Education and Ideologies of the Knowledge Economy: Europe and the Politics of Emulation[1]

Michael A. Peters, *University of Glasgow, Faculty of Education*

Introduction

The Austrian philosopher Ludwig Wittgenstein famously proposed a style of philosophy that was directed against certain *pictures* [*bild*] that tacitly direct our language and forms of life. His aim was to show the fly the way out of the fly bottle and to fight against the bewitchment of our intelligence by means of language: "A *picture* held us captive. And we could not get outside it, for it lay in our language and language seemed to repeat it to us inexorably" (Wittgenstein 1953, 115). In this context Wittgenstein is talking of philosophical pictures, deep metaphors that have structured our language but he does also use the term picture in other contexts (see Owen 2003, 83). I want to appeal to Wittgenstein in my use of the term *ideology* to refer to the way in which powerful underlying metaphors in neoclassical economics have a strong rhetorical and constitutive force at the level of public policy. Indeed, I am specifically speaking of the notion of 'the performative' in Wittgenstein and Austin.

The notion of the knowledge economy has a prehistory in Hayek (1937; 1945) who founded the economics of knowledge in the 1930s, in Machlup (1962; 1970), who mapped the emerging employment shift to the US service economy in the early 1960s, and to sociologists Bell (1973) and Touraine (1974) who began to tease out the consequences of these changes for social structure in the post-industrial society in the early 1970s. The term has been taken up since by economists, sociologists, futurists and policy experts recently to explain the transition to the so-called 'new economy'.

It is not just a matter of noting these discursive strands in the genealogy of the 'knowledge economy' and related or cognate terms. We can also make a number of observations on the basis of this brief analysis. First, there has been a succession of terms like 'postindustrial economy', 'information economy', 'knowledge economy', 'learning economy', each with a set of related concepts emphasising its social, political, management or educational aspects. Often these literatures are not cross-threading and tend to focus on only one aspect of phenomena leading to classic dichotomies such as that between economy and society, knowledge and information. Second, these terms and their family concepts are discursive, historical and ideological products in the sense that they *create their own meanings* and often lead to *constitutive effects* at the level of policy. Third, while there is some empirical evidence to support claims concerning these terms, at the level of public policy these claims are

[1] A longer version of this paper was presented at Project Workshop no.7, EURONE&T, *Learning Related Policies in the Light of EU Integration and Enlargement - Towards a Learning Society*, Royal Lodge Hotel, Bridge of Allan, Stirling, UK, October 2-3, 2003. A revised version was presented at the International Bielefeld Conference, *Integrating Formal and Non-Formal Education*, University of Bielefeld, Germany, October 9-11, 2003.

empirically underdetermined and contain an integrating, visionary or futures component, which necessarily remains untested and is, perhaps, in principle untestable.

1. Knowledge Economy Policies as Performative Ideologies

What exactly is the relation between economics and economies? On one standard sociological account the relation is weak in the sense that the economics provides highly abstract models of market behaviour based on governing assumptions that have no real world equivalences (Barry/Slater 2002). On similar lines Thrift (1998) argues that academic economics does not have a great deal of importance for business although it has significance for states as discursive elements justifying actions that the state enacts as 'economic'. By contrast, Michael Callon's (1998) *The Laws of Markets* suggests that rather than see economics as bad science it is better to view economics as a set of technical practices --as technologies—that create phenomena and participate in shaping the thing it describes. Callon is less interested in economics as a set of accurate representations of markets rather than in the part played by economics in *performing* markets. When I use the term ideology in relation to knowledge economy, then, I use it more in line with Callon's (and Wittgenstein's) 'performative' and constitutive sense that stresses its role in creating markets and policies.[2]

While I would have to do a lot more to fully justify this sense of 'ideology' and the departure from both Marxist ('false consciousness') and Althusserian ('lived practice') accounts I shall use this notion as a way of describing the fate of the so-called 'new economy'. Many of its characteristics, it might be argued, are the contemporary expression of a structural policy shift that has acted as a macro-filter for much international and national policy-making. I am referring to the significant shift in the funding regime characterising US science policy—from a Cold War federal funding regime to a globalised privatisation regime.

Mirowski and Sent (2002) in one of the first readers on the economics of science analyse the American regimes of science organisation and funding according to three broad categories: the protoindustrial regime, the era during which most scientific development took place in a few large corporations such as General Electric, DuPont, ATT, and Eastman Kodak; the Cold War regime, the watershed of American science which was based on a massive federal presence in science funding and planning; and "the globalized privatisation regime" reflecting the downsizing of physics, promotion of academic entrepreneurialism and the restructuring of universities. The shift from the Cold War to the globalised privatised regime involved the abandonment of the clear separation between 'pure' and 'applied' research when heavy subsidies ran into economic and political obstacles. The Cold War "science in one nation" policy could no longer be maintained in view of the demand for foreign graduates. These shifts along with the collapse of the Soviet Union impacted on national defence and security R&D spending and consequently on academic career paths.

Slaughter and Rhoades (2002) provide an extended analysis of the way in which the end of the Cold War refocused science and technology, turning it towards the privatisation and commercialisation of university-based research. They chart the way the "competitiveness" agenda became the basis for science and technology policy in the 1980s and question the easy substitution among policy communities of it for the military-medical industrial policies of the Cold War. They describe "the new bipartisan political coalition that supports commercial

[2] In this regard see Callon et al's (2002) analysis of "the economy of qualities" and its application to ICTs.

competitiveness as a rationale for R&D" (p. 71) and point to changes in the legal and funding structures that have impacted strongly on universities.

2. The 'New Economy'

The term 'new economy', as Karel Williams (2001, 398) notes, has a double meaning: at the micro-level it referred to the "transforming impact of digital technologies and the internet on business" which, especially in the US context had permanently changed the rules of business; and, at the macro-level, after a decade-long upswing, the new economy meant "inflation-free growth, higher productivity and the end of the business cycle". As Williams goes on to argue after the dot.com bubble burst in the spring of 2000, wiping 50% of the value of the NASDAQ index, the new economy seemed particularly fragile and inflated claims concerning its significance required closer scrutiny. What was/is the new economy in the US? What is its ongoing legacy and, in particular, what significance does it have for Europe and the rest of the world?

The 'new economy' is more than simply another discursive creation of economics talked up by business and management gurus. In regard to the first question we can say that for the 1990s capital markets and *financialisation* played a central role in its development, as did the impact of the new digital technologies, which permitted liberalisation of world capital markets and simultaneously enabled high-tech internet and telecommunications companies to rapidly develop and to make massive gains in the short term. In part, certainly the dynamic relationship between capital markets and digital technologies temporarily sustained a financial ecosystem that seemed to call into question the rules of the old game, creating a US innovation system based on large-scale venture capital investment (Feng et al. 2001).

In regard to the second question—the relevance of the 'new economy' for Europe—it is clear that there is no automatic or easy application despite rhetoric to the contrary by EU change-masters. Williams claims that the Lisbon Council politically appropriated the 'new economy' in Europe in May 2000 as the model to follow in order to maintain competitiveness and improve productivity. But this opportunism and new economy euphoria never had an accompanying strategy to realise Europe's aspirations (Williams 2001, 406). Williams usefully locates Europe's worry of global under-performance in the context of an ongoing relationship with the US going back to the 1950s when a nascent EU brought Europeans into competition with each other and with the US under conditions of freer trade.

Europe's history of perceived economic inferiority led to the "literature of emulation" that characterised the 1960s and 1970s where the distinctiveness of the European economy was all but forgotten. The 1970s on the one hand saw the British adoption of American best practice and on the other the recognition of a German model of *technik*-centred management and French indicative regional planning. The American exemplar was briefly eclipsed by the Japanese model in the 1980s but after a decade of sustained growth under the signified of the new economy the US was back as the exemplar for Europeans who sought development in a high-tech, service-based knowledge economy. As Williams (2001, 406) comments this emulation tactic diverted attention away from "the mixed results of the neoliberal Thatcher experiment in rectifying British under-performance by becoming more American, as well as from the incoherence of the subsequent Blairite attempt at neo-liberalism with a human face".

The EU has enthusiastically embraced the concepts of the knowledge and learning economies so much so that now these concepts have shaped the interlocking policy templates. The

question is to what extent have the concepts been indigenised and made sensitive to local contexts. To what extent does the acceptance of the policy concept of the knowledge economy and its cognates ride on the back of the claims for the new economy? What have been the processes and effects of emulation of the US in various national contexts? What are the "politics of emulation" and what have been the effects on policy? These questions should at least signal that the mainstream economic construction of emulation is problematic not least because of different institutional and cultural contexts. Thus, for example, Matthew Watson (2001) claims that the Lisbon Council failed to address the question of whether the European economy is institutionally compatible with [US styled] knowledge-based growth and suggests that the new economy depends upon institutional specificities of the American high-tech sector that may be impossible or even undesirable to import into Europe. In particular, he suggests, "the EU may lack both the labour market and capital market conditions for successfully embedding the 'new economy' in Europe" (p. 504). As he argues:

"The success of the 'new economy' in the United States is embedded in particular kinds of labour regulation and financial market regimes which Europe does not have and Europe's citizens may not wish to have… Europe currently does not have a labour market structure compatible with the US degree of labour market flexibility, and Europe's political leaders in various countries differ about whether they wish to have such a labour market structure…the US 'new economy' is rooted within a financial market structure which is highly facilitative of entrepreneurship …By way of contrast Europe's venture capital markets are less developed … and are poorly integrated into the wider stock market structure. The overall argument is that 'Europe' cannot be the relevant social or financial space for embedding the 'new economy' as long as Europe's labour and stock markets retain anything like their existing character" (pp. 505-506).

As he indicates there is something of a stand off: on the one hand, the importation of the new economy could raise European productivity levels and become the means by which Europe is exposed to pressures of global economic convergence thus dissolving conditions for the 'European Social Model'; on the other hand, "the political desire to defend the 'European Social Model' could itself impede the successful importation of the 'new economy', diminishing global competitiveness and hence eroding the economic foundations on which that model currently stands" (p. 507). Watson's conclusions depend upon a particular reading of the 'new economy' rather than on broader conceptions of the knowledge or learning economies and tend to assume, as Williams points out, that identical institutions to the US are required to produce the same new economy effects.

3. New Economy, Learning Economy

In addition to discourses of the knowledge economy, we can also identify a range of more popular books that are blended products and spring from theorists in social and technological change such as Alvin Toffler (1990), business and management theorists like Peter Drucker (1969), and more recently, a number of authors who recently have discussed and analysed aspects of the 'new economy' such as Dan Tapscott (1996), Nicholas Negroponte (1995), Charles Handy (1984), and editor of *Wired* magazine, Kevin Kelly (1998), along with green capitalists like Hazel Henderson (1996) and Paul Hawken (1999).

Associated with this literature on the 'new economy' is a rapidly growing field devoted to the 'learning economy' and organizational learning. Benge-Ake Lundvall, previously Deputy Director of the Directorate for Science, Technology, and Industry at the OECD (1992-95), co-

authored with Dominique Foray the influential OECD (1996) report *Employment and Growth in the Knowledge-based Economy*. He first used the term 'learning economy' in a paper published with Barbara Johnson in the *Journal of Industry Studies* in 1994. It is a concept that he, among others, has refined (see Archibugi & Lundvall 2003) as one concerned with rapid transformation (shorter product life cycles and shorter life time for competencies) and more frequent shifts in working tasks. He argues that the new kind of competition is learning-based rather than knowledge-based in that the success of individuals, forms and regions depend increasingly of their capability to learn which leads to inherent polarisation of learners and also to increasing regional divergence.

Riel Miller also has been a strong advocate of the term 'learning economy' arguing that as the learning economy becomes established we move from predictable repetitive tasks and imposed authority to unpredictable tasks demanding greater creativity and the freedom to initiate, that is, from the status of a mass-era worker and consumer to future consumer-creators modelled more on the figure of the artist. In the recent OECD (2001) publication *What Schools for the Future?* he sets out the opportunities, risks and strategies for governments and schools with this kind of transition (Miller 2001). The OECD report by the secretariat, which comprises the first part of the publication, uses the terms 'knowledge' and 'learning' economies to suggest that we should move away from the old industrial structures and organisational forms that represented the "factory model" towards schools as "learning organisations".

The business development and policy advocate Alan Burton-Jones (1999, vi) argues, "knowledge is fast becoming the most important form of global capital – hence 'knowledge capitalism'". He views it as a new *generic* form of capitalism as opposed simply to another regional model or variation. For Burton-Jones the shift to a knowledge economy involves a fundamental rethinking of the traditional relationships between education, learning and work, focusing on the need for a new coalition between education and industry. Burton-Jones (1999) states his thesis in the following way:[3] The fundamental proposition of the book is that among the various factors currently causing change in the economy, none is more important than the changing role of *knowledge*… As the title of the book suggests, knowledge is fast becoming the most important form of global capital – hence 'knowledge capitalism'. Paradoxically, knowledge is probably the least understood and most undervalued of all economic resources. The central theme of this book is, therefore, the nature and value of knowledge and how it is fundamentally altering the basis of economic activity, thus business, employment, and all of our futures. The central message is that we need to reappraise many of our industrial era notions of business organization, business ownership, work arrangements, business strategy, and the links between education, learning and work.
He argues that the distinctions between managers and workers, learning and working, are becoming so blurred that we all become owners of our own intellectual capital, all knowledge capitalists – at least in the western advanced economies. And he goes on to chart the shift to the knowledge economy, new models of knowledge-centred organization, the imperatives of knowledge supply (as opposed to labour supply), the decline in traditional forms of employment and the knowledge characteristics of work. He argues that "economic demand

[3] For a recent article by Burton-Jones see the inaugural issue of the web-based new start-up online-only journal *Policy Futures in Education* co-edited by myself and Walter Humes (Peters & Humes 2003), available at Triangle Publications (www.triangle.co.uk/PFIE). The inaugural issue is devoted to "Education and the Knowledge Economy" with contributions from Paul A. David & Dominique Forey, Gerard Delanty, Steve Fuller, David Guile among others.

for an increasingly skilled workforce will necessitate a move to lifelong learning" (p. vii) based upon the learning imperative, including the use of learning technologies that will lead to the development of a global learning industry and to profound "changes to the relationships involving learners, educators and firms" (p. vii).

This literature is also a hybrid, often combining elements from economics, policy, sociology and education, and trading on previous work completed in the area of intellectual capital (e.g., Stewart 1997; Edvinnson/Malone 1997) to stress the importance of knowledge assets (Boisot 1998), the knowing organisation (Choo, 1998), knowledge management (Davenport/Prusak 1997), or knowledge creation (Krogh et al. 2000; Nonaka et al. 1995, 2001). In the field of knowledge management the single best introduction to the issues which explores the historical and philosophical origins of knowledge management is Steve Fuller's (2000a) *Knowledge Management Foundations* in which he adopts a political economy approach drawing on the best elements of liberalism and communitarianism to talk of *governance* rather than management. The approach is further developed in his application of "civic republicanism" in relation to the governance of science.

The field of organisational learning predates the advent of the new economy growing out of organisational science, social and human capital arguments, knowledge management and education literatures with a strong orientation to "learning strategies", "communities of practice", "cultural adaptation", and increasingly directed to questions of elearning and virtual management.[4]

At the level of public policy 'knowledge economy' and 'learning economy' are twin terms that can be traced to a series of reports that emerged in the mid 1990s by the OECD (1996a, 1996b, 1997) and the World Bank (1998, 2002), before they were taken up as a policy template by world governments in the late 1990s (see Peters, 2001a, 2001b). In terms of these reports, education is reconfigured as a massively undervalued form of knowledge capital that increasingly will determine the direction of the world economy, the organisation of firms and knowledge institutions, and the future structure and delivery mode of public services in health and education.

4. Britain as Enterprise Society: The Politics of Emulation

The British case provides a clear example of the "politics of emulation". The DTI and Treasury sought to institute a competitiveness strategy that attempted to institutionalise American values and attitudes of risk-taking and entrepreneurship through the development of an enterprise culture designed to promote research venture capitalism and closer partnerships between industry and universities. I have written at length about these developments elsewhere from a poststructuralist perspective examining education policy in relation to enterprise culture and the entrepreneurial self (Peters 2001c), the UK construction of knowledge economy (Peters 2001b), 'perpetual training' in the knowledge economy (Peters 2001d) and theorising the development of a new prudentialism in higher education through what I call an 'actuarial rationality' (Peters 2003b).

In 2001 Lord Sainsbury informed the North West Knowledge Economy Conference that universities were at the heart of the UK's productive capacity, echoing Tony Blair's Oxford Romanes speech on education where he announced "entrepreneurial universities will be as

[4] For a taste of this literature see the web site headed *Organizational Readiness in Turbulent Times*: http://www.linezine.com/7.2/index.htm.

important as entrepreneurial businesses, the one fostering the other". David Blunkett as Minister of Education declared "I make no apology for placing higher education at the heart of the productive capacity of the knowledge driven economy". His comments were backed by the 2001 White Paper on Enterprise, Skills and Innovation committing New Labour to an enterprise society and were repeated by Charles Clarke this year (see fn 1). The same rhetoric was embraced by the Lisbon Council in 2000 committing Europe "to become the most competitive and dynamic knowledge based economy in the world", a sentiment actively lobbied for by the European Round Table of Industrialists whose 1998 Job Creation and Competitiveness Through Innovation promoted a culture of innovation and set the stage for the Lisbon Council.

Peter Armstrong (2001) examines key policy documents including the White Paper on Competitiveness and the Science Enterprise Challenge to demonstrate that policy makers view the task of creating the new economy based on technoscience industries through the lens of enterprise ideology. He suggests that policy makers believe that the infusion of university science with enterprise will create a profitable new culture but cautions that while attractive the framing of enterprise culture avoids all the complexities of scientific research and new product development while at the same time obscuring the precise attributes and behaviours that are actually involved in enterprise. He indicates despite the ideological pressure there has been no evidence to sustain the link between risk and entrepreneurship—risk simply has not been a prevalent feature of new venture creation nor of science –based start ups—and he concludes "the policy is an act of faith, based neither on research, nor on experience" (Armstrong 2001, 524).

In light of these comments and closer to home it is interesting to consider the recent *Research and Knowledge Transfer in Scotland* (2002), a report of the Scottish Higher Education Funding Council and Scottish Enterprise Joint Task Group, which is advertised as "orchestrating an adaptive knowledge based system" and "proposals for new ways of exploiting knowledge". The White Paper Excellence and Opportunity—A Science and Innovation Policy for the 21st Century previously had stressed the need for links between university research and business. The Joint Task group report focuses on knowledge processes, including start up companies, entrepreneurism, university spin-out companies, pull-out activity, intermediate institutions, supporting indigenous SMEs, attracting research intensive inward investment, as a list of possible actions through which technology transfer can be achieved. On the basis of its dual framework it proposes two funding streams, one formulaic allocating funds on the basis of metrics, the other, project-based to fund strategic priorities. The sources of inspiration for the report are the DTI (1998) Competitveness White Paper, which was quickly translated into the Scottish context and applied to the school sector (see Peters 2001b) and the OECD (1999) *Managing National Innovation Systems*.[5]

5. The Ongoing Legacy of the Knowledge Economy

A range of quite diverse views employing critical science perspectives agree that the 'new economy' is one episode in the ongoing history of financialisation, a concept embracing the circuit of middle-class retirement savings through capital markets and the stock market's

[5] The issue of the entrepreneurial university is a complex one and not one to make quick judgements about. There is also a substantial literature, see, for instance, Marginson & Considine (2000), Delanty (2001), Peters (2002b, 2003a, 2004a), Peters & Roberts (1999), Peters & Marginson (2000).

pressure for higher returns (Williams 2001).[6] And yet I believe it is clear that the new economy was more than a "performative legitimation" of knowledge and power invented by a series of management and business stakeholders (Thrift 2001). While certainly it had its own rhetorics and only began to assume a stable discursive form after the World Wide Web came into operation in 1993 and its numbers of participants grew exponentially after 1997, it is also clear that its underlying principles and historical dynamic represent something more than the creation of a new market culture or even the discursive rewinding and flash-forward of neoliberal economic articles of faith. I would argue that its operating principles mark out a set of related and overlapping features noticed by economists (going back to Hayek) and, more recently, by social scientists, philosophers and world policy organisations, although not always described in entirely similar ways.

A special report in *The Economist* (September 13, 2003) recently declared the discourse on the 'new economy' well and truly dead, noting that "The number of articles in financial newspapers containing the words 'new economy' is now running at only 5% of its level in 2000". Yet the report claims "in another sense the new economy is very much alive and kicking: its most important feature, namely American's improvement in productivity based on new information technology, continues to amaze" (p. 79). *The Economist* shows that US labour productivity has grown by an average of 3.3% over the past five years and that productivity growth has continued to rise even as investment in information technology has fallen from its late-1990s peak. The report claims that "over the past five years America has enjoyed the fastest productivity growth in any such period since the second world war" and it concludes "this part of America's 'new economy' is genuine" (p. 13). Unhappily productivity gains of the new 'new economy' in the US are not matched by those of Europe. Annual average percentage change in output per hour in Europe is calculated at less than half that for the US during the period 2000-2002. The report suggests "Europe's inflexible labour and product markets hinder the shift of labour and capital that is needed to unlock productivity gains" and the paradox is that "productivity growth has slowed most in those European countries with the strongest growth in jobs" (p. 81). Yet the report also suggests that the benefits of the adoption of IT for European firms may lie in the future and the economic payoff may even be greater than in the US in the sense that IT and the Internet "by increasing transparency and competition, could make deep inroads into archaic European business practices", where there is also greater scope for productivity gains.

Whether ones buys *The Economist's* analysis it does demonstrate some more permanent features of the new economy and also speaks to the complexity of the economic, social and labour relations with the new information and communications technologies. Indeed, the emergence of an increasingly globalised and integrated knowledge-based service sector, together with falling costs of information, and innovation with new systems, might be described as the emergent core of a set of overlapping characteristics that comprise the knowledge economy as an international system. I describe it in terms of interlocking templates described (for want of better and more felicitous concepts) in terms of *financialisation*, *informatisation* or *knowledgisation*, and *technologisation*.

[6] For a useful introduction to the globalisation of finance see Singh (1999) who demonstrates that globalisation of finance has assumed a greater importance than that of production with a daily turnover of several trillion. Private capital flows are approximately five times greater than official flows and now dominate financial flows to developing countries.

Figure 1: The Knowledge Economy as an Emerging International System

The historical dynamism of the knowledge economy can be contrasted with the traditional industrial economy in three key respects:

Financialisation

1. *The mobility of symbolic capital*: private capital flows in the symbolic form of information can be speedily transferred in deregulated 24 hour virtual finance markets, allowing international currency speculation and increased geographical spread and mobility of FDI.

2. *Economics of abundance:* The economics of knowledge and information is not one of scarcity, but rather of abundance for unlike most resources that are depleted when used, information and knowledge can be shared, and actually grow through application.

3. *The growth of e-commerce and e-business*: E-commerce refers to electronically mediated business transactions to create and transform relationships for value creation among organisations and between organisations and individuals. International Data Corp (IDC) estimates the value of global e-commerce in 2000 at US$350.38 billion and project it to climb to US$3.14 trillion by 2004.[7]

Informatisation/Knowledgisation

3. *Knowledge diffusion and innovation*: The centrality of knowledge and information to the processes of the sign economy and the symbolic society; in particular, "the application of such knowledge and information to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation" (Castells, 1996: 32).

4. *The technological transformation of 'leading' sciences*: the major developments in informatics and modern theories of algebra, computer languages, communication theories and cybernetics, phonology and theories of linguistics, problems of information storage, retrieval and data banks, telematics, problems of translation, are significantly all *language based* (Lyotard, 1984).

5. *Growth of intellectual, human and social capital*: Human capital or 'competencies' is a key component of value in the knowledge-based economy; one of the principal aims of knowledge management is to 'extract' it from people's heads and to lock it into systems or processes where it has a higher inherent value.

Technologisation

6. *Convergent integrated systems*: The growing convergence of specific technologies into integrated systems, including the convergence of IT, media and telecommunications based on a radical concordance of image, text and sound, and

[7] Definition and data taken from Andam's "e-Commerce and e-Business" accessed 23 September, 2003: http://www.eprimers.org/e-comm/

development of new information/knowledge infrastructures and a global media network reflecting the emergence a global Euro-American consumer culture and the rise of global edutainment giants in music/film/TV.

7. *Deterritorialisation:* In the knowledge economy the effect of location is diminished as virtual marketplaces and virtual organisations offer benefits of speed and agility, of round the clock operation and of global reach; knowledge and information "leak" to where demand is highest and the barriers are lowest thus laws and taxes are difficult to apply on solely a national basis.

9. *The model of 'the copy'*: new legal, ethical and economic problems concerning knowledge creation, transmission and distribution highlighted in the emergence of international intellectual property rights regimes and the recent GATS agreements within the international knowledge system.

If we accept this characterisation or something like it then we need closer analyses of all three axes. How does financialisation impact upon universities and schools and to what extent does it drive conceptions of the learning economy? One of the critical questions for educationalists becomes to what extent are developments in policy driven by developments or ideologies of the knowledge economy and how can we tell the difference?

References

Archibugi, D. /Lundvall, B-A 2003: The Globalizing Learning Economy. Oxford: Oxford University Press.

Armstrong, P. 2001: "Science, Enterprise and profit: Ideology in the Knowledge-Driven Economy", in: Economy and Society, Special issue "(After) the New Economy", 30 (4), pp. 524-551.

Barry, A. /Slater, D. 2002: "Introduction: The Technological Economy", in: Economy and Society, 31 (2), pp. 175-193.

Bell, D. 1973: The Coming of Post-Industrial Society; A Venture In Social Forecasting, New York, Basic Books.

Boisot, M. 1998: Knowledge Assets: Securing Competitive Advantage in the Information Economy, Oxford, Oxford University Press.

Burton-Jones, A. 1999: Knowledge Capitalism: Business, Work and Learning in the New Economy, Oxford, Oxford University Press.

Callon, M. 1998: (ed.) The Laws of Markets. Oxford: Blackwells.

Callon, M. /Méadel, C. /Rabeharison, V. 2002: "The Economy of Qualities", in: Economy and Society 31 (2), pp. 194-217.

Choo, C. W. 1998: The Knowing Organization: How Organizations Use Information to Construct Meaning, Create Knowledge, and Make Decisions, Oxford, Oxford University Press.

Davenport, T. H. /Prusak, L. 1997: Working Knowledge: How Organizations Manage What They Know. Boston, Harvard Business School Press.

Delanty, G. 2001: Challenging Knowledge: The University in the Knowledge Society. London: SRHE & Open University Press.

Drucker, P. 1992: The Age of Discontinuity: Guidelines to Our Changing Society. London: Transaction [1969].

Edvinnson, L. /Malone, M.S. 1997: Intellectual Capital. London, Piatkus.

Feng, H. /Froud, J. /Haslam, C. /Johal, S. /Williams, K. 2001: "A New Business Model? The Capital Mrket and the New Economy", Economy and Society, 30 (4), pp. 467-503.

Foray, D. /Lundvall, B. 1996: "The Knowledge-based Economy: from the Economics of Knowledge to the Learning Economy," in: OECD, Employment and growth in the knowledge-based economy. Paris: the Organisation.

Fuller, S. 1988: Social Epistemology. Bloomington: Indiana University Press.

Fuller, S. 2000a: Knowledge Management Foundations. London: Butterworth-Heinemann.

Fuller, S. 2000b: The Governance of Science. Buckingham, Philadelphia: Open University Press.

Handy, C. 1984: The Future of Work: A Guide to a Changing Society. Oxford: Blackwell.

Hawken, P. 1999: Natural Capitalism. London: Earthscan.

Hayek,F. 1937: "Economics and Knowledge", in: Economica IV. Available at: (http://www.hayekcenter.org/friedrichhayek/hayek.html).

Hayek, F. 1945: "The Use of Knowledge in Society", in: American Economic Review XXXV, 4, 519-30. (http://www.hayekcenter.org/friedrichhayek/hayek.html).

Henderson, H. 1996: Building a Win-Win World: Life Beyond Global Economic Warfare. San Francisco: Berrett-Koehlers.

Kelly, K. 1998: New Rules for the New Economy. London: Fourth Estate.

Krogh, G. /Ichijo, K. /**Nonaka, I.** 2000: Enabling Knowledge Creation: How To Unlock The Mystery Of Tacit Knowledge and Release The Power of Innovation, Oxford: Oxford University Press.

Machlup, F. 1962: The Production and Distribution of Knowledge in the United States, Princeton, N.J., Princeton University Press.

Machlup, F. 1970: Education and Economic Growth, Lincoln, University of Nebraska Press.

Marginson, S. /Considine, M. 2000: The Enterprise University: Power, Governance and Reinvention in Australia. Cambridge: Cambridge University Press.

Miller, R. 2001: "21st Century Transitions: Opportunities, Risks and Strategies for Governments and Schools," in: What Schools for the Future? Schooling for Tomorrow. Paris: OECD.

Mirowski, P. /Sent, E-M. 2002: "Introduction", in: Mirowski, P. /Sent, E.M (eds.).: Science Bought and Sold: Essay in the Economics of Science, Chicago & London: The University of Chicago Press.

Negroponte, N. (1995) Being Digital. London: Coronet.

Nonaka, I. /Nishiguchi, T. 2001: Knowledge Emergence: Social, Technical, And Evolutionary Dimensions of Knowledge Creation, Oxford: Oxford University Press.

Nonaka, I. /Takeuchi, H. 1995: The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation, Oxford, Oxford University Press.

OECD 2001: What Schools for the Future? Schooling for Tomorrow. Paris: the Organisation.

OECD 1996a: The Knowledge-based Economy. Paris, The Organization.

OECD 1996b: Measuring What People Know: Human Capital Accounting For The Knowledge Economy. Paris: the Organization.

OECD 1996c: Employment and Growth In The Knowledge-Based Economy. OECD Documents, Paris: the Organization.

OECD 1997: Industrial Competitiveness in The Knowledge-Based Economy: The New Role Of Governments. OECD Conference Proceedings. Paris: the Organisation.

OECD 1999: Managing National Innovation Systems. Paris: the Organisation.

Peters, M. A. 2001a: "Globalisation and the Knowledge Economy: Implications for Education Policy." Paper presented at The Eighth International Literacy & Education Research Network Conference on Learning, Dimotiko Skolio of Spetses, Spetses, Greece, 4-8 July 2001, in: Cope, B. /Kalantzis, M.: Learning for the Future, Proceedings of the Learning Conference 2001, Common Ground (http://MichaelPeters.Author-Site.com/).

Peters, M. A. 2001b: "National Education Policy Constructions of the 'Knowledge Economy': Towards a Critique", in: Journal of Educational Enquiry, 2 (1), May, (http://www.education.unisa.edu.au/JEE/).

Peters, M.A. 2001c: "Education, Enterprise Culture and the Entrepreneurial Self," in: Journal of Educational Enquiry, 2 (2) (http://www.education.unisa.edu.au/JEE/).

Peters, M. A. 2001d: Poststructuralism, Marxism and Neoliberalism: Between Politics and Theory. Lanham & Oxford: Rowman & Littlefield.

Peters, M. A. 2002: 'The University in the Knowledge Economy', in: Cooper, S. /Hinkson, J. /Sharp, G. (eds.): Scholars and Entrepreneurs: The Universities in Crisis, Melbourne, Arena Publications, pp. 137-152.

Peters, M. A. 2003a: "Classical Political Economy and Universities in the New Knowledge Economy," in: Globalisation, Societies and Education, 1 (2).

Peters, M. A. 2003b: "The New Prudentialism in Education: Actuarial Rationality and the Entrepreneurial Self". Paper presented Round Table on 'Education and Risk' at the World Congress of Philosophy, Istanbul, August 2003.

Peters, M. A. 2004a **:** "Higher Education, Globalisation and the Knowledge Economy: Reclaiming the Cultural Function", in: Walker, M. /Nixon, J. (eds.): Reclaiming Universities From a Runaway World, London: Open University Press (forthcoming).

Peters, M.A. /Marginson, S. 2000: Universities in the Twenty-First Century, Special Issue of Access: Critical Perspectives in Cultural and Policy Studies.

Peters, M.A. /Roberts, P. 1999: University Futures and the Politics of Reform, Palmerston North, NZ, Dunmore Press.

Singh K. 1999: The Globalisation of Finance: A Citizen's Guide. London/New York: Zed Books.

Slaughter, S. / Rhoades, G. 1996: "The Emergence of a Competitiveness research and Development Policy Coalition and the Commercialization of Academic Science and Technology", in: Science, Technology, and Human Values (21), 303-39. Reprinted in Science Bought and Sold: Essay in the Economics of Science, eds. P. Mirowski / E.M Sent.

Stewart, T. A. 1997: Intellectual Capital: The New Wealth of Organizations, London, Nicholas Brealey.

Tapscott, D. 1996: The Digital Economy. New York: McGraw-Hill.

Thrift, N. 1998: "Virtual Capitalism: The Globalisation of reflexive business Knowledge", in: Carrier, J. and Miller, D. (eds.): Virtualism: A New Political Economy. Oxford: Berg, 161-186.

Thrift, N. 2001: "'It's the Romance, Not the Finance, that makes the Business Worth Pursuing': Disclosing a New Market Culture", in: Economy and Society, Special issue "(After) the New Economy", 30 (4), pp. 412-432.

Toffler, A. 1990: Powershift: Knowledge, Wealth and Violence at the Edge of the Twenty-First Century. New York & London: Bantam Books.

Touraine, A. 1974: The Post-Industrial Society: Tomorrow's Social History, Classes, Conflicts And Culture In The Programmed Society. Trans. L Mayhew**.** London: Wildwood House.

Watson, M. 2001: "Embedding the 'New Economy' in Europe: A Study in the Institutional Specificities of Knowledge-Based Growth", in: Economy and Society, Special issue "(After) the New Economy", 30 (4), 504-524.

Williams, K. 2002: "Business as Usual", in: Economy and Society, Special issue "(After) the New Economy", 30 (4), 399-411.

Wittgenstein, L. 1953: Philosophical Investigations. Oxford: Blackwells.

World Bank, The 1998: World Development Report: Knowledge For Development, Oxford, Oxford University Press.

World Bank, The 2001: China and the Knowledge Economy: Seizing the 21st Century, Washington, The World Bank. (C. Dahlman / J-E. Aubert).

Author' address:
Prof Dr Michael A. Peters
University of Glasgow
Department of Educational Studies
Faculty of Education
11 Eldon Street
Glasgow, Scotland, G3 6NH, UK
Tel.: +44 141 330 3636
E-mail: M.Peters@educ.gla.ac.uk