Journal of Educational Enquiry, Vol. 2, No. 1, 2001

National education policy constructions of the 'knowledge economy': towards a critique

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We live in a social universe in which the formation, circulation, and utilization of knowledge presents a fundamental problem. If the accumulation of capital has been an essential feature of our society, the accumulation of knowledge has not been any less so. Now, the exercise, production, and accumulation of this knowledge cannot be dissociated from the mechanisms of power; complex relations exist which must be analysed.

Michel Foucault, *Remarks on Marx: conversations with Duccio Trombadori* (1991, p 165).

Introduction

A rediscovery of the economic importance of education has been fundamental to understanding the new global knowledge economy (Papadopoulos 1994). The Organisation for Economic and Cultural Development (OECD) and the World Bank have stressed the significance of education and training as keys to participation in the new global knowledge economy for the development of 'human resources'; for upskilling and increasing the competencies of workers; and for the production of research and scientific knowledge.

Drucker (1993) and Porter (1990) emphasise the importance of the economics and productivity of knowledge as the basis for national competition within the international marketplace. Thurow (1996, p 68) suggests that a technological shift to an era dominated by man-made brainpower industries is one of five economic tectonic plates that constitute a new game with new rules: 'Today knowledge and skills now stand alone as the only source of comparative advantage. They have become the key ingredient in the late twentieth century's location of economic activity'.

Equipped with this central understanding and guided by neoliberal theories of human capital, public choice and new public management, many western

governments have begun the process of restructuring their national education systems and redesigning the interface between universities and business.

These observations and predictions are hardly novel. In the mid-1980s, Charles Handy charted the future of work in a book of the same title. Among other things, he suggested that:

- the full-employment society was becoming the part-employment society;
- 'labour' and 'manual skills' were yielding to 'knowledge' as the basis for new business and new work;
- 'industry' was declining and 'services' were growing in importance;
- 'hierarchies' and 'bureaucracies' were losing appeal;
- 'networks' and 'partnerships' were gaining appeal; and
- the one-organisation career was becoming rarer and job mobility and career changes more fashionable. (Handy 1984, p x)

Handy assumed that we were facing more than a cyclical adjustment; the employment society was ending. Further, he sought new meanings and patterns of work, inevitably turning towards education as the panacea; as not only the means for generating new wealth, credentials and technology, but as a creator of labour-intensive employment and a good in itself - a mark of any civilised society (Handy 1984, p 133). In promoting a new education agenda, based upon greater choice, flexibility, and variety, he argued for the 'home as classroom' - and the 'workplace as school' (ibid, pp 146-147).

Quoting the new master futurists Drucker, Cairncross, Canter and Leadbeater, Hargreaves (2000) has focused upon the transition to a knowledge economy, particularly with regard to its consequences for educational systems and schools. He predicts that while the development of literacy (including information technology (IT) literacy) and numeracy will remain part of the core curriculum, the school as an institution will come under increasing pressure to promote new forms of knowledge, namely:

> meta-cognitive abilities and skills - thinking about how to think and learning how to learn; the ability to integrate formal and informal learning, declarative knowledge (or *knowing that*) and procedural knowledge or (*know-how*); the ability to access, select and evaluate knowledge in an information soaked world; the ability to develop and apply several forms of intelligence as suggested by Howard Gardner and others; the ability to work and learn effectively and in teams; the ability to create, transpose and transfer knowledge; the ability to cope with ambiguous situations, unpredictable problems and unforeseeable circumstances; the ability to cope with multiple careers - learning how to "re-design" oneself, locate oneself in a job market, choose and fashion the relevant education and training. (Hargreaves 2000)

Overall, Hargreaves emphasises 'knowledge management' as playing a vital role in the move to become the 'learning society'. To him, part of the answer for an effective education system is to *train* (*sic*) all education leaders in knowledge management. In essence, it seems that knowledge management will help us to transfer knowledge within and between institutions. It may also assist teachers in making their professional knowledge more explicit and available for others; a knowledge typically tacit (and a discourse of which I am highly suspicious).

Observations such as these on the future of work and education have been around for many years, although the explicit theoretical attempt to link 'knowledge' and 'economy' through redesigning national systems is a recent twist to an old policy narrative.[1]

Taking inspiration from Foucault, in this paper I intend to investigate this new policy twist, by identifying and examining the different discursive strands and policy constructions of three different nations, and their implications for education policy. I will be taking the United Kingdom (UK), Scotland and New Zealand as representative examples of advanced liberal states. In OECD countries, there is a strong family resemblance with regard to such policies. The situations in the UK, Scotland and New Zealand are simply examples of those in a much larger range of countries that have developed similar policies, including Australia, Canada, and Euroland.[2]

By 'knowledge economy', I mean to stress the received (mainstream) view with certain characteristics I have renamed as:

- the economics of abundance;
- the annihilation of distance;
- the de-territorialisation of the state;
- the importance of local knowledge; and
- investment in human capital.

I will discuss these characteristics in more detail below. This received view is largely untested and adopted without subjection to critique. In this policy-oriented paper, I am primarily concerned with how this 'knowledge economy', in part, prescribes education policies. I will thus not be exploring the theoretical cadences of Foucault's studies of the human sciences or Lyotard's 'logic of performativity' in the postmodern condition (as dealt with by Peters 1995, 1996, 2001). In the final section, I do however indicate several lines of critique that might be followed in future work in this area.

Discourses of the 'knowledge economy'

A number of separate discourses from economics, management theory, futurology and sociology can be identified as having contributed to shaping the present policy narrative of the 'knowledge economy'.

The economics of information and knowledge

The discipline of economics has contributed at least five important strands of discourse to this narrative. These are mostly associated with the rise to prominence of the neoclassical second (1960s-1970s) and third (1970s until today) Chicago schools. These include:

- the economics of information - pioneered by Jacob Marschak (and coworkers Miyasawa and Radner) and George Stigler, who won the Nobel Memorial Prize for his seminal work in the 'economic theory of information';

- Fritz Machlup's (1962) groundwork and development of the economics of the production and distribution of knowledge;

- the 'economics of human capital' - developed first by Theodore Schultz and later taken up by Gary Becker in the New Social Economics;

- public choice theory - developed under James Buchanan and Gordon Tullock; and

- new growth theory - which highlighted the role of education in the creation of human capital and production of new knowledge, and explored the possibilities of education-related externalities not specified by neoclassical theory.

I might also mention the application of free-market ideas to education by Milton and Rose Friedman, although their form of monetarism has lost relative importance.

Management theory

Management theory plays a strong role in relation to the 'knowledge economy', from the advent of Taylorism and development of a system of mass production, through to new theories on the organisation of work that include:

- new forms of team-work

- just-in-time production systems

- lean production

- 'kaizen' (or continuous improvement)

- total quality management
- eco-management
- benchmarking etc.

Also relevant is a new concept of continuous change described under the label of 'the flexible firm'; involving more innovative, horizontal and flexible structures based on so-called high skill, high trust and increased involvement of employees.

Knowledge management is one critical field that has emerged recently and is displaying rapid growth. The author of one site has described this field as embodying 'organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings' (see: http://brint.com/kmwhatis.htm). Knowledge management is part and parcel of the new theoretical discourse that has matured in relation to the central concept of the knowledge economy.

Sociology of knowledge and education

Another major strand, which in part stands as critique of the positive economics strand, focuses upon the sociology of knowledge and education - two fields that have provided grand theories concerning the place of knowledge and education in the modern world. For instance, Nico Stehr has traced the concept of the 'knowledge society' to Robert E Lane's coinage of the 'knowledgeable society' in 1966, Peter Drucker's (1969) The age of discontinuity and Daniel Bell's (1973) Post-industrial society. Stehr (1994, p 6) chooses to label the now emerging form of society as a 'knowledge society', because 'the constitutive mechanism or the identity of modern society is increasingly driven by 'knowledge'' and ''knowledge' … challenges as well as transforms property and labor as the constitutive mechanisms of society' (ibid, p 7). In agreement with Giddens, Stehr (1994, p iix) has commented upon the sociological importance of knowledge as the new factor of production:

> There should be a new agenda for social science today because the age of labor and property is at an end. Nonetheless, modern society is still widely conceived in terms of property and labor. Labor and property have an extended and close association in social, political and economic theory and reality. In practice, individuals are forced to define their identities on the basis of their relation to these factors. However, as labor and property (capital) gradually gave way to a new constitutive factor, namely knowledge, older struggles and contests, centered for instance on the ownership of the means of production, also make room for rising sentiments of disaffection with beliefs and values once associated with labor and property and ultimately result in very different moral, political and economic debates and conflicts.

To Stehr's list of influential works, I would add the early classics *The post-industrial society* (Touraine 1974) and *Postindustrial society as information society* (Masuda, 1981).

Sociology of the labour process

Sociological studies of the nature of work, particularly the literature on the labour process, date from Harry Braverman's (1974) Labor and monopoly capital, in which he theorised deskilling and intensification of management control. Thompson (1989) provides the best overview of this debate and the various phases it has passed through, up until the more recent 'flexible specialisation' theory.

Futurology, futures research, forecasting, foresight

This is a relatively new constellation of fields and disciplines that address the impact of world trends and develop visions of the future with the aim of bridging business, science, technology and government. These fields have impacted strongly on policy; for instance, in 1994 the UK launched a 'Foresight program' (see http://www.foresight.gov.uk, which features a list of future sites).

Communications and IT

This body of literature on communications and IT resists simple classification or characterisation, as contributions come from a wide range of disciplines, including electrical engineering, computing science, telematics, informatics and cybernetics. 'Soft' promotional work by large multinational companies such as IBM and Microsoft - carried out in the name of business - have penetrated education like no previous media form. In addition to these 'mainstream' communications and IT discourses, which directly contribute to the received notion of the knowledge economy, more critical literatures exist. These include the recent monumental work of Manuel Castels on the 'information age' (Castels 1997, 1998, 2000) and contributions by Peters and Roberts (1998) and Blake and Standish (2000).

These are clearly disparate disciplines; fields and discourses that operate with different assumptions, employ different methodologies and reach different and sometimes opposing conclusions. The art of policy scholarship is intended, in part, to gain awareness of these different strands as they influence policy narratives, to disentangle them and comment upon inconsistencies. On the other hand, policy development or formulation makes the best of what is available. This can entail weaving often incomplete, partial explanations and new and largely untested approaches to construct policy approaches and narratives with a coherent definition of vision (within the political parameters of government policy manifestos). It seems that the 'knowledge economy' is an idea whose time has come; nudged and patrolled by world policy institutions like the World Bank, OECD, International Monetary Fund etc, national governments the world over have earnestly taken on the task of transforming their economies and societies in accordance with its implicit prescriptions.

Definition and characteristics of the 'knowledge economy'

Before examining national policy constructions built around the notion of the 'knowledge economy', I shall briefly consider its accepted definition. Although I have paraphrased the main characteristics, I should emphasise that I am simply representing the claims made for or about the knowledge economy by others.

Policy definitions

In the UK's white paper titled *Our competitive future: building the knowledge driven economy*, a knowledge-based economy is defined as:

> … one in which the generation and the exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about the more effective use and exploitation **of all types of knowledge** in **all manner of activity.**
>
> (http://www.dti.gov.uk/comp/competitive/main.htm)[6]

It is suggested that 'knowledge' is more than just information, and cites a distinction between 'codified' and 'tacit' knowledge. Codifiable knowledge can be written down and easily transferred to others, whereas tacit knowledge is 'often slow to acquire and much more difficult to transfer'.

In another example, New Zealand's Ministry of Research, Science and Technology recently completed a comprehensive review of the public priorities for good science and technology, under the umbrella of the 'Foresight project'. The Ministry defines 'knowledge economies' as:

> … those which are directly based on the production, distribution and use of knowledge and information. This is reflected in the trend towards growth in high-technology investments, high-technology industries, more highly-skilled labour and associated productivity gains. Knowledge, as embodied in people (as 'human capital') and in technology, has always been central to economic development. But it is only over the last few years that its relative importance has been recognised, just as that importance is growing. (http://www.morst.govt.nz/foresight/front.html)

This definition is accompanied by a description of the 'knowledge revolution', with reference to Alvin Toffler, Peter Drucker, Tapscott (Digital Economy), Negroponte (Being Digital), Charles Handy, Kevin Kelly, Hazel Henderson and Paul Hawken (for a critical discussion of the Foresight project, see Peters & Roberts 1999, pp 66-73).

According to the Ministry, the knowledge economy differs from the traditional economy with respect to an emphasis on what I earlier referred to as the 'economics of abundance'; the 'annihilation of distance'; the 'de-territorialisation of the state'; the 'importance of local knowledge'; and 'investment in human capital'. The following is a brief expansion on each of these characteristics.

Economics of abundance

These economics are not scarce; unlike most resources - which become depleted when used - information and knowledge can be shared and actually grow through application.

Annihilation of distance

The effect of location is diminished through new information and communications technologies; virtual marketplaces and organisations offer round-the-clock operation and global reach.

De-territoralisation of the state

Laws, barriers and taxes are difficult to apply on a solely national basis, as knowledge and information 'leak' to where demand is highest and barriers are lowest.

Importance of local knowledge

Pricing and value depends heavily on context, as the same information or knowledge can have vastly different value for different people at different times.

Investment in human capital

Human capital (ie competencies) is of key value in a knowledge-based economy; knowledge-based companies seek knowledge locked into systems or processes rather than in workers, because of its higher inherent value.

National policy constructions of the 'knowledge economy'

UK: building the knowledge-driven economy

Understanding based upon these characteristics has recently helped the shaping of national policy constructions of the 'knowledge economy' in the West (eg in the United States of America (USA), the UK, Ireland, Australia, Canada and New Zealand) and in the developing world (most notably in China and Southeast Asia). For example, in the 1998 white paper titled *Our competitive future*, the UK's Department of Trade and Industry 1998 acknowledges the fact that knowledge was included by the World Bank as a theme in its 1998 *World Development Report*:

> For countries in the vanguard of the world economy, the balance between knowledge and resources has shifted so far towards the former that knowledge has become perhaps the most important factor determining the standard of living. ... Today's most technologically advanced economies are truly knowledge-based. (http://www.dti.gov.uk/comp/competitive/main.htm)

In this white paper, the Department of Trade and Industry (1998) also notes that the OECD has drawn attention to the growing importance of knowledge, indicating that the emergence of knowledge-based economies has significant policy implications for the organisation of production and its effect on employment and skill requirements. The Department also suggests that other countries, including the US, Canada, Denmark and Finland, have already identified the growing importance of knowledge and reflected this in their approaches to economic policy.

Further, the report emphasises 'new growth theory', charting the ways in which education and technology are now viewed as central to economic growth. Neo-classical economics are limited in that they do not specify how knowledge accumulation occurs and thus cannot acknowledge externalities. They also fail to consider human capital, such that education has no direct role. In contrast, new growth theory has highlighted the role of education in the creation of human capital and in the production of new knowledge (for example, see Solow 1956, 1994). On this basis, it has explored the possibilities of education-related externalities.

In short, while the evidence is far from conclusive at this stage, there is a consensus emerging in economic theory that:

a. education is important for successful research activities (eg by producing scientists and engineers), which in turn is important for productivity growth;

and

b. education creates human capital, which directly affects knowledge accumulation and thus productivity growth.

According to the report, not only do research and development expenditures provide a positive contribution to productivity growth, but education is important in explaining the growth of national income (see also Romer 1986, 1990).

The white paper emphasises that a 'knowledge economy' is not a return to interventionist strategies of the past - nor a naïve reliance on markets. In his *Foreword* to the white paper, Tony Blair expresses the role of government thus:

> The Government must promote competition, stimulating enterprise, flexibility and innovation by opening markets. But we must also invest in British capabilities when companies alone cannot: in education, in science and in the creation of a culture of enterprise. And we must promote creative partnerships which help companies: to collaborate for competitive advantage; to promote a long term vision in a world of short term pressures; to benchmark their performance against the best in the world; and to forge alliances with other businesses and with employees. (http://dti.gov.uk/comp/competitive/wh_int1.htm)

In education, Blair places a strong emphasis on the culture of enterprise and building skills of entrepreneurship, which differs little, if at all, from the policy emphases initiated by Lord Young under the Thatcher Government. He places equal emphasis on: the promotion of research; industry-education relationships, especially in higher education; workplace learning; and building a culture of learning (including the establishment of individual learning accounts).

The following is a brief illustration of the 'fit' of this economic policy orientation for education policy in Scotland and New Zealand.

Scotland: targeting excellence for the knowledge economy

In 1999, the Scottish Office released a white paper titled *Targeting excellence: modernising Scotland's schools* (see: http://www.scotland.gov.uk/library/documents-w6/edsp-00.htm). I have adopted the above subheading from a chapter in this white paper, which includes the following excerpt:

> The knowledge economy will pose challenges and opportunities. Knowledge and know-how are taking over from buildings and machinery as the most valuable assets of business. The speed at which information can cross the globe, the sophistication of modern products and services, and the sophistication of the modern consumer all point to increasing globalisation of the economy, and to increasing customisation of goods and services to meet peoples' individual needs. Innovation, fresh thinking, the

> acquisition and application of knowledge, and high levels of customer awareness are likely to be among the critical factors in achievement in the future. Competitive advantage will come from the application of intellect and knowledge to business problems. The skills Scotland will need to be successful can and should be fostered and grown in schools.

In this document, the Scottish Office lists a number of initiatives already underway, including:

- the implementation of the National Grid for Learning by 2002;
- investment in training teachers in the use of information and communications technology (ICT);
- development of the Scottish Virtual Teachers' Centre;
- development of a 'Think business' program to bring entrepreneurs into the classroom;
- promoting enterprise skills in schools;
- support for the National Centre: Education for Work and Enterprise; and
- investment in industry and enterprise awareness for teachers and schools.

The Office also identifies the next steps, namely:

- extension of the National Grid for Learning to enhance lifelong learning, particularly support for community access;
- creation of new guidelines for improving work experience;
- creation of new guidelines for careers education; and
- expansion of the Education for Work and Enterprise agenda.

New Zealand: education for the knowledge economy

The Information Technology Advisory Group (ITAG), appointed by the Minister for Information Technology, recently published a report entitled: *The knowledge economy* (Information Technology Advisory Group 1999). The executive summary of this report features the following assertions:

> More than 50 per cent of Gross Domestic Product (GDP) in the major OECD economies is now based on the production and distribution of knowledge. We are leaving the Industrial Age behind and moving into the Information Age.
>
> In the US, Australia, the United Kingdom, Canada, Finland, and Ireland, the growth of the Internet and other related new technologies have become the catalyst for the creation of 'knowledge economies' …

> Countries that have encouraged their people through education and life-long learning and by investing heavily in research and development (R&D) are well positioned to take advantage of these new global markets. Australia, Finland, Ireland, Canada, Singapore, and the United States are countries which have embraced the knowledge economy (some still with a strong commodity sector), and are experiencing strong GDP growth as a result. There is much we can learn from them. (http://www.knowledge.gen.nz/)

In this report, ITAG makes some interesting claims about 'knowledge' - 'know-how' and 'know-who' are considered more important than 'know-what'; knowledge gained by experience is as important as formal education and training; and lifelong learning is vital for organisations and individuals. ITAG (1999) goes on to suggest that intellectual capital is the source of competitive advantage for firms, and that information and communication technologies 'release people's creative potential and knowledge'. The group also details what New Zealand's competitors are doing and indicates that Ireland has accomplished a great deal by:

- investing heavily in education, especially technical education;
- correcting major imbalances in government finances and putting fiscal and monetary policies in order;
- controlling excessive costs and keeping wage increases moderate;
- opening up the economy and privatising many state-owned enterprises;
- positioning Ireland as the 'hub' between Europe and the global marketplace (Ireland trades 153 per cent of its gross national product);
- enacting strong legislation designed to open up previously sheltered activities to competition in the interests of consumers;
- creating incentives and stimulating the economy through lower taxation.

ITAG cites that New Zealand faces six crucial issues, the first five of which arguably concern education. For the purposes of this discussion however, I will quickly focus upon the first issue as dealt with in the report. Specifically, ITAG (1999) makes four significant conclusions regarding the new economics in relation to education.

1. A lack of investment in human rather than physical capital prevents poor countries from catching up with rich ones. Educational attainment and public spending on education are correlated positively to economic growth (Barro & Xavier 1995; Benhabib & Spiegel 1994).

2. School quality - eg measured in terms of teacher pay, student-teacher ratios, and teacher education - is positively correlated to future earnings of students (Card & Krueger 1992).

3. Education has an important role in the growth of national income. Lifelong learning is also crucial (Aghion et al 1998).

4. People migrate from places where human capital is scarce to places of abundance (Lucas 1988). 'Human capital flight' or 'brain drain' can lead to a permanent reduction in income and growth in the country of emigration relative to that of immigration.

On the basis of this analysis, ITAG suggests that New Zealand needs more technical graduates and an increased ICT literacy (and greater number of ICT courses) for students and teachers.[7]

Towards a Critique

A certain tedium has crept into official policy documents and academic papers that derives from the new hyper-discourse and seemingly endless inflated claims that entertain the prospect of the 'new' knowledge economy and its implications for education. This may be because under the combined impact of economic globalisation, the rapid spread of the new information technologies and the promotion of a neoliberal paradigm of free trade, there has in fact been an accelerated set of changes occurring in the economy, the nature of 'work' and education. It is as though world policy institutions, extra-national political organisations and national governments have been trying to devise policies that can embrace the nature of these changes - but apparently reality has made even the best predictions obsolete.

In this general context, the language of policy takes on a different kind of tone, especially when the same entrenched clichés about 'the future' seem to occur in document after document. Policy, in other words, has become the 'language of futurology' - steeped in hyperbole and laced with prediction. The rules of this policy language-game seem based upon the invention of new metanarratives - overarching concepts or visions of the future - as a method of picturing these changes and presenting a coherent policy narrative. Thus, the terms 'postindustrial society', 'information society' (which have been around since the late 1960s) and 'global information economy' abound in policy documents. More recently, the terms 'knowledge' and 'learning' - conceptualised both in relation to 'society' and economy - have come to occupy centre stage in national policy documents concerned with mapping the impact of global trends and encouraging greater competitiveness and more synergistic relationships between education and the economy.

Before I briefly indicate the lines of my critique, I should add that I am not against the notions of the 'knowledge economy' or its cognates 'knowledge society' and 'learning society' *in toto*, nor its employment as a direction for education policy. Before such notions can be supported or opposed, the relevant concepts need to be clarified. There are benign and less benign versions of these concepts. For instance, one view of the 'knowledge economy' - understood within the social democratic tradition - posits the economy as subordinate to the state and the question of

sovereignty. Based on this model, the accompanying notion of the 'knowledge society' provides grounds for both the reinvention of education as a *welfare right* and the recognition of *knowledge rights* as a basis for social inclusion and informed citizenship. This view can be contrasted with that of the 'knowledge economy' as simply an ideological extension of the neoliberal paradigm of globalisation, where the term stands for a 'stripped down' functionalist view of education in service of the multinationals.

My first criticisms are conceptual. These new policy language-games, on the whole, do not make standard philosophical distinctions (eg between 'knowledge' and 'information'), nor do they operate with robust concepts of 'learning' or 'knowledge'. More importantly, no analytical distinction is drawn between 'knowledge economy' and 'knowledge society', which is as fundamental as the distinction between 'economy' and 'society'. The latter notion, for instance, might enable us to talk of education and knowledge rights in the new 'knowledge economy' and therefore address questions of social inclusion more directly.

These national policy constructions revolve around a narrow, instrumental approach to the economics of knowledge and to intellectual culture in general, which does not acknowledge or sufficiently differentiate among various definitions of knowledge: economic, sociological, and philosophical. These policy documents often obfuscate the issues by using the terms 'knowledge' and 'information' interchangeably. Traditional analytic philosophers argue that the concept of knowledge has three conditions: a belief condition, a truth condition and a justification condition. In other words, for a statement to count as knowledge, it must satisfy the conditions of belief, truth and justification. While it has its difficulties, this philosophical account of knowledge - of great importance in defining 'education' in analytic philosophy - does not distinguish between 'knowledge' and 'information'. Information considered as data transmitted from a 'sender' to a 'receiver' does not necessarily have to satisfy the belief, truth or justification conditions. Thus, 'education for the information economy' and 'education for the knowledge society' take on quite different meanings.

Second, the meaning of the concept of the 'knowledge economy' is not yet clearly defined. If it means more than a certain percentage of the working population employed in 'knowledge' occupations, then it is necessary to conceptually explore the links between 'knowledge', 'economy' and 'learning'. This is especially necessary if the term signals an emerging phenomenon, as many of the change merchants believe.

Also, it is clear that the empirical evidence for the 'knowledge economy' as a new stage of capitalism or for a new 'weightless' economy is still weak at best, as are the empirical connections between the processes involved. Can capital be infinitely substituted for manual and skilled labour? Can knowledge become a new factor of production, as some scholars claim, or have new forms of intellectual and human capital become important? What is the relationship between investment in human capital and economic growth or productivity? What are the differences between state and private forms of investment in human capital, especially in

relation to higher education? Should education be seen solely as a form of investment in human capital?

In this respect, the landmark research on the concept of the 'learning society' undertaken by the UK's Economic and Social Research Council under the directorship of Frank Coffield (ie *The Learning Society Programme* 1994-2000) resulted in some important evidence on higher, vocational and workplace education, and the intersection or transition between education and work (see also Coffield 1995). Coffield (1999) has spoken of 'breaking the consensus' that prevails in the UK; a consensus built on the tenets of a narrowly construed education policy that is based upon a simplified version of human capital theory and incorporates both the notions of 'lifelong learning' and 'learning society'.

In his 1999 address, Coffield examined the problem of human capital theory and its legitimation as policy, and began to discuss alternative visions of the 'learning society'. As implied in the twin titles of his recent works (Coffield 2000a, 2000b), he has taken both this critical contestability of current policy and its visionary element a considerable step further. He explains:

> One of the achievements of the programme is to have explored critically the concept of a learning society and, by examining the definitions used by the 14 projects, it is possible to discern at least 10 contrasting ways in which the term is used. (Coffield 2000a, p 7)

Coffield lists the following ten ways:

1. skills growth
2. personal development
3. social learning
4. a learning market
5. local learning societies
6. social control
7. self-evaluation
8. centrality of learning
9. a reformed system of education
10. structural change.

This demonstrates how cognate concepts like the 'learning society (which is a soft policy focus of the knowledge economy) can take on plural meanings and practices.

Third, the discourse of futurology often embraced by such policy discourses is at once populist and ahistorical. It should be remembered that the discourses of futurology and of futurisms (in the plural) have always been defining features of modernism and modernity, and that these discourses gain prominence at the end of each century. They are essentially millennium products. Often such policy discourses are grounded in the corporatist management theory of scenario building; thus it is not always clear in these future-oriented narratives who is telling the story or whose interests are at stake.

A new form of knowledge managerialism has quickly developed, and its proponents have taken upon themselves the policy expertise for deciding the new meanings of the concepts of 'knowledge' and 'learning' in their novel constellations with the economy. Most often, these discourses do not consider the history of the notion of the 'knowledge society' nor its theoretical antecedents in the 'postindustrial society' or the 'information society', which are not uncontested terms. Rather, they are value- and theory-laden concepts that have been part of social and cultural theory for over thirty years. The document writers also run terms together, failing to distinguish the discursive strand of the economics of information, knowledge and education.

Moreover, with the coalescing of literatures in policy document of this kind, often what occurs is the predominance of an economic definition of knowledge that then serves to construct education policies, without careful thought of other approaches or the criticisms they might generate. Even in terms of the limited approach of economics of knowledge, the documents do not tend to recognise knowledge as a global public good (for example, see Stiglitz 1998, 1999a, 1999b, 1999c).

Fourth, there are important changes concerning the shifting nature of work and its organisation. National policy constructions of the 'knowledge economy' are constructed on the assumption that it is the future basis for national competitiveness and success in the global economy and will provide the necessary new jobs for successive waves of 'knowledge workers'. While unemployment levels are historically at their lowest level for many years in the UK, the questions of the intermediate and long-term shift in the nature of work, work organisation and in new forms of employment related to the knowledge economy require much more reflection and empirical research.

For example, Rifkin (1998) argues convincingly on the basis of empirical data for 'the end of work' in his analysis of the US economy. He suggests that as automation becomes more sophisticated, the primary, secondary and tertiary labour forces (ie the knowledge sector) will face massive displacement. Rifkin suggests that the current technological revolution and labour-saving mechanisms have driven down wages and threatened livelihoods. Others have suggested that the social consequences of the disappearance of work are most obvious in America's inner cities (Wilson 1980, 1987).

The shift from industrial capitalism to information or knowledge capitalism is transforming the West into 'workless worlds', where only an elite technical labour force will find jobs. In this context, we must rethink the purpose of civil society, particularly the role of national education systems. As Rifkin (1998) argues:

> Corporate downsizing, increasing automation of the manufacturing and service sectors, the shift from mass to elite workforces, growing job insecurity, the widening gap between rich and poor, an aging population, and globalization of the economy are creating a host of new uncertainties and challenges for millions of Americans as well as American businesses. At the same time, government at every level is being fundamentally transformed. The 'welfare state' is being pared down, and entitlement programs are shrinking. The social net is being streamlined and overhauled, and government subsidies of various kinds are being reduced or eliminated.

He also posits: 'The so-called third sector is likely to play a far more expansive role as an arena for job creation and social-service provision in the coming century'. What Rifkin calls the 'end of work' is the end of 'work' under industrial capitalism, and as André Gorz (the utopian Marxist sociologist) claims, we must learn to think of work in the philosophical and anthropological senses:

> We must dare to prepare ourselves for the Exodus from 'work-based society': it no longer exists and will not return. We must want this society, which is in its death-throes, to die, so that another may arise from its ruins. We must learn to make out the contours of that other society beneath the resistances, dysfunctions and impasses which make up the present. 'Work' must lose its centrality in the minds, thoughts and imaginations of everyone. We must learn to see it differently: no longer as something we have - or do not have - but as *what we do*. We must be bold enough to regain control of the work we do. (Gorz 1999, p 1)

For Gorz, work in a genuine sense is the means to self-realisation. In the Hegelian and Marxist senses, the nature of work is tied up not only with 'practico-sensory activity', but with *poiesis* and self-creation.[8]

Finally, perhaps most importantly, we must not become so locked into national policy constructions and their ideological narratives to such a degree that, as servants of the state, we spend all our time satisfying its policy requirements and have no time for informed critique or for perceiving the social consequences of the policies. In this regard, I think that the observations of Lynne Chisholm should be considered carefully:

> New information and communication technologies offer ultimately non-controllable access to diverse and plural worlds - yet they do not assure the acquisition of the ethical and critical faculties needed for personal orientation and balance in negotiation of those worlds … Knowledge societies thus theoretically offer 'unprecedented means to empower social actions and to add to the self-transforming capacity of society' [Stehr]. Yet in practice they appear to be highly susceptible to recreating and reinforcing systematic social inequalities and to exacerbating economic and social polarisation. (Chisholm 1999, p 3)

In the opening quote of this paper, Foucault discusses the formation, circulation and utilisation of knowledge as a fundamental problem and compares the accumulation of knowledge to that of capital. These remarks, made in the late 1970s,

help us to chart the genealogy of his own project in relation to the emergence and shift of *epistemes* or distinctive formations of systems of knowledge. It was in this period that he coined the term 'power/knowledge'. Both the quoted remark and his studies of the history of the systems of thought are wonderfully prescient. Certain knowledge formations did exist before capitalism. However, perhaps, at this juncture (with full-blown notions of the knowledge economy looming large in policy terms), it is now impossible to pursue the question of knowledge separately from the question of capital.

Notes

I would like to thank: Malcolm MacKenzie and Cathy Fagan at the University of Glasgow; a number of people, including Paul Standish and John Drummond, who attended a seminar at the University of Dundee; and two anonymous reviewers for the *Journal of Educational Enquiry*, for their helpful comments on an earlier draft. I presented this paper through the Educational Studies Seminar Program at the University of Dundee in the Autumn Term, 12 December 2000.

1. For instance, see the European Commission's white paper Teaching and learning: towards the learning society (1995) and The European house of education - education and economy, a new partnership (Working Document SEC 796, 21 May 1999).

2. In August 2000, I spent a month in China, during which time I examined the restructuring and current reform of Chinese universities in relation to the 'knowledge economy'.

3. See: http://cepa.newschool.edu/het/schools/chicago.htm.

4. There is a strong sociological literature that focuses on contemporary analyses of individualisation processes, including the work of Beck (1992), Beck, Giddens and Lash (1990) and Giddens (1991). The sociology of postindustrialism overlaps with more philosophical debates on modernity and postmodernity (see Habermas 1987, Lyotard 1984) and studies of globalisation (eg Amin 1996, Burbules 2000 (for education), Held 1995).

5. One of the earliest and well-known futures studies was Alvin Toffler's (1972) collection and his subsequent work. See also the 1999 book I coauthored with Peter Roberts called University futures, and a recent excellent collection entitled Global futures (Pieterse 2000). Pieterse (2000) distinguishes among the mainstream managerial approach to futures based on forecasting and risk analysis; critical approaches to futures that are critical of dominant futures reflecting institutional vested interests; and alternative futures, which seek to be inclusive without being alarmist.

6. The web links mentioned are as follows:

- The Foresight project - http://www.morst.govt.nz/foresight/front.html;
- Tertiary education in New Zealand: policy directions for the 21st Century - http://www.minedu.govt.nz/tertiary/review;
- What bright future means for research, science and technology - http://www.morst.govt.nz/bright/index.htm;
- Knowledge management - http://www.brint.com/km/;
- New Zealand Trade Development Board - http://www.tradenz.govt.nz;
- BIZ - http://www.bizinfo.co.nz

7. In hindsight, ITAG;s report became part of a wider national government innovation and enterprise strategy that led into the elections held 27 November 1999.

8. Philosophers of education have had little to say about work, its centrality for society and education, or about the new forms it will take in the knowledge economy. For some recent discussions of the philosophy of work and its importance for education, see White (1997) and Winch (2000). Before we can begin to understand new forms or to develop education policies based on the future of work, I think we need to become more aware of the theology of work, the history of the concept 'work', and the ideology of work.

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