



technology, children, schools and families

The consequences of global expansion for knowledge, creativity and communication: an analysis and scenario

Hugh Lauder, University of Bath
Phillip Brown, Cardiff University
Ceri Brown, University of Bath

December 2008

Introduction

There are striking parallels between the stories that were told to justify economic policy over the past decade in Britain and America and the stories that have been told about the benefits of globalisation and the knowledge economy. Just as we have been told that the business cycle could be abolished – the end to boom and bust – so the advent of the 'knowledge' economy was accompanied by claims that for those that invested in education the rewards would be great. Peter Drucker (1993), the management guru, declared that we were on the threshold of a new form of capitalism in which knowledge workers would replace the owners of capital as the locus of power. He argued that we were in a new stage of post-capitalist development that would lead to a fundamental shift in power from the owners and managers of capital to knowledge workers. Not only would they assume power but with it would come greater autonomy, creativity and rewards. This is a story that politicians and policy makers have sold to the public and it has placed education at the centre of questions of economic competitiveness and social justice. In this scenario, his thinking echoes the pioneering work of Bell (1973) who predicted that the growing importance of 'knowledge' work, reflected in the historical shift from blue-collar to white-collar work, would significantly raise the demand for educated workers, who would enjoy greater autonomy in their work.

The fundamental problem with this beguiling account is that it does not take into account the power relations and imperatives of capitalist economies. There have been significant changes to the division of labour and the nature of work in developed capitalist economies in which issues relating to the control of knowledge work have been linked to economic globalisation. But rather than these changes leading to greater creativity and autonomy for the majority of knowledge workers, 'permission to think' has only been given to a minority, while [for] the majority of knowledge workers are being confronted by routinisation. Although myths and theories about how capitalism can be harnessed to human freedom have been popular over the past twenty years, the reality has had much more to do with the dark side of capitalism, routinisation, surveillance, control and

exploitation. In global terms there are significant differences; the remarks made here are particularly relevant to the West, while in the economies of India and China, the picture appears different as middle classes and those of the super rich emerge.

In turn this raises questions about the role of education in this re-ordering of the division of labour and of the role of knowledge and skill within it.

The analysis given in this report is based on a study of the skill formation strategies of transnational companies and there will be caveats that need to be entered. However, the broad trends that we have observed are likely to be integral to the advanced and emerging economic superpowers.

In this context we are focussing on economic globalisation in which the MNCs have played a key role in structuring global labour markets and acted as the conduits for learning by the emerging economic superpowers: China and India.

Keywords: globalisation, economics, competition, knowledge economy, capitalism

The Study

The study comprises 190 interviews with senior managers in 20 MNCs in three sectors, electronics and IT, automobiles and finance, and senior policy makers. Where possible, interviews within companies were triangulated between head office (in the United States, the UK, Germany and South Korea) and their subsidiaries in China, India and Singapore over time. The timing of the interviews is important because it enabled us to gauge what has turned out to be very rapid change within MNCs over a period between 2004-2007. Of the interviews 65 were with policy makers in the seven countries within which these multinationals operated. This enabled us to examine current changes in the ways in which these companies use skills, as well as the relationships between them, and the national education and training institutions that provided some of the skills they utilise.

The Analysis

The analysis focussed on three inter-related dimensions to the changing nature of skill and work. Firstly, the nature of skills and reward are fundamentally changing, creating significant divisions in what were once considered middle class careers for graduates. Instead of a career ladder, it is clear that corporations are distinguishing between those they consider the talented who are, typically, fast tracked into senior managerial positions and those that are considered worthy, loyal and committed but who do not have the key ingredients for leadership positions. Beneath them are workers who engage in routine work. There are two reasons for these changes. The first concerns the ideology of the war for talent, in which corporations seek to identify outstanding talent because global corporations now need a range of skills in leadership positions that were not in demand when corporations were embedded in national economies. These new skill sets that only the small minority of 'talented' have are therefore highly rewarded. In contrast, much of the work that has been considered knowledge work is now routinised under a process akin to Taylorism, hence we term it digital Taylorism. In turn this requires much lower skill sets, and far lower rewards. Alongside digital Taylorism standardisation of judgements about human beings and their performance have also been introduced.

These changes in the division of labour, skills and reward can only be understood within the context of economic globalisation. Here there are two general points to make. The first is that electronic technology has enabled three key processes that have transformed the nature of work. Here, the standardisation of knowledge work, through digital Taylorism, is perhaps the most important because standardisation is required in order to transfer particular forms of knowledge work offshore. Equally it has enabled the development of packages by which worker performance can be judged by corporations

on a global scale. Finally, it has enabled what has been termed the 24 factory, in which corporations can develop projects which follow the sun, thereby reducing the time it takes from innovation to invoice. The notion of 'factory' is a little outdated because, as we shall see, it applies as much to high level research and design as to more routine tasks.

The second major development which has a direct bearing on graduate jobs concerns the increase in large numbers of highly qualified graduates in Russia, China and India. This has led to a global auction in high skilled jobs since typically graduates from these countries will work for anything between a third (R&D work) to a tenth (computer programming and system analysts) of the wage in the United States or Britain. The pressure of competition has meant that TNCs are seeking to cut costs and the arbitrage of high skilled work is one way in which it can be done.

It should be said that there are clearly differences in the competitive strategies of China and India. China has used MNCs as a way of gaining intellectual property through the rather weak implementation of IPR law and through the ways its corporations have learnt about organisation, management and the production of quality goods and services. However, it would be wrong to think that China has simply 'borrowed' the competitive strategies of western MNCs; its corporations are now developing their own low cost innovation strategies which threaten to disrupt global competition as we know it (Zeng and Williamson, 2007). India, in contrast, has used its maths and IT talent to develop a strategy whereby its service industries establish shop fronts to win projects in Western nations and then cut costs by undertaking the projects in India. However, it would be a serious mistake to see China focussing on a cheap manufacturing strategy and India as adopting a cheap service industry strategy. Both are now home to cutting edge R&D institutions which relate to both manufacturing and services.

In the following a more detailed account for these changes is given.

Dividing Graduate Work: The War for Talent

Corporations typically rate their management workers according to sets of what appear to be clearly defined competences. Often referred to as A, B and C players, the A players are believed to be crucial to the future of the company. Every effort is made to retain this group through generous compensation, interesting assignments, and career development:

You have just got to decide that those people are our future and whether they are kind of A players or they are kind of high potential people lower in the organisation, those are the people that we are going to pay, you know, whatever.

The B players are the 'engine house' of the company, they get things done and need to be treated with dignity and paid at a competitive rate. It includes 'engineering talent' with extensive experience but 'they usually are folk that don't really want to lead the charge'. The C players are those that they expect will leave through lack of skill or commitment. Beneath these categories are the routine knowledge workers, as discussed below.

The A category managers are those who are seen as exceptionally talented and as the quote above suggests, will be highly rewarded. We are told that such inequalities are justified because 'Talent is the new oil and just like oil, demand far outstrips supply'.ⁱ Consultants at McKinsey popularised the idea of a 'war for talent' by arguing that talent management had assumed greater strategic importance since the 1980s with the growth of the knowledge economy.ⁱⁱ This, they suggest, reflects the changing economic role of talent as only 17% of all jobs required knowledge workers in 1890, whereas now it's over 60%. The result is that 'more knowledge workers means it's more important to get

great talent, since the differential value created by the most talented knowledge workers is enormous.ⁱⁱⁱ

In London the head of HR within the banking sector told us:

We have segmented our employees brutally just in terms of talent. They've gone through quite a tough assessment process over many years now. So we have the group that are recognised as talent, and sadly there is this group who are recognised as not talent. I don't know how I fix that, that's next year's problem. That group who are talented we actively manage them in terms of how long have they been in their current role, what's their next role? They get moved around the world quite a bit. They get stretched and out there.

What is interesting about this war for talent is that the ideology appears ubiquitous, almost every HR executive or manager had on their bookshelf a copy of the book written by Michaels and colleagues who popularised the concept of war for talent (2001). It also translated into a strategy for recruitment from universities based on a few select universities with high reputations. There were exceptions to this, especially in the motor vehicle sector, but generally it held true for the other sectors we studied and the countries that were part of the study.

Leading transnational corporations gravitate towards the global elite of universities because they are believed to have the best and brightest students. This view is actively promoted by leading universities as higher education has become a global business. The branding of universities and faculty members is integral to the organisation of academic enquiry. Claims to world-class standards depend on attracting 'the best' academics and forming alliances with elite universities elsewhere in the world, while recruiting the 'right' kinds of students. Universities play the same reputational games as companies, because it is a logical consequence of global market competition between universities.

Leading corporations and elite universities have engaged in a tango that enhances each other's brands. But when companies recruit from these universities they are merely extending the notion of a brand to new entrants. The issue of recruiting to enhance the brand of the company extends to the highest levels. One of our finance interviewees had an international reputation in relation to banking in China and when he was recruited by a Western bank it made headlines in the financial sections of the papers in China. But by choosing to fish in such a small pond for talent companies are strengthening the barriers to entry: it is as if they are putting a sign out, 'those who are not at internationally recognised universities need not apply'. What may be considered extraordinary about this strategy is that despite the demand for increased numbers of young managers who can work across the globe, they remain focussed on recruiting from the elite universities in each country. The consequence is that many able students will not get their foot in the door: the ideology of the war talent leads to paradoxically to a massive wastage of talent. The problem is that 'talent' that has a reputed university pedigree acts as an effective signal in the new global labour market.

Digital Taylorism

If it were true that the relentless nature of capitalism was leading to an unprecedented demand for employees to think for a living it would mark a profound economic transformation. But the reality is more complex. Historically, productivity has not come from giving people permission to think but from imposing barriers to individual initiative and control through a detailed division of labour. While the management of knowledge workers poses problems for HR professionals, there is also a major shift to what we called Digital Taylorism (Brown, Lauder and Ashton, 2008). If the era of Fordism,

characterised by Mechanical Taylorism, involved the transformation of craft work through 'scientific management' (Taylor, 1911; Braverman, 1974), today we are witnessing the translation of knowledge work into working knowledge.

There are many accounts of technology but here we see it as the social organisation of electronic and information technologies to reduce skill and consequently costs while standardising platforms so that the work to be undertaken can be done anywhere with the requisite levels of basic skills.

Digital Taylorism enables innovation to be translated into routines that might require some degree of education but not the kind of creativity and independence of judgement that is often associated with the knowledge economy. In order to reduce costs companies have to move from knowledge work to working knowledge; that is, from the idiosyncratic knowledge that a worker has and applies, to working knowledge, where that knowledge is codified and routinised, thereby making it generally available to the company rather than being the 'property' of an individual worker.

There are many ways in which digital Taylorism can be applied, for example, a leading company producing and selling software handling credit card transactions and credit rating expanded very rapidly over the last decade both within the UK and abroad, mainly through acquisitions. In an interview with the CEO in 2006 he defined the company's major problem as one of how to encourage his staff (mostly university graduates) to be innovative. He thought this was essential for the continued success of the business as they developed products for new markets and customers. Today the problem has changed dramatically. The company has achieved an annual growth rate of 25% and opened offices across the developed and developing world, including China, India and Bulgaria. There has been a change in CEO, and the major issue is no longer defined as innovation, but of how to align business process and roll out software products to a global market. The creative work in producing new platforms, programs and templates, has been separated from what they call routine 'analytics'. Permission to think is restricted to a relatively small group of knowledge workers in the UK, while the more routine work (ie customizing products to different markets and customers), also referred to as the 'grunt work', is offshored to their offices in Bulgaria (where graduates can be hired at a third the cost of the UK) and India.

In Britain we interviewed a premier banking relations manager at a retail TNC bank. He described how he used to have discretion over the amount of money he could lend to a customer. The bank relied on his expertise and judgement in making decisions. Now he no longer has that discretion, it's all done by computer algorithms. He had become a sales person and he had a whole series of manuals as to how to sell particular kinds of products. The knowledge and discretion that he once exercised was no longer required and as he noted, 'a junior with a ready smile could now do my job'.

There are two points to make from this example. The first is that the application of digital Taylorist techniques encompass the globe. In India we talked to the manager of another TNC retail bank who described exactly the same process as described by our English manager in respect to premier retail banking. He commented that:

We basically work on something called scorecards ... you punch in the data, and it moves on to the scorecard, it gives you a score, it is related to their [customers] credit effectiveness in a particular transaction and an approval comes through. So it is no longer the discretion of an individual across the table. It is purely based on *scorecards*.

It is quite alarming how closely this situation echoes the 'Little Britain' comedy television sketch featuring the character 'Carol Beer' a low level bank worker whose emotionless response following each of her customers requests is: 'computer says no'!

Secondly, techniques of digital Taylorism are ascending the skills ladder. In an interview with a leading international law firm in the City of London we were told of how they offshored the preparatory work in the development of high profile cases to the Philippines. Their lawyers, who would cost £125,000 a year in London, would work at a fraction of the price. This form of labour arbitrage could only work with standardised processes of analysis and of course sophisticated security devices to ensure confidentiality. Clearly, in this case, more professional judgement would need to be exercised than in the bank manager's present role. However, labour arbitrage would not be possible without standardised forms of process and quality control.

The Standardisation of Judgements about Workers

In order to be able to move workers to where they are most suited or needed TNCs need to standardise judgements about workers across the globe. This gives them a major competitive advantage in terms of the utilisation of talent. To give an example of how this works a TNC retail bank in India described a metric indicator, the Customer Relationship Management System (CRMS) which captures a numerical performance of individuals and this CRMS which captures the behaviour of an individual towards an activity ... and we call it the Staff League Table.

He was asked how this league table was used and how often it was published, to which he responded:

Every year, which means if I need to, if that particular person in the banking hall needs to know where he or she stands in the country in her particular function. She can just go and open the league tables and she will get to see where her position is.

This comment reveals an assumption that employees will inevitably 'need to know' their relative position in the performance hierarchy. Echoing the league tables of schools and universities which comprise the education market as discussed above, these worker evaluation programmes eradicate the unique benefits of personal difference (as a good thing). As such it follows there is but one formula determining the quality of a worker and therefore it is possible that pay and promotion are determined on this basis as well as recruitment to other positions, globally within the bank.

The Global Auction for High Skilled Jobs

The global auction has been made possible by the rapid expansion of high quality universities and graduates in Russia, India and China. In turn this has led to the rapid expansion in the global supply of high skilled workers that also has major implications for the future of high skilled, high waged work in Western nations. Table 1 shows that China had six times as many university students as the UK and almost as many as the US in 2001. It also has plans to increase university numbers to 16 million by 2005, including 600,000 engaged in postgraduate studies. This amounts to 15% of age cohort. Even more ambitious is the plan to increase enrolment to Chinese senior high schools from 27 million in 2000 to 46 million in 2005.^{iv} The expansion of higher education in India is following a similar path. There are plans to increase the participation rate of 18-23 year olds in higher education from 6% in 2002 to 10% in 2007.^v

While a degree of scepticism is required with respect to the accuracy of these statistics they show that in six years higher education numbers in China, India and Russia have almost doubled from a combined total of 15.8 to 30 million students. This is almost double the combined total for the US and the UK at 15.7 million. There is therefore a good supply of highly qualified Indian, Chinese and Russian workers entering the global labour market.

Table 1: The Expansion of Tertiary Education in Selected Emerging and Developed Economies

Tertiary Education (ISCED 5&6): Total Enrolment (thousands)

	1970	1980	1990	1995	1999/2000	2000/2001
United States	8498	12097	13710	14261	13202	13596
France	801	1077	1699	2092	2015	2032
United Kingdom	601	827	1258	1821	2024	2067
India	2472	3545	4951	5696	9404	9834
Brazil	430	1409	1540	1869	2457	2781
China	48	1663	3822	5622	9399	12148
Russia	NA	5700	5100	4458*	NA	8030

*1994

See Brown, Lauder, Ashton and Tholen, 2005. Derived from the following sources: UNESCO, Enrolment in tertiary education for the academic years 1999/2000, 2000/2001.

Rather than a magnetic attraction to a specific location, global economic integration has enabled companies to create a new spatial division of labour for high skilled activities including research, innovation, and product development, as well as for low skilled, low waged work.

In the 1960s and 1970s companies such as Ford, IBM or Siemens were characterised as 'national champions' as they not only paid taxes that contributed to the public exchequer but also offered mass employment within the home nation. However, the IBMs and Siemens of the post-war period that controlled all elements of hardware and software production have given way to a fragmented horizontal structure across national boundaries that combine speed and flexibility, while off-loading corporate risk. Facilitated by the personal computer, the internet and an increasing supply of highly qualified employees in developing countries, these networks extend across the globe, particularly to the Pacific Rim, India and Eastern Europe.

Saxenian (2002) has charted the development of this industry.^{vi} The story starts with increasing numbers of Taiwanese, Indian and Chinese students enrolled in Ph.D programmes in the United States.^{vii} During the 1980s Taiwan sent more doctoral students to the United States than any other country. The first generation of these students tended to stay in the United States, working in the semi-conductor industry before returning home to establish their own businesses. Encouraged by government policies approximately 6,000 doctoral engineers were returning home each year by the mid-1990s (Saxenian, 2002). The combination of the knowledge and networks established in the United States by the first generation of IT entrepreneurs, coupled with the critical mass of expertise of returnee graduates, enabled Taiwan to capitalise on the possibilities of a horizontally structured industry operating across national borders.

The emergence of the electronics industry in Bangalore in India also demonstrates how less-skilled employment in the IT industry was exported from Western economies to enclaves in the developing world (Kobrin, 2000). The education and training of electronic engineers provided the necessary human capital for the electronics industry in Bangalore to take off. But contrary to the view that only lower skilled work would be subject to price competition, the IT industry suggests that this is at best wishful thinking. India's tertiary education system now trains over 67,000 computer science professionals annually and another 200,000 enrol each year in private software training institutions.

The cost advantage to companies employing software professionals in India in comparison to the United States is presented in Table 2:

Table 2: Salaries of Software Professionals in the United States and India¹, 1997 (OECD 2000).

	United States (USD per annum)	India² (USD per annum)
Help desk support technician	25 000 - 35 500	4 400 - 7 000
Programmer	32 500 - 39 000	2 200 - 2 900
Network administrator	36 000- 55 000	15 700 -19 200
Programmer analyst	39 000 - 50 000	5 400 - 7 000
Systems analyst	46 000 - 57 500	8 700 - 10 700
Software developer	49 000 - 67 500	15 700 - 19 200
Database administrator	54 000 - 67 500	15 700 - 19 200

Source: OECD Information Technology Outlook, OECD, Paris, 2000. p.1

It can be seen from this table that Indian programmers are around 14 times cheaper than those in the United States. But much of the work of Indians in the past has been at the low end of the market. Saxenian (2000) has shown that the annual revenue per employee in the Indian software industry was \$15-20,000 whereas in Israel and Ireland the corresponding figure was \$100,000 per employee. However, wages have risen in Bangalore and there is now concern that, with increasing competition from China, Russia and Romania, amongst others, the industry will price itself out of the market unless it moves into higher value added production (Yamamoto, 2004). This may be facilitated by the large numbers of Indian entrepreneurs in Silicon valley where in 1998 they were running more than 775 technology companies, accounting for \$3.6 billion in sales and 16,600 jobs (Saxenian,2000).

This fundamental change in the division of labour has enabled transnational corporations to engage in a Dutch or reverse auction whereby they can locate work where it is cheapest. The key to understanding why this is possible is that now with the advent of the processes described above quality equals price. Whereas once high quality could only be undertaken in the west, now it can be done almost anywhere, as long as there is a supply of high quality graduates and it is this that has turned the assumptions regarding globalisation on its head. Where once it was assumed that the west would do the brain work (Reich, 1991; Rosencrance, 1999) now that is no longer the case.

While the global auction is now a key feature of skill strategies, it is not always the case that all high skilled jobs will go East. For example, there are good reasons why TNCs will keep some of the high skilled work in the West: the concept of 24 hour project work which follows the sun is an example.

Following the Sun

We found most manufacturing companies operated in this way, not only with research but also design. A leading German motor vehicle manufacturer offered this example of following the sun:

Stuttgart, Mumbai and Los Angeles in a 24 hour cycle, so we have round the clock. So there is a studio at Los Angeles the main part is at Stuttgart, in India we have some electronic design and other design parts, Italy we have some internal design, but they are connected and they are working 24 hours a day. In India people are working when it is night in Germany and German employees pick up the direction in the morning and continue.

This is an example of 24 hour design work but it also applied to R&D. An American motor manufacturer had recently set up a new research centre in India. This centre specialised in the virtual modelling of the production process because they were able to recruit talented IT and Maths graduates. When asked whether they worked in virtual teams on the same projects he replied by saying that they also 'followed the sun', with project work initiated in India, now being extended across the globe so that virtual modelling could be undertaken across the globe on a 24 hour basis.

The question to be raised is what effect these processes will have on education and in particular on universities with respect to issues of creativity.

The Role of Knowledge, Creativity and Education in the New Division of Labour

In order to develop a scenario, we need first to examine the situation in the HE sector. Here there are two related dimensions. The first concerns the way the university sector is differentiated by social class. The second is how these class differences map out in terms of teaching and learning.

Social Class and University Participation

Recent figures for the socio-economic profile of UK universities show that those from the upper end of the socio-economic scale dominate elite universities. For example, the university with the highest percentage of students from top socio-economic backgrounds (band 1, 2 and 3) in 2006/7 was Oxford with 90.2% followed by Cambridge with 88.5%. These are followed by some of the top ranked non Oxbridge universities including Bristol (85.7%), Durham (85.2%) and Warwick (82.6%). In contrast those who attract the most working class students include the new universities such as Wolverhampton (51.3%), Bradford (49%), Sunderland (48%) and Greenwich (46.4%)¹ Not surprisingly there is a relationship between type of school attended and access to the elite universities. For example, in 2006/7, the University of Cambridge recruited 58% of its students from the state sector, Oxford 53%, Bristol 63%, and the London School of Economics 66%. In contrast, many of the 'new' universities recruited over 95 per cent of their students from state schools: The Universities of East London and Greenwich, for example recruited some 95% of their students from state schools. Of course many of those from elite state schools may also come from privileged backgrounds, and here there is continuity over time in terms of social class and university participation: Power, Edwards, Whitty and Wigfall (2003) reported that in 1998/99, 70% of students in seven of the top universities were drawn from professional and managerial backgrounds. Moreover, they also noted that working class students who may be eligible to apply to Oxbridge by dint of their A-level scores did not do so.

These data suggest that as the higher education sector has expanded so it has also become more differentiated by social class. While it appears that there has been some improvement in access to the HE sector for working class students (Gorard, 2008) it does not follow that all students will have the same life chances in the labour market, nor that they will have the same experience at university.

¹ These data are taken from HESA.

In terms of wages once graduated, there is a clear difference between those who have attended elite universities and those who have attended less prestigious institutions. Hussain, McNally and Telhaj (2008) calculate that those from elite universities earn twice the wages of those who attend less prestigious institutions. The question is why? There are many answers that can be given to this question and from the research cited above it is clear that TNCs recruit from elite universities because they believe that they will be getting not only technical skills but the 'right kind of person': in the current management jargon these are people who will fit into the TNC because of their confidence, initiative, problem solving and communication skills. Arguably, here is a relationship between the way teaching and learning is conducted in the elite universities and those that are less prestigious that reflects some of the differences that TNC managers identify.

The following comments from a TNC in Shanghai underlines just how important it is to be the right kind of person to represent the company:

in the total pool of [professionals] that are available there would only be a much smaller proportion that ... I would be interested in because I represent a MNC, I can only recruit people who have at least a certain level of English proficiency, I will only be interested in people who have a certain international sense of business, you know I am only interested in people who do not see themselves as civil servants, you know the 9-5ers, where as that kind of you know qualities may be accepted by a local company or a state owned company, it is not acceptable to me. So the market is quite small to begin with and competition is extremely fierce because the cream of the crop, everybody, all the MNC's, are fighting for them.

Social Class, Teaching and Learning in HE

Naidoo and Jamieson have sought to examine the impact of consumerism on higher education exploring both the field of higher education in Bourdieuan terms (Naidoo and Jamieson, 2006) and the impact on teaching and learning of where an institution is positioned within the field. They argue that lower ranked universities are more likely to engage in pre-packaged learning materials, for example through e-learning type strategies, and forms of assessment and pedagogy that narrow the tasks that students need to accomplish. In turn the knowledge that is 'transmitted' will be pre-packaged and divided into modular form. This view raises the question put by Michael Young (2007) as regards the distinction between knowledge of the powerful and powerful knowledge. The former refers to the knowledge that dominant groups impose on others to their advantage, while the latter is the knowledge that is needed in order for individuals to develop an understanding of the world and is potentially emancipating.

The implications of the position developed by Naidoo and Jamieson (2005) is that the knowledge of the powerful and powerful knowledge reside in the elite institutions which are by and large dominated by the most privileged in society, since it is in the elite institutions that powerful knowledge is taught and the pedagogy that is practised enables considerable freedom of expression and creativity.

Given this analysis what is the most likely scenario for higher education, and the fostering of knowledge and creativity?

Scenario: higher education, and the fostering of knowledge and creativity

The analysis developed above leads to a scenario where the decline in professional middle class jobs leads to an intensification of positional competition for access to the elite universities. Three further factors need to be considered. We are undergoing a financial crisis which will impact on the higher education sector. In turn, there is a

question as to whether the present participation target of 50% of an age cohort attending university in the UK can be met. It may be that some universities will be closed because public debt is so high. In this case positional competition will further intensify. On top of this, fees are likely to rise, especially in the elite universities, when the cap is taken off in 2010. Even without the economic crisis this will act as a deterrent to many middle class, far less working class students. Finally, governments will always support the elite universities because their research is seen as a source of global competitive advantage. Given these near term developments we can speculate as follows:

greater elitism in relation to university participation

Within the middle class there will be an intensification of positional competition to get into the elite universities in order to become a high earner. As an indication of this form of thinking Chris Woodhead has recently spoken of the enthusiasm with which politicians and top universities have embraced university administered selection exams which one in seven universities now administer. Furthermore, designed to address the devalued status of A-level grades the 'Pre-U' has been developed by the University of Cambridge International Examinations board, as an alternative to A-levels so as to;

"stiffen the rigour of individual subjects and replacing modularity, in which candidates are assessed on units of work through the course, with a traditional final examination." (Sunday Times University Guide, 21.09.08, p7)

This in turn will lead to greater selectivity with new exams introduced in order for the elite universities to pick the 'brightest and best'. On current form that will mean recruiting from private schools. In effect educational selection will be increasingly determined by parentocracy (Brown, 1997) – the wishes and wealth of the parents rather than the abilities and motivations of the child. This will extend through the educational market mechanisms to all parts of the educational system. Here it is the sons and daughters of those defined as 'the talented' that will capture the places at the elite universities.

Knowledge and Creativity

In this scenario, powerful knowledge and associated creativity will reside with the executive and management elite and their state counterparts. Rather than the democratisation of powerful knowledge we are likely to see it even more in the hands of the few. It can be argued that there are countervailing tendencies, such as the internet but the crucial point here is that data and information from the internet needs interpreting and evaluating. Such tools require greater skill and selectivity amongst multiple information sources so as to locate, analyse and use information so as to answer questions, solve problems and make decisions (Kasper, 2000; Leu, 2001). And as has been discussed above it requires powerful knowledge to do so.

Given the rather pessimistic account we have given in contrast to the official scenario that policy makers adhere to and which we outlined at the start of this report, are there counter trends which may challenge the alternative scenario we have presented?

There are several points to make. As many have observed there are political, social and economic infrastructural factors in China and India which may throw their extraordinary economic development off course. For example, in respect of education, there is now considerable graduate unemployment in China and students have frequently rioted because their graduate credentials were considered worthless in the labour market. However, both are vast countries with widely distributed resources and there would only be a major interruption to their development if either country were caught in nation wide social unrest. This does not mean that their development may not falter but short of a

fundamental re-writing of the current rules of globalization (see Lyn, 2005) we can expect the trends we have identified to intensify.

What then of the response from Britain? Firstly, there have been strategies to improve learning through the use of IT at all levels. For example, the Prime Minister WHICH ONE? announced at the last Labour Party Conference that there would be funding for a million extra families to get online. It could be argued however that this is an example of what Hargittai (2003) believes is a conflation in the understanding of the issue of a digital divide being an issue of access. Hargittai argues that this policy fails to take into account a more nuanced understanding of the digital divide which includes other factors such as the quality of equipment, autonomy of usage, support networks, and online skill. Secondly, these have been linked to more flexible delivery of tertiary and higher education programmes which is integral to current Conservative party thinking. However, these strategies do not address the fundamental problem of the availability of high skilled jobs and related wages.

One solution to this problem now being canvassed by Peter Mandelson in the Hugo Young Memorial Lecture (2008) in which he argues for a re-focusing of economic policy towards industrial policy and the a role for the state in its development. The difficulty is how to see, at the present time, how high skilled high wage industries can be developed from such a low base. Especially when, in contrast to Germany, France or indeed Singapore, there is not the expertise within government to develop such an industrial policy.

Conclusion

The scenario we have developed is pessimistic but there are further reasons for thinking that it is most likely. In the face of a failing City, it is unclear how the economy is to be rebalanced in order to provide mass employment, especially in relation to skilled work. There is vague talk of launching a new industry in renewables: perhaps but it should be noted that some countries with cutting edge engineering skills such as Germany are well ahead in this respect. For this scenario to be consigned 'to the dustbin of history' would require a fundamental change in the politics and economics of Britain.

References

- Bell, D. (1973) *The Coming of the Post-Industrial Revolution*. New York, Basic Books
- Braverman, H. (1974) *Labour and monopoly capital*. New York, Monthly Review Press.
- Brown, P. (1997) *The Third Wave: Education, and the ideology of parentocracy*. In: Halsey, A.H., Lauder, H., Brown, P. and Stuart Wells, A. (eds) *Education, Culture, Economy and Society*. Oxford, Oxford University Press.
- Brown, P., Lauder, H. and Ashton, D. (2007) *Towards a High Skills Economy: Higher Education and the New Realities of Global Capitalism*. In: Epstein, D., Boden, R., Deem, R., Rizvi, F. and Wright, S. (eds) *World Year Book of Education, 2008, Geographies of Knowledge, Geometries of Power: Higher Education in the 21st Century*. London, Routledge.
- Brown P., Green, A. and Lauder, H. (2001) *High Skills: Globalisation, Competitiveness and Skill Formation*. Oxford, Oxford University Press.
- Drucker, P. (1993) *Post-Capitalist Society*. London, Butterworth / Heinemann.
- Hargittai, E. (2003) *The Digital Divide and What To Do About It*. Pre-print version of the book chapter to appear in the *New Economy Handbook* edited by Derek C. Jones. San Diego, CA., Academic Press.
- Hussain, I., McNally, S. and Telhaj, S. (2008) *University Quality and Graduate Wages in the UK*. Centre for Economic Performance, London School of Economics.
- Karchmer, R. (2001) *The Journey ahead: Thirteen teachers report how the internet influences literacy and literacy instruction in their K-12 Classrooms*. *Reading Research Quarterly*, 36 (4), pp.442-466
- Kobrin, S. (1999) *Development after Industrialisation: Poor Countries in an Electronically Integrated Global Economy*. In: Hood, N. and Young, S. (eds) *The Globalisation of Multinational Enterprise Activity and Economic Development*. Basingstoke, Macmillan.
- Leu, D.J (2000) *Literacy and technology: Deictic consequences for literacy education in an information age*. In: Kamil, M.L., Mosenthal, P., Pearson, P.D. and Barr, R. (eds) *Handbook of Reading Research*, vol. III, Mahwah, NJ., Erlbaum
- Lynn, B. (2005) *End of the Line: The Rise and Coming Fall of the Global Corporation*. New York, Doubleday
- Power, S., Edwards, T., Whitty, G. and Wigfall, V. (2003) *Education and the Middle Class*. Buckingham, Open University Press.
- Reich, R. (1991) *The Work of Nations*. London, Simon & Schuster
- Rosencrance, R. (1999) *The Rise of the Virtual State*. New York, Basic Books.
- Saxenian, A. (2000a) *The Bangalore Boom: From Brain Drain to Brain Circulation?* In: Kenniston, K. and Kumar, D. (eds.) *Bridging the Digital Divide, Lessons from India*. Bangalore, National Institute of Advanced Study.
- Saxenian, A. (2002) *Transnational Communities and the Evolution of Global Production Networks: The Case of Taiwan, China and India*. *Industry and Innovation*, Special Issue on Global Production Networks, Fall.
- Yamamoto, M. (2004) *Will India Price Itself Out of Offshore Market?* Available from <http://news.com.com/Will+India+price+itself+out+of+offshore+market/2100-10223-5180589.html>
- Young, M. (2007) *Bringing Knowledge Back In*. London, Routledge/Falmer.
- Zeng, INITIAL, and Williamson, P. (2007) *Dragons at Your Door: How Chinese Cost Innovation is Disrupting Global Competition*. Boston, Harvard Business School Press.

ⁱ Heidrick and Struggles, 2007, *Mapping Global Talent: Essays and Insights*, p.2.

ⁱⁱ Michaels, E., Jones, H.H. and Axelrod, B. (2001) *The War for Talent*, Boston, Mass.: Harvard Business School Press.

ⁱⁱⁱ Michaels, E., Jones, H.H. and Axelrod, B. (2001) *The War for Talent*, Boston, Mass.: Harvard Business School Press.p.3.

^{iv} See 'Chinese University Students to Top 16 Million' at <http://www.edu.cn/20010903/200991.shtml>

^v The figures on China and India were compiled with the assistance of Gerbrand Tholen. For a broader statistical analysis of these issues see Brown, Lauder, Ashton and Tholen, 2005.

^{vi} See also Saxenian 1994, 2000a, 2000b, 2002

^{vii} See also Alarcon, (1999).

This document has been commissioned as part of the UK Department for Children, Schools and Families' Beyond Current Horizons project, led by Futurelab. The views expressed do not represent the policy of any Government or organisation.