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Education policy research and the global knowledge economy[1]

Michael Peters

University of Auckland

ABSTRACT
In this paper, first, I sketch the importance of three discourses leading to the notion of the "knowledge economy" and I outline a common conception of the notion. Second, I discuss two recent policy constructions of the "knowledge economy" commenting at the same time on implications for education policy. Third, I mention some criticisms of these constructions and introduce Joseph Stiglitz's notion of knowledge as a global public good, and, finally, lay out some of the tasks of educational policy research in its contribution to the debate.

> Knowledge is and will be produced in order to be sold; it is and will be consumed in order to be valorised in a new production: in both cases, the goal is exchange.
>
> Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge,* 1984, p. 4.

> 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

The body of literature on the concept of the "knowledge economy" is both recent and rapidly growing, especially in the related fields of economics and management, yet both less recognised and less established in the field of education. It is a concept that has inspired many national governments and world policy institutions such as the OECD[2] (1996a; 1996b; 1997) and the World Bank (see e.g., Stiglitz, 1998, 1999a, 1999b) to talk of the global "knowledge economy" of the future, and to emphasise the fundamental importance of education considered as an investment both in human capital and in the production of research or new knowledge.

In February 2000 the executive body of the European Union (EU) launched an ambitious new strategy to promote job creation and skills for the new knowledge-based economy, designed to overcome the gap with the United States in access to the Internet and the use of information and communication technology. The strategy sets out a range of specific recommendations in four main areas (learning, work, public services and enterprises) and, specifically, calls for: the linking all schools to the Internet by 2002; teacher competency in information society skills; an inclusiveness

where all workers have the opportunity to achieve the key new skills of information society, and; the establishment of flexible frameworks for tele-working to meet the new needs of business and employment. The EU Commissioner for Employment, Anna Diamantopoulou, suggested that the main goal of the union is to build an inclusive knowledge-oriented economy as she considers it the only route to create jobs and growth in Europe in coming years. Diamantopoulou also pointed out that the next generation of the work force - the "net generation" - is in school today and nations of the EU must properly equip this generation so that the EU can grasp the challenges and opportunities of the knowledge society that are considered vital to the EU's future economic and social development.

In this paper, first, I sketch the importance of three discourses leading to the notion of the "knowledge economy" and I outline a common conception of the notion. Second, I discuss two recent policy constructions of the "knowledge economy" commenting at the same time on implications for education policy. Third, I mention some criticisms of these constructions and introduce Joseph Stiglitz's notion of knowledge as a global public good, and, finally, lay out some of the tasks of educational policy research in its contribution to the debate.

The discourses and characteristics of the "knowledge economy"

The concept of the "knowledge economy" and its associated discourse is anchored in a diverse literature that is now almost fifty years old, beginning, perhaps, with Peter Drucker's (1959) predictions in *Landmarks of Tomorrow,* developed further by Fritz Machlup's (1962) empirical analyses of the growth of the service sector of the American economy in the early 1960's, and taken up by the sociologists of post-industrialism, Daniel Bell (1973) and Alain Touraine (1972), in the late 1960s. Machlup estimated that in the US "knowledge production in 1958 was almost 29 per cent of adjusted GNP" (p. 362.). Machlup (1970; 1980) was also among the first economists to theorise the importance of knowledge and education to the modem economy. *The Knowledge Industry in the United States, 1960--1980,* a book he was working on at the time of his death, was completed and published by his disciples (see Rogers et al, 1986). Gary Becker (1964), drawing on the work of his teachers at the University of Chicago -- Theodore Schultz, Greg Lewis and George Stigler, began to theorise education as a form of human capital in the early 1960s. Both Becker and Machlup, along with Milton Friedman, were members of the Mt Pelerin Society established by the Austrian economist Frederick von Hayek, who had taken up a chair at the University of Chicago in 1950 and exercised a strong influenced over the development of contemporary forms of American neo-liberalism (see Peters, 1999a). As Becker (1997) said in a recent interview: "Chicago always stands for markets, rationality and that market do things more efficiently than governments do."

In this literature the main organising concepts have shifted backwards and forwards between "information" and "knowledge", and between "society" and "economy", so that, for instance, Masuda -- the Japanese sociologist, whose thinking encouraged many of the structural changes of the Japanese economy during the 1970s and early '80s -- published his ground-breaking work Entitled *The Information Society As Post-Industrial Society* in 1980. I would want to maintain the distinction between the "knowledge society" and the "knowledge economy" without collapsing the one into the other, for the very reason that we need to maintain a distinction between "society" and "economy". There are certain traditional notions of welfare, rights, and State responsibilities that inform the former concept, that are missing from the latter, yet these traditional notions prefiguring "civil society" require a theoretical reworking in the new context.

During these conceptual shifts, which became intensified through the 1980s, alternative perspectives to that of the Chicago school of economics developed, especially in American sociology and French philosophy, which began to theorise the conceptual relations between "knowledge", "information", "education" and "economy" in terms of "the postmodern condition" (Lyotard, 1984) or, what, perhaps, more commonly became known as the modernity/postmodernity

debate. It is this literature that I have followed and contributed to over the past fifteen years. In particular, I have been interested in the work of Jean-Frarnçois. Lyotard, whose *The Postmodern Condition: A Report on Knowledge* (1984), I think, still defines the critical issue facing the "knowledge economies" of the advanced Western states: the question of the *legitimation* of knowledge and education (see Peters, 1995). I have followed also the work of other poststructuralist thinkers, including Foucault and Derrida. Indeed, in terms of the links between education policy and educational research I can identify my own orientations in terms of a number of directions that attempt to build the development of an approach that reflects this philosophical orientation: in particular, a critique of neo-liberalism in social policy (Peters & Marshall, 1996; Peters, 1998; Peters, 2000; Peters & Fitzsimons, 2000), and; a focus on higher education policy focusing on the reform and future of universities (Peters, 1997; Peters & Roberts, 1998; Peters & Roberts (1999). Certainly, one of the lessons that poststructuralism has taught me, especially the work of Lyotard and Michel Foucault, is that "knowledge" and "power" are to be seen as two sides of the same question. On this basis, I think that "knowledge" and "economy, in its "knowledge economy" formulation, needs the third term "power", to provide a comprehensive analysis that draws loosely on principles of political economy.

Orthodox neo-classical economics can only explain or analyse education -- a form of non-commodity production -- by representing it as a form of commodity production, whereas Marxist political economy, utilising Marx's notions of exchange-value and use-value, provides an analysis of education that is able to explore it as a non-market activity. In addition, Marxist political economy also identifies an expansionary dynamic of capitalism that, in all social realms, tends to universalise the commodity production form. This universalising tendency of capital marks a new stage of capitalism where knowledge becomes a direct force of production m its own right.

Simon Marginson (1997) asserts (following Mandel, Williams and Jameson) that the global knowledge economy based upon the proliferation of new communications and information technologies, is better understood as an extension of capitalism, applied to new spheres, than an altogether new economy as implied in the "post-industrial" literature. Marginson (1997) argues that if Marx's theory of power, based largely on economic relations, seems "radically insufficient", especially in relation to the role of knowledges and projects of government, "it remains necessary to recognise the role of economically constituted power" (p. 16). In an important footnote, Marginson states: "Foucault and Lyotard take Marx's description of economic relations as given" (p.282, fn 4). I think this is a source of confusion. I do not think that it is possible to *add* what Marginson calls Foucault's "social theory" to Marxian political economy, without any theoretical difficulties or leftover problems (see Peters, 1999b).[3]

At this point let me tum directly to a common conception of the 'knowledge economy' before moving on to examine national policy constructions built around the notion. The 'knowledge economy' allegedly differs from the traditional economy with an emphasis on what I shall call the 'economics of abundance', the 'annihilation of distance', 'de-territoralisation of the state', the importance of 'local knowledge', and 'investment in human capital' (and its embedding in processes). Let me briefly expand on each of these characteristics:

- *Economics of abundance:* The economics is not of scarcity, but rather of abundance for unlike most resources that become depleted when used, information and knowledge can be shared, and actually grow through application.
- *The annihilation of distance:* The effect of location is diminished through new information and communications technologies; virtual marketplaces and organizations offer round-the-clock operation and of global reach.
- *The de-territoralisation of the state:* Laws, barriers and taxes are difficult to apply on solely a national basis as knowledge and information 'leak' to where demand is highest and the barriers are lowest.

- *The importance of local knowledge:* Pricing and value depends heavily on context as the same information or knowledge can have vastly different value to different people at different times.
- *Investment in human capital:* Human capital (i.e., competencies) is the key component of value in a knowledge-based economy and knowledge-based companies seek knowledge locked into systems or processes rather than in workers because it has a higher inherent value.

National policy constructions of the "knowledge economy"

United Kingdom

It is policy understandings based upon these characteristics that recently have helped shape national policy constructions of the 'knowledge economy' in the USA, United Kingdom, Ireland, Australia, Canada and New Zealand. The United Kingdom's White Paper *Our Competitive Future: Building the Knowledge Driven Economy* (Department of Trade and Industry, 1998), for example, begins by acknowledging the fact that the World Bank's 1998 *World Development Report* took knowledge as its theme, citing the report as follows:

> 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).

The White Paper also mentions 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 report suggests that already other countries including, US, Canada, Denmark and Finland, have identified the growing importance of knowledge and reflected it in their approach to economic policy.

It defines a knowledge based economy in the following terms:

> A knowledge driven economy is one in which the generation and the exploitation of knowledge has come to play the predominant play 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).

The report suggests that "knowledge" is more than just information and it goes on to distinguish between two 'types of knowledge: "codified" and "tacit". Codifiable knowledge can be written down and transferred easily to others whereas tacit knowledge is "often slow to acquire and much more difficult to transfer."

Much of the report follows Paul Romer's (1986, 1990) work in so-called "new growth theory", charting the ways in which education and technology are now viewed as central to economic growth. One of the limitations of neo-classical economics is that it does not specify how knowledge accumulation occurs. As a result there is no mention of human capital and there is no direct role for education. Further, in the neoclassical model there is no income 'left over' (all output is paid to either capital or labour) to act as a reward or incentive for knowledge accumulation. Accordingly, there are no externalities to knowledge accumulation. By contrast, new growth theory has highlighted the role of education in the creation of human capital and in the production of new knowledge (see, for example, 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 education is important for successful research activities (e.g., by producing scientists and engineers), which is, in tum, important for productivity growth, and;

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

The White paper emphasises that "knowledge economy" does not mean a return to interventionist strategies of the past but neither does it mean a naïve reliance on markets. As Tony Blair expresses the role of government in the *Foreword* to the White Paper:

> 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.

In education there is a strong emphasis on the culture of enterprise and building skills of entrepreneurship which is not very different, if at all, from the policy emphases initiating by Lord Young under the Thatcher Government. There is an equal emphasis on the promotion of research, on industry-education relationships, on workplace learning, on building a culture of learning (including the establishment of individual learning accounts).

New Zealand

New Zealand's Ministry of Research Science and Technology (MoRST) has very recently completed a comprehensive review of the priorities for public good science and technology, under the umbrella of the so-called Foresight Project. The Foresight Project links government investment with the vision of New Zealand's as a "knowledge society".

On this account knowledge is said to include " information in any form, but also includes know-how and know-why, and involves the way we interact as individuals and as a community" (MoRST, 1998). The project defines "knowledge economies" in the following terms:

> Knowledge economies are 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/font.html).

This description is accompanied by a description of the 'knowledge revolution', sprinkled with references 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: 66-73).

More recently, the Information Technology Advisory Group (ITAG), appointed by the Minister for Information Technology, has published a report entitled *The Knowledge Economy* (ITAG, August 1999) begins its Executive Summary with 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) ~re 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).

The report is interesting in terms of the claims it makes about "knowledge": "knowhow" and "know-who" is more important than "know-what"; knowledge gamed by experience is as important as formal education and training, and; life long learning is vital for organisations and individuals. The report goes on to suggest that intellectual capital is a film's source of competitive advantage and that information and communication technologies "release people's creative potential and knowledge". It details what New Zealand's competitors are doing and indicates that Ireland accomplished a great deal by:

- investing heavily in education, especially technical education
- correcting major imbalances in the 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 GNP)
- 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.

The six crucial issues that New Zealand faces are specified as: education; Maori (the indigenous inhabitants of NZ) success in the knowledge economy; immigration and the 'brain drain'; research and development; a culture of innovation, and; changing the export mix. The first five of these issues, arguably, concern education but in this context let me quickly focus upon the first issue as the report deal with it. The report suggests that the most significant lessons of the new economics in relation to education are:

- It is a lack of investment in human capital, not a lack of investment in physical capital, that prevents poor countries from catching up with rich ones. Educational attainment and public spending on education are correlated positively to economic growth (Barro and Sala-i-Martin, 1995; Benhabib and Spiegel, 1994).
- School quality measured, for example, by teacher pay, student-teacher ratio, and teacher education is positively correlated to future earnings of the students (Card and Krueger, 1992).
- Education is important in explaining the growth of national income. Life-long learning is also crucial (Aghion et al., 1998).
- People with human capital migrate from places where it is scarce to places were it is abundant (Lucas, 1988). "Human capital flight" or "brain drain" can lead to a permanent reduction in income and growth of the country of emigration relative to the country of immigration.

On the basis of this analysis it goes on to suggest that New Zealand needs more technical graduates and to increase ICT literacy (and ICT courses) for students and teachers. The Report has become part of a wider National Government innovation and enterprise strategy leading into the upcoming elections to be held on 27 November.[4]

Education policy research and criticism of national policy constructions

My criticisms of both policy constructions is that they revolve around a narrow, instrumental approach taken to the economics of knowledge and to intellectual culture in general, which does not acknowledge sufficiently differentiate among various definitions of knowledge: economic, sociological, and philosophical. Often these policy documents obfuscate the issues by using interchangeably the terms "knowledge" and "information". In traditional analytic philosophy it is 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 belief, truth and justification conditions. This philosophical account of knowledge, very important in defining "education" in analytic philosophy of education, while it has its difficulties, it does allow us to distinguish "knowledge" from "information": information considered as data transmitted from a "sender" to a "receiver" does not necessarily have to satisfy the belief, truth or justifications conditions. The document writers also run together these terms not distinguishing the discursive strand of the economics of information, knowledge and education. Moreover, with the coalescing of literatures that occurs in the 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 recognise knowledge as a global public good.

Knowledge as a global public good

The policy constructions do not recognise, for instance, either knowledge as *a global public good* or the key role governments have in promoting *public* education or protecting and regulating intellectual property rights. I shall briefly elaborate this criticism by reference to the work of Joseph Stiglitz (1998, 1999a, 1999b) who is Senior Vice President and Chief Economist at the World Bank. Simply put, Stiglitz combines two concepts that have been developed over the last twenty-five years: the concept of global public goods and the notion of knowledge as a global public good. A public good has two properties: non-rivalrousness and non-excludability. Knowledge qualifies as a public good on these two criteria: it is non-rivalrous because "there is a zero marginal cost from an additional individual enjoying the benefits of knowledge" (Stiglitz, 1999c) which has the implication that "Even if one could exclude someone from enjoying the benefits of knowledge, it would be undesirable to do so because there are no marginal costs to sharing its benefits" (ibid.) The non-excludability property of knowledge (which means that no one can be excluded) also has a strong implication: "it means that knowledge cannot be provided privately" (ibid.). (It is the case, however, that knowledge can be appropriated through the patent process so there is some degree of non-excludability.)

Stiglitz (1999c) indicates shortly after Samuelson developed his general theory of pure public goods it became recognised that some public goods were limited geographically, yet most knowledge is a global public good, especially if we are talking of scientific knowledge for its 'truth' is considered universal. Stiglitz (1999c) argues that one of the central implications of knowledge as a global public good is that the state must play some role in the provision of such goods, otherwise they will be undersupplied. As he writes:

> National public goods provide one of the central rationales for national collective action and for the role of government. Efficiency requires public provision, and to avoid the free rider problem, the provision must be supported by compulsory taxation.

He argues further that "knowledge is one of the critical keys to development and that knowledge is complementary to private and. public capital. Knowledge is a global good requiring public support at the global level" (Stiglitz, 1999c).

If there is an argument for the public provision of knowledge as a local and global good, there is also an argument for considering education as a local and global good and for its public support through taxation. Certainly, it is the case that the knowledge economy depends upon the fostering of higher order cognitive skills, the development of the knowledge infrastructure, and an understanding of the institutional complexities of knowledge cultures, both public and private. I believe that government approaches to the fostering of higher order cognitive skills requires a more complete understanding of the concept of knowledge, its different forms and aspects, and an understanding of the ways in which intellectual cultures operate. This means that governments ought to be looking more closely at the synergistic effects of research collaboration and the collegiality, and peer networking that characterize traditional intellectual cultures like universities and technical institutes as well as research teams, think-tanks and the like.

It is of fundamental importance that economists of information and knowledge consider the wider societal and cultural parameters of knowledge. In this context, it is also important to draw the distinction between "knowledge *economy"* and "knowledge *society".* Both locally (or nationally) and globally, I want to argue, governments and world institutions, have a joint role and responsibility: to provide the public goods of knowledge and education and to support the right to education. In the transformed global context of the "knowledge economy" education must be considered as a *global welfare right,* perhaps, *the* global welfare right that has the power to determine individual citizenship, employment status, and income. Indeed, we might say that within the global knowledge economy/society a new sets of rights are beginning to emerge: the set of rights to knowledge and education that will determine individual, cultural, national and global development well into the third millennium. This set of rights, I would argue, should be central to the future concerns of the Left, which should define and prosecute the struggle for equality in the related realms of knowledge and education, as never before.

Educational policy research must be central to the emerging discourse of the "knowledge economy". Among other things, educational policy research must be able to accomplish the following critical tasks:

- to map the relations -- empirical, conceptual and historical -- between the terms "knowledge" and "economy" and "education";
- to focus upon the national and local impacts of these global mega-trends, and to predict and measure the demand for "education" in all its future forms;
- to invent new educational strategies and approaches that embrace the possibilities of the new communication and information technologies;
- to elaborate and develop the philosophies of "lifelong learning" and "inclusive education" as a new basis for individual and collective welfare, and social cohesion and national identity, into the next century;
- to provide a critical account of the policy discourse of the "knowledge economy" by charting the conceptual shifts in the analyses of "knowledge" and "economy", and giving contemporary policy some historical and philosophical depth.

Notes

1. A version of this paper was presented at the University of Glasgow, August 1999, and the Institute of Higher Education, Wuhan University, People's Republic of China. (July, 2000).
2. For OECD on "Information Economy": http://www.oecd.org/dsti/sti/iUinfosoc/prod/online.htm
3. On this point we must return to Foucault to gain some insight on his historical relation to Marxist political economy. I think it is impossible to resolve the issue without a quick excursus in recent French intellectual history and, in particular, the way in which "structuralism" conceived (at least in hindsight) in terms of the *problematique* of the subject, was, above all, an attempt to escape Hegel and phenomenology. In his conversations with the Italian Marxist Duccio Trombadori, Foucault

(1991: 44) speaks of Nietzsche, Blanchot and Bataille as those writers who permitted him to free himself of the clutches of a French university education dominated by an Hegelian history of philosophy. As it can be seen from this brief note Foucault's relation to Marxism is a changing and complex affair. It is problematic to try simply to wield Marxist political economy onto Foucault by some straightforward process of conjunction. Foucault would not himself assent to the kind of operation that Marginson performs upon him and Marxist political economy is understood by Foucault as a discourse, indebted in its fundamentals to liberal political economy, which is, itself, an exemplar of the broader question of knowledge that he formulates. In the Foucault's remarks there are also some signs of a possible resolution: the configuring of political economy in terms of the history, ruptures and transformation of a discourse, and; the discursive rendering of the production, dissemination, and circulation of knowledge (see Peters, 1999b).

4. 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

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OECD (1996a) *Measuring What People Know: Human Capital Accounting for the Knowledge Economy.* Paris: OECD.

OECD (1996b) *Employment and Growth in the Knowledge-based Economy.* Paris: OECD Documents.

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