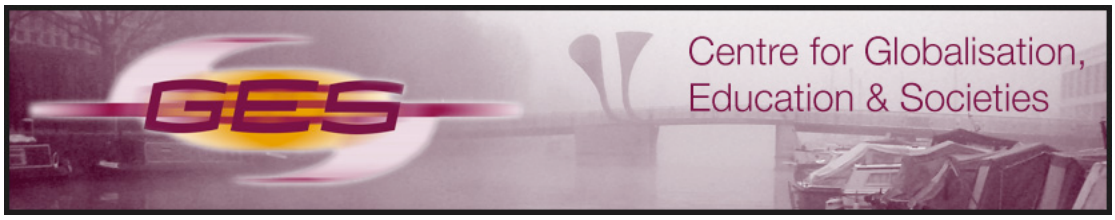

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'Producing' Knowledge Economies: The World Bank, the KAM, Education and Development

Susan L. Robertson

Centre for Globalisation, Education and Societies
University of Bristol, UK

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Introduction

If globalization was the policy buzz of the 1990s to the point that we could breathe it in the air, its 21st century equivalent must surely be the idea of a 'knowledge-based economy'. Like globalization, knowledge is both a new problem and panacea for our times. If we don't have enough of it, we are destined to become 3rd world countries. If we are not yet a knowledge economy, or are not 'in transition' to becoming one, then organizations like the OECD and World Bank are on hand to guide us in the right direction; the midwife giving birth to this bright new future.

The problem with this kind of buzz—like 'white noise'—is that it conceals more than it reveals. Just as much 'globalization talk' tended to divert attention from its profoundly intellectual western roots and highly uneven experiences of globalization (Harvey, 2006) so too is it increasingly important that we ask questions like: "who are the actors? What is being globalised? And, who stands to gain from this particular kind of project? I will be arguing that similar kinds of processes are occurring with a clustering of concepts around 'knowledge' ('the knowledge economy', 'the knowledge society', 'learning economy' and so on). Making sense of 'knowledge economy talk' is important as, like its predecessor, these ideas are informing development and education policy today around the globe. This is in part because the idea of knowledge is a particularly slippery one. It is a concept so utterly familiar and 'good for us' that it slides down the metaphoric throat without much difficulty at all.

The purpose of my chapter is to show, through an analysis of a specific World Bank programme of policy-based development strategy—the Knowledge For Development Program (K4D) which began in 1999—that not only are knowledge economies being constructed, but they are being constructed in very particular ways. For this reason we need to pay close attention to this project and set of instruments, given that they have now been deployed by the World Bank in a range of countries to guide the realization of a new regime of accumulation and mode of regulation. Countries include Korea, China, India, Sri Lanka, Chile and Malaysia. However, this program is not specific to low-income countries. As we will see, data on 137 countries is available for comparison, including the so-called high economic performing countries, such as USA, Finland, Japan and Denmark. The World Bank has also completed 'enhanced' country studies in countries like Finland and Japan. This chapter is particularly focused on interrogating a key instrument used in the K4D programme, the *Knowledge Assessment Methodology (KAM)*. It is being used by the World Bank as a form of 'strategic selectivity' (Jessop, 2001); to diagnose, direct and produce 'knowledge-based economies'. Education has a significant role to play in this formulation that goes beyond input/ investment models to a finessed output set of specifications.

The chapter is developed in two parts. In this first part, I begin by making some methodological comments about my approach in the chapter before turning to trace out a genealogy of the production of the idea of knowledge-based economies and its attempted materialization. In particular I ask: what kind of problem was this umbrella concept intended to re/solve and how did this particular version came to dominate public policy discourse? Here I outline the OECD's early engagement with this idea; its role as agenda setter for the developed economies, placing it in a uniquely powerful role in developing and stabilizing the idea of a knowledge economy through statistics, research and policy.

In the second half of the chapter I focus on the World Bank's take-up of this idea in the mid-1990s. Under James Wolfensohn's presidency, the Bank reinvented itself as a 'knowledge bank', it established the Knowledge for Development Program (K4D), and began work on the Knowledge Assessment Methodology (KAM) that, by 2007, provides data on 130 countries using 81 indicators for measuring progress toward being a knowledge-based economy. This methodology is also translated into a handy, do it yourself, website-based tool. Using the KAM, countries can benchmark themselves against an imagined 'perfect' knowledge economy; locate their trajectory in relation to others over a series of dimensions (or pillars), and steer a path (in some cases with aid assistance) from the World Bank toward this desired and desirable economic future. However, a close analysis of the KAM reveals that not only is the integrity of many of the indicators problematic (what are they measuring?) but, most significantly, the model of development is one based on an extension of western modernity and market liberalism.

Methodological Notes - Cultural Political Economy (CPE)

The broad analytical approach in this chapter draws on the work of Bob Jessop (2004) and a 'cultural political economy' (CPE) approach. In this approach, Jessop outlines four broad ontological, epistemological and methodological claims. First, through processes of semiosis (discourses and so on), objects and subjectivities are socially constructed; they are also co-constituted and co-evolve in wider ensembles and social relations. This approach seeks to overcome the false dichotomy between interpretative and structural approaches. Second, CPE emphasizes the co-constitutive role of semiosis. Agents have agency but agents and their agency are also shaped by the extra-semiotic features of social relations. Third, CPE involves combining critical semiotic analysis as a methodology with critical political economy as an approach. On the one hand this involves an explicit engagement with the cultural and semiosis; that is, the inter-subjective production of meaning. The production of meaning, however, is never able to secure self-reproducing closure as discursive relations are tendential, vulnerable to disruption, and plural. On the other hand it involves deploying a strategic relational approach to understanding political economy (Jessop, 2001: 5). Applying this approach involves "…examining how a given structure may privilege some actors, some identities, some strategies, some spatial and temporal horizons, some actions over others; and the ways, if any, in which actors (individual and/or collective) take account of this differential privileging through 'strategic-context' analysis when choosing a course of action." Finally, because of their complexity, 'actually existing' economies can only be imagined. Imagined economies, however, have significant, though only partial, correspondence to real material inter-dependencies. In sum, argues Jessop: "Imagined economies are discursively constituted and materially reproduced on many sites and scales, in different spatio-temporal contexts, and over various spatio-temporal horizons" (2004: 162).

A cultural political economy approach is particularly useful for my purposes here; for unraveling and revealing the complex (and contradictory) way in which discourses/ideas (such as growth, development, knowledge), actors/institutions (such as the World Bank, OECD, nation states) and material capability/power (resources, aid) are mobilized to strategically and selectively advance an imagined new knowledge-based economy and its material re/production. As Jessop (2004) argues, in capitalist societies, imaginary economies

tend to be shaped by those economic, political and intellectual forces who manipulate power and knowledge in order to re/produce new boundaries, geometries and temporalities in a spatio-temporal fix to displace or defer capitalisms crisis tendencies. These strategic projects, however, are never able to resolve the fundamental contradictions of capitalism; in this case the contradictions around knowledge itself as a fictitious commodity (Jessop: 2000). I return to this point I take up in the concluding section of the chapter.

Constructing 'The Knowledge-Based Economy' – The Genealogy of a Project

The current knowledge economy discourse borrows heavily from work developed by a group of 1960s intellectuals, futurologists and information economists, like Fritz Machlup (1962), Peter Drucker (1969), and Daniel Bell (1973)–that industrial societies were in transition to becoming variously knowledge economies, post-capitalist and post-industrial societies. This thesis has been added to more recently by a new wave of writers, the most prominent being Manuel Castells (1996) and his network society thesis. A core argument of this body of work is that knowledge is *a new factor of production*. This is contrasted with classical arguments that posited that land (natural resources), labour (human effort) and capital goods (machinery) were the three main factors of production. 'Knowledge' and 'information' in these approaches is treated separately from labour.

As the sub-title of Bell's *The Coming of the Post-Industrial Age: A Venture in Social Forecasting,* indicates, this work was rather speculative. Perhaps as a consequence, Bell's thesis was greeted with considerable scepticism amongst the academic community (see Webster, 2002), not least because of its technological determinism and assumed teleology. Nonetheless, it received a great deal of attention amongst policymakers and the popular press, as well as in international organisations like the OECD. There were several core propositions to Bell's arguments - that:

- all societies evolve, moving from pre-industrial to industrial to post-industrial;
- in this evolutionary cycle, work moves from being muscle-based to mind-based;
- post-industrial societies are more dependent upon 'theoretical' knowledge – or the knowledge of professionals, such as scientists, engineers, teachers, health workers; and
- post-industrial societies generate greater degrees of wealth than industrial societies.

Understanding Bell's conception of 'knowledge' is also important for this view, along with the propositions above, now dominates contemporary policymaking in high and low-income countries.

> Knowledge is that which is objectively known, an *intellectual property*, attached to a name or group of names and certified by copyright, or some other form of social recognition (e.g. publication). This knowledge is paid for –in the time spent in writing and research; in the monetary compensation by the communication and educational media. It is subject to a judgement by the market, by administrative or political decisions of superiors, or by the peers as the worth of the result, and as to its claim on social resources, where such claims are made. In this sense, knowledge is part of the social overhead investment of society, it is a coherent statement, presented in a book, article, or even a computer program, written down or recorded at some point for transmission, and subject to some rough count (Bell, 1973: 176).

As we can see, knowledge is defined as intellectual property (IP) that has commercial value. By patenting various kinds of knowledge—from processes, procedures and products as diverse as new turbine machinery, seeds, and DNA material, value can be realised, in turn creating economic value and thus economic growth. More recently knowledge in the form of 'education services' have been added to the list of 'products' that can be traded in the global economy.

This view was strengthened by Manuel Castells' (1996) work *The Network Society,* where he argued that information now drove the new economy, and that information also characterised the new mode of production – which he defined as *informational capitalism*. However, it is not *just* information and knowledge "…but 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" in pursuit of profit (Castells: 1996: 38). While Castells pays considerable attention to technology, he also insists that 'minds' were now the most important asset:

> …the human mind has always been, but more than ever now, the source of wealth, power and control over everything… ideas and talents are ultimately the source of productivity and competitiveness (Castells, 2000: 3-4).

For, as Castells insists; "…minds programme technologies rather than the other way round, and minds can make or lose money" (2000: 3-4). Information societies, as a result, value humans' 'minds' or 'brains' as a key resource: minds that are flexible and which adapt to changing circumstances; that can innovate and make new products; that are entrepreneurial and create new opportunities to generate and realise economic growth. Minds are thus *further* valorised *for* capitalist production and thus another step in the separation of execution (muscle power/goods) from conception (ideas) and the further degradation of labour.[1]

The OECD was influenced by these early debates and, during the 1970s, adopted the idea of an 'information society' (Mattelart, 2003: 113). During this period, the OECD enlisted the expertise of a range of economists concerned with mapping and measuring information, including Marc Uri Porat the Franco-American economist, who later produced a nine volume study of the definition and measurement of the information economy for the US government. The concept of a knowledge-based economy was added in the 1990s; it was an idea that had entered OECD's work in the 1970s, however it had not stabilised into becoming the master or umbrella concept that we know today.

[1] See H. Braverman (1976) The Degradation of Labour

The interest in ideas like 'knowledge based economies' can be better understood if set against the wider context of economic crisis at the time (and its iconic representation, the 1970s oil shocks) where developed economies, such as the USA and UK, were experiencing a declining share in the production of manufactured goods (Jessop and Sum, 2006). It was a crisis of capitalism that sought to displace or defer capitalism's crisis tendencies, by producing new boundaries, geometries and temporalities, and opening the way for renewed economic growth. However, as Castells observes:

> ...this is a brand of capitalism that is at the same time very old and fundamentally new. It is old because if appeals to relentless competition in the pursuit of profit and individual satisfaction (deferred or immediate) is its driving engine. But it is fundamentally new because it is tooled by new information and communication technologies that are the roots of new productivity sources, of new organizational forms, and of the formation of a global economy (Castells, 1996: 32).

These ideas were taken up more widely in World Bank's reports on education where they argued that:

> A knowledge economy relies primarily on the use of ideas rather than physical abilities and on the application of technology rather than the transformation of raw materials or the exploitation of cheap labor. It is an economy in which knowledge is created, acquired, transmitted and used more effectively by individuals, enterprises, organizations and communities to promote economic and social development. …The knowledge economy is transforming the demands of the labor market in economies throughout the world. In industrial countries, where knowledge based industries are expanding rapidly, labor market demands are changing accordingly (World Bank, 2003: 1).

Benoit Godin's (2006) account of the OECD's take-up of the idea of a knowledge economy is elaborated in greater detail here because of its saliency for this analysis. The OECD was an early promoter of the knowledge economy, initially it was the idea of information and measuring it that dominated OECD work. However, in the 1990s, the idea of the 'new economy' began to articulate with the idea of a 'knowledge economy'. The early work in the OECD was directed by the Danish evolutionary economist, Ake-Bengt Lundvall, who worked on National Systems of Innovation (NSI). Between 1992-5 he was deputy director of the OECD Directorate for Science, Technology and Industry (1992-95). Lundvall launched the idea of a learning economy (1992) arguing that (i) learning does not just come from R&D but from a myriad of routine activities in production, distribution and consumption and that (ii) learning comes from interacting. Lundvall's work progressed, but with difficulty. First, the OECD did not have the funds support the development of indicators. Instead it forced a compromise by building on old data sets. Second, Lundvall's work was proving difficult to implement and thus hard to sell to policymakers—the funders of the OECD—in national settings. Third, Dominic Foray, initially a consultant to the OECD during the early 1990s, critiqued Lundvall's work as unoriginal and offered an alternative theory; that it was the *distribution* and *use* of knowledge that was the most important for the knowledge-*base*.

Godin (ibid) argues that the first step in the generalised use of the concept of 'the knowledge economy' in the OECD came in 1995 with a document written by the Canadian delegation to an OECD meeting – with 'the knowledge economy' in its title. The paper discussed two themes: new growth theory[2] and innovation—both themes focused on the role of education in growth. The Canadian proposal articulated with the work of Lundvall and others in the OECD who had sought to take account of more components in an economy. On the innovations theme, it was argued that innovation needed to be dynamic, and that there was a need to develop indicators (beyond input and output measures – such as R&D expenditures, patents, publications) that measured processes. In other words, indicators were needed that measured the *distribution* of knowledge within key institutions and the *interactions* forming the system of innovation. The OECD then moved toward developing new indicators that built on existing ones to measure inputs, stocks, flows, networks, learning, international trade, employment, structural change, and so on through targeted conferences, papers and the use of consultants. By 1999, 32 indicators were reported; in 2000 more were added. The effect of producing statistics to measure the KBE in turn stabilised and materialised the idea of a knowledge-based economy, despite the fact that there was a pervading view, even amongst its supporters, that "…measuring knowledge itself is more challenging, if not impossible" (Foray and Gault, 2003:18).

By 2005 the OECD' KBE concept had become conceptually further refined, and, most importantly, it had now also become an umbrella concept. In her introduction to an OECD/NSF Conference on 'Advancing knowledge and the knowledge economy', OECD Deputy Secretary-General, Berglind Asgeirsdottir stated:

> The development of the knowledge economy is dependent on four main 'pillars': innovation, new technologies, human capital and enterprise dynamics. I have chosen to illustrate the important factors shaping the knowledge economy as a 'Greek temple' with four pillars. The 'economic fundamentals' are the base on which the four pillars are standing. The four pillars are also illustrating that for the knowledge economy to develop and grow, it is not enough to focus on a single policy or institutional arrangement. A whole range of policies and coordinated actions to create the right conditions are necessary. The 'policy mix' must be based on a comprehensive strategy suited to each country or circumstance and will include the four pillars 'innovation', 'new technologies', 'human capital' and 'enterprise dynamics'. At the top of the Greek temple, I have put 'globalisation', which is a driver that influence all four pillars and four key factors that are becoming increasingly mobile and global under the globalisation process: 'research and development', 'Internet', 'highly skilled' and 'multi-national companies'.

As we will see, this umbrella representation of the knowledge economy with its four pillars is identical to the World Bank's K4D depiction of the knowledge economy.

[2] New growth theory had been developed by Romer (see 1989) and others as a way of getting beyond what Romer called "narrow growth accounting models" (Romer, 1989: 1). These narrow models were being deployed in development economics, however they did not take into account the role of education as an investment in growth –in particular basic literacy.

Globalisation, Development and Knowledge – the World Bank's Approach

In the Spring of 2004, the first newsletter of the World Bank's K4D program was launched. In it the Bank argued that "…knowledge, and its application, are now widely acknowledged to be one of the key engines of economic growth" (World Bank, 2004: 1). This assertion to some extent attested the stabilisation and naturalisation of the concept across the developing and developed world. For the World Bank, the very existence of the term 'the knowledge economy' simply reflected the increased importance of knowledge in development strategies (see Chen and Dahlman, 2005). Again in 2007 the Bank continued to insist that:

> This 'knowledge revolution' manifests itself in many different ways: there are closer links between science and technology; innovation is more important for economic growth and competitiveness; there is increased importance of education and life-long learning; and more investment is undertaken in intangibles (R&D, software and education) which is even greater than investments in fixed capital. And of course there is the ICT explosion which brings worldwide interdependency and connectivity (World Bank, 2007).

Though the World Bank's process of early formulation of the idea of a knowledge economy has been different to the OECDs, there appears to have been sufficient corroboration for them to arrive at identical means of representing the knowledge economy – a stylized Greek temple made up of four pillars with the knowledge economy and globalisation its protective roof.[3]

It is useful to look closely at the World Bank's foray into the 'knowledge' arena as it provides a useful context for the my analysis of the Knowledge Assessment Methodology in the following section. Kenneth King's (2003) research in this area, of the World Bank's relationship to 'knowledge-based aid, is particularly enlightening. He points out that the World Bank was the first cooperation agency to explore the implications of 'knowledge' both for its own activities as an organisation and also for its clients. This ambitious work began in 1996 under the leadership of World Bank President, James Wolfensohn, where it reinvented itself as 'the Knowledge Bank'. Its 1998 World Development Report (WDR), *Knowledge for Development*, then laid the foundations for much of the Bank's work over the next decade. The WDR placed knowledge at the centre of the work of the Bank's activities – so that in the education sector the focus was now shifted—away from the primary school as the site/agent/mover of change—to 'knowledge'. What made this report and the ongoing programme of work different was the seriousness with which education was now taken – as a key factor in technological creation, adoption, and communication. This policy move entailed that low-income country's reorienting its attention to basic education to include investments in basic education *and* upper secondary and tertiary.[4]

[3] There are regular movements of key personnel from the OECD to the World Bank and vice versa. For example, Kurt Larsen, a Senior Researcher with the Education Directorate of the OECD and author of key reports on the cross border supply of higher education and knowledge management, joined the K4D team in 2005.

[4] See World Bank, 2003 report on *Lifelong Learning for the Global Knowledge Economy*, Washington: World Bank.

A series of initiatives were developed by the Bank to realise the ambition of the WDR. This included the Knowledge4Development programme, a 'knowledge sharing' programme for those working inside the Bank, and a programme dedicated to revamping staff learning. According to King:

> The sheer scale of the coverage on the Bank's website of knowledge sharing, knowledge initiatives, knowledge management, knowledge economies and knowledge resources is difficult to exaggerate. It stands in marked contrast to the explicit treatment of knowledge in most other bilateral and multilateral agencies (King, 2002: 312).

The Bank's K4D argument was that the increased importance of knowledge provided great potential for countries to strengthen their economic and social development by providing more efficient ways of producing goods and services and delivering them more effectively and at lower costs to a greater number of people. Combined with trade policy liberalization, the knowledge revolution was to lead to greater globalization and increased international competition. Furthermore, to capitalize on the knowledge revolution to improve their competitiveness and welfare, the Bank argued that developing countries needed to build on their strengths and plan appropriate investments in human capital, effective institutions, relevant technologies, and innovative and competitive enterprises. However, the Bank also raised the danger of a growing 'knowledge divide' [rather than just a 'digital divide'] between advanced countries who are generating most of this knowledge and developing countries, many of whom were failing to tap the vast and growing stock of knowledge because of their limited awareness, poor economic incentive regimes, and weak institutions.

The objective then of the World Bank *Knowledge for Development Program* (K4D) was to:

> …stimulate social and economic development in client countries by building their capacity to access and use knowledge as a basis for enhancing competitiveness and increasing welfare. The K4D programme is intended to help countries understand their strengths and weaknesses with respect to knowledge as a means to identifying appropriate policies for improvement of the country's performance and to give direction to the country's ambitions. Working closely with the World Bank's regional and sector teams, K4D works with client countries to create a framework for achievable action over a reasonable time period. To be effective, this work must be supported by the creation of the necessary capacity to deliver - namely, people and organizations with the skills, competencies and understanding capable of taking things forward, and supported by access (online and face-to-face) to networks of expertise and experience from across the world (World Bank 2007).

With the focus now on knowledge *per se*, and given its concerns about a growing knowledge divide between the developed and developing countries, there were nevertheless a very particular 'knowledge' being privileged in the K4D program: Western science and technology, now enabled by ICTs and a liberal market economy. As King argues, this was pretty much business as usual for the Bank. What was different was a shift in language and the embrace of digital technologies as the means to ostensibly enable developing countries to catch-up. As King observed:

> WDR also draws heavily on the older faith about the role of science and technology in development, and on what has been learnt about technology transfer and adaptation for over 30 years. Arguably, the word 'knowledge' has to some extent replaced what was written about 'technology' and technological capability in earlier decades, but the information and communication technology revolution is what now makes the difference in terms of outreach, potential and impact of this now globally-accessible knowledge (King, 2002: 313).

Like the OECD, the World Bank's K4D programme is based on four pillars:

1. An **economic and institutional regime** that provides incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship.
2. An **educated and skilled population** that can create, share, and use knowledge well.
3. An **efficient innovation system** of firms, research centres, universities, think-tanks, consultants, and other organizations who can tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology.
4. **Information and Communication Technologies (ICT)** that can facilitate the effective communication, dissemination, and processing of information.

The K4D programme is delivered through what it calls 'product lines': (i) 'Knowledge Economy Policy services' for clients, including policy reports and policy consulting advice on various aspects of the knowledge economy ;(ii) enhanced assessments designed to meet the needs of meet the needs of different client countries; (iii) 'Knowledge Economy studies' designed to bring together global learning and experience on the knowledge economy, such as on innovation systems; and (iv) 'Learning events' to build knowledge and skills and to facilitate exchange of experience and good/best practice on the knowledge economy (see Appendix 1 for a list of countries and types of assessments undertaken between 2003 and 2007).

Like the OECD, the Bank's approach to knowledge for development to 'produce' a knowledge-based economy was now influenced by both human capital theory and new growth theory. Human capital theory has long been used by the World Bank to justify its investments in education.[5] In other words, human capital is viewed as a means of production, into which additional investment yields additional output. New growth (or endogenous) theory was developed in the 1980s as a response to criticisms of the neo-

[5] Initially based on Mincer's pioneering article "Investment in Human Capital and Personal Income Distribution" in *The Journal of Political Economy* in 1958, it was then taken up by both Mincer and Becker of the "Chicago School" of economics. Becker's book entitled *Human Capital*, published in 1964, became a standard reference for many years. In this view, human capital is similar to "physical means of production", e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's outputs depend partly on the rate of return on the human capital one owns. Thus, human capital is a means of production, into which additional investment yields additional output. Human capital is substitutable, but not transferable like land, labor, or fixed capital.

classical growth model on which human capital theory was based.[6] This means not only that a range of factors might be involved (innovation, research, quality, learning, and so on), but they these factors are also policy-able.

New growth theories was now increasingly reflected in its education policy, for instance, in its report *Lifelong Learning for the Global Knowledge Economy* (2003) where it embraced the need for investment in education shaped by rates-of-return analyses and in new pedagogical approaches, such as 'learning-by-doing' and 'learning-to-learn' (Robertson, 2005). Taken together, the turn to 'knowledge' by the Bank was ambitious and breathtaking in scope, though as King (2003) also observes, the Bank's hyperbole about knowledge management and sharing was not always matched in practice.

The World Bank and the KAM – How it Works

We can get a good sense of the World Bank's strategic and selective framing of what it means to be a knowledge economy, as well as the tools that are being used by the Bank to help shape a country's strategies, by looking at the content of the Knowledge Assessment Methodology (KAM). The KAM is the centrepiece and underpinning architecture of the Bank's K4D programme. It is also an interactive, diagnostic and benchmarking tool that provides a preliminary assessment of countries and regions 'readiness for the knowledge economy' (World Bank, 2007). The KAM enables countries to benchmark themselves with neighbours, competitors or other countries they wish to learn from on the four pillars of the knowledge economy. It is therefore a tool aimed at promoting 'learning' amongst developing and developed countries about the elements involved in a very particular kind of economy; a globally-oriented, market-based economy and society. Learning through comparisons with others (normalisation), and making appropriate policy changes is seen as producing a nation's knowledge-based economy. Dale (1999) identifies this particular kind of mechanism of globalisation as 'emulation' and it acts as a useful contrast to the earlier structural adjustment approaches of the Bank which were built around the imposition of policies and programmes.

Since its launch, the KAM has undergone a series of refinements. In 2004, 121 countries were included in its KAM database and 76 structural and qualitative variables were available as measures of knowledge-based economies. In 2006 the KAM was re-launched, this time with 128 countries and 80 variables. By 2007, four further countries were added (making it 132). The KAM currently consists of 81 structural and qualitative variables for 132 countries to measure their performance on the four Knowledge Economy (KE) pillars: Economic Incentive and Institutional Regime, Education, Innovation, and Information and Communications Technologies. Variables are normalized on a scale of zero to ten relative to other countries in the comparison group. The KAM also derives a country's overall **Knowledge Economy Index (KEI)** and **Knowledge Index (KI)**.

[6] For example, the neo-classical model does not explain the origin of growth and so it makes it is overly simplistic and unrealistic. New growth theory tries to overcome this shortcoming by building macroeconomic models out of microeconomic foundations.

The KAM is available in six different modes. Mode 1, a **Basic Scorecard** (see Figures 1 and 2) uses fourteen key variables as proxies to benchmark countries on the four KE pillars and derive their overall KEI and KI indexes. The scorecard allows comparisons for up to three countries for 1995 and the most recent available year.

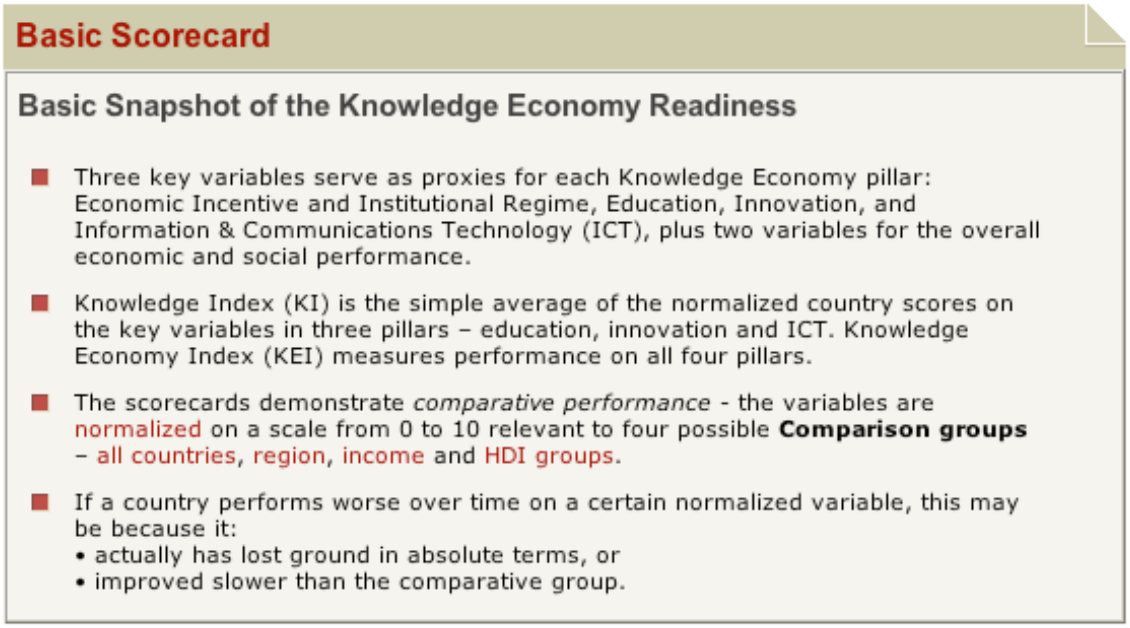

Figure 1: Mode 1 - 'Basic Scorecard' data (Source: World Bank, 2007).

 Variable	Finland (Group: All)	
	actual	normalized
Annual GDP Growth (%)	2.30	1.85
Human Development Index	0.947	9.15
Tariff & Nontariff Barriers	2.00	7.13
Regulatory Quality	1.74	9.70
Rule of Law	1.96	9.55
Researchers in R&D / Mil. People	7832.00	9.89
Scientific and Technical Journal Articles / Mil. People	1000.38	9.69
Patents Granted by USPTO / Mil. People	164.38	9.55
Adult Literacy Rate (% age 15 and above)	100.00	8.41
Gross Secondary Enrollment	109.40	9.15
Gross Tertiary Enrollment	89.50	9.92
Total Telephones per 1,000 People	1407.00	8.79
Computers per 1,000 People	481.10	8.33
Internet Users per 1,000 People	628.50	9.39

Figure 2: Mode 1 - Basic Scorecard data for Finland (World Bank, 2007).

Mode 2, **Choose Variables** allows the use of any combination of the 81 variables and to compare up to three countries or regions for the most recent available year (see Figures 3, 4 and 5).

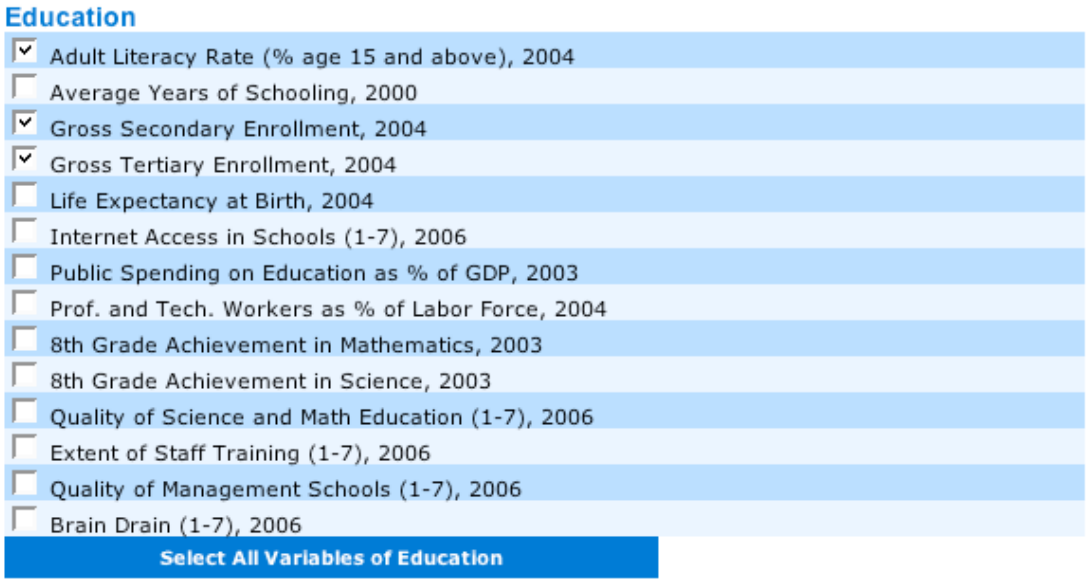

Figure 3: Mode 'Choose Variables' – in this case the education pillar (World Bank, 2007)

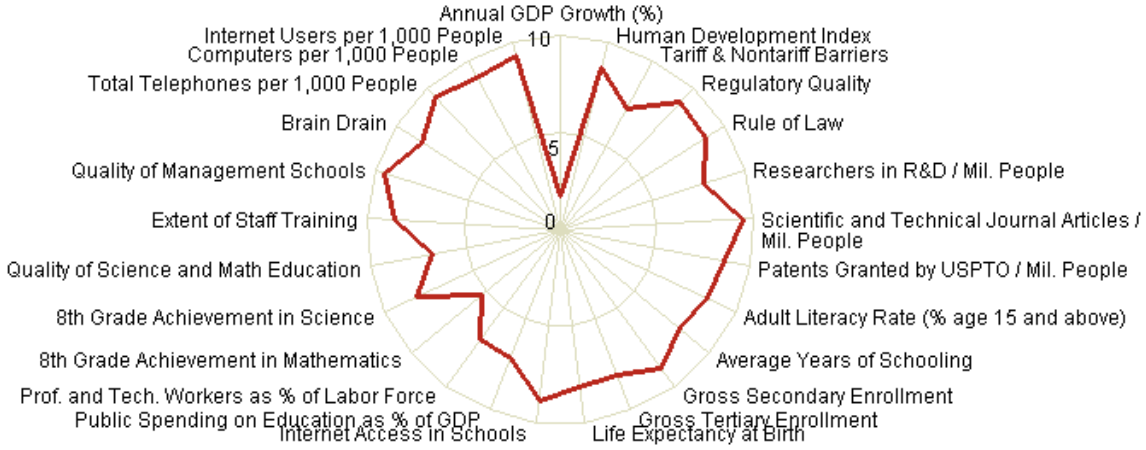

Figure 4: Mode 'Choose Variables' – in this case the education in the UK pillar (World Bank, 2007)

Education	Tanzania	
	actual	normalized
Adult Literacy Rate (% age 15 and above), 2004	69.40	2.12
Average Years of Schooling, 2000	2.71	0.85
Gross Secondary Enrollment, 2004	5.90	0.00
Gross Tertiary Enrollment, 2004	1.20	0.24
Life Expectancy at Birth, 2004	46.20	0.91
Internet Access in Schools (1-7), 2006	2.50	1.55
Public Spending on Education as % of GDP, 2003	2.20	0.53
Prof. and Tech. Workers as % of Labor Force, 2004	2.35	0.00
8th Grade Achievement in Mathematics, 2003	n/a	n/a
8th Grade Achievement in Science, 2003	n/a	n/a
Quality of Science and Math Education (1-7), 2006	2.90	1.38
Extent of Staff Training (1-7), 2006	3.10	2.33
Quality of Management Schools (1-7), 2006	3.30	1.64
Brain Drain (1-7), 2006	2.60	2.43

Select All Variables of Education

Figure 5: Mode 'Choose Variables' – in this case the education in Tanzania (World Bank, 2007)

Mode 3, **KEI and KI Indexes** presents performance scores of all countries on the KEI and KI indexes, as well as on the four KE pillars, in a sort-able table format (see Figures 6 and 7 for top 10 and bottom 10 countries on the four pillars).

Rank		Country	KEI	KI	Economic Incentive Regime	Innovation	Education	ICT
1	+4	Denmark	9.23	9.37	8.82	9.42	9.20	9.48
2		Sweden	9.22	9.49	8.41	9.72	8.98	9.77
3	-2	Finland	9.12	9.24	8.79	9.71	9.16	8.84
4	+11	Iceland	8.83	9.03	8.25	9.07	8.78	9.24
5	+2	Norway	8.80	8.89	8.54	8.86	9.21	8.59
6	-3	United States	8.74	8.90	8.26	9.42	8.38	8.91
7	-1	Australia	8.74	9.02	7.89	8.82	9.15	9.11
8	+1	Netherlands	8.73	8.80	8.51	8.63	8.67	9.08
9	-5	Canada	8.68	8.73	8.51	9.05	8.52	8.63
10		United Kingdom	8.67	8.77	8.36	8.62	8.44	9.25

Figure 6: Comparison of top 10 countries over four pillars (Source: World Bank, 2007).

122	+5	Bangladesh	×	1.20	1.35	0.76	1.63	1.57	0.83
123	-1	Mali	×	1.15	0.45	3.27	0.50	0.45	0.41
124	+5	Burkina Faso		1.07	0.47	2.87	0.73	0.24	0.46
125	-18	Nepal		1.05	0.92	1.44	0.85	1.36	0.57
126	+5	Mozambique	×	1.04	0.54	2.52	0.42	0.28	0.93
127	+5	Angola	×	1.02	0.98	1.16	1.29	0.74	0.91
128	-25	Djibouti	×	0.88	0.86	0.93	0.00	0.87	1.71
129	-3	Lao PDR	×	0.85	0.91	0.66	0.15	1.86	0.72
130	•	Ethiopia	×	0.72	0.51	1.37	0.61	0.81	0.10
131	-14	Eritrea	×	0.72	0.58	1.14	0.23	0.87	0.64
132	-7	Sierra Leone	×	0.44	0.29	0.89	0.27	0.34	0.27

Figure 7: Comparison of bottom 10 countries over four pillars World Bank 2007.

In mode 4, **Over Time Comparison,** demonstrates countries' progress on Knowledge Economy pillars and indexes from 1995 to the most recent year (see Figure 8).

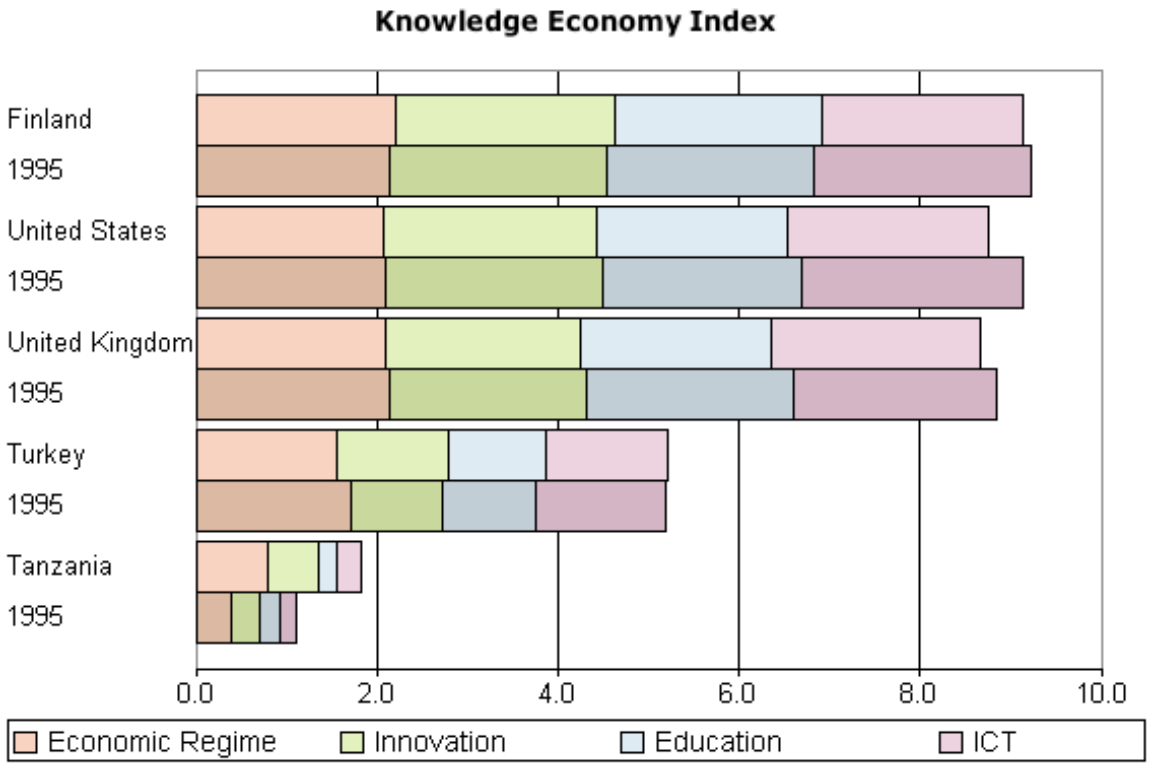

Figure 8: Over-time comparision of selected countries, Finland, USA, UK, Turkey and Tanzania (Source: World Bank 2007).

Mode 5, **Cross-Country Comparison**, allows bar-chart comparison of up to 20 countries on their KEI and KI indexes while demonstrating the relative contribution of different KE pillars to the countries' overall knowledge readiness. Finally, mode 6 - **World Map** (see Figure 9), provides a colour-coded map for a global view of the worlds' 'readiness' for becoming knowledge-based economies in 1995, and the most recent year.

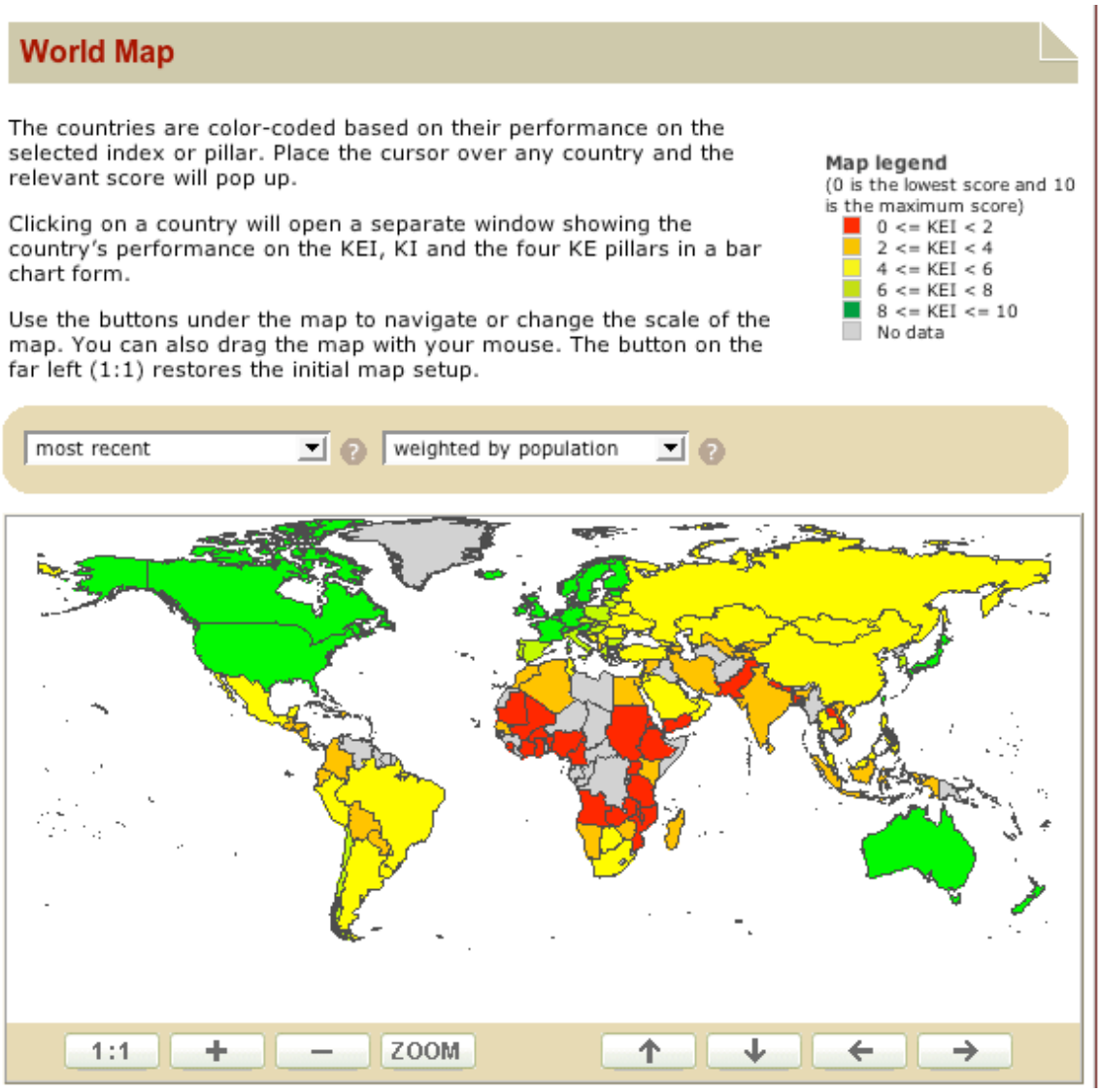

Figure 9: World map of knowledge economy countries by colour code (Source: World Bank 2007).

The KAM works both as a strategic selection device and also relationally; that is against an imagined 'perfect' knowledge economy for which a value of, for instance 10 is assigned, while its absence is denoted by the other end of the continuum, for instance 0. Many of the indicators require a judgement about where a country is in relation to others; a judgement made by the K4D programme officers. We can now run through the four pillars and 81 indicators to provide a brief but detailed sense of this imagined knowledge economy. A knowledge-based economy is: open to global trade; moving in the direction of creating a services sector; has few bans on imports and licensing (as measured by the Heritage Foundation's Trade Policy Index); strong protections in place for intellectual property; the transaction costs (time and money) to start a business are low, and there is a limited number of market-unfriendly policies. In relation to *governance*, the rule of law to ensure contracts is enforced; governments are effective (such as the civil service is independent); and there is a measure of political stability and limited corruption. In relation to the *innovation* system,

Foreign Direct Investment is welcomed, there is a system to ensure payments for royalties and intellectual property across borders; science and engineering enrolments are strong; there are a large number of researchers involved in R&D; total expenditure on R&D are high; companies collaborate with universities; venture capital is available; publications in scientific journals, and patent applications are high; and there is evidence of value being added higher up the value chain. In the area of *education* (see also Figure 3 above), measures include the adult literacy rate, the average years of schooling (for 15 years and above); secondary and tertiary enrolments are high; life expectancy at birth is high; schools have access to the internet; the state funds education; there is a high level of achievement on international mathematics and science tests (such as TIMMS); teachers receive ongoing training; schools are assessed as well locally-managed; and the talented individuals of a country stay rather than leave. Gender receives a special focus; with indicators on females in the labour force; females elected to Parliament; and the numbers of females enrolled in secondary school and tertiary education. Finally, a knowledge economy embraces *information and communication technologies* as indicated by the number of telephones, landlines, computers, internet connections, televisions and newspapers circulated per capita; the bandwidth and cost of connection to the internet; e-government; e-business; and ICT expenditures as a % of GDP.

Using the interactive website tool, it is possible to generate rapid and colourful depictions of a country's 'knowledge-economy' status over time, in relation to others, and regionally. It is now time to critically analyse the World Bank's KAM to discursively and materially re/produce knowledge-based economies globally.

Analysing the KAM

I want to analyse the KAM in three ways. First - to review the indicators themselves and what it is they 'represent' as modalities of selectivity. Second - to examine the KAM as a strategically selective tool to produce a particular kind of economy. This means asking what kind of imagined economy is being discursively and materially 'produced', whose interests are being selectively and strategically advanced, and what are the roots of this project? Third - how is 'education' specified in this project, for whom, and with what likely outcome? In the conclusion I ask: what form do the contradictions of capitalism take in this new imagined society, and how might these contradictions be revealed in the agendas of education policymakers in the 21st Century?

Indicators of what?

The KAM draws upon existing data-bases and indexes from the international organisations, such as World Bank data-bases, OECD national accounts data, the Human Development Index (United Nations Development Programme), unemployment rates from the International Labor Organisation (ILO), and global competitiveness index such as the World Economic Forum (WEF). It also draws upon indexes from think-tanks, such as the right wing Heritage Foundation on the existence (or not) of tariffs and other forms of protectionism. These actors can be commonly characterised by their common commitment to neo-liberal economic policies. These databases and indexes provide measures of

'economic performance' (such as GDP growth over time) and measures of 'human development' (as in the Human Development Index).

However, as a number of researchers point out, many of these indicators and indexes are based upon data that is inadequate and formulations and translations into indexes that are highly problematic. Sagar and Najani's (1998) discussion of the problems of the HDI are highly instructive here. While the HDI was welcomed by many in the development community because it opened to door to a wider discussion on development beyond the economic, it was nonetheless also seen as a tool that needed considerably more refinement in order for it to be useful and reliable. Very early on the HDR noted that there was some way to go in refining the content and method used in the Index "…before the HDI could be confidently used to interpret reality and make policy decisions" (Sagar and Najani, 1998: 25). However, this has not occurred, with the result that examples can be found, such as Mexico and Switzerland having very similar HDIs, that shows the index is a long way from being able to represent what is going on in the real world and direct policy.

Similarly, Pyatt (2003) shows that major errors in household survey data from which national accounts are built and which underpin World Bank and OECD national accounts data-bases present similar issues to those identified by Sagar and Najani for the HDI. These issues have made instruments like the Living Standards Measurement Study (LSMS) unreliable, and World Bank dependence on them for its intervention in areas like poverty and development highly problematic. Other critiques have been made about UNESCO and OECD statistics in education (see Cusso and D'Armico, 2006).

It is well recognised that data-bases and statistics—like all representations of the world—tend to present themselves as truths, thus concealing their politics and forms of strategic selectivity. The value of Godin's (2005) historical analysis of the OECD's project—to generate indicators of the knowledge economy—is that he also shows us how the project began; as a set of compromises between ambition, circumstances and legacies of the past. More than this, Godin (2002) reveals how these statistics frame a very particular understanding of the knowledge economy; one tied to science and technology. The OECD did not have sufficient funds to start the project afresh with the result that less than adequate existing databases and indicators had to be used.

Whose knowledge economy?

As Jessop argues (2004: 167)), crises encourage semiotic as well as strategic innovation. As I have shown, the idea of a knowledge-based economy had its material and ideological roots in the 1960s and 70s as a result of the crisis of Atlantic Fordism. It was taken up in the 1970s by the OECD, an important agenda-setting agency for the developed economies, however it did not gain traction until the 1990s when the OECD committed significant resources to the development of its knowledge programme.

Through the 1980s, however, the idea that the knowledge/services sector might offer a comparative competitive advantage for the developed economies gained momentum in the US, as US capitalists and state officials sought a response to the growing competitiveness of its European and East Asian rivals. This approach was buoyed by the work of think-tanks, and lobbying by interests in the services sectors - such as the coalition for services' unions.

The US's competitive edge, at the high value-added end of the commodity chain, prompted a concerted effort to develop the material and ideological base for a new accumulation strategy centred on the widening and deepening of the services sector and the extension of intellectual property rights and the means to protect those rights internationally and return value to the US. These ideas and strategies also contributed to the formation of the World Trade Organisation, and the creation of new agreements, such as the Trade Related Intellectual Property Services agreement (TRIPS) and General Agreement on Trade in Services (GATS) which materialised in 1995 (Robertson, Bonal and Dale, 2002).

We can see from the KAM indicators that intellectual property, its protection by states, and the institutional means for returning value across borders, is a key feature. The KAM is, therefore, a strategically-selective tool that advances the interests of capital in the developed economies. This framing of the economy also underpins the hope for a new long wave of accumulation for the developed economies. Put another way, the knowledge-economy narrative is *not* about developing countries becoming knowledge-based. Rather, it is tool for putting into place the ideological and institutional means to enable the developed economies, in particular the USA, to generate value from knowledge services globally. The KAM prioritises the ideological and structural means for developing a globally-integrated post-Fordist macro-economic order, secured through WTO regulations. As Jessop argues: "This reflects a neo-liberal policy for productive capital that safeguards US super-profits behind the cloak of free trade in intellectual property" (Jessop, 2004: 170).

This chapter also reveals the way in which the World Bank, along with the OECD and the WTO (as regulator), represent themselves as the metaphoric mid-wives of this new economy; as institutions who are helping give birth to a country's transition from an industrial to a knowledge economy. However, as Jessop observes, to produce a new social formation, something *more* is required. "It also depends critically on institutional innovation intended to reorganise an entire social formation, and the exercise of political, intellectual and moral leadership" (Jessop, 2004: 166).

The idea of a knowledge-based economy is also a particularly powerful discursive and strategic tool for the World Bank and OECD. It not only enables the rethinking of social, material and spatio-temporal relations among economic and extra-economic activities, institutions and systems, but the master narrative of knowledge provides a useful cloak for these international agencies because it appeals to the 'knowledge as progress/ive' ideals that continue to dominate some quarters of the economic development industry and societies in general. Who can be against knowledge, and by implication, knowledge-based economies? Who can be against knowledge for development? However, as we have seen, this is an imaginary that works in the interests of the developed economies more generally, and US capital in particular, with its need to protect profits and realise value from intellectual property whilst at the same time expanding into new services markets globally. It is structural adjustment cloaked in a consensual, progressive mantle.

What education?

How, then, is education represented in the KAM? Whilst a major pillar of the knowledge-based economy imaginary, education is now constructed as 'investment' and 'performance' in adult literacy, science, mathematics and technology, including scientific publications in

these areas. This represents the extension of western high modernity, with its faith in science, technology and law, now aided by new technologies to propel and hasten development. It is argued that only science and technology will produce the innovations and patents for the new economy and to the extent that education can produce more scientists, engineers and technologists, it is in turn valued. In this reformulation, education is now completely subordinated to the economy, like any other commodity-producing sector. The emancipatory potential implied in the formulation, 'knowledge for development', is cauterised, leaving instrumental knowledge.

The KAM indicators also ignore important aspects of education in low-income countries that have been central to the Millennium Development Goals; access to education as a universal right; the level of completions of schooling (quality issues) and alternative trajectories for developing knowledge and skills that are more appropriate to regional and local conditions (see Robertson et al, 2007). The move from human capital to new growth theory, with its focus on outputs and policy levers, also gives the World Bank greater leverage over education. Read in conjunction with their 2003 Report, *Lifelong Learning for the Global Knowledge Economy*, we can see that developing countries in particular will face new ways of embedded neo-liberal interventions in their economies – this time opening up access to education (in the name of literacy, secondary and tertiary education) for global chains of private for-profit suppliers of education (cf. Robertson, 2005) in the name of 'the knowledge-based economy'.

Conclusions

In this chapter I have set out to better understand the construction and use of the World Bank's Knowledge Assessment Methodology as a tool for discursively and materially producing a very particular kind of economic imaginary; a knowledge-based economy globally. I have argued that the KAM can be understood as a tool of strategic selectivity. Through this tool the interests of the developed economies and in particular US capital are being advanced by the World Bank and the OECD, reinforced at regional, national and institutional scales of policymaking and practice. I have also argued that the material and ideological roots to this hegemonic imaginary can be found in the crisis of capitalism in the developed economies (and specifically the USA) when they sought to deepen and widen the services sectors globally in order to more freely trade in the services sectors globally, and to extend intellectual property rights. International agencies, such as the OECD and World Bank, have been critical actors in helping launch this master narrative, although they are also aware of the fundamental and profound contradictions of this form of capitalism both for accumulation and for ongoing social stability. When knowledge is valorized and the 'west' is perceived to extend its reach so that the divides become gaping chasms, capitalism will not only have eroded the possibilities for new markets, but reduced its own imaginative potential through the limits it places on education.

At this point, however, that it is also important to remind ourselves that, historically, education has been notoriously difficult to pin down as a factor of production, despite the interest in doing so by human capital and new growth theorists. As new growth theorist, Paul Romer (1989) noted, we can say education matters, but the question is what kind of education? The answer of course lies in the fact that, as Dore (1976) reminded us many years

ago, it is not possible to generate a causal relationship between education and growth, beyond the fairly commonsensical understanding that literacy is important. He outlines at least 10 competing explanations for the relationship between education, earnings and growth, all of which continue to resonate today. Similarly, it is notoriously difficult to 'predict' and reproduce the conditions for generating new innovations, patents and intellectual property, as the OECD have found. And, as I argued to begin with, social systems are always open, contingent and potentially plural.

Finally, we might also argue, and indeed we can see some evidence for this, that the specification of 'the knowledge based economy' has opened up the knowledge question for scrutiny (whose knowledge?) and challenge (what about other knowledges?) in ways in which education systems had tended to contain and close it off. This is all for the good, in my view, and for this reason we might continue to see knowledge on the agenda for education policy analysts and critical academics for some time to come.

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Appendix 1

	Benchmark *basic*	**Enhanced** *intermediate*	**Comprehensive** *comprehensive*
El Salvador	2003		
Slovakia	2004		
Turkey	2006	2003	
Morocco	2004		
Tunisia	2004		
India		2004	2005
China			2004
Mexico			2004
Korea			2006
Ethiopia		2006	
Japan			2005
Finland			2006
Chile			2006

Table 1: World Bank Knowledge Economy Assessments Carried Out – 2003-2007
Source: World Bank *K4D Newletters* 2004-2007