in formats for handheld devices – e.g. school examination revision on mobile phones (BBC, 2006) and university podcasts on MP3 players (Stanford, 2006) – could prove effective in student recruitment.

The high fixed costs of developing eLearning courses have so far proved a barrier to attaining the low variable costs of large-scale usage (Littlejohn 2003); a possible solution lies in combining the emerging technologies of *learning objects* and *intelligent software agents*. A learning object is a digitised learning resource, and the use of a common file format makes it possible to put together any

selection of objects to work in combination and in different educational contexts. Learning objects are stored in digital repositories alongside metadata descriptions specifying their content, level and range of application (CETIS, 2006). Zemsky & Massy (2004) believe this technology is still at an experimental stage in which a variety of competing designs are being trialled prior to the expected emergence of a dominant design, but they predict learning objects to be the next major adoption cycle of eLearning. With the growing employment of situated and problem-based learning in higher education (Lave & Wenger, 1991; Savin-Baden, 2003), many learning objects are being designed as components within educational games and simulations. Paris (2003) claims that "*by 2006 70% of all off-the-shelf as well as custom e-learning content will include some application of simulations*". In a possible learning object economy of the future, millions of such resources would be accessible in digital repositories, requiring sophisticated software including learning content management systems (Pankratius *et al.*, 2004) to identify needs, locate, broker and pay for appropriate content. Early examples of 'open source' repositories are MERLOT (2006) in the USA and JORUM (2006) in the UK, but these may be followed by commercially operated 'pay per view' systems. All online searching will anyway be complemented by developments towards a *Semantic Web* to greatly improve the quality of information access and linking (Berners-Lee *et al.*, 2001).

In the higher education sector new learning technologies are associated with pressures for change (*e.g.* Garrison & Kanuka, 2004), but as with the political and economic factors discussed earlier there may be lack of understanding and a reluctance on the part of some academic staff to employ pedagogical materials and methods 'not invented here' and to cede some control over the content and direction of their courses. Changes in organisational culture are also needed if

universities are to adapt and accommodate to external pressures, and these issues provide the focus for the following section.

Adaptations and accommodations

Institutional reorientations

Tynjälä *et al.* (2003) explore four perspectives on the changing role of universities in their address of vocational issues and work-based learning. The first takes the viewpoint of student learning and the development of vocationally relevant expertise through formal as well as work based learning, and hence is related to the notion of valid knowledge. The second is the standpoint of educational institutions and their staff, examining the pedagogical challenges and changes in role involved in new ways of working. The third is that of employers and organisations in the public and private sectors who engage with universities in the provision of work based learning – where there is potential for conflicts of interest and understanding. Finally, a general view is taken of universities within society, including questions of their roles, purposes and continuing autonomy in a more complex and interconnected world. Relating to the second of these perspectives and in the context of two European universities, Cowan *et al.* (2004) argue for the closer alignment of institutional development with staff and curriculum development, giving greater focus to student-centred curricula to help meet external imperatives of government and market. The difficulty of meeting such objectives is considerable, not the least in terms of defining the problems to be addressed. Tigelaar *et al.* (2004) acknowledge that a more student-centred curriculum demands extended teaching skills, and the competency framework they devise reflects the roles of staff as teachers, content experts, learning facilitators, learning organisers and scholars engaged themselves in ongoing learning. Alignments must also be made with initiatives and organisations

operating at local, regional and national levels. Tynjälä *et al.* (2003) note significant growth in such alignments in Finland over the last 20 years and see movement towards what Välimaa (1999) calls *pragmatic universities*, enjoying well developed economic and community links and strong orientation to business enterprise. In England, 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, which is now nearing completion, bears greater resemblance to a shopping mall than to an ivy-clad institution, with the objective of attracting learners of all ages and backgrounds. But while it may be possible at Doncaster to create from fresh a custom-built distributed structure and new organisational culture, for some existing universities the problems of cultural change may rival pedagogical ones.

It may be that there exists in prestigious universities an 'aristocratic disdain' for the educational challenges entailed in moving towards a mass system, due in part to the legacy of what Leinhardt *et al.* (1995) see as an Aristotelian intellectual hierarchy which places abstract principles above particular instances. Davenport & Prusak (1998) use the term 'pathology' to describe the flaws which cause some knowledge markets to drastically underperform: the monopolising and hoarding of knowledge by privileged groups, and a 'not invented here' mentality which refuses to accept external knowledge. Readings' (1996) gloomy analysis is of the 'university in ruins', an institution which previously had drawn its *raison d'être* from its position within the nation-state, but which now "no longer has to

safeguard and propagate a national culture because the nation-state is no longer the major site at which capital reproduces itself" (ibid., p. 13).

For-profit models

For-profit models of higher education which employ eLearning have a chequered career. In 2000, the 62 million GBP attempt by the British government to fund the UK eUniversity (UKeU), to compete in what was widely thought to be the profitable global business education market, had to be scrapped four years later. Other examples of failed enterprises include NYUonline (Carlson & Carnevale, 2001) and the Fathom Knowledge Network (Fathom, 2003). In each of these cases a major factor appears to be an unrealistic expectation of student demand, and Carlson & Carnevale (*ibid.*) argue that NYUonline and similar enterprises failed because of poor business models at the outset. However, when provision is better matched to demand, the results can be very different.

In the USA some universities take an upbeat view of economic globalisation and are embracing change through entrepreneurial partnerships with commercial or non-governmental organisations. These 'curricular joint ventures' (Eckel *et al.*, 2004) are driven not only by falling state funding but also by the competitive pursuit of institutional prestige and market share. Initially confined to knowledge production, they now include knowledge dissemination, typically in the form of eLearning courses which each partner alone could not develop. An example cited is Cardean University, a for-profit organisation which delivers online MBA degree courses. Five conventional universities, which are shareholders in the company, provide the course content, and delivery is managed at Cardean by online tutors working with educational designers and technology staff. Thus, not only have the considerable start-up costs of such an enterprise been shared, but the business of educational interaction with students has been separated from that of content

production. Morey (2004) cites examples of for-profit enterprises, noting how the flexibility of study offered by eLearning has attracted students from a range of backgrounds and locations in which conventional on-campus attendance would be impossible. For the majority of these students, education is seen very much as a passport to better-paid employment, and so the utilitarian fare of providers such as the University of Phoenix (UoP, 2006) is well targeted. With over 180 campuses across North America and Europe, Phoenix has also separated the production of course content from its delivery, and employs processes similar to those of chain store retailing to ensure that its clients receive a standardised 'product'. Phoenix falls into the second of three categories of universities devised by Waks (2004, p. 278), which are:

(1) established, mainstream, non-profit universities adapting to economic and technological pressures by adopting managerial practices of modern for-profit corporations; (2) newly established, highly innovative universities that operate as for-profit corporations, but satisfy the political and legal requirements for university status, and meet the standards of accrediting bodies (e.g. the University of Phoenix); and (3) new educational organizations operating within, and providing education and training services for, for-profit corporate firms (e.g. Marriott University).

In his model of the change process in organisations, external pressures force internal fractures which create "*clusters of beliefs and values, norms, organizational images and proposed practices*" (*ibid.*, p. 284), and these constitute what Waks calls *shadow institutions*. Despite lacking official status, they are in effect 'institutions in waiting' which in certain cases will replace the institutions reacting conservatively to change. Waks sees his third category as containing these shadow institutions which "*pre-figure mainstream universities of the future*". Corporate universities, he says, arose out of dissatisfaction with the business degree programmes offered by traditional universities; these were seen as too academic and detached from current practice and failed to address the need for creative problem solving in collaborative teams. Waks reports that early attempts by the International Management Centres Association (IMCA) to

introduce a more practice-oriented approach were met by establishment conservatism such that when a 'change from within' strategy failed, the result was a fracturing of the established order and the inception of a shadow institution. The IMCA now provides tutoring and degree accreditation services for corporate universities, building upon its considerable experience in developing students' reflective learning through collaborative teamwork (IMCA, 2006). Jarvis (2001, chapter 7) makes similar points, noting a continued extension of the activities of corporate universities into markets previously the monopoly of Waks' category (1) institutions.

This section of the paper has examined a variety of attempts by the academy to accommodate and adapt to external pressures. The success of these attempts has been mixed, however, with innovation often hampered by organisational practices and cultures. In Waks' (2004) analysis, internal tensions have already resulted in break-away groups of corporate universities, and there is no reason to suppose that this trend will not continue, possibly resulting in a tipping of the balance between conventional non-profit institutions and a variety of corporate and for-profit federations. The final section of the paper will explore these matters further in envisioning a new learning landscape for tertiary education.

Transformations: a new tertiary education landscape

New roles for universities

As has been seen in the Cardean and Phoenix examples, a key development in the future may be the growing separation of educational content from its delivery.

As Scott (2002, p. 65) speculates:

... the associations between teaching and research, between general education and professional training, which are typically regarded as natural, inherent, may, in fact, be merely

contingent on specific organisational cultures or, intellectual economies which are rapidly becoming an anachronism.

In this view, the operational control exerted over curriculum by the custodians of propositional knowledge will be weakened, and the educational services providers who have positioned themselves in student markets will see profit in the exploiting of vocationally-oriented procedural knowledge. Some university teaching staff will see their role change: from author/lecturer employing materials created in-house, to educational content writer, working in partnership with commercial eLearning developers. Indeed, some university teachers may opt out, making a move to the better-paid commercial world as eLearning consultants. A particular priority may be the need to help students foster expertise through *particularising theory* and *theorising practice* (Leinhardt *et al.*, 1995, p. 408), facilitating the application of propositional knowledge and helping students develop understanding and expertise through reflection-on-action (Schön, 1983). A larger proportion of students than at present may be work-based, following pressure by governments (Tynjälä *et al.*, 2003; UK Learning and Skills Council, (LSC), 2006). In the UK there is pressure also to make greater use of eLearning, for example in recent initiatives by the Learning and Skills Network (LSN, 2006).

New types of organisations

Consequent upon changes in practice could be changes in organisational structures. Some university courses – in areas such as business management, science and engineering – may find themselves coming under greater competition from commercial education providers, with a resultant fracturing from their traditional institutions. Some universities would contract, restricting their operations to those – less popular and possibly less vocationally oriented – subject areas not so threatened by commercial competition. In Britain, the days of the 'comprehensive regional university' able to offer a full range of subject provision may come to an end, and the higher education sector may divide into

camps, with prestigious universities able to command high tuition fees distancing themselves from institutions with more teaching-oriented missions. A related trend, already evident in the USA and discussed earlier, is the erosion of distinctions between state-funded 'traditional' universities and for-profit corporations. Following Waks' (2004) analysis, there would be a resultant drift in the proportions of institutions falling into his three categories: from (1) to (2), and from (2) to (3). A further factor which might shape the tertiary education landscape is the convergence of higher and further education, and the proposed new University of Doncaster provides an example of a distributed federal model, combining provision across higher, further and work-based routes through a network of local centres.

Summary

Caution should be employed in any attempts to extrapolate from present trends to future scenarios. As Cunningham *et al.* (1998, p. 7) observe in their analysis of the future of universities, "*the lesson of history is that prognostication needs to be tempered by a recognition of the complexity of the issues and concepts*".

Universities have survived the Enlightenment and the Industrial Revolution, and perhaps may be able to adapt in the face of this new challenge. Delanty's (2001, p. 158) prognosis is upbeat, seeing universities as "*on the threshold of a new beginning, which can be characterised as the renewal of the cosmopolitan project*". However, Delanty's analysis is now five years old and does not reflect the rapid developments in eLearning and social computing discussed earlier.

It is the contention of this paper that the main threat to the academy is the declining relevance of its course product. The relationship between pure and applied knowledge is difficult to define, as indeed are those respective concepts.

In the past the pursuit of knowledge for its own sake was seen as intrinsically worthy, and even today in higher education blue skies research claims the moral and intellectual high ground over its 'trade' cousin. But the last twenty years have seen major economic, political and social change. With the rise of knowledge working, the status of the traditional professions has declined and competitive advantage is now found increasingly in the creation of new knowledge. ICT has enabled the rapid development of globalisation, resulting in a quickening pace of change and a consequent premium on the adaptability of people and organisations. Nation-states are in retreat as technology-enhanced commercial interests grow, so the role of universities in servicing the needs of the state becomes unclear. The academy has been slow – at least in the short term – to respond to the economic impacts of globalisation, to the massification of higher education markets and to the educational possibilities of new technologies. The old product: disseminating just-in-case, print-based propositional knowledge to prepare an intellectually able elite for a relatively static professional career, is losing its relevance. The new product: recognised by a massified and technologically sophisticated higher education market, is for ICT-related generic skills in information access, creation and communication and the capacity for rapidly adaptive just-in-time learning. In the popular view, what is regarded as valid knowledge is now being redefined.

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