‘Knowledge as Development’:

A Critique of the Knowledge Economy

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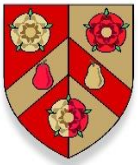

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ABSTRACT

The aim of this thesis is to provide a theoretical critique of the Knowledge Economy discourse, the dominant discourse in which development is equated with the economic exploitation of knowledge. The nature of the critique is political in the sense that the problem with 'building a knowledge economy' as a model for development is that the accounts (such as they are) of how to go about doing so seem fatally undermined by their neglect of questions of power and politics – questions which this thesis will argue are essential to understanding the relationship between knowledge and development. The emergence of the discourse itself and the way in which its ideas are implemented can also be seen in political terms, in that the depoliticisation of development that it entails is itself a political position. The thesis is structured as an introduction followed by three main parts and a conclusion. In the Introduction and Part 1, I explain the nature of the research and the methods used, and provide a genealogy of the Knowledge Economy (KE) discourse, which includes the empirical element of this research, namely a series of interviews with key actors in the emergence of the discourse. In so doing, I historicise the discourse within the specific institutional history and politics of the major organisations (World Bank and the OECD) which have done the most of any to promote it. From this I identify the key theoretical ideas (Human Capital Theory, Innovation Systems, Hayekian Neoliberalism, Information Economics and Endogenous Growth Theory) which underpin the discourse and which are

then the subject of critical analysis in Part 2. I make the case that the Knowledge Economy should not be understood as a robust analytical framework, empirical methodology or policy template, but instead as the reconceptualisation of 'questions of knowledge' in terms of markets. Specifically, the discourse depends upon a number of qualitatively different ways in which knowledge can be represented in, and transformed by, the operations of markets. These representations derive from three main schools off economic thought. I describe how each offers a critique of the others and yet how the Knowledge Economy is obtained as a synthesis of the three. In Part 3, I firstly illustrate a case of the Knowledge Economy discourse in action, namely Higher Education reform in India. I explain how the approaches that were studied in Part 1 and which were developed at the World Bank and the OECD in the late 1990s and early 2000s were applied in practice in India in the mid 2000s. I argue that these applications illustrate the claims of Part 2 regarding knowledge and markets. I then describe the politicised nature of Indian Higher Education and argue that no satisfactory account can be given without an engagement with these political economy factors. Following on from this, I then consider how adopting a KE approach of conceptualising knowledge in terms of markets might be subject to various forms of political analysis and develop a political economy critique that synthesises three theoretical approaches: (a) the politics of markets; (b) commodification; and (c) governmentality. From this I conclude that the KE approach is fundamentally flawed as an account of development.

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INTRODUCTION:

THE KNOWLEDGE ECONOMY AS A DOMINANT DISCOURSE

> *Knowledge is critical for development, because everything we do depends on knowledge. Simply to live, we must transform the resources we have into the things we need, and that takes knowledge.....We must use those resources in ways that generate ever-higher returns to our efforts and investments. That, too, takes knowledge, and in ever greater proportion to our resources.* (World Development Report 1998-99 p.16)

> *Whatever their stage of development, countries should consider building a knowledge economy.* (World Bank 2008 p.xiii)

When statements such as these are made by the World Bank, it claims ownership of an idea that has now become something of a global orthodoxy amongst policymakers – that 'knowledge is development'. Similar statements are regularly made by other multilateral development agencies such as UNESCO or the OECD, as well as by governments and in academic circles, with various themes recurring: that 'knowledge', however defined, is the key driver of economic growth; that 'human capital' or 'intangible capital' are a country's most precious resources; that education, especially higher education, should be reconceptualised both at the macro level in terms of the generation of that capital and at the micro level in terms of the costs and benefits that such an investment might entail for the individual; that 'building knowledge infrastructure' – systems of innovation, strong intellectual property and liberal trade regimes – will lead to the effective dissemination and economic exploitation of knowledge; and finally that through a model of globalisation in

which knowledge, though sometimes referred to as 'a global public good',[1] is increasingly treated as a tradable commodity to be exchanged in markets and protected through property rights legislation, there really is no alternative for any country but participation and competition in the globalised knowledge economy.[2]

Over the past fifteen years or so, this general idea has been expressed in the form of various governmental commitments to 'build knowledge economies'. The United Kingdom (UK) was amongst the first countries to make such a declaration with the publication in 1998 of the White Paper *Our Competitive Future – Building the Knowledge-Driven Economy.*[3] Soon afterwards, at the Lisbon Council in 2000, a pledge was made by European Union (EU) leaders that the EU would be, by 2010, "the most dynamic and competitive knowledge based economy in the world" (Presidency Conclusions, 2000, Point 5)[4]. In India in 2005, the National Knowledge Commission (NKC) was established and given a broad mandate to effect a knowledge oriented paradigm of development,[5] whilst in China, a similar body, CASTED (the Chinese Academy of Science Technology Education and Development)[6] came into being in 2007 and was charged with moving China from a manufacturing economy to one driven by science-based innovation.[7] Korea has had a Ministry for the Knowledge Economy since 2008,[8] and Malaysia has made building a knowledge economy a key feature of their

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[1] See OECD (1996), Stiglitz (1998b), World Bank (2002, 2008), Chen and Dahlman (2005).
[2]I use the lower case 'knowledge economy' to refer to the economic object and the upper case 'Knowledge Economy' or sometimes 'Knowledge Economy discourse' to refer to the discourse that surrounds that object.
[3]UK Government Department of Trade and Industry (1998).
[4]Presidency Conclusions (2000) Point 5. Please see http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/00100-r1.en0.htm Although note that in 2009, the Swedish Prime Minister, Fredrik Reinfeldt, judged the Lisbon strategy to be a failure(Euractiv, 2009).
[5] See Part 3 of the thesis.
[6] Replacing the NRCSTD (National Research Centre on Science and Technology for Development) set up by Deng Xiao Ping.
[7] See for example the introductory pages of CASTED's website http://www.casted.org.cn/en/web.php?ChannelID=64.
[8]Renamed the Ministry of Trade, Industry and Energy in 2013.

"Vision 2020" set of policy objectives.[9] In South Africa in 2006, the World Bank convened a Knowledge Economy Forum which resulted in 'Ten Priorities for Africa' to utilise knowledge for development, whilst in 2009 a similar forum in Tunisia led to the 'Tunisian Declaration', in which MENA countries pledged to rethink development strategies towards building knowledge economies.[10] At a 2014 conference, "Innovative Asia: Advancing the Knowledge Economy: the Next Policy Agenda" organised by the Asian Development Bank, Ministers from Indonesia, China, India, South Korea and Kazakhstan met "to chart a course for knowledge-based economic development in Asia".[11] There are, in fact, very few countries which have not to some extent shared in this global orthodoxy.

The premise of this thesis is that these events matter. To some extent this is self-evident. Twenty years ago, the Knowledge Economy discourse was marginal; now it is hegemonic. But as we shall see, it is not straightforward to understand exactly *what* has changed, nor *why*. Of course there is nothing new in the proposition that knowledge and development are intertwined. Rather it is the way in which these concepts are now related, and it is this particular point that the thesis engages with critically.

Perhaps the most significant criticism that has been made of the Knowledge Economy as development paradigm has been that its understanding of knowledge is primarily as a subject for economic exploitation rather than as, for example, a force for social or personal transformation. The major multilateral organisations have tended to express this criticism reflexively in the imagined contrast between a 'Knowledge Society' and a 'Knowledge Economy',[12] with the former representing a richer, more substantive vision of what it might mean to understand 'development' in terms of 'knowledge'. Typically, this distinction is

[9] See Mustapha and Abdullah (2004).
[10] See Tunis Declaration (2009). Also see Aubert, J-E., and Reiffers, J-L. (2003).
[11] See Asian Development Bank (2014 p.xxiii)
[12] See UNESCO (2005), World Bank (2002), National Knowledge Commission (NKC 2008).

presented as an ethical one – the United Nations Educational, Science and Cultural Organization (UNESCO) paper, for instance, distinguishing between societies based on "knowledge sharing … [and those based on] the partition of knowledge"[13] (2005 p.22) – and the putative goal of policy should then be to secure that superior ethical outcome. Such a position – variations of which are adopted by all major policy actors – is as old as the terms themselves, with Drucker writing "it may be premature … to call ours a 'knowledge society' – so far we have only a knowledge economy" (1969 p.18). The problem, however, with conceptualising development as a narrative of this kind, is that the ultimate goal of 'constructing a knowledge society' becomes less of an ethical critique and more of a legitimising, aspirational device for the project already in hand, that of 'building a knowledge economy'.

The critique envisaged in this thesis is primarily political, rather than ethical, in nature. This is not to deny the very substantial ethical, philosophical and ontological issues that result from taking an 'economic view of knowledge', i.e. one that is premised in terms of the market exchange between rational individuals of homogeneous commodities. Instead, it is to suggest that the prior problem with 'building a knowledge economy' as a model for development is that the accounts (such as they are) of how to go about doing so seem so unsatisfactory, and that this shortcoming is fundamentally due to an inadequate treatment of questions of power and politics. Knowledge economy advocates point to a range of institutions which collectively are held to facilitate the economic exploitation of knowledge – intellectual property rights, well-functioning systems of innovation, integrated academic and commercial research, and effective and widely available higher education.[14] As evidence for this position, correlations may be established between institutional strength in

[13] This distinction is predicated on the idea that 'knowledge gaps' lead to divisions and disassociations both between and within societies. In a society in which knowledge is excessively commodified and partitioned rather than shared, building a knowledge economy would then deepen existing inequalities and create new ones.

[14] See World Bank (2008).

these areas and other indicators of development or economic success. But correlation is not causation, and little consideration is given to how the processes and outcomes of institutional change that these involve are determined and indeed obstructed by *political* factors – by conflict and contestation between states, classes, firms and individuals; by questions of legitimacy, authority and governance; and by the exercise and relational hierarchy of power.

On the other hand, the position of this thesis is that development – and indeed knowledge – *are* political concepts and that the knowledge economy discourse obscures this fact. There are at least three main senses in which this is so. The first is that the focus on knowledge leads to a *'dematerialisation'* of development – that is to say, it draws a veil over the idea of development as concerning the material relations of production and the political question of who has control over those relations. The fundamental problems that developing countries face regarding land reform, agricultural production and industrialisation are, of course, to do with knowledge to some extent. But they are also, and more significantly, to do with *power* and how the exercise of that power over time has embedded itself into the fabric of society. Still more so are other issues that developing countries face, such as security, migration and conflict – it is hard to see these issues as fundamentally to do with 'knowledge'. The dematerialisation of development has a long history[15] as does the depoliticisation[16] - both are connected with the rise of neoliberalism – but the knowledge economy may represent a new phase in these processes. The second major way in which the knowledge economy obscures the political is that the discourse itself provides a rationale for the *commodification of knowledge*, that is to say the extension of a market-oriented mode of production and ownership to a realm that had previously not been subject to these material relations. And the point about the

[15]See Leys (1996)
[16]See Ferguson (1994)

extension of markets, is that markets (as will be seen in Part 3) are not neutral, but governed by a whole range of political formations. Opening up knowledge to markets means opening it up to a proportionately greater extent to those who can participate in them more effectively or who have the greater influence on their creation or the rules that govern them. The knowledge economy discourse engages with this point only tangentially in the sense that establishing property rights is, of course, integral to establishing markets and yet appropriation, accumulation and exploitation are no less important concepts when applied to knowledge than to material resources or to land. But the final way in which the knowledge economy discourse obfuscates the political dimensions of development is in its understanding of knowledge. This is not just to say that the dissemination and application of technology, learning and education is about far more than the stimulation of economic growth or the increase of productivity – although these are important points. But in conceptualising knowledge in market terms is to except a mentality that over time becomes internalised and leads to a form of control and subjectification. Finally, the greatest power of knowledge lies in the capacity of ideas to mobilise the individual, unite the collective and transform society.

A Note on Methods

This thesis is primarily a theoretical critique of the Knowledge Economy. Critique is, as Raymond Williams describes, "not a judgement but a practice" (1976 pp.75–76). That is to say, its primary purpose is not to adjudicate in some summary fashion whether a thing – in this case a system of knowledge – is 'good or bad' or even 'accurate or inaccurate', but instead to "bring into relief the very framework of evaluation itself" (Butler 2002 p.2) and to ask how the epistemological position it represents structures the world and forecloses alternative possibilities of ordering. In this thesis, the central idea is that the epistemological framework of the KE is one in which certain political categories

are excluded and that this position itself represents the exercise of power. The practice of critique here, therefore, is to examine the ways in which the rationality under consideration (in this case the Knowledge Economy) may legitimise, consolidate or enhance existing inequalities and asymmetries of power.

To this end, the approach taken in Part 1 will be historical and genealogical. By examining when, how and why particular terms are introduced and used in particular ways, and by whom, we seek to foreground critique in specific historical contexts (Williams 1976, Fraser and Gordon 1994). The contention in Part 1 of this thesis, based on a critical analysis of key policy papers and populated with data from 'elite' interviews (more on this below), is that the Knowledge Economy arrived as a language in the late 1990s, and over the subsequent two decades has radically transformed how the relationship between knowledge and development is conceived. In selecting these texts and the subjects for interviews, careful consideration was required as to what was 'key' and what influenced what. This is especially complicated because of the different forms of texts - academic articles, policy research papers and actual implemented policies - and authors who might be said to have contributed to the discourse. A major part of the research in this thesis was therefore occupied with accumulating and then analysing this material before presenting it in the form here. Such a genealogical approach rejects the idea that rationalities (such as, in this case, those represented by the Knowledge Economy) can be understood independently of the context from which they originated (Fraser and Gordon 1994). In particular, the proposition that the Knowledge Economy can be regarded as a rigorous analytic concept, objectively defined and politically neutral, is rejected. Indeed, the debate as to whether the Knowledge Economy *could* be made rigorous as a concept seems hardly relevant; one must accept that the term is used in different, even contradictory, ways under different circumstances – and, moreover, that this fluidity of meaning may be an essential

part of the term's usefulness to those that employ it.[17] However, irrespective of this conceptual fuzziness, what my analysis of the relevant literature identified was that the Knowledge Economy first began to seriously influence public policy discourses in the period between 1996 and 2002. In particular, I identified three major publications as key: first in 1996, the OECD's *Knowledge-Based Economy*, then in 1998 the World Bank's World Development Report – *Knowledge for Development* – and finally, in 2002, the World Bank's *Constructing Knowledge Societies*. These publications set out for the first time the principal theoretical ideas which inform the Knowledge Economy; those ideas were hugely influential. A fourth publication, the jointly sponsored UNESCO/World Bank's *Peril and Promise* published in 2000, is also analysed as an important alternative account. Although the publications are all multi-authored and the identities and specific contributions of individual authors are typically not advertised, from my literature review and initial interviews I was able to identify all the authors and researchers involved. Through interviews with these individuals, I sought to uncover how the confluence of certain theoretical ideas from the economics of knowledge, together with particular institutional and internal politics of these multilateral organisations, led to the construction of the Knowledge Economy discourse. To date, there is no comparable analysis of this kind, and I was extremely fortunate to secure this rare group of interviews. All in all, I contacted 51 key interviewees selected on the basis of their involvement in the production of the Knowledge Economy discourse (these people were past and current World Bank and OECD staff, and consultants across a range of relevant institutional affiliations) and was successful in 25 cases. Although the sample size of key interviewees is inevitably small, I was fortunate in that the subjects who agreed to be interviewed were the most significant figures in the development of the Knowledge Economy discourse, having directly contributed to its generative

[17] This is not to suggest that the KE is only contradictions - there is a general core set of ideas, such as those mentioned at the outset of the Introduction, or those expressed in major KE publications such as the K4D programme (to be discussed in Part 1) but the point being made here is that such sets of ideas are quite general and seeking a clear analytic foundation for them (starting with an unambiguous definition of what a knowledge economy actually is) seems a futile task.

publications or having held important institutional positions directly responsible for its 'operationalisation'. Unsurprisingly, these sorts of interviewees are difficult to access, and I am extremely grateful that so many agreed to speak with me (please see Appendix One for list of interviewees/institutions). It was especially valuable to secure interviews with each of the authors of the main KE texts (as set out in Part 1).

The method of 'elite interviewing' (Moyser and Wagstaffe 1987, Harvey 2010, Browne 2013) differs significantly from that of conventional qualitative research in that the interviewer must secure a particular individual with a particular knowledge and perspective on the relevant research question and moreover to persuade them to participate, rather than engaging with larger social groups or a random sample selection, as is more often the case with qualitative reasearch. It is in this sense that the interviewee is 'elite', meaning 'particular'. Through this method the interviewer attempts to identify specific views of individuals rather than approximating an overall or majority picture of a population as a whole. Of course, there are limitations to this method – interviewees may be guarded or inaccurate in their responses, or have a vested interest in representing a particular interpretation of events (Berry 2002, Batteson and Ball 1995). Also, by using interviewees to generate further potential interviewees, there is a danger that particular views are reinforced and others excluded. It is impossible to obtain interviews with all targets and therefore important to acknowledge possible biases or omissions which may affect the findings. However, all of my key targets agreed to be interviewed, and in the event appeared to speak openly and candidly about both success and failure in their work and their institutional involvement. The extent that interviewees tried to put across particular ways of seeing things was of course *the point*; my critique of the Knowledge Economy discourse pinpoints the way in which a comparatively few influential voices – such as those of these subjects – had such a significant effect on the way 'knowledge' is understood. So it is the language and arguments used by my

interviewees to justify and motivate the selection of texts and authors that are the subject of critical analyses in Part 2. Moreover, the empirical method of elite interviewing was intended as only one component in what is essentially a mixed-methods thesis, which then shifts register in Parts 2 and 3 to critical analysis and political theory respectively. The interviews enrich and complement the genealogical account, but they are not intended to stand alone or to determine some testable proposition. The thesis as a whole is a critique of a particular way of thinking about the relationship between knowledge and development, and the purpose of interviewing key actors is to shed some light on how that way of thinking emerged.

In the interviews I focused on the definition and theoretical underpinnings of a Knowledge Economy approach, together with the structural nature of the interviewee's own institution and their experience in terms of promoting and implementing the KE's specific approaches. These data are not intended as representative of the institutions for which the interviewees work (or did work). Indeed, as well as complementing the genealogical analysis of Part 1, they demonstrate the multitudinous views of 'Knowledge Economy actors' such as senior staff members at the World Bank and OECD (including authors of key policy documents), senior policymakers from UNESCO and TWAS, and other relevant academics and authors. In conducting these interviews and hearing a range of personal and subjective views, I hope to avoid the pitfall of representing major organisations such as the World Bank or OECD in an overly simplistic or monolithic manner, and rather to recognise something of the many and competing voices that operate within them. Excerpts from these interviews are presented throughout the thesis where relevant.

Interviews were conducted face to face in Washington DC, New York, Paris, Cambridge and London between the end of 2011 and 2013. Where it was not possible to meet with interviewees in person, I conducted camera-skype

interviews during the same period. Each interviewee was very generous with their time, and I am extremely grateful to them for their insights and highly engaging discussions. For some, the interviews were secured on the understanding that anonymity would be protected. All interviews were recorded, transcribed and coded by me. Whilst I have indicated the rank, position and institution for each of these interviewees, I have been careful not to disclose information that might identify particular individuals. However, several interviewees (key KE authors for example) were happy to be quoted directly and are attributed accordingly.

In Part 2 the method of critique transfers to theoretical engagement. I critically examine how the concept of knowledge in various forms is a central object of economic study, and I consider how the various attempts that economists have made to deal with questions of knowledge have contributed to the Knowledge Economy discourse. In determining the key texts which informed the KE discourse, I base my selection on the findings of Part 1.

In Part 3, I consider first how the KE discourse impacted upon the particular case of India. I examine the major 2005 World Bank Report *India and the Knowledge Economy*, and consider how Indian policy making changed in the years following the publication of the Report and more generally the influence of the KE on Indian policy making. I focus on Higher Education reform and the role of the Indian National Knowledge Commission (NKC) in implementing KE reforms. I describe how Higher Education in India is politicized in a number of ways and consider how these forms of politics affect the market oriented aspects of the KE in action. I use this empirical example to motivate the theoretical critique which is the purpose of the remainder of Part 3 in which I consider the idea that markets are political, that knowledge and markets are increasingly interlinked and how we might think of a 'political economy of knowledge'.

PART 1

THE GENEALOGY OF THE KNOWLEDGE ECONOMY

Given that this thesis is largely to do with a single concept – the 'knowledge economy' – it might be expected to begin with a definition. Unfortunately, however, this is not so easy to do. The term is "more often used than defined" (Morris-Suzuki 1988 p.81) and indeed many authors[18] would go further and dispute that the term has *any* clear definition. When asked, several interviewees ducked the question, describing the concept as "fluid" or "flexible", whilst others offered definitions of extreme generality ("an economy that uses knowledge"). Only a few attempted to define the term in line with the 'standard' definitions offered by the OECD or World Bank. According to the OECD, knowledge economies are "those which are directly based on the production, distribution and use of knowledge and information" (OECD, 1996, p.7).

Whereas for the World Bank:

> A *Knowledge Economy* is one that utilizes knowledge as the key engine of economic growth. It is an economy where knowledge is acquired, created, disseminated and used effectively to enhance economic development (World Bank, 2005 p.4).[19]

Both definitions are problematic. Indeed, to the extent that economic success has always been about the effective utilisation of knowledge, as Freeman observes: "all human economies are knowledge economies".[20] On the other hand, it is very hard to think of *any* economies that are or could be based *directly* upon knowledge or information[21], since a very small part of production is

[18] See for example, Smith (2002), Peters and Besley (2006) or Edwards and Ogilvie (2002).
[19] See the World Bank publication by Chen and Dahlman (2005).
[20] Freeman (2008, p.248).
[21] Smith (2002).

actually knowledge itself. The OECD tries to get around this difficulty, by talking about 'knowledge-intensive' or 'knowledge-based' production but unfortunately these concepts are no less slippery. What exactly makes a production process knowledge-intensive and does this refer to just the process itself or the whole industry of which it is a part? Moreover, when one thinks of sectors or possibly regions (eg Silicon Valley) where one might try to claim that 'knowledge-intensive production' *was* the dominant economic activity, it is very difficult to see how such arrangements could be replicated at the national scale or, indeed, why this would be a desirable goal to achieve. Even in those economies, such as Singapore, which have very small agricultural sectors, few material resources and relatively large shares in high-tech manufacturing, the economy as a whole is still services-led[22] and it is unclear which parts of the services sector should be considered part of the knowledge economy. Financial services, for instance, certainly involve the economic exploitation of information but in a very different way to high-tech manufacturing. If we wish to talk about the economy as a whole then how do we tackle the differences between knowledge-based services and knowledge-based manufacturing? If we only wish to talk about the knowledge-intensive parts of manufacturing then how do we determine when this sector is significant enough to warrant applying the term 'knowledge economy' to the whole? Nowhere in any of this discussion is there a clear analytic distinction between a *knowledge* economy and any other sort.

[22]In Singapore in 2015 Business and Financial Services account for 28% of GDP as compared with 19.8% for all of Manufacturing. Significant shares of the economy are also found in Construction (5.2%), Transport (7.4%), Accommodation and Food (4%) and Trade (15.6%) and Other Services (11.8%) with Information and Communication only contributing 4.2% All data for 2015 from Singapore Government Statistics
https://www.mti.gov.sg/ResearchRoom/SiteAssets/Pages/Economic-Survey-of-Singapore-2015/Ch6_AES2015.pdf

To politicians, of course, the knowledge economy is a potent rhetorical device – a utopian vision of the future. For Tony Blair (1998 p.8) it represented the endpoint of a transition from the old "industrial order … built on raw materials, heavy industry, unskilled and manual employment, great concentrations of economic power, and antagonism between labour and capital"to "the new economy … Services, knowledge and skill and small enterprises are its cornerstones. Most of its output cannot be weighed, touched or measured. Its most valuable assets are knowledge and creativity. The successful economies of the future will excel at generating and disseminating knowledge and commercially exploiting it" (*ibid*).

Such a statement manages to be both empty and hyperbolic. The implication that the economies of the past did *not* generate or exploit knowledge is as misplaced as the suggestion that those of the future will not rely on raw materials or the exploitation of labour. Western economies continue to depend, as they always have done, on natural and human resources – physical labour, agriculture, manufacturing and industry. Through globalisation, however, a proportion of these activities take place elsewhere, and through increased productivity and the politics of international trade the prices of material goods relative to those of services continue to fall. Even so, according to the OECD the predominant activity in its member state countries, in terms of employment and real value added, remains the production, transport and distribution of goods.[23]

Nonetheless, the core image of old orders yielding place to new lies at the centre of knowledge economy discourse, even if it is a "sea change, not a sharp discontinuity" (David and Foray 2003 p.20) which most authors envisage. But

[23] See the OECD Factbook 2013.

what is it that has changed and how do we distinguish a 'knowledge economy' from any other sort?

One answer to this question, given that we are thinking about economics, is to look at production. We might try to claim that in a knowledge economy, knowledge (in some yet-to-be-defined sense) is more important either as an input (a factor of production) or as an output (a product). Drucker claims something along these lines when he states that "[k]nowledge is now becoming the one factor of production, sidelining both capital and labour" (1998 p.15), whilst the OECD asserts in a similar vein that "the role of knowledge (as compared with natural resources, physical capital and low-skill labour) has taken on greater importance. Although the pace may differ, all OECD economies are moving towards a knowledge-based economy" (OECD 1999 p.7). However, as Smith (2006) argues, for knowledge to 'sideline capital' one requires the ability to analytically separate the accumulation of knowledge (and hence technological advance) from the accumulation of capital. It is hard though to see how this is to be done, because the way in which one conceives of knowledge as being an input into production is typically as an investment in new technology. So separating the input into production that is considered to be 'knowledge' from that considered to be 'capital' is a fairly arbitrary exercise. Almost everything that adds value to production represents some form of embodied or applied knowledge – if the use of this kind of knowledge is all that a knowledge economy means then it is not so different from our conventional understanding of a capitalist economy. Even if one does postulate such a distinction, the claim that 'knowledge is sidelining capital' cannot be sustained by empirical data. Both the World Bank and OECD have produced comparative data on investment in physical capital and investment in knowledge. These reports show that in many countries, such as Italy, Austria, Spain, Germany, Netherlands and France, physical capital investment is growing faster than 'knowledge capital'

investment.[24] As Smith says: "although it is common among polemicists to claim that knowledge is in some sense more important than capital there exists no substantive analysis which would substantiate this claim" (2006 p.10). On the other hand, whilst there is some empirical evidence to suggest that knowledge products are increasing as a share of output, the same data also show that that overall share remains very small in absolute and relative terms*(ibid)*. If a knowledge economy is supposed to be one in which knowledge is the major share of output then we clearly have a long way to go before we actually see one.

The next type of claim we might try to make is that the mode of production of knowledge in a knowledge economy is different to that in other economies. Michael Gibbons's *The New Production of Knowledge* (1994) stands out as an especially influential and controversial exposition of this position. Gibbons's thesis is that the traditional mode of production ('Mode 1') characterised by "the hegemony of theoretical or, at any rate, experimental science; by an internally-driven taxonomy of disciplines; and by the autonomy of scientists and their host institutions, the universities" (Nowotny *et al* 2003 p.179) was being superseded by a new paradigm of knowledge production ('Mode 2'), which is "socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities" (*ibid*). However as Steve Fuller comments: "The most pernicious feature [of Gibbons's argument] … is that the two modes are seen as not merely mutually exclusive, but also jointly, exhaustive – that is, not admitting of other possibilities" (2000, p.xii) whereas Michael Peters argues:

> Gibbons adopts a neoclassical economic perspective on knowledge, even though he does not acknowledge its sources. His position is theoretically skewed and the nature of the evidence is both limited and debateable. He provides little in the way of empirical studies or analyses of data. The

[24] See, for instance Khan's *Investment in Knowledge* published by the OECD in 2005. Available at http://info.worldbank.org/etools/docs/library/145276/InvestmentinKnowledge.pdf

> theory he puts forward is certainly underdetermined by the evidence and, it could be argued, functions more as an implicit neo-liberal policy prescription (2006 p.282).

In a similar way, Jacobs and Hellström remark: "Gibbons's [claims] … may also be read as legitimizing the decline of the university as the central site of knowledge production" (2000 p.2). This suggests a very important way of thinking about the knowledge economy, which we shall return to in Part 3 – that it is not a 'thing' as such, but a theoretical device which tries to suggest it already exists and in so doing creates the conditions for its own realisation.

The third sort of claim is that we can distinguish a knowledge economy from another sort by measuring some aspect of its performance. There are various candidates for the sorts of indicators which might be used in this way. Abramovitz and David, for instance, suggest that "[p]erhaps the single most salient characteristic of recent economic growth has been the secularly rising reliance on codified knowledge as a basis for the organisation and conduct of economic activities" (1996 p.35). Elsewhere David and Foray point to the rise of intangible capital[25] claiming that "[i]n the USA, the current value of the stock of intangible capital (devoted to knowledge creation and human capital) began to outweigh that of tangible capital (physical infrastructure and equipment, inventories, natural resources) at the end of the 1960s" (David and Foray 2003 p.21). Yet another candidate is ICT with Foray and Lundvall arguing that "Even if we should not take the ICT revolution as synonymous with the advent of the knowledge-based economy, both phenomena are strongly interrelated … the ICT system gives the knowledge-based economy a new and different technological base which radically changes the conditions for the production and

[25] Intangible capital according to David and Foray is either "investment geared to the production and dissemination of knowledge (i.e. in training, education, research and development [R & D], information and coordination)" or "investment geared to sustaining the physical state of human capital (health care expenditures)" (David and Foray 2003 p.21).

distribution of knowledge as well as its coupling to the productive system." (1996 p.14). Finally, the OECD favours a sectoral approach to the problem, and defines "knowledge-based industries" to be ones which display three main qualities: (1) a high level of investment in innovation,(2) intensive use of acquired technology, and (3) a highly-educated workforce (Godin 2005 p.21). The OECD compiles indicators to measure each of these three attributes and then defines a knowledge economy to be one with an especially high proportion of knowledge-based industries.

If one wanted to be hyper-critical about this last category of claims one could observe that none of them specify *analytically* what it is to be a knowledge economy, only providing a different set of indicators that are meant to parametrise it. Some of these claims also blur the distinction between the empirical task of measuring an object and the epistemological achievement of bringing something into being by defining it through measurement. Particularly in the case of attempting to measure codified knowledge, there has been an explosion in proxies, such as research publications, citation indices, patents and educational certificates. But does the rise in such quantities really indicate that some underlying stock of knowledge is actually increasing? Or does it suggest that the process of measurement itself is actually incentivising behaviour which may have very little to do with developing knowledge or may even restrict or limit it? When it comes to ICT, it is unquestionably the case that the way in which we organise and manage ourselves has changed but whether this has actually changed knowledge production in a substantive way is less clear. The change in the way we use and disseminate information cannot be taken as the basis of a claim that we have changed the way we produce knowledge.

There is also a rather more prosaic criticism which can made of the indicator-based approach which is that, despite the best efforts of the scholars mentioned

above (who are widely acknowledged as experts) there is absolutely no consistency as to *which* set of indicators are the right ones or what level they need to be at to identify what a knowledge economy actually is. Even the OECD regularly changes which indicators it uses and amongst my interviewees, who also included some of the most experienced and respected authors in the field, not one offered a clear definition of how a knowledge economy should be measured.

A major problem in all of this is the imprecise and sometimes inconsistent way in which 'knowledge' is used as a term. The distinctions are blurred between epistemological understandings – implying some internalised transformation – and cognitive ones, resting upon an intelligible account of how to do something. Binary classifications abound – tacit versus codified; 'know-how' as opposed to 'know-what'; knowledge versus information – but they tend to be neither exclusive nor exhaustive. There is considerable slippage in meaning between the individual claims, and even more in the ways in which they are applied. The claims that are made for the KE, in short, do not stack up.

What one is left with is a *discursive* idea of what a knowledge economy might mean; that is to say, a set of related propositions which, although they cannot be said to hold simultaneously (and to some extent not even individually) in any logical sense, nevertheless provide some sort of rationality in which the concept can then function. Indeed, as will be seen in Part 2, the co-existence of contrary positions within the discourse, in fact lends it a form of stability, for it permits the perception of disagreement and debate amongst KE advocates. At the same time, the discourse achieves a coherence because within these contrary positions lies a significant common theme, namely the reconceptualisation of problems of knowledge in terms of properties of markets (again, to be discussed further in Part 2). 'Building a knowledge economy' is not a well-defined project therefore,

but instead a discursive space in which policy decisions can be reconceived within that rationality. Considering the KE as a development discourse deepens the ambiguity even further, since so many aspects of development are not readily represented in terms of knowledge. But, in raising the criticisms above, the objective is not to refute the concept but to critique it – that is to systematically analyse the ways in which it operates at both intellectual and practical levels.

Narratives of Modernity

If we are to understand the 'knowledge economy in a discursive sense, then a genealogical account of that discourse must begin in the late 1960s and early 1970s, when the term 'knowledge economy' was used by sociologists and futurologists such as Peter Drucker (1969), Alain Touraine (1971) and Daniel Bell (1973) to represent a new 'post-industrial' paradigm in which 'knowledge' was *the* organising principle, rather than capital or land or labour or any other economic or social phenomenon. In the post-industrial age, manufacturing and industry had given way to high-productivity, high-tech knowledge services – some claimed we were already living in a post-industrial age. Similar claims are echoed by later authors such as Manuel Castells (1996) or Ulrich Beck (1992), who write of the 'Network Society' and 'Risk Society' respectively; a large literature has emerged discussing various cognate terms, 'information society', 'knowledge society'.[26] This kind of reading takes the knowledge economy as a narrative of modernity, and does not necessarily assume that the term hasa high degree of rigour as an analytic concept.

One particular problem with the post-industrial narrative, as Ha-Joon Chang (2010) points out, is that it relies on the myth that the rise of services and the fall in manufacturing as a share of total output in rich countries is due to a fall in the

[26] See Godin (2006) for a detailed description of how and when these related terms came into popular use.

demand for manufacturing goods in those countries. This is a misconception based on a failure to appreciate that the falling relative prices of manufactured goods are largely due to productivity increases in manufacturing – which are typically far greater than those in services (Chang offers the example of haircuts and computers – over time one 'consumes' a roughly stable number of haircuts per year, baldness nothwithstanding, but consumption of computing power dramatically increases, even though actual expenditure remains reasonably constant). Thus whilst employment patterns may be tending towards the service-dominated post-industrial extremes, the decline in importance of manufacturing has been greatly exaggerated.

Chang (2010) also cautions that the post-industrial narrative is not only misleading but actually dangerous as a discourse of development. The implication of diminishing industrial and manufacturing sectors in some putative post-industrial age could be construed as a reason for developing countries to neglect those sectors in favour of a services-led economy. But to do so would be a grave mistake as most services have low productivity growth and those that do have high growth typically depend upon a previously established strong manufacturing sector. Furthermore, Chang argues, as services are not readily tradable, low growth in these sectors would lead to a poor balance of payments and therefore an inability to invest in infrastructure. Chang's arguments highlight how it is not only the concept of the KE which is problematic but also the steps which are taken to develop it in practice.

Another line of criticism is that of Gordon (2012) who claims that of all the so-called 'revolutions' – industrial, technological and information – the economic and social impact of the latter is of vastly less significance than that of the former two. Gordon's (US-based) analysis links periods of slow and rapid growth to the timing of the three revolutions and concludes that it was the

second, between 1870 and 1900 (in which electricity, the internal combustion engine, running water, indoor toilets, communications, entertainment, chemicals and petroleum entered the economy) which had the greatest impact, resulting in rapid productivity growth between 1890 and 1972. The information revolution of computers, mobile phones and the internet has, according to Gordon, had a relatively minor and short-lived impact on growth. Whilst one might disagree with parts of Gordon's analysis, or at least consider his conclusions premature[27], the point is that the issues he raises are almost never discussed in KE discourse. Instead, the importance of ICT is taken as an article of faith and its promotion adopted as a key priority. Relatively little thought is given to how ICT contributes to the economy and more particularly, in whose interest? Various commentators (see, for instance, Janeway 2012) have observed that the prodigious wealth creation that has arisen through the information revolution has been distributed in an astonishingly uneven manner.

A third and related line of criticism is that the importance of information or knowledge has not only been overstated but is actually misleading, theorising economic development in technological or technocratic terms, when what is really at stake is a much broader set of institutions.[28] And as soon as we accept this focus then we are returned to political and social questions, such as who has access to or control over the new technology, and how technology changes society. In this vein, Kumar argues:

> the main burden of the critique of the information society idea is that the development and diffusion of information technology have introduced no fundamentally new principle or direction in society … Work and leisure are further industrialized, further subjected to Fordist and Taylorist strategies

[27]see Janeway 2012 who argues that Gordon has drastically underestimated the time period in which the information revolution might take effect

[28] See Gooptu (2013) for a discussion of how the entrepreneur culture in India has transformed social and cultural attitudes.

> of mechanization, routinization and rationalization. Existing social inequalities are maintained and magnified (2004 p.116).

There is for Kumar a distinct politics to the information society, and the issue is as much the control as the application of knowledge. This opinion is echoed by Robins and Webster:

> [the] 'Information Revolution' is inadequately conceived, as it is conventionally, as a question of technology and technological innovation. Rather, it is better understood as a matter of differential and unequal access to, and control over, information resources. That is, far from being a technological issue, what should concern us is the management and control of information within and between groups. Raising this widens unavoidably the scope of discussions of social change, taking it far from 'technology effects' considerations, at the same time as it, necessarily, politicises the process of technological development itself by framing it as a matter of shifts in the availability of and access to information. Conversely, attempts to divert analysis and debate into technical and technocratic channels serve to repress these substantial political questions(1999 p.89).

These political questions will be addressed in greater detail in Part 3, but as a final example (of a critique of narratives of modernity), I mention the French philosopher Jean-Francois Lyotard, for whom post-modern critique is precisely a rejection of such grand narratives. Lyotard, in *The Postmodern Condition,* describes two different sorts of knowledge – scientific and narrative – and characterises modernity as the rise of the former at the expense of the latter. One could read *The Postmodern Condition* as a critique of the knowledge economy in terms of the commodification of knowledge:

> Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorised in a new production: in both cases, the goal is exchange … Knowledge in the form of an informational commodity indispensable to productive power is already, and will continue to be, a major – perhaps *the* major – stake in the worldwide competition for power" (Lyotard 1984 pp.4-5).

Other authors such as Kenway *et al* (2006), more simply, reject altogether the knowledge economy as a coherent concept and consider it as a form of 'performative ideology'.

These post-modern approaches, however, are problematic, if taken on their own. Undoubtedly, the discursive qualities of the KE are important but one must not let an analysis of the language games which make up the knowledge economy discourse blind us to the fact that the effects it generates are very real indeed. We are less concerned with whether we do actually live in a knowledge economy than with the particular policy decisions legitimated by such an understanding and their consequences for the real world. Therefore, it is a mistake to engage with the KE as an objective entity, springing fully-formed from the ether, instead we need to understand when it came about, in which places, and why.

The Knowledge Economy and Institutions: the OECD and the World Bank

If it is the case that we cannot presume any objective or universally agreed-upon definition of the Knowledge Economy, then it is clear that we must think in a different way about it and the effects it generates. Of course there is no necessity for terms to be rigorously defined in order for them to be effective in terms of

policy discourse;[29] indeed, a degree of fuzziness may well be of use to policymakers. But in this section I wish to argue that whilst the terms themselves may resist precise definition, the point at which those terms can be said to have serious consequences in policy terms is far less ambiguous. If one looks for defining moments at which the 'Knowledge Economy' can be said to have come into being as the basis for public policy, then three events stand out above all others. The first of these was a workshop at the OECD in 1994 in which Foray and Lundvall first set out the concept of the 'knowledge-based economy'.[30] This led to the publication in 1996 of the OECD's *The Knowledge-Based Economy*, which formed part of the Science, Technology and Industry Outlook for that year.[31] This paper sets out for the first time the key theoretical and methodological elements needed to define and measure the Knowledge Economy. The second pivotal moment was the publication of the World Bank's *World Development Report 1998/99* which states that "knowledge has become perhaps the most important factor determining the standard of living" (WDR 1998/9 p.16).[32] At the same time, Carl Dahlman, the lead author of the report, set up the Knowledge for Development programme (K4D) at the World Bank. This initiative produced the Knowledge Economy Index (KEI) and Knowledge Assessment Methodology (KAM), the basis of the framework through which the Bank has sought to develop Knowledge Economy policy. The third moment was the publication of *Constructing Knowledge Societies* (World Bank 2002) written

[29] See Clay and Schaffer (1984) for a description of how policymakers avoid responsibilities for policies they make.

[30]Foray and Lundvall (1996). See also Etzkowitz and Leydesdorff (2000).

[31] The OECD Science, Technology and Industry Outlook is an important biennial publication of the OECD that maps key trends and outlines forthcoming research agenda. See for example the 2014 edition: http://www.oecd.org/sti/oecdsciencetechnologyandindustryoutlook.htm

[32] The World Bank describes on its website how the World Bank 1998/99 Report is an illustration that "knowledge, not capital, is the key to sustained economic growth and improvements in human well-being" and goes on to explain: "It distinguishes between two sorts of knowledge: knowledge about technology … and knowledge about attributes". See the relevant page at the following World Bank website link:
http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/0,,contentMDK:22293493~pagePK:478093~piPK:477627~theSitePK:477624,00.html

by Jamil Salmi. This was the first attempt to operationalise the concept of the Knowledge Economy to transform a specific policy area, namely Education.

A central part of the analysis of this thesis is then to contextualise and historicise these three events within the World Bank and the OECD, and to map the competing intellectual ideas and internal politics which shaped their development.

The OECD and the Knowledge-Based Economy

To appreciate how and why the OECD is so important, it is necessary to understand both its governance structure and the particular way in which it influences policy. Of course, unlike the World Bank, the OECD does not disburse funds, make loans or organise programmes. Indeed it has only very limited formal powers, and it employs far fewer staff than the World Bank, with 2,500 employees in total, most of whom work in its Paris headquarters[33] (by contrast, the Bank has over 9,000 employees, of whom two thirds work in Washington and the others in regional offices around the world).[34] Instead, the OECD functions as a think-tank – but a very special one that is strongly research-oriented as opposed to merely offering advocacy. Indeed, it is largely on its research – the vast output of reports, statistics, data and policy papers that it produces – on which the OECD's reputation depends. As one senior ranking analyst at the OECD recounts: "A major division … is the Indicator Analysis Division. Collecting indicators … always ranks very high in the prioritisation of our work – in fact – ranks No.1" (OECD Interview No. 2). The OECD has a remarkable relationship with its clients, not only in that it deals directly with governmental elites from member states and beyond but also in the way in

[33] See the OECD main website: www.oecd.org
[34] See the World Bank website: http://web.worldbank.org/WBSITE/EXTERNAL/EXTSITETOOLS/0,,contentMDK:20147466~menuPK:344189~pagePK:98400~piPK:98424~theSitePK:95474,00.html#8

which it facilitates and organises seminars, workshops and conferences to promote and disseminate its research. The OECD does not simply advocate a particular position based on a particular set of empirical findings, but instead is actually driving the way in which the empirical research is conceived, conducted and communicated. For example, the Programme for International Student Assessment (PISA) – the OECD's flagship tool for education assessment – is, as a former Head of the OECD Education Directorate explained:

> [t]he only thing that uses primary data. Everything else uses OECD secondary data. It's that that builds reputation … and has people coming to you. PISA *has driven policy*. It has given [state level] policy-makers the tools to gauge policies … and to set themselves goals and objectives which they could set themselves through PISA. Also [the] motive was to give Education Ministers the sorts of tools to deal with Finance Ministers! (Former Head of Education Directorate, OECD Interview No. 5).

The relationship between the OECD and its client member states is extremely complicated. On the one hand, the OECD, though it has no formal obligations to its members (although they may fund individual projects) and is an independent organisation, nevertheless has historically adopted policy positions which are closely aligned with the interests of Western capitalist economies. There are few, if any, examples where the OECD has strongly criticised its members and similarly OECD members typically show a respect for the OECD's work in a way few, if any, other think-tanks receive. So it is a subtle question of who is influencing who - do the client countries determine the direction that the OECD's research takes or does the research actually guide countries down particular economic paths? Some observers describe the OECD in terms of 'transnational governance' whereby the assessments that the OECD makes of its member states economic performance comprise a knowledge

system which ultimately frames the way in which policies are formulated[35]whilst others argue that the social policy recommendations that the OECD makes are generally ineffective and that the member states generally ignore any recommendations that they do not like.[36]Our examination of the OECD's role in generating the Knowledge Economy discourse will tend to fall between these two positions but will lie closer to the former. As will be seen, the OECD's research does indeed play a leading role in establishing the epistemological framework in which knowledge economy policy is conceived and yet, it will be argued, the ultimate form that that framework took was itself mediated through and constrained by the internal politics of the organisation as well as the vested interests of the particular form of capitalism that it and its member states represent.

The OECD is currently made up of twelve Directorates,[37] of which two are particularly important to the OECD's work on the Knowledge Economy. The first is STI (the Science, Technology and Industry Directorate), which includes the Committee for Science and Technology, and in which Foray and Lundvall's original work on the Knowledge Economy took place, and the second is the Directorate for Education and Skills (including CERI, the Centre for Research and Innovation in Education) which is where Lundvall's later project on knowledge management was carried out.[38] Over the years, the exact composition of the individual Directorates, together with the subject areas they oversee, has significantly changed. Until 2002, Education was part of a larger Directorate of Employment, Education, Labour and Special Affairs, which in the 1990s had also incorporated Social Policy, Health and Migration. In the view of a former head of the Education Directorate: "it [Education] lost authority, not having its

[35]See Mahon and McBride (2009), especially Chapters 1,2, 5 and 13.
[36]See Armingeon and Beyeler (2004).
[37] See the OECD website Directorate List:
http://www.oecd.org/about/listofdepartmentsandspecialbodies.htm
[38] See OECD (2002a).

linkages back to other policy areas" (Former Head of Education Directorate, OECD Interview No. 5). This point was also echoed by senior analysts within the STI Directorates, who particularly criticised the severance of Education from Labour Policy.[39] Different Directorates may be stronger or weaker and have "different cultures … – those which are closer to the main focus of the Organisation which is economics – so then you have a divide between social and economic Directorates … They [the economic Directorates] focus on the structural framework and will have a much more technical point of view, *technical* in the sense that they will think about 'efficiency' and not so much the social consequences. When you work in Education, you cannot do that!" (Senior Analyst OECD Interview No. 2). Since the majority of the OECD research is itself commissioned by member states or other clients, an examination of the OECD's research on particular issues also gives a very good indication of what the interests were of those member states in terms of the application of the OECD's findings. Funding for OECD projects can be core (ie funded directly from the OECD's own budget) or non-core (funded by the clients or third parties). As a former head of the Education Directorate explained: "it's the non-core funding that allowed us to break into new ideas" (OECD Interview No. 5). These distinctions between core and non-core, and between centre and periphery, were significant for the Knowledge Economy discourse. The Economics Directorate was, and still is, orthodox in its outlook, whereas the STI and Education Directorates were capable of admitting heterodox perspectives. The concept of the Knowledge Economy depended strongly on the input of heterodox economists.

The OECD had for many decades played a leading intellectual role in the conceptualisation of the relationship between 'knowledge' and economic

[39]Senior Analysts OECD Interviews 3 and 20.

growth. As early as 1962, the OECD Committee on Scientific Research (CSR) of the Directorate for Scientific Affairs (DSA) decided "to give more emphasis in the future to the economic aspects of scientific research and technology" (Godin, 2003). Following Machlup's work measuring the impact of knowledge (eg. as investment in R&D) on economic performance, the OECD introduced a number of indicators, such as GERD/GDP (Gross Expenditure on R&D/Gross Domestic Product). But without a detailed theoretical framework in which to interpret these empirical data, the policy implications were limited.

The OECD and Innovation

What changed this state of affairs was the 1992 arrival of Lundvall, at the invitation of Francois Chesnais[40] and Robert Chabal, the Director of the Science and Technology Directorate, to take up the position of Deputy Director. Lundvall had been a member of various working groups at the OECD in the 1980s but his ideas had had little influence – as Lundvall quipped, one of his working papers was rejected on the grounds that there were insufficient printing materials to publish! (Lundvall, OECD Interview No. 20). But by the early 1990s, the concept of innovation systems had achieved much greater traction and coherence, thanks largely to the work of Chris Freeman at the Science Policy Research Unit in Sussex, and also the publication of Lundvall's (1992) and Richard Nelson's (1993) books on the subject. Moreover, a 1992 study, *Technology and the Economy: The Key Relationships* (OECD 1992), also organised by Chesnais, had already spawned a range of ideas relevant to an innovation systems approach, such as networking and clusters, spillovers, and the importance of tacit knowledge. The stage was then set for an analytic framework in which to conceptualise these ideas.

[40] Chesnais was a left-wing figure at the OECD and subsequently became a prominent member of the Nouveau PartiAnticapitaliste, Attac France (which campaigns for policies such as a Tobin Tax on financial transactions) and the Red Square Collective.

Lundvall's work on innovation systems is focused on knowledge and the process of learning itself: learning-by-doing, learning-by-using etc. As such, it is more theoretical than the traditional National Systems of Innovation approach pioneered by Nelson and Winter (1977), which looks at institutional arrangements in particular countries and seeks to evaluate how effective they are in producing and disseminating innovation. In his role at the OECD, Lundvall therefore developed the concept of the 'learning economy'. [41]According to Lundvall, "the most fundamental resource in the modern economy is knowledge and, accordingly, the most important process is learning" (Lundvall 1992 p.1) Learning is not only generated by the formal elements of science and technology systems (such as universities, research organisations, in-house R&D departments) but on "the learning implications of the economic structure, the organizational forms and institutional set-up". (Lundvall and Johnson 1994 p.26) Lundvall's work led to a series of papers, reports and statistics that sought to apply this theoretical perspective to measuring innovation and evaluating different forms of social structure, such as clusters and networks which were held to be important in promoting innovation. But this work was of limited impact, partly because of budgetary restrictions and partly because senior figures within the OECD considered Lundvall's approach to be "of too little operational value and … difficult to implement" (OECD 2002b p.11). Nevertheless, the conceptual foundations for the Knowledge Economy had been firmly laid.

It was with the arrival of Dominique Foray, who had been consulting with the OECD from 1994 to 1996, that things began to move again[42]. Foray, in an article with Paul David, had initially been critical of the NSI (National Systems of Innovation Approach) and of Lundvall for focusing too much on institutions

[41]Lundvall (2009), consultant to the OECD arguing for the integration of science and technology into economic policy (Godin 2006).
[42] See Godin (2003)

and growth and not enough on the distribution of knowledge itself, writing that "an efficient system of distribution and access to knowledge is a *sine qua non* condition for increasing the amount of innovative opportunities" (David and Foray 1995 p40).[43] It was this new idea which reignited interest within the OECD. For, one thing it offered the potential for a great deal of research in how to devise indicators and measuring tools to capture this new aspect of innovation. Previously there had been a somewhat gloomy consensus that the tools to measure the knowledge economy were simply lacking,[44] but with Foray and Lundvall'sseemingly more purposeful approach, the mood changed. But even this optimism was short-lived, as the technical difficulties of producing general indicators of the knowledge distribution power of a national innovation system proved formidable.

Once again, the pursuit of a conceptual basis for the knowledge economy as practical policy tool depended on the injection of further ideas from economics. This time, the stimulus came from a paper written by a Canadian delegation which incorporated the then fashionable (and Nobel Prize-winning) Endogenous Growth Theory[45]; this theory treated knowledge as a factor input in production, thus making investment in knowledge an economic activity like any other, except with a macroeconomic perspective of increasing returns to scale due to spillovers and other externalities (see Part 2). The 'Canadian paper' also stressed the importance of a dynamic view of innovation and, importantly, had a strong focus on measurement. Taken together with Foray and Lundvall's earlier work, this approach culminated in OECD 1996, which declared:

> OECD *analysis is increasingly directed to understanding the dynamics of the knowledge-based economy and its relationship to traditional economics, as reflected in*'new growth

[43] Lundvall jokingly remarked that he used to address Foray by the Asterixian nickname of 'Codifix' on account of Foray's emphasis on codified knowledge. Foray, in return, referred to Lundvall as 'Tacitus' for his focus on tacit knowledge. (Lundvall, OECD Interviews Nos. 20).
[44] See Carter (1996).
[45] See Robertson (1998)

theory' [Endogenous Growth Theory]. *The growing codification of knowledge and its transmission through communications and computer networks has led to the emerging* 'information society'. *The need for workers to acquire a range of skills and to continuously adapt these skills underlies the* 'learning economy'. *The importance of knowledge and technology diffusion requires better understanding of knowledge networks and* national innovation systems(emphasis in original, p.3).

In the years that followed the publication of the 1996 paper, the knowledge economy became what Godin calls an "umbrella concept" (2006 p.17) – that is, an idea so broad that it subsumes a wide range of policy fields and is flexible enough to permit many interpretations. As Robertson (2008) recounts, the OECD's position has done just that. In her introduction to an OECD conference on 'Advancing Knowledge and the Knowledge Economy', OECD Deputy Secretary-General Berglind Ásgeirsdóttir 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...'innovation', 'new technologies', 'human capital' and 'enterprise dynamics'. At the top of the Greek temple, I have put 'globalisation', which is a driver that influences 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 (Robertson 2008 p.7).[46]

[46] The image of a Knowledge Economy edifice resting upon four pillars echoes work done at the World Bank in the late 1990s, in which precisely the same image is used. The difference being that whereas in Deputy Secretary General Ásgeirsdóttir's speech the four pillars are a convenient metaphor, in the case of the World Bank they really are the central categories around which Knowledge Economy research and policy are directed, as discussed in the next section.

The OECD 1996 paper is a complex document. On the one hand, it does seem to involve a whole spectrum of original economic ideas incorporated into policymaking and also to offer the potential for a major new set of indicators. But on closer inspection, having understood the chain of events that lead to its publication, one can see that the end result is far less coherent and practical than might have been assumed. Whilst many of Lundvall's ideas are there in the paper – such as the learning economy and the fourfold distinction of knowledge into 'know-what', 'know-how', 'know-why' and 'know-who' – there are also others (especially regarding Endogenous Growth Theory) of which he has been highly critical. Recently, Lundvall has described the astonishingly wide diffusion of the concept of innovation systems and argued that this diffusion has been accompanied by a distortion in meaning. He distinguishes two approaches to innovation: the STI mode, which focuses on science, technology and codified knowledge; and the DUI (Doing–Using–Interacting), which places much greater emphasis on learning-by-doing and tacit knowledge – and makes the claim that the preponderance of the former over the latter is both unfortunate and unhelpful. Lundvall remarks that "the one major reason for this distortion is the uncomfortable co-existence within organisations like the OECD of the innovation systems approach and the much more narrow understanding of innovation emanating from standard economics" (Lundvall, OECD Interview No. 20). He is sceptical, too, of the policy potential, and cautions that it runs the risk of being "paper policy" (*ibid*). Moreover, Godin has argued in a series of papers that the main effect of the OECD's research was merely to devise a new set of indicators against which individual countries' performance could be measured.[47] On closer examination of the indicators specifically created to measure the Knowledge Economy, it becomes clear that there is remarkably little that they measure which had not already been part of previous indicators or models. In short, the adoption of Knowledge Economy language at the OECD

[47] See, for example, Godin (2003, 2006).

was less a radical departure in policy terms than a recalibration of the *language* in which policy could be discussed.

The World Bank – Knowledge Economy and Knowledge Bank

> *The international community, through institutions like the World Bank, has a collective responsibility for the creation and dissemination of one global public good – knowledge for development.*(Stiglitz 1999a)

In his now famous 1998 Prebisch Lecture at United Nations Conference on Trade and Development (UNCTAD), Stiglitz declared his intention to "go beyond [the] well-documented failures of the Washington Consensus[48] to begin providing the foundations of an alternative paradigm" (1998b p.1).[49]Development had been conceived of in far too narrow terms, more specifically in far too *economic* terms, when what was needed was a broader "transformation of society". The new paradigm would be built on ownership, participation and autonomy, although Stiglitz did not, in his early speeches,[50] go into detail as to what this would mean – pointing out merely that a major weakness of the Washington Consensus was its one-size-fits-all approach based upon the prescriptive application of abstract economic theory, irrespective of context.

Stiglitz's choice of words was provocative. The word 'paradigm' recalls Thomas Kuhn's work[51] on the History and Philosophy of Science, and also fits in with a particular view of Development Economics as predicated on a succession of paradigmatic eras. This is a narrative which in turn fits with the Bank's sense of its own history, as described by Jean-Jacques Dethier' who, in his *World Bank Policy Research: A Historical Overview*, describes how research priorities switched

[48] See Williamson (1990).
[49] Also see Williamson (1990).
[50]Stiglitz (1998a, 1998b, 1999a, 1999b).
[51] See Kuhn (1962). 'Paradigm shift' may be a more correct Kuhnian term than '*new* paradigm'.

from poverty reduction in the 1970s to market incentives and macroeconomic adjustment in the 1980s to inequality and corruption in the 1990s.[52] Dethier makes the point that each such switch was accompanied by reorganisation within the Bank and realignments without in terms of the Bank's relationships with the US Government and the Bank's clients. The Post-Washington Consensus, as Stiglitz's ideas have come to be known, followed just such a pattern. But the obvious question, regarding the Bank's paradigmatic view of the history of development economics and its own role within that history, is to ask whether these reorganisations and realignments are driven more by the need to define that role than to respond to a genuinely new paradigm. Certainly, with the growing importance of private finance, the role of the Bank as a lending organisation was somewhat diminished. Regardless of the accuracy of the 'new paradigm' claims, the *rhetorical* force of that image was powerful and signalled not only a new research agenda but also a whole new identity for the Bank. The defining concept of both of these changes was *knowledge*.

To appreciate why this should be so, one should recall that the Washington Consensus failed, according to Stiglitz, because it was unable to "understand the subtleties of the market economy, to understand that private property and 'getting prices right' (that is, liberalisation) are not sufficient to make a market economy work. An economy needs an institutional infrastructure". Stiglitz (1998a p.10). For Stiglitz, market failures of this kind are exactly failures of knowledge – of asymmetries of information or of inadequate institutional structures for the distribution and application of knowledge. It was therefore natural that knowledge would be a central topic of research under Stiglitz's direction and accordingly the second World Development Report published during Stiglitz's tenure as Chief Economist (1997–2000) was *Knowledge for*

[52] See, for instance, Krugman (1992) on the supplanting of high development theory, in the sense of Rosenstein-Rodan and W. Arthur Lewis by neoclassical theory, in particular the Washington Consensus. Similar paradigmatic debates have been held over the work of North and Sen. See Dunning (2006) and Kuonqui (2006).

Development, the single most significant text in the Knowledge Economy discourse (as discussed further on).

Knowledge, however, was on the agenda not only as a research topic for the Bank at that time but also as a *function*; in his 1996 Annual Address to the Board of Governors, Bank President James Wolfensohn (1995–2005) unveiled the concept of the 'Knowledge Bank', "creating, sharing, applying knowledge".[53] The Bank would be part of a "global commons", sharing its knowledge and expertise with clients and development agencies (Wolfensohn 1996). Such a role would stand in contrast to the idea of the Washington Consensus Era 'Conditionality Bank'[54] – imposing conditional lending and structural adjustment. Stiglitz, appointed in February 1997, supported this position, pointing to the Bank's advantages as a repository of development knowledge and arguing that its role should be exactly the provision of knowledge as a global public good.

There is a political point, made by many commentators, (see, for instance Pincus 2002, Standing 2000 or Halvorsen and Skauge 2004), that the Bank's self-appointed role as the custodian and propagator of development knowledge is not one in which it has a distinguished record. It is also, of course, not a function of a bank to 'offer knowledge', at least not a standard one (Standing (2000) remarks that it would be an 'impertinence' if any other sort of bank were to try and provide such a service). David Ellerman who Stiglitz engaged as his Chief Speech Writer in 1997 articulates 10 reasons why the Bank is institutionally incapable of realising those ambitions – of ownership, participation and autonomy – that Stiglitz and Ellerman had originally defined as the purpose of the Knowledge Bank (Ellerman 2005).

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[53] See details at World Bank Website link: http://web.worldbank.org/WBSITE/EXTERNAL/WBI/0,,contentMDK:20212623~menuPK:575902~pagePK:209023~piPK:207535~theSitePK:213799,00.html

[54] See Gilbert *et al* (1999).

"All these ideas are bubbling around but they don't really change what the Bank is *doing*. They are super-structure – icing on the cake. Not that you can't have some occasional Maverick – when Joe Stiglitz was in the Bank it wasn't his ideas but his *willingnessto put the cat amongst the pigeons!"* (Ellerman, World Bank Interview No. 15).

In part, the frustration that Ellerman (and Stiglitz) experienced at the difficulties in realising their ideas raise similar questions of governance that arose in considering the OECD. Like the OECD, the World Bank is institutionally geared to reflect the political objectives of wealthy Western capitalist economies, and especially that of the US. Indeed, to an even greater extent than with the OECD, these interests are formally and directly enshrined within the structures of the WB, and in such a way that they are difficult to change - see, for instance, Vestergaard and Wade (2013) on voting power reform and how wealthy countries were able to subvert this process. As with Lundwall's work at the OECD, we shall see a tension emerge between the research agenda that sprang up around the idea of the Knowledge Economy and the wider institutional politics of the Bank as a whole.

Knowledge for Development

The publication of the 1998/99 World Development Report (WDR) *Knowledge for Development* was, then, the defining moment at which the idea of the Knowledge Economy became mainstream. It was one of five WDRs associated with Stiglitz, and one of two which he describes as "having seen through from beginning to end" (2009 p139), the other being its successor in 1999/2000, *Entering the 21st Century*. The purpose of these reports, according to Stiglitz (World Bank Interview No. 25), was to "rethink what development might mean – and thus, by extension, the role of the World Bank within it" – in contrast to previous WDRs, which had tended to focus on specific issues such as poverty,

agriculture or health. Thus, whilst *Knowledge for Development* is important as one of the longest (at 266 pages) and most detailed expositions of the knowledge economy concept, it is also, and perhaps more significantly, part of a broader debate about the nature of development, and by extension the role of the World Bank within it. The WDR 1998/99 is not so much an academic thesis as a mission statement, a declaration of identity. In particular, it is deeply bound up with the ideas of the Post-Washington Consensus and the Knowledge Bank which are so central to the Wolfensohn-Stiglitz era. The WDR 1998/99 distinguishes between two kinds of knowledge. The first of these is knowledge about technology, or *know-how*, such as nutrition, software engineering, birth control or accountancy. The differences between countries in respect to know-how are termed 'knowledge gaps', and to a large extent, development is viewed as the closing of these gaps. The second type of knowledge concerns information problems – knowledge about attributes, such as the quality of a worker or the creditworthiness of a firm. Knowledge of this kind is held to be essential to the functioning of markets.[55]

The lead author on the WDR 1998/99 was Carl Dahlman, who had worked for the World Bank for 26 years from 1979. Prior to writing the report, Dahlman had been working on the acquisition of technological capability in developing countries. This had been a "hard long process because most of the Bank did not believe in Technology … we [he and his colleagues] were considered on the fringe. One very famous Chicago-style economist sat me down and said 'Carl, look, you can grow strawberries on the North Pole but it's very expensive' " (Dahlman, World Bank Interview No. 7). Like Lundvall, nevertheless, Dahlman

[55] In this respect, the Bank's approach is already less nuanced than that of the OECD, with its fourfold classification of forms of knowledge. Another issue is whether this distinction, into 'know-how' and information, is an exclusive one. Knowledge of the first kind, knowledge of how to use or develop a particular technology,must require at least some knowledge of the second kind, of the information regarding that technology. Drawing a distinction between the forms of information that fall into this category and those that do not seems arbitrary or at least unspecified by the World Bank. For this reason, the forms of knowledge that the WB maintains to be essential to the functionings of markets cannot easily be disentangled from the knowledge-gaps between different countries.

proposed the concept of the Knowledge Economy, based in part on his previous research, as the central topic of the World Development Report. For three consecutive years, his proposal was rejected. However, when Stiglitz joined the bank in 1997, he became interested in Dahlman's ideas: "Stiglitz said … who is this crazy guy who was talking about Knowledge and Development?" (*ibid*), and so the World Bank's Knowledge Economy Programme began:

> The whole idea of [1998/99] World Development Report was to look at the role of knowledge in economic development.
>
> When I finished the report, I went round to disseminate it and the response I got from developing countries was that it was too academic, so what I then focused on was to make it more practical. I … .introduced three components, one was training for policy-makers, the second was to develop the methodology (KAM) and the third thing was to do analyses of countries" (Dahlman, World Bank Interview No. 7).

Dahlman and his team began with a series of training programmes. Typically, these would involve three to four countries, and early participants included the Baltic States, Poland, Finland, Thailand, Korea, Vietnam and Malaysia. Despite the enthusiasm of the delegates, the problem was that very little impact would be made following their return to their respective countries. So, as the exercises were expensive to run, Dahlman switched his attention to the country-level. The first such study conducted jointly with the OECD was in Korea, and resulted in the World Bank 1998 *Republic of Korea Transition to a Knowledge-Based Economy* which Dahlman describes as a "excellent calling card" (*ibid*) for China, to which he was subsequently invited to conduct a similar study: "So we did it, produced it in record time five months – was made required reading all the way up to the President, it had the biggest impact. We happened to hit China at the right time" (*ibid*).

As a result of the success of this mission and the WDR 1998/99, and with the support of Stiglitz and Wolfensohn, Dahlman went on to refine and popularise the Knowledge Assessment Methodology and the Knowledge Economy Index, which remain the cornerstone of the Bank's Knowledge for Development (K4D) Programme. Since the empirical methodology is designed as a bench-marking tool by which countries may rank themselves against others and over time, it strongly underpins both the theoretical perspective of the Knowledge Economy as a trajectory of development and the critical question of determining policy goals and progress made towards them. The World Bank has compiled detailed reports on, for example, Argentina, Brazil, Chile, China, India, Korea, Mexico, Russian, Tanzania and Turkey (World Bank 2007). The report on India, the 2005 *India and the Knowledge Economy: Leveraging Strengths and Opportunities* will be studied in detail in Part 3.

In what follows, I shall first set out the key ideas in the WDR and K4D programme, including the World Bank's 'Four Pillars Framework' and the KAM. Then I shall consider how the methodological approach adopted in the K4D and the KAM contributes to both their successes and their failures as a Development and policy discourse. Finally, by way of example, I shall look at the operationalisation of the Knowledge Economy policy in the context of the key area of Education for the World Bank.[56]

As with the OECD, the Bank's vision depends heavily on ideas of measurement. Of paramount concern to the Bank are those aspects of knowledge which can be counted, scored, compared and, most of all, valued. Not only does measurement confer a degree of economic responsibility on some nebulous concepts, but it also legitimises policy goals by representing them relative to

[56] The example has been chosen because it highlights how internal politics within the Bank, as well as external pressures to do with the Bank's image, contributed to the evolution of the Knowledge Economy discourse.

specific empirical criteria. Again in line with the OECD, although pre-dating its usage of the term, the World Bank defines a Knowledge Economy to be based on 'four 'pillars' – education, innovation, institutions and ICT. These in turn give rise to a slew of indicators, the collective measurement of which provides a 'knowledge scorecard' for each and every country in the form of the Knowledge Assessment Methodology (KAM). The Bank is interested in aggregating across these indices – giving rise to the Knowledge Economy Index (KEI) – a measurement (on a scale of 1 to 10) of how far a country has progressed along the path of becoming a knowledge economy.

The 'Four Pillars Framework' is as follows:

i. *Economic incentives, and an institutional regime* that provides both sound economic policies and good institutions that permit efficient mobilisation and allocation of resources, and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge:

a) The number of price distortions should be minimal: there should be increased competition, which will encourage entrepreneurship.
b) Inflation should be low and stable (government expenditures and budget deficits should be sustainable).
c) Domestic prices should be largely free from controls and the exchange rate stable.
d) Financial systems should be able to allocate and redeploy resources to sound investment opportunities.
e) Government should be effective, accountable and corruption-free, with legal systems which can support commerce and protect property rights (including intellectual property rights).

ii. *Educated and skilled workers* who can continuously upgrade and adapt their skills to efficiently create and use knowledge:

a) Basic education, to increase capacity for learning and information use
b) Higher education in engineering and scientific areas, for technological innovation
c) High-level teaching and research
d) Human capital measurement of education and skill.

iii. *Effective innovation systems* of firms, research centres, universities, consultants, and other organisations, that can keep up with the knowledge revolution and tap into the growing stock of global knowledge and assimilate and adapt it to local needs:

a) Universities, public and private research centres and policy think-tanks – all of which promote R&D
b) Patenting and production of scientific and technical papers.

iv. *Modern and adequate information infrastructure* that can facilitate the effective communication, dissemination and processing of information and knowledge:

a) Accessible, reliable and efficient computers, phones, televisions, radios etc (hardware, software, networks and media).

The Bank's four pillars are virtually identical to those of the OECD ('innovation', 'new technologies', 'human capital' and 'enterprise dynamics'). But where the WB goes further than the OECD is in operationalising these pillars as the basis of the Knowledge Assessment Methodology (KAM). Through this methodology, countries may be assessed as to their progress towards becoming 'knowledge economies'. Such an assessment (towards a goal which is assumed

automatically to be a positive one) then provides the basis for policy recommendations designed to strengthen a given economy in one or other of the four pillars.

The Knowledge Assessment Methodology (KAM): The World Bank's methodological approach to attaining the Knowledge Economy pillars is worth quoting in full:

> The transition to becoming a knowledge economy requires long-term strategies that focus on developing the four KE pillars. To facilitate this transition process, the World Bank Institute's Knowledge for Development (K4D) Program has developed the Knowledge Assessment Methodology The KAM is a … benchmarking tool designed to help client countries understand their strengths and weaknesses by comparing themselves with neighbors, competitors, or other countries that they may wish to emulate based on the four KE pillars. The KAM is therefore useful for identifying problems and opportunities that a country may face, and where it may need to focus policy attention or future investments, with respect to making the transition to the knowledge economy. The unique strength of the KAM lies in its cross-sectoral approach that allows a holistic view of the wide spectrum of factors relevant to the knowledge economy." (World Bank 2005 p.9).[57]

The KAM has been applied to various economic and sector work projects, such as those for China, India, South Korea, Japan, Finland, Mexico, Argentina, Chile and Slovakia (Chen and Dahlman 2005). The KAM produces indices representing each of the four pillars, which are then aggregated into a single Knowledge Economy Index.

[57] See the World Bank publication by Chen and Dahlman (2005).

Knowledge Economy Index: The KAM Knowledge Economy Index (KEI) is an aggregate index that represents the overall level of development of a country or region in the Knowledge Economy. It summarises performance over the four Knowledge Economy pillars, and is constructed as the simple average of the normalised values of the twelve knowledge indicators of the basic scorecard.

Such a specifically quantitative focus shapes the Bank's position on the Knowledge Economy in three related ways. First, it forms the rationale for the bulk of Bank-sponsored quantitative research, a huge volume of material devoted to compiling, comparing and correlating the prescribed indices against other economic indicators, such as growth. As a consequence, it offers a justification of the analytical premises on which the Bank's methodological approach is founded by providing empirical evidence in the form of large cross-sectoral regressions[58] that purport to offer robust correlations between conventional development indicators and those associated with knowledge – confirmation, in other words, that 'knowledge really is development'. The problem however is that this 'justification' is not entirely convincing in that the methodological challenges are so overwhelming. As a Senior Analyst from the K4D stated; "There are plenty of definitions in reports but it is hard to make them precise, hard to come up with measurement. I am not a great believer in these measurements because you need to have a battery of indicators depending on what you want to focus on (education, innovation etc) and then it is hard to use this data in a comparative sense. Measuring knowledge production and use is extremely difficult" (World Bank Interview No. 11). Robertson (2008) describes a range of methodological problems in the ways in which these indicators have been compiled by the WB, OECD and UNESCO (see also Sagar and Najani 1998 p.25 and Cusso and D'Armico 2006).

[58]See Chen and Dahlman (2005) or Barro and Sala-i-Martin (1995).

Next, the emphasis on what can be measured automatically diminishes the importance of what cannot - those forms of knowledge which are less easily evaluated or which do not reside neatly in individuals or in firms. As Carl Dahlman remarked, "that's what we didn't get into. In part, because these were not fertile areas for the Bank and secondly it was really hard to get some way of quantifying them" (World Bank Interview No. 7).

Finally, the empirical data which the Bank collects suggest not only a picture of institutional change but also a basis for a particular policy design, strengthening the 'four pillars' approach. This approach, as I will argue further in Part 2, does not engage sufficiently with the possibility that the institutional co-evolution envisaged in simultaneously strengthening the four pillars might be politically constrained. As a senior education analyst commented: "This is not somewhere where you need a lot of knowledge. By and large, you know what needs to be done. What you really need to do is overcome the political economy problems!" (World Bank Interview No. 14).

Despite these conceptual shortcomings, however, the methodological form developed by Dahlman and his team (ie that of a benchmarking tool) turned out to be one of its strongest selling points. The possibility of comparing a country's performance against others or over time proved extremely attractive to policymakers. It provided them with a set of criteria that could be used to justify or create policy objectives. This demonstrates, again, that it is more fruitful to understand the Knowledge Economy not as some abstract framework but rather as a discourse through which ideas influence policy-makers. As Dahlman says: "an institution like the Bank is most influential when the message it brings out coincides with what the national champions are saying" (World Bank Interview No. 7).

However, whatever appeal the methodological structure might have held for the World Bank's clients, there is a respect in which it was very *unappealing* to the Bank itself. Dahlman's approach was by definition cross-sectoral, demanding a holistic approach. Yet as a senior analyst remarked "the World Bank is very sector-oriented. The policy debate is about distributing wealth and power to sectors. With 'country work', which is the bread and butter of the Bank's work, you do not cut across sectors!" (World Bank Interview No. 11). Paradoxically, then, the K4D approach proved more popular with client countries than it did with the Bank itself. Today, K4D would not be viewed as mainstream within the Bank, and its activity has been limited since Carl Dahlman's departure from the Bank in 2011. The cross-sectoral approach has largely given way to a focus on innovation, through the Skills and Innovation Programme (SIP), and the 'Knowledge Bank' has become the 'Solutions Bank'.

Constructing Knowledge Societies – The Example of World Bank Education Policy

In the preceding section, an account was given of how the Knowledge Economy discourse provided a methodology and benchmarking tool, the KAM, through which countries could evaluate the extent to which their economies adhered to the four pillars of the Knowledge Economy, as defined in the K4D programme. However, whilst the pillars provided some detail as to the direction that policy would have to take in order to improve a country's KEI, the K4D was a long way from being a policy framework itself. In fact, it would take several years from the inception of the K4D programme and the WDR in 1998, before the impact of the Knowledge Economy discourse manifested itself in a specific policy area. That subject area was Education, the second pillar of the K4D programme – as a senior analyst states "taking a Knowledge Economy approach puts Education at the forefront" (World Bank Interview No. 6) – and the crucial paper was *Constructing Knowledge Societies* (CKS World Bank 2002).

CKS, according to its author Jamil Salmi, "dovetails with K4D … it applies the same academic framework" (World Bank Interview No. 12). It sets out to redefine the role of tertiary education within a development strategy and does so very much in the language and through the perspective of the knowledge economy. Salmi, who had served for many years as the World Bank's Tertiary Education Co-ordinator, wrote the paper at the suggestion of the South African politician and activist Mamphela Ramphele, who was then serving as one of the four managing directors of the Bank. Ramphele, who described the working atmosphere at the Bank as "toxic" (p319) in her autobiography, *A Passion for Freedom*, would leave the Bank shortly afterwards.

CKS is an erudite document, quoting Darwin, Seneca and Ovid. Its main contentions are that:

- Social and economic progress is achieved principally through the advancement and application of knowledge.
- Tertiary education is necessary for the effective creation, dissemination, and application of knowledge and for building technical and professional capacity.
- Developing and transition countries are at risk of being further marginalized in a highly competitive world economy because their tertiary education systems are not adequately prepared to capitalize on the creation and use of knowledge.
- The state has a responsibility to put in place an enabling framework that encourages tertiary education institutions to be more innovative and more responsive to the needs of a globally competitive knowledge economy and to the changing labor market requirements for advanced human capital.

- The World Bank Group can assist its client countries in drawing on international experience and in mobilizing the resources needed to improve the effectiveness and responsiveness of their tertiary education systems.

(*Constructing Knowledge Societies* (CKS) World Bank 2002 p.19).

This perspective, which clearly owes much to the Knowledge Economy discourse, seems also to place a certain amount of distance between it and its predecessor, the 1994 *Lessons from Experience (LfE)* which takes a view of education almost entirely driven by considerations of efficiency and holds the further involvement of the private sector to be the key policy objective. LfE, as can be seen from the Executive Summary, is about Higher Education in Crisis (in developing countries) and how to respond to that crisis. However, as will be seen, the striking differences in presentation between the two documents may not be matched in terms of substance. In fact, Jamil Salmi was the lead author on both papers and, in the view of one of his co-authors on CKS "a lot of LfE remains true today" (World Bank Interview No. 6).

CKS emerged from the regular lunchtime meetings of a small group in the higher education team – called the Core Higher Education Group (COREHEG) – which included Salmi, Rick Hopper, Peter Moock and Hena Mukherjee. The group was dynamic and driven by the same economic instincts as had motivated K4D and Stiglitz, with a particular focus on incorporating externalities due to knowledge. They further drew "strength from adversity" (World Bank Interview No. 6) in that the main intellectual objective of the group was to move beyond the then dominant rate-of-return analysis which had been the centre of the Bank's Education methodology for many years. In this respect the CKS, like K4D, went against the mainstream Bank position, but as we shall see it

nevertheless sustained the fundamentally market-oriented approach favoured by the Bank.

Education did not play a significant part in the Bank's programmes for reconstruction and development during the 1950s and 60s, and it was not until the McNamara Era (1968–81) that serious involvement began, with the creation of an Education Department and the first major policy papers in 1971 and 1974. Education lending as a percentage of total Bank lending grew from 3.0% for the period 1963–69 to 5.1% for 1970–74. The main shift in policy was to increase the share of lending going into Primary Education (from 4.2% over 1963–69 to 10.% for 1970–74 to 23.6% for 1975–59)[59] although the Bank was still extremely cautious, with no declaration of universal entitlement to education or immediate achievement of universal primary schooling, unlike UNESCO. Although this period saw the introduction of rate-of-return analysis in Education (see Psacharopoulos 1971) and the development of Human Capital Theory of Schultz (1961) and Becker (1964), there is little evidence that this influenced the formation of policy (Jones 1992). The pivotal point in terms of the way in which Bank policy was to become research-led was the 1980 Education Sector Policy Paper, described by Psacharopoulos as a "modern Bible of educational development" (Psacharopoulos 1981 p.141) and by King as a "watershed in Bank thinking"(1995 p.20).

Considerably more academic, with 65 academic references compared to the 10 of its 1974 predecessor, the 1980 paper was in tune not only with the theoretical momentum that surrounded Human Capital Theory at that time but also with the growing political will to implement structural adjustment via conditional lending. In practice, this paper and its successors throughout the 1980s held efficiency as the most important criterion for lending and, with rate-of-return

[59] See Mundy (2002 p.486).

analysis[60] at its most influential, that Primary Education was more efficient than Higher. Accordingly the share of Education lending spent on Higher Education fell from 53.7% in 1980–84 to 33.4% for 1990–94, with Primary Education rising from 22.9% to 36.1% over the same period.[61] Moreover, following the UNESCO 'Education for All' strategy declaration at Jomtien (UNESCO 1990), the prioritising of primary education could be represented as a global policy that united multilaterals, government agencies and NGOs. This was despite the fact that the UNESCO declaration is explicitly about poverty reduction rather than development. The LfE (1994) can be seen as the last chapter in the particular intellectual and political mindset that had held sway over this period (1980–94). The starting premise of LfE can be summarised thus: "in most developing countries … the extent of government involvement in higher education has far exceeded what is economically efficient" (LfE 1994 p.56). The gloomy conclusion is that "the overwhelming fiscal reality in most developing countries is such that quality improvements and enrollment expansion in higher education will have to be achieved with little or no increase in public expenditures" (LfE 1994 p.25). LfE promotes the key policy objectives as the encouragement of differentiation amongst higher education institutions, especially through attracting the private sector and diversification of funding (for instance through introducing fees), and it redefines the role of the state as the facilitation and incentivisation of the above. Note however that the rhetorical shifts in the World Bank's position, such as that between the publication of LfE and CKS, are not mirrored by changes in lending patterns. In fact, despite the hostility to state investment in tertiary education that thrived in the LfE era, the Bank was lending at a relatively high level in the tertiary sub-sector (the IBA+IBRD commitment was in excess of $400mn[62] for new commitments in tertiary

[60] Rate-of-return analysis applied to Education computes via proxy indicators the value added in relation to the investment made in Education. See Psacharopoulos (1985).
[61] See Mundy (2002 p.494).
[62] Note that this sum is only *relatively* high when compared with the Bank's own history of lending commitments in the same sub-sector for different years. When considered as a fraction of total lending

education for every year between FY90 and FY99 except FY95 - the mean annual commitment between FY90 and FY99 was $505.6mn). If anything the structural break seems to have been in FY00 - between FY00 and FY09, IBA+IBRD commitment was only once in excess of $400mn and averaged only $232 mn. It is interesting, then, that the period just after the development of the KE actually sees a significant drop in lending for tertiary education commitments.[63] Of course, these figures must be tempered by the fact that there is a lag due to the time period in which commitments are agreed and funds distributed and it is virtually impossible to disentangle these lag times from the aggregate data without knowing more about specific projects and also borrower demands. Also these data are not broken down by area and disguise certain large lends (eg. the Latin and Central America region received $304.9 mn (61%) of the total $498mn in FY2008) and outlier years (such as FY2000 when all lending seems to have been very low or FY2009 when lending was exceptionally high)

But perhaps a better reading of these data is to infer that the KE, and indeed the Bank's influence as a whole, is less now to do with its function as a lender (especially as private finance or other large lenders like the Asian Development Bank have become more significant)[64] and more to do with its capacity to structure the parameters of development discourse (or dispense 'knowledge' as the Bank would put it) and to set the terms of reference. As we shall see in Part

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(or in absolute terms, remembering this is a global figure) this is not a huge sum of money. In the period between FY90 and FY99 total lending in Education ranged between $1.03bn and $2.82bn, averaging $1.76bn, and Total Bank lending was between $20.7bn and $29.1bn, averaging $23.2bn. The average total Education lending was 7.5 % of the average total lending for this period and the average tertiary lending figure is 2.2% of the average total lending (NB not adjusted for inflation). Source: World Bank Education Sector

[63] Total Education lending for FY2000 - FY2009 dropped to an average of $1.68bn compared with the previous decade and ranged between $728mn for FY2000 to $3.45bn in FY2009 (Note that both these figures are outliers - between FY2001-2008 the figures are much more stable with a range between $1.095 in FY2001 and $2.35bn for FY2003). Total lending was generally stable - the average annual lend remained at around $23.3bn so that average Education lending as a percentage of average Total lending fell slightly to 7.2% but average tertiary lending as a percentage fell to just 1% of average Total lending. Source: World Bank Education Sector.

[64] See Woods (2015) for a discussion of why the Bank is increasingly unpopular as a lender

3 in a discussion on India, the effect of the KE has been to discourage public investment in higher education and look to diversify funding through (much) greater involvement of the private sector.

Returning to the internal politics of the Bank, there is evidence in the period between LfE and CKS of what Mundy calls "a legitimacy deficit" (2002 p.491) – a growing unease within the Bank in the face of considerable public criticism of its policies of the preceding decade. Papers started to appear in the Education sector questioning the effectiveness of loan conditionalities, especially those associated with privatisation and decentralisation, mirroring the anxieties felt elsewhere in the Bank, and which would prompt the Post-Washington Consensus. When the 1995 paper *Priorities and Strategies in Education* essentially reiterated the neoliberal position of LfE, thus ignoring these criticisms, the result was considerable internal dissent, and senior figures within the Education Department argued that it should be sent forward to the World Bank's Executive Board. This was, in Mundy's words, the "end of an era" (2002 p.496).

Also important to the genesis of CKS were papers such as Birdsall (1996) which argued that certain social benefits of higher education had hitherto been excluded from the analysis, and Ritzen and Woolcock (2000) which highlighted social cohesion as a key prerequisite for change, and saw higher education as extremely important in building such cohesion. Thus CKS can be thought of as drawn from a multiplicity of influences and criticisms, in many ways a crystallisation of what the Bank's new identity was all about.

The World Bank is not the only organisation to publish major policy papers on Higher Education. Roughly contemporaneous with LfE and CKS are two major papers from UNESCO, the *Policy Paper for Change and Development in Higher Education* (CDHE 1994) and the *Report of the Task Force on Higher Education – 'Peril*

and Promise' (P&P 2000) – also chaired by Maphela Ramphele. CDHE and LfE are strikingly different from one another in their respective views of what Higher Education means and how best to achieve it. In Olsson's words "The World Bank document [LfE] pictures universities as problems for society. UNESCO [CDHE], on the other hand, focuses on problems in society and the need to strengthen universities so that they can better respond to these challenges and contribute to change"(1995 p.239). On the other hand, P&P, convened by the World Bank, but independently financed and staffed by UNESCO and other organisations,[65] is much closer to the Bank's position. However, although there are strong similarities in language, themes and policy recommendations with CKS, P&P also displays important differences (see Post *et al* 2004 – described by one of its authors as "a critique of the Bank that should not appear as a critique": P&P Interview No. 16 and by another as "a corrective to Bank policy": P&P Interview No.24). CKS is focused more on the formation of human capital, P&P on the production of knowledge. CKS is less concerned with quality than it is with diversifying higher education institutions and expanding the role of the private sector. Whereas CKS conceives of development in terms of the 'knowledge gap', P&P belongs to a different tradition that Post *et al* (2004) trace back to the Modernization Theory of Alex Inkeles. P&P also goes much further in stressing positive social externalities to Higher Education, such as social cohesion and democratisation, although it does not use the term 'social capital' even once, and is less prescriptive in policy terms, especially over the role of the private sector. Perhaps most significantly, P&P explains the purpose of Higher Education in Developing Countries in terms of how it might benefit the lives of students and other citizens.[66] CKS however, as will be seen, views Higher Education in a rather more abstract sense, emphasising "the need for a balanced and comprehensive view of education as a holistic system that includes not only the human capital

[65] The main authors of P&P were David Bloom and Hal Rosovsky of Harvard University.
[66] P&P (2000 p.10).

contribution of tertiary education but also its critical humanistic and social capital building dimensions and its role as an important global public good" CKS (2002 p.xix).

The Economics of Education: Limitations of Human Capital Theory

> *It is difficult to pinpoint a single important idea or method in development economics that has its origins in the World Bank*(Gavin and Rodrik 1995).

In one important respect the Bank's understanding of education displays a striking continuity, as Jones observes "the Bank's rationale has barely changed in 35 years, a celebration of the elegance of human capital theory" (1997 p.117). This comment, made between the publication of LfE and CKS, retains much of its force today. What has remained constant is this vision of education as a mechanism for increasing the stock of human capital: what is new is the idea that social capital[67] may also be enhanced in the same way, and that by increasing both forms of capital, one may accelerate technological change via participation in the Knowledge Economy. The continuity in the Bank's approach was in large part due to the continuity of its staff and in particular the senior education analyst George Psacharopoulos.

Over a period of thirty years, Psacharopoulos (1973, 1980, 1985, 1994 and 2002) published regular and comprehensive reviews of Rates of Return in Education (ROREs). This research, continually cited in the economics literature and in particular in each of the Bank's own major Education Policy Papers, up until

[67]The World Bank defines 'social capital' as referring to 'the norms and networks that enable collective action' and providing the contribution to economic growth that is not attributable to a growth in natural, produced or human capital.Viewing development as a process in which future generations receive as much or more capital per capita than the current generation (Grootaert 1998) the contribution to this accumulation of capital which is due to the particular forms of organization and interaction within economies is held to be down to social capital.

CKS, has been remarkably influential. The main findings of this research are that:[68]

- ROREs for all levels of education generally exceed the aggregate social opportunity cost of capital;
- ROREs in developing countries (and especially Africa) are higher than in the advanced market economies;
- the private and social ROREs are highest for primary education, followed by secondary education;
- private ROREs to higher education are usually considerably higher than the corresponding social ROREs;
- the pattern of ROREs remains stable as a country develops, with only relatively minor declines in ROREs.

There are three immediate conclusions that the Bank drew from this alleged universal pattern. First, that it is rational for governments, as well as individuals, to invest in education, as the rate of return on this investment will be positive. Secondly, that if one prioritises primary education there is a greater return to investment. And thirdly, that the involvement of the public sector in higher education is at an inefficient level, and greater returns would be recouped by engaging the private sector. The comparatively low rates of return to higher education in comparison to primary education led to a lack of interest[69] within the Bank in the state provision of higher education throughout the 1980s – the main object of policy was to extract rather than engage the state. Interestingly, CKS, despite emphasising the importance of hitherto undervalued social returns, still recommends a ceiling of no more than 20% of the education budget to be spent on tertiary education.

[68] See Benell (1996 p.183).
[69] Indeed, in the 1980 Education Sector Policy paper mentioned above, higher education is referred to on only a couple of pages within a 100-page document.

Over the years, the Psacharopoulos reviews took on a gospel-like level of authority in Bank publications, with each reference only further legitimising them. Indeed Psacharopoulos remarked that "it might not be an exaggeration to treat [the 1980 World Bank Education Policy Paper] as a modern Bible on educational development"(Psacharopoulos 1981, p141). Yet upon closer scrutiny, numerous authors have found that the way in which the original reports were collected and then subsequently aggregated is highly suspect.[70] In a comprehensive attack on the Sub-Saharan Africa ROREs, Benell (1996) observes manifold failings. First, there are serious concerns over the original reports. There is a bias in country coverage and a generally poor quality of data. Many of the authors of the original reports were acutely aware of this, and typically prefaced their findings with disclaimers such as 'indicative', 'rough estimates' etc. These caveats have not, however, made their way into the subsequent analysis. Then there are numerous methodological problems such as: sample selectivity; omitted variables; inability to take account of changing wage and social structures (see also Colclough 1995); cost and benefit biases; and confusion between applications of the full and Mincerian methods of calculation.[71]Benell also questions the aggregation of data, raising serious problems with comparability and temporality. He concludes: "aggregate ROREs for SSA presented in the 1994 review are so flawed that they should be discarded altogether in any serious discussion" (Benell 1996 p.195).

Publicly, these criticisms have largely gone unanswered. In a rather caustic, one-page rejoinder to Benell, Psacharopoulos puts it succinctly: "So what?" (1996 p.201). His point is that "estimates of anything in a scientific profession will be

[70] See Colclough (1995), Schultz (1988), and especially Benell (1996).
[71]The 'full' or 'elaborate' method "amounts to … finding the discount rate that equates a stream of education benefits to a stream of education costs at a given point in time" Psacharopoulos (1993 p.2). The 'basic' or 'Mincerian' method regresses (the logarithm of) earnings against (the logarithm of) years of schooling and potential labour market experience.

subject to improvements and controversy" (1996 p.201). However this rather conveniently avoids the question of by how much estimates need to be improved before one can base policy upon them.

Privately, however, ROREs were to become progressively less and less visible in the Bank's arguments in the late 1990s, but for quite different reasons.[72] Instead, in the climate of growing interest in market imperfections, the view that had emerged from COREHEG and elsewhere was that ROREs undervalued social returns of higher education and did not take into account the externalities that could occur within a better educated society. This motivation, therefore, was closely tied to the conceptual reconfiguration that was taking place within the Bank at the time, and hence also tied to the birth of the Post-Washington Consensus. In her influential 1996 paper, Nancy Birdsall, formerly a senior figure within the Bank, argued that:

> Current measures of social returns to primary, secondary and higher education do not reflect unmeasured social benefits at each level; since we do not know the relative size of these benefits across levels, we do not know the true ranking of social returns across primary, secondary and higher education. The true social rate of return to certain components of higher education, such as research and postgraduate training in science and technology, and creation of other skills where social returns probably exceed private returns (such as public administration) is probably high, and in some settings, may now be as high or higher than the social rate of return to primary and secondary education. (Birdsall, 1996, p.407).

This theoretical point was then backed up by a growing body of empirical research (summarised in Bloom, Canning and Chan (2005)) which attempted to quantify these benefits. These include Barro and Sala-i-Martin's (1995) work on

[72] At least within the Bank's literature the OECD has a rather different approach, although note that this research is mostly to be applied to industrialized nations. See Martins *et al* (2007).

links between tertiary education and growth, and Bloom, Hartley and Rosovsky's (2006) work on productivity. In each case, the authors are attempting to quantify social benefits to individual human capital.

The key observation to make here is that the change in the Bank's thinking is a *refinement*, not a *rejection*, of its earlier position. Implicit in Birdsall's criticism is the idea that the social rate of return to education is a meaningful concept that can both describe the relationship of education and development and act as a guide for policy. There is no conception of the potential of education to transform the lives of individuals or of society, but only of its economic value, calculated by an accountancy-style reckoning of the return on an investment. Indeed, Human Capital Theory was to remain the basis upon which all subsequent Bank policies were premised. The only response to the criticisms mentioned above was that the Bank sought an *expansion* of Human Capital Theory, one that could accommodate the externalities and unmeasured social benefits. Moreover, the claim that CKS privileges tertiary education in a radically different way from that of LfE is not matched by a structural break in World Bank lending patterns; even when the Bank was at its most dismissive of the efficiency of Higher Education in developing countries, there were still significant lending operations in place; and in the period after CKS and K4D, there is no significant systematic increase from previous levels.

As we have seen, then, whilst the Knowledge Economy discourse was evidently an important and radical point relative to the Bank's own narrative, it is far less clear whether the same could be said of it in an absolute sense. Many of the ideas contained in the Knowledge Economy discourse can be found in some shape or form in earlier work of the Bank, but by repackaging and renaming some of these ideas, the Bank was able to address the legitimacy deficit problem and add further momentum to the reinvention of its own image that the Post-

Washington Consensus entailed. In terms of the genealogy of the Knowledge Economy, what is new here is not the nature of the relationship between markets and knowledge but the breadth of forms that this relationship now takes. What the K4D programme does is incorporate a range of new economic ideas, opening up many new ways in which to apply an economic rationality to various questions of knowledge, yet without fundamentally altering the neoliberal position that preceded it.

Remarks

In Part 1, I have argued that the Knowledge Economy must be understood in a contextualised and historicised manner. I have described how the seminal publications that contributed to the development of the Knowledge Economy came about and have given an account of the institutional contexts from which they arose. I was extremely fortunate in that each of the lead authors agreed to be interviewed by me, as well as a number of secondary authors and others with direct involvement. I have argued that the transformative effects of the Knowledge Economy have been more strongly felt through the reworking of old ideas than the creation of anything radically new – and yet these transformative effects are significant. By examining the genealogy of the Knowledge Economy in Part 1, I have identified a number of scholars whose ideas have particularly contributed to the Knowledge Economy – Stiglitz, Lundvall, Arrow, Romer, Becker. In Part 2, I will posit a novel understanding of the Knowledge Economy – that it constitutes the extension of market rationalities to questions of knowledge in various diverse ways. The manifold nature of the Knowledge Economy is reflected in the different approaches that these scholars have taken towards knowledge.

One striking finding of Part 1 was that so many of the key participants were, or are, discontented with their experiences in the major institutions in which they

worked. Some, such as Stiglitz or Chesnais, were forced to leave (the World Bank and the OECD respectively). Others, such as Ramphele or Ellerman, left under their own volition, but subsequently wrote highly critical books (on the World Bank in both cases)[73] explaining why initiatives that they had themselves started were doomed to failure due to institutional or cultural features of the Bank. Even those who remained, whether at the Bank or the OECD, were equivocal about the relationship between the core and the periphery, pointing out how innovative ideas starting out in satellite departments tended to become far less radical by the time they were absorbed by the core. All of these observations combine to confirm the hypothesis of Part 1 – that one cannot understand the Knowledge Economy discourse as a robust analytical framework, a well-defined empirical methodology or a clear basis for practical policy. Instead, it can only be understood within its historical and institutional context as a particular way of thinking about knowledge, markets and development.

In making this latter point, I am arguing for an understanding of the KE that transcends particular programmes, economic theories or policies but which represents it instead as a fundamental discursive shiftin the way we approach knowledge. This shift, towards a far more market-oriented paradigm, remains very much in the ascendancy, at the Bank and OECD and indeed in wider development discourse. Some of the specific initiatives of the early KE discourse, such as the K4D programme at the World Bank, are now no longer active whilst some of the theoretical ideas (such as Endogeneous Growth Theory) which I discuss in detail in the next Part are no longer as influential as they were in the mid 1990s. Indeed, as has been discussed in this Part, the vitality of the KE, especially within institutions such as the World Bank or OECD, is sustained by exactly this turnover of ideas and initiatives. The KE in

[73] See Ramphele (2013) and Ellerman (2005).

this sense continues to evolve, incorporating new ideas from evolutionary and behavioural economics yet retaining the strong orthodox core. My motivation, therefore in documenting the genealogy of the KE is not to provide an exhaustive institutional history but to show how institutional change played a fundamental role in shaping the evolution of the discourse.

PART 2

KNOWLEDGE AND THE MARKET

In Part 1 of this thesis, I examined various ways in which we might think of the KE (Knowledge Economy) and concluded that none were particularly convincing. As an analytic concept, the KE lacks robust foundations, and moreover is applied with such inconsistency that it cannot be considered in any well-defined manner. Even a unanimously agreed definition of the term 'Knowledge Economy' seems impossible. Then, as an empirical methodology, it is riddled with technical difficulties and problems of measurement and comparability. It is unclear whether the indicators constructed to measure the parameters of the KE do in fact give us any new information, or provide any meaningful comparison between countries or over time. As a policy framework, it is amorphous, and it is not obvious that those countries that claim to follow a KE agenda have much in common beyond rhetorical similarities. It is true that there are a core set of ideas, such as those of the K4D programme, but these are pitched in quite general terms and can be interpreted in different ways according to context. It seems that a better way to think of the KE is as providing a broad *lingua franca* amongst policymakers which may serve particular political projects but which more generally enables a common market-oriented perspective on the relationship between knowledge and development. It is not a prescriptive list - there are not particular demands that a client country needs to adopt - this reflects the fact that we are no longer in an era of loan conditionality and Structural Adjustment and that the hegemonic power of the Bank and neoliberalism in general operates in a different way to that of the 1980s and early 1990s. At the same time, as will be seen in Part 3, the process of becoming a KE is *not* a matter of rhetoric but in fact constitutes a concrete policy shift towards a market-oriented approach to knowledge. Often this shift is quite radical and inspires fierce opposition - again this will be illustrated in detail in Part 3. But

before we can understand the effects of the discourse in action, we must still answer the question of what the KE actually is. Therefore, having applied in Part 1 an *institutional* history approach to critique the various ways in which the KE presents itself, in this part of the thesis I will draw upon the *intellectual* history of the KE, to present an original alternative conceptualisation of the discourse.

It is argued in this Part that the Knowledge Economy discourse should be understood as the 'systematic representation of questions of knowledge in terms of properties of markets'. More to the point, it is a set of such representations, since there are many and diverse ways in which economists have interpreted 'questions of knowledge'. How do we know what a thing is worth? How do we know what knowledge itself is worth? What role does knowledge play in driving economic or social change? What should we do when knowledge is incomplete, or inadequately developed or utilised? These sorts of questions are, I argue, 'what the KE is about', and the systematic representation of them in terms of markets is its primary function. This proposition should not be understood as the simplistic (and false) claim that the Knowledge Economy functions as a crude agenda of marketisation, in the manner of the Washington Consensus; KE advocates are not (in general) arguing that all forms of knowledge should be commodified without restriction, nor are they positing that the achievement of free markets should be the overriding policy goal (indeed, often explicitly rejecting this position). However, what they are doing in a range of distinct ways is advocating that all important questions regarding knowledge should be presented either in terms of markets or in terms of market failure. The possibility that important aspects of knowledge cannot and should not be conceptualised in relation to markets is excluded. The market functions, therefore, as a common "principle of intelligibility", making sense of the complex realm of knowledge and permitting a homogenising logic through which to impose an interpretation on its many processes.

In tracing the intellectual history of the discourse, I relied not only on an extensive review of the literature but also on my interviews, in which I asked which ideas from economics had had the greatest influence on my subjects' thinking and on how they felt the discourse had evolved. As has already been observed in this thesis, the range of intellectual ideas which have informed the KE discourse is staggeringly wide. The three schools of economic thought which have dominated the development of the knowledge economy discourse are as follows: First there is the Austrian school, of Hayek, Mises, Machlup and Kirzner; next the evolutionary school, which has its origins in Veblen and Schumpeter (who could also be regarded as of the Austrian school), and latterly Nelson, Winter, Freeman and Lundwall; and finally the neoclassical school, incorporating the Economics of Information (Marschak, Stigler, Arrow, Stiglitz, Akerlof, Spence); Public Choice Theory (Buchanan, Tullock); Human Capital Theory (Becker, Schultz, Mincer); and Endogenous Growth Theory (Romer, Lucas, Grossman).

On the face of it, these three schools – Austrian, evolutionary and neoclassical – are not just distinct but are actually incompatible, relying as they do on quite different and exclusive micro-foundations. Moreover, when it comes to the question of knowledge, these differences are essential and explicit. Austrian economists such as Hayek and Machlup declared the mathematically and empirically driven approach of neoclassical economics to be utterly misguided,[74] whilst evolutionary economists would make a different criticism that neoclassical economics fundamentally misunderstands the nature of innovation and mistakenly reads the purpose of the market in terms of allocative efficiency rather than competition.[75] Neoclassical economists, on the other hand, would view the Austrian treatment of knowledge as either hopelessly untestable or

[74] Hayek (1945), Machlup (1962).
[75]Lundvall (2011).

founded on questionable precepts[76] and the systems-theory approach of the evolutionary economist as lacking in rigorous micro-foundations or even little more than description.[77]

One might suppose that such profound disagreements rendered the possibility of a synthesis of ideas from across these schools to be very remote indeed. But in fact, as the interviews I conducted revealed, for many KE advocates the theoretical and methodological diversity was something to be celebrated. Not only does the KE not require rigorous foundations to be discursively effective, but in fact the tensions between the different perspectives actively strengthened it. First, because many KE enthusiasts felt that the subject matter necessitated a 'broad church' of opinions, but secondly because the critical stance of those within the discourse towards others allowed the KE to be portrayed as non-mainstream and radical. As we shall see, however, the differences between rival perspectives within the KE mask some very striking similarities. The overall picture that I want to draw is of the KE as being composed of three interwoven strands – neoclassical, Austrian and evolutionary – each of which defines itself relative to the others by emphasising one or other methodological or theoretical advantage. But running through the core of the discourse is the key idea I described above – that questions of knowledge should be conceptualised in terms of properties of markets. So in the third part of this thesis, I shall offer a political economy critique of this idea and argue that the fundamental failing of the KE lies in its inability to engage with the politics of markets.

Another observation that can be drawn directly from the list of economists whose work informs this subject is that the rise to prominence of the KE at that particular point in time coincides with two things. First, the institutional changes mentioned in the previous part of this thesis and secondly the simultaneous

[76]Nozick (1977).
[77]Schultz (2013).

publication and worldwide accreditation given to key academic ideas. Whilst the work of some economists working on knowledge had already been recognised,[78] the rise to prominence of the KE discourse in the mid-1990s immediately followed the establishment of other fields – Information Economics, Endogenous Growth Theory, Innovation Systems. The intellectual credibility conferred upon these theories during this period (with, for instance, Nobel Prizes in 1986,[79] 1992,[80] 1995,[81] 1996,[82] 2001[83]), coupled with the institutional realignments in the OECD and World Bank described in the previous chapter, created a synergy and momentum from which the dominant KE discourse emerged. I argue in this part of the thesis that rather than any fundamental shift in how knowledge is produced or consumed, the emergence of the KE signifies instead a shift in how it is conceptualised. It is not that the world changed fundamentally sometime in the late 1990s, but that these various institutional and intellectual factors found themselves in alignment.

In terms of political effects, the market-oriented rationality which the KE discourse places on its subject leads to policy formulations which are themselves expressed in market terms. Thus, although there most certainly is a role for the state in 'building a knowledge economy' that role is limited – for instance, in correcting market failures such as the supply of public goods or in the establishment of institutions such as the enforcement of intellectual property rights or the provision of a regulatory framework in which the privatisation of higher education may occur.[84] As will be seen in Part 3 however, although the role of the state may be limited (in the sense that a KE state could not be a developmental state for instance) it is still an active role - the state is expected to

[78]Through, for instance, the awarding of Nobel Prizes to Hayek and Myrdal (1972), Buchanan (1974) and Simon (1978).
[79] James Buchanan.
[80] Gary Becker.
[81] Robert Lucas.
[82]James Mirrlees and William Vickrey.
[83]Joseph Stiglitz, George Akerlof and Michael Spence.
[84]*See the* World Development Report (1998-9, p.7).

create the conditions under which marketisation can occur - and a radical one Another important political consequence is discursive. The under-theorisation[85] of the market as a social and political construct, as in Austrian and neoclassical economics, permits the same type of reasoning to be applied to many contexts. Taken together, these two types of political effect lead to a 'depoliticisation' of questions of knowledge (such as higher education reform, or the development of scientific or technological capacity), first by rendering those questions in terms of markets, and secondly by representing those markets as depoliticised spaces. Without this depoliticisation these questions of knowledge are necessarily specific, contextual and heterogeneous, and the template of the knowledge economy becomes impossible to apply globally.

Perspectives on Knowledge: An Overview

Each of the three schools of economic thought which make up the KE discourse attaches critical importance to the understanding of the relationship between knowledge and markets. Yet the ways in which they do so are strikingly different from one another. Indeed, it could be argued that it is these differences in how these schools treat knowledge and markets that *define* each school in opposition to the others. Thus, on the one hand those differences in the knowledge/market relationship conceptually distinguish the three strands within the KE discourse, whilst on the other the similarities bind them together. In the following overview, I shall briefly set out the main features of each strand and then, later on in this part of the thesis, provide a fuller discussion of how these similarities and differences are the key to understanding the KE discourse.

[85] Itself a form of theorisation, as Harriss-White (2003) observes.

Austrian

For Austrian economists like Hayek, the fundamental problem of economics, indeed of social science, is that different forms of 'local' knowledge cannot be grasped by any central authority. The crucial role that the market plays is in co-ordinating and ordering these local knowledges, bringing institutional structures into being as it does so, and enabling macro-level decision-making. This idea is formalised in the Austrian notion of *catallaxy*,[86] and in particular in Hayek's theory of *spontaneous order*. Hayek's Austrian economics takes a view of human behaviour that is deeply methodologically individualist – choice is a privilege of individuals, not collective entities – and an understanding of cost and utility that is subjectivist in the extreme. Human interaction is mediated by social institutions, which may be of 'human action but not of human design',[87] the most important of which are the price system and the market.[88] The former of these transmits information whilst the latter, through the process of exchange co-ordinates knowledge and achieves catallaxy. The Austrian school may be distinguished from other branches of economics by its unique 'epistemic-cognitive' qualities (Boettke , 2002), in which drawing a distinction between information, understood as a stock concept of known facts on the one hand, and knowledge, understood as a flow-concept of ever-changing cognitive skills on the other, is paramount. The evolution of Austrian economic thought can be traced from Hayek's concept of spontaneous order, through Machlup's

[86] 'Catallaxy' is defined by Hayek as follows: "the order brought about by the mutual adjustment of many individual economies in a market" (*Law Legislation and Liberty* Vol 2, pp.108–9) – the point being that these individual economies operate independently of one another and yet through the market mechanism achieve an outcome which could not have been arrived at collectively or by the action of any central authority.

[87] To paraphrase Adam Ferguson's *An Essay on the History of Civil Society* Part III Section I (1767). Of course one might concede that the market as a whole is not of human design and yet still insist that human design might still have a very great impact on the market.

[88] Hayek says "If social phenomena showed no order except insofar as they were consciously designed, there would indeed be no need for theoretical sciences of society … It is only insofar as some sort of order arises out of individual action but not consciously designed by any individual that a problem is raised which demands a theoretical explanation" (Hayek 1952 p.69).

presentation of knowledge as a commodity,[89] to Kirzner's work on entrepreneurial discovery.[90] Of these, Hayek's and Machlup's contributions are especially important for the KE discourse, and will be discussed further below. Throughout this trajectory, the common theme is the conceptualisation of the market as an epistemic-cognitive process, that is, not merely responding reactively to information but actively co-ordinating knowledge. Whilst relatively few KE advocates explicitly reference Hayek, this fundamental idea of the market as a means of coordinating knowledge is pervasive and highly influential throughout the KE discourse. Similarly, Machlup's methodological approach is very much the forerunner of the various KE programmes discussed in Part 1 of this thesis.

Evolutionary

Evolutionary economics is predicated on a view of markets that is quite different from both the Austrian and the neoclassical schools and, in particular the role of markets in generating competition as opposed to allocative efficiency or price-taking. This is most immediate in the context of Innovation Systems (IS) – the major evolutionary idea in the KE discourse. The fundamental core of neoclassical economics – utility-maximising rational agency – is incompatible with the process of innovation, which is not one of rational optimisation, as understood in the IS approach. For, in the evolutionary approach to learning, agents *change and become more diverse* as they acquire knowledge - this is fundamentally different from the orthodox economic perspective, posited around the idea of a *representative agent* who is constant and uniform. Also, innovation involves repeated disruption of initial conditions and thus of equilibrium - equilibrium is of little interest to evolutionary economists, since it is assumed that we are always in a state of change, whereas to neoclassical

[89] In the 1950s, Machlup defined knowledge as commodity in a series of works culminating in *The Production and Distribution of Knowledge in the United States* (1962).
[90] See Boettke (2002).

economists it is a central concept that lies at the heart of what neoclassical economist believe economies do. Evolution is predicated on three mechanisms: a mechanism for information storage, whereby stable characteristics are preserved; a mechanism by which new variations are generated; and finally a mechanism of selective retention whereby the frequency with which some variations are retained is increased relative to that of others. In the case of biological evolution this means genetic inheritance: mutation and natural selection. On the other hand, in economic evolution these mechanisms are habits and routines: innovation and market selection. In this sense, evolution is inherently inefficient – it entails variation which means that some outcomes must be sub-optimal: trial and error (lots of error); and path-dependence – hence a limited ability to 'correct' to optimality. It is a key assumption in evolutionary economics that agents and organisational routines differ and that *diversity* is fundamental to the dynamics of the system. Innovation creates novelty and diversity in the system, and competition is a selection process (and an imperfect[91] one at that) that reduces diversity, while some routines are reproduced over time.

As has been seen in Part 1, the KE came about when evolutionary economists, such as Lundvall, began to have an influence on a policy realm which had hitherto been neoclassical. The criticisms that Lundvall and others in the evolutionary school made of the mainstream are important in understanding how the KE works but as I will show here there is nothing new in critical approaches of this kind. What follows is an account of the contrast between the work of various evolutionary economists with those of other authors: Friedrich List with Adam Smith, Joseph Schumpeter with Karl Marx, and Bengt-Ake Lundvall with the neoclassical approach in general.

[91] In contrast to much neoclassical economics, the assumption of perfect competition, maximisation and equilibrium cannot be made in evolutionary economics, as to do so would violate the imperfections in knowledge which are supposed to provide opportunities for innovation.

Neoclassical

Neoclassical economics, like evolutionary economics, has always privileged questions of knowledge[92] and has always related them, in various ways, to the behaviour of markets. There are two reasons for this. First, neoclassical economics is premised on the idea of individuals making rational, utility-maximising choices, and so the question of how individuals *know* what decisions are rational is fundamental – and is, in the neoclassical view, answered by the market, which provides a calculus for evaluating decisions, revealing preferences and predicting behaviour. The second is that when knowledge itself is the object of study or of practical change, the idealised neoclassical assumptions of perfect information, or an exogenously determined level of technology, or an absence of externalities, no longer hold. Instead, what is of interest is precisely the reverse – how to deal with asymmetric information, how to make decisions about investments in technology, how to predict 'knowledge spillovers', etc. In this sense, questions of knowledge are antithetical to neoclassical economics and therefore fascinating to it.

In respect of the first of these points, the market functions as a decision-making process – a means of evaluating and distinguishing between different investments in knowledge. Most prominent amongst the economic theories which embody this idea is Human Capital Theory (HCT), which has been central to the evolution of the KE discourse. Human Capital Theory is the idea that types of knowledge, competences and skills embodied in an individual should be considered as a form of capital – *human* capital – and subject to economic analysis. This means measuring the investments in those knowledges, skills and competences (eg through education), assessing the returns (eg through salary) and explaining the relationship between the two in terms of levels of human capital. Moreover, according to HCT, not only do levels of human

[92] See Peters (2007 p.32).

capital affect economic decision-making, but also economic decisions can be taken as evidence of underlying levels of human capital (so that employment segregation patterns, such as gendered pay gaps, can be seen as evidence not of systemic inequality but instead of some fundamental unevenness in the distribution of human capital). For example, according to HCT, differences in what individuals (eg. men and women) are paid for doing the same job (or of educational achievements or crime rates for different groups) need not be taken as prima facie evidence of discrimination or inequality of one kind or other but instead as indicating intrinsic and essential differences between these individuals and groups, in terms of their human capital. As such it provides aconservative rationale, a defence of the *status quo,* since any attempt to redress these inequalities would be inhibit the market's allocative functionings and result in a sub-optimal and quite possibly futile result. Moreover, whilst Human Capital Theory provides the basis for tolerating certain differences in outcome (eg in the form of inequalities) it also suppresses other forms of difference since it privileges only those aspects of 'human capital' which can be measured as inputs and which can be ascribed to individuals. So, a human capital based approach to education might record the years of schooling or the examination results of a given set of students but it would be unable to account for those substantive aspects of the group's experiences that cannot be quantified or which apply to relationships within the group rather than to specific individuals. Finally, human capital theory provides an evaluative criterion - a calculus of measurement – by which the actions of actors, including the state, can be assessed in terms of whether certain decisions represented good or bad investments. The growing reliance on human capital-derived measures of the success or failure of knowledge policy decisions (eg whether or not investment in education or research is well spent) can be said to represent a form of control which gradually becomes internalised and eventually supplants all other criteria. This point will be explored in more detail in Part 3.

As a corollary of the second point, certain questions of knowledge, once thought to lie outside the methodological scope of orthodox economics, have been reconceptualised as instances of market failure. Into this category falls much of the economics of information and also Endogenous Growth Theory. Ideas of this kind permit proponents of the knowledge economy discourse to make three significant claims: first, to have brought 'knowledge questions' into the economic sphere and to have made them amenable to orthodox economic methods; secondly, to have acknowledged that markets are not perfect and so to place intellectual distance between the knowledge economy and earlier discourses of development such as the Washington Consensus; and thirdly, to have provided a rationale for the state in terms of correcting for these market failures. My argument against this sort of claim is that the ideal of perfect markets – abstract and socially and politically under-theorised – remains the point of reference and represents a 'colonisation' by orthodox economics of other branches of social science. Rather than signifying a break with earlier, free-market, approaches, the knowledge economy actually shares and sustains many of the same methodologically individualist assumptions. Moreover, whilst the KE discourse does indeed envisage a role for the state, it is a limited one, falling far short of any genuinely transformative vision of knowledge-led development.

Of the various neoclassical approaches to the economics of knowledge, I will discuss in detail the contributions of Kenneth Arrow and Joseph Stiglitz to the Economics of Information, Paul Romer and Robert Lucas to Endogenous Growth Theory, and Gary Becker to Human Capital Theory. These are the major authors identified by my research in Part 1 as influential on the KE discourse.

Austrian Economics – Spontaneous Order and the Production and Distribution of Knowledge

Hayek and the Theory of Spontaneous Order

> *The economic problem of society … is a problem of the utilization of knowledge which is not given to anyone in its totality* (Hayek 1945, p519).

Of all the authors whose work has influenced the knowledge economy discourse, there can be none for whom the relationship between markets, economics and knowledge occupies a more central position than Hayek. Indeed, it is almost impossible to make sense of any of Hayek's work without explicit reference to his epistemology. By 'knowledge', Hayek does not refer to "the conscious, explicit knowledge of individuals, the knowledge which enables us to state that this or that is so-and-so" (1960 p.25) but to the 'tacit' knowledge which represents "all human adaptations to environment in which past experience has been incorporated" *(ibid*). In his 1936 lecture to the London Economic Club, 'Economics and Knowledge', Hayek posed what was for him the fundamental question of all social science, "How can the combination of fragments of knowledge existing in different minds, bring about results which, if they were to be brought about deliberately, would require a knowledge on the part of the directing mind which no single person can possess?" (Hayek 1936 Lecture, paragraph 35). The answer given by Hayek was that the market represented "the only way so many activities depending on dispersed knowledge can be integrated into a single order" (Hayek 1988 p.21) and the importance of Adam Smith's invisible hand was that "we had stumbled upon methods of ordering human economic co-operation that exceed the limits of our knowledge and perception" (Hayek 1988 p.14). Hayek's argument was then, in effect, that the modern market economy depends upon a division of knowledge every bit as important as Smith's division of labour (Gamble 2006) and moreover, that since this "division of knowledge increases the necessary ignorance of the individual

of most of this knowledge", there is a moral imperative to the market as well, because those who consider themselves custodians of knowledge are often the "enemies of freedom". This view underpins Hayek's political liberalism, and in particular his vehement opposition to centralised state authority.[93] For Hayek, the only free society was one based upon a market economy; and the spontaneous ordering, through the market, of knowledge – fragmented, local and incomplete – was the key to its achievement.

Hayek's relationship to neoclassical economics, especially that which came out of the Chicago School, was complex and ambivalent (Gamble 2006). On the one hand, through his presidency of the Mont Pelerin Society, Hayek directly influenced some of its key figures – Frank Knight, Milton Friedman and George Stigler – were all fellow founder members. But on the other, many within the Chicago School were mistrustful of Hayek's economics even if they approved of his political liberalism. In particular, the non-interventionist themes in Hayek's writing frustrated neoliberal economists, such as Buchanan or Tullock, for whom Hayek's obsession with spontaneous order seemed to preclude the deliberate, active creation of markets (Gray 1982). In turn, Hayek's writings are full of admonitions, even condemnations of the development of neoclassical economics (Caldwell 2004, Boettke *et al* 2006). The basis of his objection was to a large extent the treatment of knowledge, and his criticism of neoclassical economics was that it tried to behave as a physical science, treating as important only what could be measured, modelled and predicted (Hayek 1974). Knowledge, in Hayek's view, could never be captured or reduced in this way; the mathematical tendency was not only misguided but dangerous, jeopardising the whole point of spontaneous order, and hence anti-liberal. Insofar as Hayek accepted analogies of that kind, economics should proceed more as a biological science in the manner of Darwinian theory – guided by a few 'natural principles',

[93] According to Gamble (2006 p.128) Hayek was against strict laissez-faire politics (Hayek 1960 p.60) regarding it as "cut from the same rationalist cloth as socialism".

but based on verbal logic, empirical research and historical narrative rather than on rationalist calculation and deductive reasoning.

In his book *The Market: Ethics, Knowledge and Politics*, John O'Neil systematically sets out critiques of both neoclassical and Austrian defences of market economy, and in particular Hayek's version of them. O'Neil articulates and then criticises what he considers to be the strongest such defences, which he terms neutrality, well-being, autonomy, recognition and epistemology. The first four belong to a broader category of debates about the market and will not be discussed here. It is O'Neil's analysis of Hayek's epistemological claims that is relevant to this thesis.

The epistemological defence of the market economy is, in effect, the thesis of spontaneous order – that the market solves the 'problem of ignorance' that arises from the division of knowledge. Moreover, there is a second claim, sometimes implicit, that the market is the best, or even the only, system that can do this – and it is certainly something that a socialist system cannot do at all. The first part of the thesis of spontaneous order, then, is a positive claim about what the market can do – namely to co-ordinate information about agents' plans whilst letting them utilise their local and practical knowledge. The problem with this assertion is that it assumes that the market itself acts only in a positive manner and ignores the strong and diverse market imperatives for limiting and restricting information and suppressing the flow of knowledge. But in reality and in theory, there are very sound reasons why participants in markets do exactly this, and through the extension of property rights it is clear that a greater degree of marketisation will in many circumstances accentuate the problem – the closer science is to industry, for instance, the greater the typical restrictions upon the freedom with which the information produced may then be distributed. The second claim is a negative one, denying that alternative forms of organisation are

capable of performing certain actions, and this denial depends upon a gross over-simplification of what these alternatives might be. It ignores an equally important quality of systems of knowledge – that they are invariably and crucially dependent upon a host of non-market institutions which may or may not be centralised. Scientific research, for instance, is virtually always dependent upon a huge corpus non-market, decentralised knowledge creation – 'standing on the shoulders of giants' in Newton's famous phrase. Centralisation (or for that matter market-production) may or may not be beneficial to the productivity of scientific research[94] but the important point is that however it is produced, scientific knowledge will always have mixed public and private characteristics. It is therefore impossible to disentangle privately produced knowledge from the publicly produced knowledge from which it is derived

Hayek's essentialist position on markets also seems peculiarly blind to the processes of marketisation, as opposed to the disembedded and static ideal he favours. In practice, marketisation of knowledge itself leads to a greater reliance on knowledge that is codified, commodified and commensurable – paradoxically diminishing the importance of the local, subjective and specialised knowledge that is at the heart of spontaneous order. Markets for knowledge do not display the epistemic qualities that Austrian theory requires.

These epistemological critiques directly rebut some of the claims that are explicitly made in relation to spontaneous order. But, perhaps of even greater importance is the implicit assumption of catallaxy, that market exchange is somehow neutral and independent of questions of power. Hayek favoured the

[94]The Lysenko scandal (Graham 2002) is a famous example of how a centralised system of knowledge production in which the imperatives of the Centre (Stalin's desire to outpace the West and personal patronage of Lysenko, who came from a peasant background) had disastrous consequences, with Lysenko's fraudulent research for a time being the jewel of the Soviet scientific establishment's crown; On the other hand, wartime examples, such as the Enigma code-breakers or even the Manhattan project (Rhodes 1995) – at least considered on its own terms – of the former demonstrate that centralised scientific research can, in certain circumstances, be extremely productive.

idea of catallactic as opposed to economic exchange, because he saw economy, with its etymological derivation of the household, as suggesting a directing agency. Catallactic exchange is meant to be abstract and communicative of nothing more than subjectivist value. But this is not the world in which we live: "Every case of a rationally oriented exchange", as Weber says, "is the resolution of [...] a conflict of interest." (Weber 1922 p.72).

In the first instance, asymmetries of power derive from asymmetries of endowments, in the sense of items which are tradable. This presents a difficulty for those who would seek to claim that catallactic exchange necessarily brings about an optimal outcome. Whereas neoclassical economists might maintain that supply and demand bring resources to where they are most valued, ie where there is a willingness to pay, from the point of view of spontaneous order, disparities in endowments may limit or even exclude some participants from the market and this under-utilisation means that the market will not function as it should. It is therefore possible to argue even from within the theory of spontaneous order, as Robert Sugden has done, that "the market has a strong tendency to supply each person with those things he wants, *provided that he owns things that other people want, and provided that the things he wants are things that other people own*" (1998, p492). In Sugden's argument, the market order cannot function effectively in a situation in which there are large disparities of wealth and resources of market participants (see Deakin and Wilkinson 2000). Thus, for spontaneous order proponents inequality may be endogeneous, in the sense that the market itself creates the inequality, whereas neoclassical economics would suggest that it is exogeneous in the sense that inequalities result from essential disparities in individual abilities. Another way of putting this is to say that the market has no inbuilt tendency to satisfy the wants of those who do not have things that other people, too, want. As a result, there seems no reason to believe – as Hayek apparently does – that the spontaneous order created by the market

should be stable or coherent or benevolent. Instead, it may well be, as Giddens (1979) observes, more like a juggernaut – impossible to steer, and destructive of everything in its path.

In this section I have offered a critique of the Hayekian idea of the market as a 'spontaneous ordering' of knowledge – an idea which, as I have argued, is essential to the conception of the knowledge economy and of various attempts to construct policy around it. The substance of my critique is that, contra to the idealised Hayekian view, the role of the market in co-ordinating fragmented knowledge is in fact deeply constrained by power and politics, the neglect of which fatally undermines some of the key neoliberal assumptions of those who advocate a knowledge economy approach to policy.

Machlup and the Production and Distribution of Knowledge

The direct relevance of Austrian economics to the development of the knowledge economy comes from the influence of one of Hayek's students, Fritz Machlup.[95] Like Hayek, Machlup saw the problem of knowledge as a fundamental but neglected question in economics – "knowledge has always played a part in economic analysis, or at least certain kinds of knowledge have – but for most economists and for most problems in economics the state of knowledge and its distribution in society are among the data taken as given" (1962 pp. 3-4). But, in contrast to Hayek, Machlup's response to this shortcoming of the economics profession was methodological rather than philosophical. Machlup was concerned with distinguishing different types of knowledge, determining which of these could be considered within economic analysis, and then establishing a methodological framework in which to measure those which could. The first challenge in this regard is that of categorisation, and here Machlup brought a particularly Austrian subjectivist perspective. Gilbert

[95]Machlup studied under Hayek in Vienna in the 1920s before emigrating to the US in 1933.

Ryle (1949) had distinguished between 'knowing that' and 'knowing how', and Michael Polanyi had argued for further distinctions between information and knowledge, and codified and tacit knowledge (Polanyi 1969). Machlup went further, identifying five types of knowledge – practical,[96] intellectual, past-time, spiritual and unwanted – each of which is further divided into sub-categories. His conceptualisation of knowledge defines knowledge in terms of both its production and its distribution – it is not possible, in Machlup's understanding, to separate knowledge from either. To operationalise his concept further, in terms of production and distribution he has four elements: the distribution of knowledge – education is for him the largest part of this industry; the creation of knowledge (which Machlup describes as R&D, but in a very generalised sense, broader than that which was used at the time. Machlup is interested not only in the production of new knowledge 'in the minds of researchers' but also in its production 'in the minds of others' (Machlup 1962 p.145) - ie through development and innovation, though Machlup does not use the latter term); the media; and finally information, itself comprised of two elements, information services and information machines. As Godin (2003) argues, the subjectivist distinction that Machlup makes between information and knowledge is that information is knowledge only if it is communicated and used: "real information can come only from an informant. Information without an informant – without a person who tells something – is information in an only metaphoric sense" Machlup (1983 p.657). Moreover knowledge is taken to be "both what we know and our state of knowing it" (Machlup 1962 p.14). The first is knowledge as state; the second is knowledge as activity. "Knowledge – in the sense of what is known – is not really complete until it has been transmitted to some others" (*op. cit.*p.15).

[96] In this context, 'practical' includes knowledge that is professional, business, workers, political or household.

Machlup's magnum opus *The Production and Distribution of Knowledge* emerged in 1962, shortly after Robert Solow, from within neoclassical economics, had introduced the production function and the Solow growth model (Solow 1957). But Machlup, in a similar vein to Hayek, was sceptical that an econometric or statistical analysis based on empirical measurements of inputs and outputs and rooted theoretically in a production function approach, could really demonstrate any great insight. According to Machlup, a mathematical exercise such as the production function was "only an abstract construction designed to characterise some quantitative relationships which are regarded as empirically relevant" (p1962, 155). What the production function demonstrated was a correlation between input and output rather than any causality. Indeed there are "insurmountable obstacles in a statistical analysis of the knowledge industry" (*op. cit.* p.44). Machlup's focus was then on data – complementary data to capture the internal market for knowledge – but more importantly also on the organisation of that data into the various categories mentioned above. His analysis was at odds with that of the mainstream economics profession, in that most neoclassical economists of the time were either following Solow in trying to estimate the residual due to technology in the production function or, like Arrow, were studying knowledge as information and considering whether the standard results of equilibrium theory still applied. Both of these neoclassical approaches are narrower than Machlup's in terms of what forms of knowledge are being counted as economically significant and in what ways the production and distribution of knowledge can be considered as economic activity. Machlup had exhaustively compiled his data across his main categories, in work that prefigures much of the current indicator-driven KE work today. The famous conclusion of all this was that 29% of GDP in the USA in 1958 came from knowledge-related labour (Machlup, 1962, p.362).

It is somewhat ironic that Machlup is best remembered for a statistic, given his opposition to the use of statistics and econometrics. In fact, his intention in *The Production and Distribution of Knowledge* was threefold: to define knowledge, to measure it and to identify policy issues.[97] In so doing, he was making a strong case for the inclusion of knowledge in economic analysis whilst resisting the attempts of neoclassical economists to do so through mathematics. Methodologically, the contemporary KE discourse is a hybrid, depending more on indicators than on Machlupian national accounting or on neoclassical econometrics. Yet the way in which major organisations collect and organise these indicators is clearly influenced by Machlup: the input/output framework he favoured was introduced at the OECD in 1965 by Chris Freeman[98] and remains in place to this day. Later KE programmes, such as the K4D, drew directly on this approach. Machlup's influence on the form of the modern KE is therefore undeniable although, as I have observed, there were also significant differences between his approach and that of the neoclassical school, especially over the subjectivist understanding of knowledge and the opposition to mathematical methods. As with Hayek, these differences with neoclassicals are mitigated by shared themes – most especially methodological individualism and a faith in the market – which provide the KE with its coherence. But subjective knowledge in Machlup's sense is equally vulnerable to the political economy critique made earlier of spontaneous order. Knowledge, in the manner in which it is produced and consumed, cannot be considered as the subjective experiences of collections of individuals without excluding a host of forms of collective behaviour and political forces which constrain and influence that behaviour. To give but one example, note that Machlup includes (indeed prioritises) education amongst his categories of knowledge production/distribution. But to define education in economic terms requires its production as a market commodity, and this automatically limits or alters the way in which it might be valued. Not

[97] See Godin (2008).
[98]Godin (2008 p.30).

only do forms of collective consumption (eg literacy, civilisation, social norms, class formation/reproduction) fall outside the realm of individualised commodities, but also exchange values are also privileged over use values. If one is to take a view of knowledge as development, at least in any significant sense of the terms, then one cannot be reductionist or individualist about the role of education within it.

Evolutionary Economics and Innovation Systems

The third major school of economic thought which has contributed significantly to the KE discourse is that of *Evolutionary Economics* and in particular the various *Innovation Systems* approaches.[99] Of course, the general idea that innovation is important for long-term economic growth is not controversial; almost all major thinkers, from Smith to Solow, via Marx, Schumpeter and Keynes, relate productivity growth to the introduction and diffusion of technical and organisational innovation.[100] But IS takes a specifically systems-theoretic approach to this relationship, in which the object of analysis – an Innovation System (IS) – is defined as a set of interrelated agents and their interactions, together with the institutions that condition their behaviour with respect to the common objective of generating, routinising, diffusing and utilising knowledge and/or technology. It offers a description of innovation that is evolutionary as opposed to linear – arising from the interactions of agents rather than the output of R&D – and which is premised upon an imperfect rationality and the importance of learning processes and competence-building and supportive institutions. As such, it offers a critique of neoclassical conceptions of innovation and explicitly sets itself up as an alternative framework.[101] Yet at the same time in policy terms, the evolutionary approach, which focuses on those

[99] Including National Systems of Innovation, Regional Systems of Innovation, Sectoral Systems, Industrial Clusters etc.
[100] See Freeman (2008 p.740).
[101] See Lundvall (2010).

institutions conducive to innovation, has some clear parallels to the neoclassical: 'getting institutions right' is a slogan similar to 'getting markets right' albeit one that may inspire different methods.

The basic ideas behind the evolutionary approach to innovation go back to Friedrich List, especially his 1841 volume *The National System of Political Economy* (although Thorstein Veblen is often credited with coining the term "evolutionary economics", in *The Theory of the Leisure Class* (1899)). However, it is Schumpeter who explicitly identifies innovation as the central driver of economic growth, in *The Theory of Economic Development* (1911). More recently, the formal introduction of evolutionary economics to science policy is generally attributed to Nelson and Winter (1982),[102] whilst the concept of Innovation Systems appears first in the influential article (on Japan) by Freeman (1987) and is further developed in the two edited books of Lundvall (1992) and Nelson (1993). Lundvall's volume attempts to lay the theoretical foundations of IS as an analytical framework, whilst Nelson's adopts the complementary approach of empirical analysis by presenting case studies of innovation systems in fifteen countries (the last section comprising five studies in newly industrialising countries). As discussed previously, it was during Lundvall's time at the OECD that the IS concept became central to the KE discourse. In what follows, I will argue that in each of these three periods – classical, modern and contemporary – the evolutionary school has presented itself as a critique of other economic approaches to innovation (and knowledge), especially the neoclassical. Paradoxically, however, under the terms in which the evolutionary school has been assimilated into the KE discourse, these critiques do not so much distance

[102] Other important core texts include Dosi *et al* (1988), Edqvist (1997) and Fagerberg *et al* (2005). The papers referred to above are primarily concerned with *National* Innovation Systems (NIS) although there are some related strands of research focused on alternatives, such as Regional Innovation Systems (eg Braczyk *et al.* 1998), Sectoral Innovation Systems (Malerba 2002), Technological Systems (Carlsson 1995, 1997) and Industrial Clusters (Porter 1990)). According to a 2004 literature review (Carlsson 2004), 750 studies had then been published on one or other of these variants, with just over half focusing on National Innovation Systems.

the evolutionary school from the objects of criticism as mask the close similarities between them.

Friedrich List on Adam Smith

The dialogue between the evolutionary and the neoclassical could be said to have begun as early as the start of the 19th century, when the German economist, Friedrich List, savaged Adam Smith's vision of free trade and the liberal economy. Dismissing 'laissez-faire' as "cosmopolitan",[103] List argued that countries such as Germany could only catch up by following policies of government intervention, and that adopting policies similar to those of the British would merely consolidate the economic superiority of the latter. List argued that Smith's theory neglected what List referred to as 'mental capital', and underestimated the importance of skills, productive powers and knowledge, focusing overly on the division of labour. He also emphasised a long-term historical view of economic policies, ridiculing Say's position on only allowing infant industries brief protection against free trade, and insisting that it could take decades to develop the necessary competences and capabilities to compete. The wealth of nations, claimed List, is the result of:

> [T]he accumulation of all discoveries, inventions, improvements, perfections and exertions of all generations which have lived before us. They form the mental capital of the present human race, and every separate nation is productive only in the proportion in which it has known how to appropriate these attainments of previous generations (Freeman 2008 p.22).

[103] Adam Smith and Jean-Baptiste Say are 'cosmopolitan' in that their economic ideas are based on individuals but extended globally (rather than the national-level political economy advocated by List) – free trade is meant to create a single global market.

Moreover, List is strongly critical of Smith as having taken an understanding of capital and markets that is far too abstract and which privileges commerce and trade over actual production:

> Commerce is also certainly productive … but it is so in quite a different manner from agriculture and manufactures. These latter actually produce goods, commerce only brings about the exchange of goods … From this it follows that commerce must be regulated, according to the interests and wants of agriculture and manufacture and not vice versa … The perversity of surrendering the interests of manufactures and agriculture to the demands of commerce without reservation is a natural consequence of that theory which everywhere merely takes into account present values but nowhere the powers that produce them, and regards the world as but one indivisible republic of merchants (List, 1997 1845, p.169).

Capital, in Smith's usage, is that of "the merchants and rentiers in their book-keeping and balance sheets" and not, as List says it should be, "of the mental and bodily abilities of the producers" (1997, 1845 p.145). This mistake, in List's view, makes it impossible for Smith to understand how capital is formed – "[t]he augmentation of national material capital is dependent on the augmentation of mental capital and vice versa" (List 1997, 1845, p.147).

Leaving to one side List's strongly nationalistic politics (and support for colonialism), one can see in his critique of Smith a line of argument employed by contemporary IS advocates against orthodox neoclassical economics. Whilst there may be a much greater focus nowadays on institutional questions, the emphasis on learning and competences and the insistence on their long-term development are precisely what later IS writers, such as Lundvall and Freeman, put at the heart of their analysis. Nevertheless, just as List is critical of Smith for failing to see how the formation of mental capital governs that of material

capital, one can raise an analogous criticism of contemporary IS approaches. Can the production of competences and learning really be understood in terms of networks and institutions without also providing – which IS does not – a political economy of institutions? I shall return to this particular point in Part 3.

Joseph Schumpeter on Karl Marx

It is, of course, incorrect to speak of a 'dialogue' between Schumpeter and Marx, with the former's birth occurring in the same year (1883) as the latter's death. Nor is it quite correct, as some do, to describe Schumpeter's writings as a wholesale rejection of Marx, despite certain well-known criticisms he makes.[104] In fact, Schumpeter's views on innovation owe a great deal to Marx (Swedberg 1991), and an examination of where the two diverge and converge is useful in understanding the contours between the KE and political economy. Schumpeter is, after all, generally regarded as the father of modern innovation research, and many contemporary innovation scholars would see themselves as neo-Schumpeterians. Very few, however, would identify as Marxists.

For Marx, innovation was a crucial component of capitalism: "The bourgeoisie cannot exist without constantly revolutionizing the instruments of production, and thereby the relations of production, and with them the whole relations of society" (Marx and Engels 2002, 1848 p.222).

Driven by competition, new processes and products were the means by which rival capitalists could outdo both each other and earlier economic and social formations. By the time of *Capital*, Marx is offering deep insights into how new technologies shape the economy and society (Lundvall 2007), describing

[104] For instance, on antagonism between capitalists and workers, Schumpeter writes "To any mind not warped by the habit of fingering the Marxian rosary it should be obvious that their relations are, in normal times, primarily one of cooperation and that any theory to the contrary must draw largely on pathological cases for verification" (Schumpeter 1942, p.19).

conflicts which arise between productive forces and production relations. In so doing, Marx offers a dynamic description of the politics of technological change.

At least as far as capitalism's dependence on the constant revolutionising of production, it is clear that Schumpeter is strongly influenced by Marx, especially in the idea of Creative Destruction. Indeed, he describes Marx's work as "a panegyric on bourgeois achievement that has no equal in economic literature" (1949 p.209), and describes Marx's analysis of capitalism's revolutionary role as:

> creation that spells the obsolescence and consequent destruction of any industrial structure of production: capitalism is a process, stationary capitalism would be a contradiction *in adjecto*. But this process does not simply consist in increase of capital by saving, as the classics had it. It does not consist in adding mailcoaches to the existing stock of mailcoaches but in their elimination by railroads. Increase of physical capital is an incident in this process but it is not its propeller (Schumpeter, 1949, p.210).

On the other hand, Schumpeter, unlike Marx, did not believe that capitalist profits were a surplus extracted by social and political power and based on exploitation. Instead, Schumpeter, in the *Theory of Economic Development* (1934),[105] saw profits as the product of entrepreneurialism. The individual entrepreneur introduces innovations in markets and creates new enterprises and sometimes generates huge profits as a result. These profits are then the signals which drive hordes of imitators to copy the pioneering entrepreneurs, leading to unpredictable explosions of innovation in particular sectors, rather than the economic growth patterns that would follow from models of reallocation, such as neoclassical theory (management of market imperfections) or Keynesianism (management of aggregate demand) would predict. Since entrepreneurialism is

[105] Although later, in *Capitalism, Socialism and Democracy* (Schumpeter 1942), the innovation mechanism is no longer the individual entrepreneur but the big company with experts working together in R&D teams searching for new technological solutions (Lundvall 2007) – and thus the IS.

the driving force of innovation and hence of growth, the provision of credit and investment is key and a strong banking sector is an essential Schumpeterian institution. For Marx, however, it is the class distinction between capitalists and workers that is the source of surplus value and the driver of change.

Freeman (2008, Chapter 11) has argued that there has over the last few decades been a strong 'Schumpeterian renaissance', not least in the fields of evolutionary economics and innovation studies. Not every Schumpeterian idea – for instance, his rather extreme position that the supply side dominated the demand, which would imply that if innovations were produced then they would automatically also be consumed – has been taken up. But overall, Schumpeter's promotion of the evolutionary approach and entrepreneurially driven waves of innovation has proven hugely influential. I would suggest, however, that the point at which Marx and Schumpeter divide, namely the dynamics of capitalist production, throws up an essential weakness in both Schumpeter and contemporary IS approaches. Regardless of one's views on Marx, the question that Marx tries to answer on the conflict between changing production and changing relations is surely the right one to ask – and is a point on which Schumpeter and IS are largely silent. Schumpeter's assertion that 'in normal times' the relationship between capitalists and workers is one of co-operation seems somewhat utopian. One does not need to be a Marxist to appreciate the fact that the conflict between capitalists and workers has been an abiding feature of capitalist development.

Contemporary Innovation Systems as a critique of Neoclassical Economics

Contemporary Innovation Systems research is, by now, some thirty years old. In that time, it has gone through many re-evaluations, and numerous articles have been written on the fundamental nature of the subject and where it sits theoretically. A great number of these writings explicitly assert that IS provides a

completely different framework to neoclassical economics.[106] There are two main arguments that are made to support this assertion. The first is that neoclassical economics does not appreciate that when it comes to knowledge not only does market failure occur but also it is an essential feature of how knowledge is developed, diffused and utilised. The neoclassical obsession, then, with correcting for market failures is misplaced; the real challenge is institutional failure. The second argument is that neoclassical economics has very little to say about the innovation process itself, that it treats technological change, learning and competence building as a form of 'black box' and favours a linear model of innovation.

The first of these arguments stems from the fact that in IS, agents are *not* taken to be rational maximisers of utility but as strategists whose behaviour depends upon that of others and, though directed towards the creation of innovation, this argument is intrinsically governed by bounded rationality and genuine uncertainty. Change is generated in the evolutionary manner by which successful innovations 'survive' the 'natural selection' of the market, reflecting the origins of IS in evolutionary economics and systems theory and distinguishing it from neoclassical treatments of knowledge – such a process of change is by definition inefficient, as some mutations/innovations must perish. As Lundvall says:

> Knowledge does not decrease in value when used. On the contrary, its use increases its value; i.e. knowledge is not scarce in the same sense as other natural resources and technical artefacts. Some elements of knowledge may be transferred, easily, between economic agents while others are tacit and embodied in individual, or collective agents. Knowledge is not easily transacted in markets and not easily privately appropriated. In spite of attempts to find institutional solutions to the problem (patent laws, etc.)

[106] Lundvall (2007) makes this assertion repeatedly, and even offers a table to illustrate why IS offers a 'two-dimensional shift in perspective from neoclassical economics, from allocation and choice-making to innovation and learning' (p.19). (Austrian economics is characterised as midway between the two, with a focus on allocation and learning).

> property rights to knowledge are not easily defined. When it comes to knowledge market failure is the rule rather than the exception (Lundvall 1992 p.18)

His assertion is that the neoclassical emphasis on scarcity, allocation, efficiency and exchange, is quite unable to capture the principles of knowledge, learning and innovation that lie at the heart of the IS approach. Approaches such as Endogenous Growth Theory may engage with the same Schumpeterian problem – that the key determinant of economic performance is technological change, rather than capital and labour alone – but does not offer a structural or causal theory and are little more than an accounting exercise.

However, Pavitt argues that "progress has been uneven: greatest, when the concepts [of evolutionary economics] have been confronted by a rich body of empirical material, often emerging from traditions outside evolutionary economics; least, when they have been constrained to mainly theoretical debates and developments" (2002 p1). This perspective – from within the field – underlines the point that the micro-foundations of IS are not of a rigour comparable to that of neoclassical economics.[107] IS advocates might, however, argue that a lack of rigour could be seen as a strength, as Lundvall observes that the problem with neoclassical economics is not necessarily that it is based on abstraction, but on the *wrong kind* of abstraction, one in which what has been abstracted from reality - ie rationality - no longer has any great connection with it.

IS advocates claim that they offer a conceptualisation of markets that either is less abstract or is based on a more meaningful type of abstraction. They point to certain stylised facts, observed in empirical studies, such as the frequency of

[107] Harriss-White *et al* (2009).

product innovation. Of course, the desire to reduce costs and raise productivity may result in *process* innovation. However, in a pure market, all information is conducted by price signals and so neo-classical theory does not give any reason or any explanation for why *product* innovation takes place, except through some sort of market failure that defies neoclassical description. Producers do know *a priori* that reducing costs will make them more competitive but they cannot know which new products will be desirable to users because that kind of information cannot be communicated by the idealised, neo-classical market. This latter form of knowledge comes about through relationships between producers and users which are built up over time. When producers are prepared to innovate, according to the IS approach[108], it is down to interactive relationships of trust, loyalty and power between user and producer - either because users trust the producer to deliver an innovation that they will value based on reputation or past experience or because there is a loyalty to that producer irrespective of past performance or that there is some imbalance of market power which will incentivise or even compel them to purchase an innovation, whatever their own views of its worth.

This nod towards the fundamental social and political nature of markets is one of the most positive aspects of the IS approach, but unfortunately it is limited. As Lundvall himself admits, IS is lacking in its treatment of power (Lundvall 2007 p.32). The focus on interactive learning – essentially through communicative and co-operative relationships – tells only half the story, omitting other crucial ways in which markets are patterned and organised along power relationships. Moreover, IS advocates have a tendency to recast even these interactions as 'social capital' – a reductive concept which offers no more insight into market organisation than the cognate concept of human capital. These points will be discussed further in the next section.

[108]According to Lundvall, even "Schumpeter's entrepreneurs are activists who bring new combinations to the market. How the new combinations come about is left in the dark" (Witt 1993 p.xiv).

Another problem with the lack of robust micro-foundations is that some researchers have attempted to 'solve' this perceived weakness by fusing an IS approach with elements of neoclassical economics. Some even apply the utility-maximising rational representative agent approach of orthodox economics, thus robbing the systems approach of one of its key strengths, namely the heterodox, evolutionary approach to innovation which is fundamentally different to the methodological individualism of orthodox economics. The whole point of the evolutionary approach is to appreciate how competences, skills and learning are spread (and acquired) unevenly across the population and so the idea of the representative agent simply does not apply. Moreover, when it comes to the diffusion of the concept, Lundvall argues that there has been a significant distortion of the original ideas coming out of Science Policy Research Unit in Brighton, UK, led by Chris Freeman and Lundvall's own IKE group, based in Aalborg, Denmark. A narrow interpretation has crept in, with a bias towards technology studies focused on formal technological structure, codified knowledge and science (what Lundvall terms STI - Science Technology Innovation); the other aspects of innovation – learning, competences and tacit knowledge – (what Lundvall calls DUI - 'Doing, Using and Interacting') are squeezed out. Thus, although the KE discourse accommodates both orthodox and heterodox perspectives, when it comes to operationalisation the latter tends to be suppressed and the former emphasised. Lundvall's reflection on his subject is further confirmed by the findings of Part 1 of this thesis.

Furthermore, in practical terms, the Innovation Systems approach offers a fundamentally depoliticised approach to policy. There are two main ways in which this manifests itself. First, as remarked on above, both theoretical and empirical studies invariably omit any discussion of the political economy of the institutions which govern the IS. Secondly and more insidiously, the terms of the debate – that a well-functioning IS delivers a preferable economic outcome –

prejudices the formation of policy to the exclusion of other issues. Thus, the role of education in the promotion of social justice or of basic research in the sustainable development of scientific capacity, are understood only in a very limited sense. Such outcomes, should they occur at all, are side-effects of a strong IS rather than policy goals in themselves.

Neoclassical Economics – Market Failure and the Principle of Intelligibility

In the previous part of this thesis, I described how the KE discourse emerged within very large (economically) 'orthodox' organisations – principally the OECD and the World Bank – but in each case with significant contributions from individuals (such as Stiglitz, Dahlman and Lundvall) who regarded themselves as outsiders or even mavericks, and who consciously tried to inject something radical or heterodox into well-established, long-standing policy and intellectual frameworks. Ultimately, however, the orthodox tendencies of the institutions prevailed, and the more radical ideas of the individuals were subverted or suppressed (as a result of which many of those individuals abandoned their respective institutions). Nonetheless, as I have argued previously, the effect of conflict within the discourse has been to strengthen it, largely because a discourse which appears to admit conflict suggests both a plurality of views and a possibility of radical change. The fact that the more radical views tended to be defeated in conflict and extremely diluted in policy terms did not diminish this effect. In terms, therefore, of institutional history a major theme in the emergence of the KE discourse has been reflexive self-criticism, in which the effect of that criticism has been to reinforce rather than undermine the status quo. Such a theme also runs through the intellectual history of the discourse – especially that part of its intellectual history which concerns neoclassical orthodox economics, which has repeatedly used analyses of knowledge to re-examine its core beliefs regarding the operations of markets.

These re-evaluations in turn become the basis for claims that the subject has progressed or even that new paradigms have been created.

There are two principal, but somewhat contrary, ways in which neoclassical economics relates questions of knowledge to properties of markets. The first of these is the idea that the market provides a means to take decisions about knowledge, that in effect our investments in knowledge are no different from any other sort of investment, and that we should apply the same sort of market-oriented calculations to distinguish between them. The second is the idea that the special qualities of knowledge that distinguish it from other economic entities should be understood in terms of market failure – whether by generating externalities, or increasing returns, or asymmetric information.

Both of these ideas connect the neoclassical treatment of knowledge to conceptualisations coming from other schools. The former relates to the Austrian idea of the market as a principle of order, whereas the latter has a similar starting point to the approach of the evolutionary school to the understanding of the innovation process. But these connections with other schools also reveal the tensions in the KE discourse, since the different schools approach the same problems in such different ways. The definitive OECD 1996 paper, for instance, refers to four key foundations on which the knowledge economy is to be based, including both Endogenous Growth Theory (neoclassical economics) and Innovation Systems (evolutionary economics). These, as Blankenburg (2000) observes, involve quite incompatible assumptions and indeed, as has been mentioned, the Innovation Systems approach makes an explicit virtue of its opposition to neoclassical economics precisely on the subject of markets (Lundwall 2010).

Market Failure

> *Economic theory is mathematical analysis. Everything else is just pictures and talk.*
>
> (Lucas, in Warsh 2006 p.168)

In this section, I will discuss the distinct ways in which questions of knowledge have been represented as market failure within the neoclassical framework. It will be argued that the consequent discursive impact on the knowledge discourse has once again been to suppress the social, political and cultural dimensions of knowledge to the advantage of the economic.

Because neoclassical economics is based upon the abstraction of perfect markets, intellectual enquiry is very often directed towards situations where this assumption no longer holds. If market failure occurs, what are the consequences? Can conditions be placed on these failures so that something concrete may be said about the outcomes? This method is a mathematical one – weakening the assumptions of a model in specific ways so as to test the robustness of its conclusions. Knowledge, in various forms, violates the assumptions of the neoclassical paradigm – as a good, it is non-rivalrous and only partially excludable; as technology, it is continually changing, dependent upon human agency, and generates externalities; as information, it is incomplete and asymmetric. When neoclassical economics has engaged with problems of knowledge, the fields of research which have emerged in response, such as Endogenous Growth Theory or Asymmetric Information, have typically been mathematical, in not only their reasoning but also their methods. When these treatments have been judged a success, it has been because the particular conceptualisations of knowledge (as information, human capital, technology etc) have given rise to conditions which resolve the mathematical problems associated with the market failure in question and not, it could be argued, because of any great epistemological insight.

This latter point regarding the ontological role of mathematics for neoclassical economics is extremely important. Lawson (2013) has argued recently that if the label 'neoclassical school' is to mean anything nowadays, then the defining characterisation must be as a form of mathematical deductivism[109] in which the representation of reality increasingly relies or even insists on mathematical modelling. For Lawson, the two main senses in which 'neoclassical' economics has traditionally been distinguished from other schools no longer apply. First, the historical sense in which 'neoclassical' has sometimes been defined in terms of continuity with or difference from 'classical' economics (for instance, as signifying the marginalist revolution of Marshall or the work of Hicks or Samuelson) does not well reflect more recent developments. Secondly, attempts to systematise analytical features (such as rationality, utility-maximisation and equilibrium) as a basis for defining the subject seem outdated. In what Colander *et al* (2004) call "the changing face" of mainstream economics, these features are far less prominently asserted, and sometimes explicitly rejected. But whilst neoclassical economics may no longer be as clearly defined in the historical or analytical senses, the methodological reliance on mathematics has only grown stronger. Thus whilst both evolutionary and neoclassical economics may approach questions of knowledge in terms of market failure, they do so for very different reasons and in very different ways. When Lundvall writes that "when it comes to knowledge, market failure is the rule rather than the exception" (2010 p.351), he does so because his main interest is the innovation process and the failure of markets to generate that process. But when neoclassical economists invoke market failure, especially in the context of knowledge, it is to ask how mathematics can provide parameters on market failure as a deviation from perfect markets.

[109]Deductivism is the doctrine that "all explanation be expressed in terms of 'laws' or 'uniformities' interpreted as (actual or 'hypothetical') correlations or event regularities"(Lawson 2015 p.58).

Work of this kind depends upon several underlying philosophical assumptions. First, although the subject matter is market failure, there is an implicit assumption that the ideal of perfect markets is more than a mathematical abstraction and does in fact capture something of the world in which we live. This is, of course, also a negative claim, denying – or at least suppressing the relevance of – alternative understandings. The rationalism and methodological individualism of the original neoclassical model are preserved intact. Secondly, the fact of market failure, in and of itself, conveys something substantive about the problem in question and to some extent a rejection of the Theory of Second Best (Lipsey and Lancaster 1956)[110] – ie that correcting a specific instance of market failure might be closer to optimality than not (*contra* the Theory of Second Best). And thirdly, there is an assumption about method – that the conditions imposed are meaningful ones, derivable in some way from the type of knowledge under consideration.

Kenneth Arrow and the Allocation of Resources for Invention

Picking a starting point for the engagement of neoclassical economics with knowledge is a somewhat arbitrary task. One could go right back to the marginalist revolution and Alfred Marshall, who wrote on industrial clusters and efficiency wages. Or even to Adam Smith who, anticipating adverse selection, wrote that as firms raise interest rates the best borrowers drop out of the market.[111] But a more relevant choice is the seminal work of Kenneth Arrow, in which the idea first emerges that the economics of knowledge must be deeply related to forms of market failure.

[110] The Theory of Second Best is a result in welfare economics due to Lipsey and Lancaster (1956–1957) which considers a general equilibrium system with a Pareto optimum state requiring the simultaneous fulfilment of a set of Paretian optimum conditions. The theorem states that if a constraint is imposed which prevents the fulfilment of just one of those conditions, then the other conditions (though they may still be attainable) are not in general desirable. In other words, once one condition has been violated, then any new equilibrium state will in general also violate all other original conditions.

[111] Stiglitz (2000 p.1442).

In his 1962 paper *Economic Welfare and the Allocation of Resources for Invention*,[112]Arrow asks the classic question of welfare economics: "To what extent does perfect competition lead to an optimal allocation of resources?" (p.609) but asks it in the particular case of the production of knowledge. More specifically, Arrow asks how the optimal allocation for invention (understood broadly as the production of knowledge) depends upon the "technological characteristics of the invention process and the nature of the market for knowledge"(Arrow 1962 p.610) – by this he means the respects in which the market for knowledge fails to meet the neoclassical assumptions of general equilibrium theory.

Arrow observes in this paper that the standard results on general equilibria and Pareto optimality make two technical assumptions: 1) that the utility functions of consumers and the transformation functions of producers are well-defined functions of the commodities in the economic system; 2) that the transformation functions are convex (the property of indivisibility). The first of these in turn conceals two further assumptions – that there is no uncertainty in the production relations and the utility functions, and also that there is appropriability – that everything relevant to production and the welfare of individuals is traded on the market. Thus it is in the nature of the market for knowledge (or more generally whenever a commodity for one reason or other cannot be turned into private property) that the fundamental theorems of welfare economics should not be expected to hold. Arrow's paper is particularly concerned with the problem of uncertainty of information. In this way, his work can very easily be seen to be a forerunner of the work on Asymmetric Information which would later win Stiglitz his own Nobel Prize. It also overturned the prevailing consensus at that time, by demonstrating that the competitive equilibrium theory that Arrow himself had formalised with Gerald

[112]Written while Arrow was at the Rand Corporation and acknowledging fellow Rand colleagues Richard Nelson and Sidney Winter, who were later to develop the concept of Innovation Systems.

Debreu[113] could no longer be considered a good approximation of the market behaviour of knowledge.

Arrow hypothesises a situation in which uncertainty comes only from production relations and in which outputs for producers are determined from the (known) inputs and an (unknown) "state of nature". He then defines a "commodity option" to be a conventional commodity but additionally labelled with a "state of nature" (1962, p.610). The production of a commodity under uncertainty can then be described as a vector of commodity options, representing all the factor inputs together with the state of nature. Arrow then goes on to consider an idealised case where a market exists for all commodity options – that is to say, a market in which contracts are traded under which the buyer agrees to purchase an agreed quantity of a given commodity if and only if the given state of nature appears. Such a market is an idealised form of insurance. Under these circumstances, competitive equilibrium results will hold and risk-bearing will be managed optimally.

However, the problem is, as Arrow observes, that the real world is so far removed from the idealised complete market in commodity options that not only is there no guarantee that equilibria will hold but there is in fact no control either. Arrow talks in some detail as to when this may occur, and discusses the question of moral hazard in, eg, the purchase of fire insurance. He acknowledges how economic systems have devices for shifting risk, but observes that they are limited and imperfect, and moreover that the problem of moral hazard creates a limit to their potential. When it comes to investments in knowledge, he also is amongst the first authors to identify the idea of knowledge as a public good that is under-provided by the market:

[113]Arrow (1964) and Debreu (1959).

> We expect a free enterprise economy to underinvest in invention and research because it is risky and because the product can only be appropriated to a limited extent and because of increasing returns in use. This underinvestment will be greater for more basic research further to the extent that a firm succeeds in engrossing the economy value of its inventive activity there will be an underutilization of that information as compared with an ideal allocation (Arrow 1962 p.619).

Arrow's contributions to the economics of knowledge and information and hence to the KE discourse are enormously significant, although like Hayek he is an author whose influence is in the background and seldom explicitly acknowledged. His papers are extremely elegant from a mathematical point of view, and yet also display a consciousness of the limitations of the mathematical method. They function as thought experiments, testing the logical relationships between assumptions and conclusions (eg the fundamental theorems of welfare economics) and demonstrating that these relationships, which hold under idealised conditions, rapidly break down once a certain level of complexity (eg that associated with knowledge) is introduced. And yet, despite the explicit awareness of the limitations of extending equilibrium theory, there is also in Arrow's work an implicit decision not to enquire as to why these limitations exist or how to go about describing them. For all the elegance of the formalism there is a reluctance on Arrow's part to provide any detailed discussion of why other aspects of knowledge may not be amenable to this formalism.

Joseph Stiglitz and Asymmetric Information

Perhaps the most obvious intellectual heir to Kenneth Arrow, not only in respect of the nature of his work but also the way in which that work influenced others, is Joseph Stiglitz. His major contribution lies in the economics of information, and can be seen as a continuation of Arrow's own work, in which

the standard results pertaining to existence and uniqueness of equilibria cease to hold once asymmetric information is permitted. Indeed, Stiglitz's work with Bruce Greenwald shows that not only do the standard results of general equilibrium break down, but also that there are effectively no limitations on how badly they do so. Marshall's famous dictum 'Natura non facitsaltum'[114] had for decades reflected the faith of neoclassical economists that so long as information was not too imperfect then a reasonable approximation to perfect markets could be made. Stiglitz's work and that of his colleagues comprehensively debunked this faith. The fundamental non-convexities associated with asymmetric information cannot be reconciled with the standard results of equilibrium theory and Stiglitz, in his Nobel Lecture, refers to the 'pervasive nature of market failure' (Stiglitz 2001 p.506).

But Stiglitz's work goes far beyond the academic realm and, as has been seen in Part 1 of this thesis, it was his engagement with the reforming the identity and image of the World Bank and his formulation of the Post-Washington Consensus that lay at the heart of the KE project in its early days. That institutional reform depended upon the argument provided by Stiglitz that a paradigm had shifted; and Stiglitz himself made some rather self-aggrandising claims regarding perfect markets and market failure. Earlier in his Nobel Lecture, Stiglitz declared: "Information Economics represents a fundamental change in the prevailing pattern in economics" (2001 p.472). What this change implied, he explained, was that government did indeed have a role which was, effectively, to correct for asymmetries of information. Moreover "to a large extent, the problem of development … is that of the acquisition of information about technology". (1998 p.107) To many, these would seem curiously minimal – and unsatisfactory – definitions of the role of government or the 'problem of development'. But for Stiglitz, the claims represent a radical departure from his

[114] Literally "Nature does not jump" – in other words, change in Nature should be a continuous rather than a discrete process.

neoclassical predecessors, like Stigler who "while recognizing the importance of information, argued that once the real costs of information were taken into account, even with imperfect information, the standard results of economics would still hold".[115] In this sense, there had indeed been a paradigm shift – but only when seen from within the perspective of orthodox economics and Stiglitz's conception of the KE may not be such a radical departure from previous World Bank positions after all.

Paul Romer and Endogenous Growth Theory

The other major development in neoclassical economics which contributed to the emergence of the KE discourse was that of Endogenous Growth Theory. For thirty years or so, following Solow's publication in 1956 of "A Contribution to the Theory of Economic Growth", mainstream economists had thought in terms of Solow's production function relating output to inputs of capital and labour, with some residual factors relating to technological change. Since in Solow's paper this latter factor was defined exogenously, neoclassical economists were in effect saying that the contribution of knowledge to the economy could not be measured or explained. All this was to change in the late 1980s and early 1990s when some economists, including Paul Romer and Robert Lucas, began to introduce a new kind of growth theory. In Romer's original paper (1986), the objective was to write down an augmented version of the traditional Solow growth model in which technological change – which Solow had taken as an exogenously determined and continuously increasing term – was 'endogenised' to reflect the increasing returns that are supposed to accrue due to "knowledge spillovers". Lucas (1988), on the other hand, introduced human capital as a factor in production and used it to endogenise the way in which the growth of knowledge and skills are supposed to enhance the economy as a whole - his goal

[115]Stiglitz (2001 p.477).

is to understand why different countries should experience different growth rates and his hope is that this may be attributable to different rates of human capital accumulation in different sectors. Romer's later paper (1990) combines the ideas of knowledge spillovers and human capital as a factor in production - knowledge considered as having a rival part embodied in individuals (human capital or 'skills') and a non-rival part which is eternal and universally available ('technology').

Solow's growth model supplanted earlier theories such as those of Harrod (1948) and Domar (1947). Conceptually, it offered a clear advantage over these predecessors, in that the earlier theories relied on certain assumptions which seemed either arbitrary or unconvincing, assumptions that Solow's neoclassical model could avoid. The purpose of Harrod-Domar growth theory is to explain how an economy is capable of steady growth, without the appearance of drastic labour shortages or surpluses. In Harrod's and Domar's work this is achieved by asserting that the national savings rate (the fraction of income saved) has to be equal to the product of the capital-output ratio (ie the amount of capital needed to produce one unit of output) and the rate of growth (of output). The rate of growth of output must also equal the rate of growth of the effective labour force ie the sum of the rate of growth of the labour force and the rate of growth of the productivity of the labour force. But this in turn assumes that all three of the key ingredients (the savings rate, the rate of growth of the effective labour force and the capital-output ratio) were each constant - facts of nature. One could try to argue, for instance, that the savings rate reflected people's preferences, that the growth and productivity of the labour force were demographic facts and that the capital-output ratio was determined by the level of technology and even make an empirical case for each such claim. One would then understand that each quantity was generally constant but with occasional sporadic changes which could be independent of one another. However, if this were so, then for steady

growth to occur would require, as Solow (1991) says, "a miraculous stroke of luck", for there is no reason given within the model as to why the product of two of these quantities should be equal to the third. Most economies, most of the time, would have no equilibrium path. Instead, one should expect to see capitalist economies experiencing prolonged periods of increasing or falling unemployment and prolonged periods of increasing or falling capital utilisation. That these predictions are not borne out by observation suggests that there is something wrong with Harrod-Domar growth theory. But at a theoretical level, it is the arbitrary nature of the theory that is the problem – the requirement that a mathematical identity be satisfied when there are no obvious reasons for that to be the case. And so the appeal of Solow's solution - and of neoclassical growth theory in general - is twofold, bypassing the theoretical arbitrariness and predicting steady state growth. It is this sort of criterion that we shall later consider in relation to Romer's and Lucas's theories as extensions of Solow's.

Solow's solution was, in effect, to 'endogenise' the capital-output ratio. To do this, Solow writes down a production function

$$Y(t) = K(t)^{\alpha}(A(t)L(t))^{1-\alpha}$$

describing the total output Y, as a function of two factors of production - capital K, labour L - and a term describing 'labour-augmenting' technology A. Assumptions are made regarding the returns to scale - in particular that output itself has constant returns to scale (ie is homogeneous) but that there are diminishing returns to capital and labour - ie that $0 < \alpha < 1$. From this and certain other simplifying assumptions regarding the (exogeneous) ways in which labour and technology grow and capital depreciates, Solow is able to calculate the dynamics of capital-intensity $k(t) = \frac{K(t)}{L(t)}$and prove that an economy will converge to a balance growth equilibrium at which $k(t)$ tends to an equilibrium

value k^* regardless of the inital conditions. At equilibrium, an equation for the capital-output ratio $\frac{K(t)}{Y(t)} = \frac{s}{n+g+\delta}$ is derived which shows that the capital output ratio $\frac{K}{Y}$ depends only on the savings rate s, the growth of the labour force n, the growth of technology g and the rate of depreciation of capital δ - this is what is meant by 'endogenising the capital-output ratio'.

Solow's model is appealing to the neo-classical point of view not only because of the theoretical simplicity but also because the mechanism by which an equilibrium may be obtained is plausible in terms of the real world. Decreasing the capital-output ratio might correspond to a situation in which labour is getting scarce relative to capital, thereby leading to a rising wage rental ratio, so that cost-minimising firms would naturally substitute capital for labour (Solow 1991). However, the criticism that can be made of Solow's model is that the crucial term A which largely determines the dynamics is exogeneous - that there is no explanation or insight provided by the model as to why or how technology (or knowledge) should have such a crucial role in economic development. A second criticism is that, although neoclassical growth theory can be used to predict the existence of balanced growth in an economy, it fails to explain observed empirical differences between countries growth rates nor does it offer a satisfactory account of how trade would affect those growth rates It is as a response to these two criticisms that the Endogeneous Growth Theories of Romer and Lucas (respectively) were conceived.

However, before discussing what conceptual insights Endogeneous Growth Theory may have, it is worth reviewing what Solow himself had to say in response to these criticisms. Writing in 1994, Solow makes two points concerning Romer's endogenous treatment of technology. The first is to say that treating technology as exogeneous is not to say that it is always constant, or

impossibly erratic or even too mysterious to talk about. There may well be very significant and systematic things that one can say about how, when and why technology changes but it may not be the case that they can usefully be fitted into the model. The second point is no-one could possibly deny that technological progress is at least partially endogenous to the economy - the vast sums of money invested in research are evidently there for a reason as is the patent system. Some calculations can clearly be made as to the economic value of technology. So the question then, from within the neoclassical point of view, is not whether technology can be endogenised but whether the way in which it is endogenised is a good description of how technology actually affects the economy. In response to Lucas, Solow is more directly critical, referring to his methodological approach as 'unconvincing' and pointing out the lack of robustness in the mathematical formalism - the presence of increasing returns to capital in the model tends to lead to predictions of explosively fast growth. With this in mind let us look at how Romer, Lucas and others contributed to neoclassical growth theory and the economics of knowledge.

Romer's seminal paper (Romer 1990) rests upon three key premises. The first of these is that technological change lies at the heart of economic growth. The second is that is endogenous in the sense that it "arises in large part because of intentional actions taken by people who respond to market incentives" (Romer 1990 S72). Romer views technological change through a neoclassical lens in which rational individuals respond to market incentives, such as reducing production costs, and take whatever decisions will optimally translate new knowledge into goods with practical value. The third and most fundamental premise (according to Romer) is that knowledge is non-rivalrous or as he puts it "instructions for working with raw materials are inherently different from other economic goods. Once the cost of creating a new set of instructions has been incurred, the instructions can be used over and over again at no

additional cost. " (Romer 1990 S72). Romer uses this property of non-rivalry together with the property of partial excludability (ie that an agent can (partially) exclude the use of that knowledge by other agents) to derive a model in which knowledge has increasing returns to scale. The partial excludability means that rational agents can recoup the cost of producing knowledge in the first place, and the non-rivalry means that this knowledge can then be utilised in further production at no extra cost. However, the standard replication arguments that are used to justify constant returns to scale for production functions in which all factors are rivalrous do not apply. Romer gives the example of a factory making hard drives and which has three inputs in production: the number of hours spent engineering the hard-drive technology, the investment in physical capital in terms of the factory and the investment in labour in terms of the number of workers. If a firm wishes to scale up its production then it only needs to scale up the rivalrous inputs of physical capital and labour - there is no need to do any further engineering. Formally, then, if $F(X, A)$ represents the production function with X the rival and A the non-rival inputs then $F(\alpha X, A) = \alpha F(X, A)$. However, if A is to be productive then $F(\alpha X, \alpha A) > F(\alpha X, A) = \alpha F(X, A)$ for $\alpha > 1$ which means that F cannot be concave. From this it follows immediately that such a production function cannot be price-taking as a firm that paid its marginal cost for all inputs would, in fact, make a loss:

$$F(X, A) < A.\frac{\partial F}{\partial A} + X.\frac{\partial F}{\partial X}$$

Thus far, there is nothing particularly new in Romer's exposition - the result that a production function with a partially excludable rival input will not lead to a price-taking equilibrium was at least implicitly recognised in Solow's own model (hence the exogeneous treatment of technology) and in the work of various other economists, including Arrow, Stiglitz, Dasgupta and Shell. Romer's 1990

paper takes a philosophical approach, by considering which of these approaches (eg Solow's exogeneous technology, Arrow's learning-by-doing) is compatible with which of his three starting premises Romer argues that the only way to retain his premises is to abandon price-taking equilibrium and propose a model of monopolistic competition, which draws on Dixit and Stiglitz's work (1977).

Next Romer proposes a model in which there are four inputs - capital, labour, human capital and an index which measures the level of technology. Human capital is understood as some measurable quantity (such as years of schooling) which is supposed to contribute to production - it is then a rival input whereas technology is understood simply to be a count of all the available designs and is a non-rival input (so that as technology grows, more and more designs become available without any limitations as to their use). The model has three sectors - a research sector which produces new designs, an intermediate goods sector which uses those designs to generate producer durables and a final goods sector which uses capital, labour and producer durables to produce final goods. Romer's production function takes the form $F(H, X, L) = \int_{i=0}^{\infty} H^{\alpha} L^{\beta} x(i)^{1-\alpha-\beta} di$

where H is a measure of human capital and L of labour, and X is a generalisation to a continuous variable of the discrete series $X = (x_i),\ i = 0, \ldots \infty$ which lists the input of each producer durable created from the designs which have been discovered. Romer solves his model by showing how workers decide whether to work in the research sector (designing new producer durables) or the manufacturing sector (creating final goods), how producers of the durable goods set their prices (through a form of monopolistic competition) for these goods (based on the new designs) and how the producers and consumers of the final goods calculate the optimal values for the inputs of the durable goods (through a form of inter-temporal optimisation). The conclusion is that equilibrium paths exist and that the model is a generalisation of that of Solow.

The non-convexities of the model, associated with the non-rivalry of knowledge, are taken to be representative of externalities due to knowledge spillovers, whilst the monopolistic competition by which researchers set a price for their designs is held to highlight the importance of the partial excludability of knowledge.

Romer's work depends upon a number of assumptions. Many of these are implicit in the model itself with its very stylised understanding of technology and of the relationship between the research and manufacturing sectors. But others are made explicit, usually justified on the grounds of simplicity as the mathematics is easily made intractable without quite strong assumptions. Some of these are questionable - for instance, the supply and population of labour is assumed constant and "the total stock of human capital is fixed and that the fraction supplied to the market is also fixed" (Romer 1990 p.S71) and it is not at all clear whether weakening these assumptions also destroys the conclusions regarding equilibrium. Moreover, some of the technical apparatus - in particular the Ramsey style temporal optimisation through which the calculations regarding new designs are made is not only unconvincing (it effectively assumes that all agents have perfect knowledge about all designs, past and future) - but also seems an entirely wrong-headed approach to markets and knowledge. As Solow says in his Nobel Lecture "The markets for goods and for labor look to me like imperfect pieces of social machinery with important institutional peculiarities. They do not seem to behave at all like transparent and frictionless mechanisms for converting the consumption and leisure desires of households into production and employment decisions. I cannot imagine shocks to taste and technology large enough on a quarterly or annual time scale to be responsible for the ups and down." Even the notion of equilibrium - the demonstration of which is the whole point of endogeneous growth theory - seems like the wrong kind of concept. Is this really how we think of the production and consumption of knowledge? Whereas Solow could point to substitution of labour for capital

as a plausible mechanism by which 'old' growth models moved to equilibrium, the idea that something similar happens with technology or knowledge more generally seems a very limited description of how that knowledge contributes to economic growth. In other words, there may well be a significant element to knowledge production that is irreducibly exogeneous and which cannot be represented in terms of inputs and outputs. Moreover, the sorts of uncertainties concerning knowledge may also be non-probabilistic and impossible to approach analytically. If this is the case then all Endogeneous Growth Theory has achieved is to model a very specific type of knowledge-production exchange but under such extreme and implausible assumptions that it is hard to see what has been added.

There are further technical issues which call into the question the paradigm-shattering claims made of Endogenous Growth Theory ("an invisible revolution" (Warsh 2006 Ch. 26)). Traditional growth theory represents the impact of technological change on growth through residually defined quantities such as Total Factor Productivity (TFP). TFP is subject to two major criticisms, the first that it offers little in the way of explanatory power (as in Joan Robinson's withering description "a parable that explains nothing but itself")[116], the second that there is no mathematically consistent way of defining it (the 'Cambridge Capital Controversy').[117] But is Endogenous Growth Theory any less immune to these criticisms? Indeed, the particular problems that the Cambridge Capital Controversy implies for TFP – namely that the aggregation of capital is mathematically unsound – is even more of an issue for models of Endogenous Growth Theory (like Lucas's) which employ measures of Human Capital as

[116] Robinson's remark was made in a letter to Bob Solow, to which she attached her review of his book *Growth Theory: an exposition*. The review began "These lectures provide an elaboration of the neoclassical parables (as Professor Samuelson calls them) which pretend there is a single thing called capital that can be put into a single production function and along with labour will produce total output." The letter concluded "How can rules for policy be deduced from a parable that explains nothing but itself?"

[117] See, for instance, Fine (2000).

variables and which aggregate over even more different types of capital[118] than in the calculations of TFP. Moreover it is hard to see what insight or explanatory power Endogenous Growth Theory has to offer on how or why technological change occurs, or on what impact it has on the economy. There is very little besides the schematic assumptions of 'knowledge spillovers' as externalities (which, by the time of Romer (1990), had been discarded in favour of product differentiation) and increasing returns to scale (Kelm 1996). Even increasing returns are not necessarily fundamental, as they follow logically from constant returns to capital (otherwise the non-capital factors would have negative marginal productivity), which in turn reflect nothing more than the non-scarcity of knowledge (ie that there are no longer diminishing returns). In short, Endogenous Growth Theory is a mathematically adroit way of telling us what we already knew. As Robert Solow says in an interview: "[N]obody in the world ever doubted that there was a large endogenous element in technological progress. All those people in Eastman Kodak or General Motors laboratories, drawing down salaries and doing work, were clearly not believed to be wasting their time".[119]

Similarly, whilst asymmetric information has certainly transformed the academic discipline of economics, it is arguable that the most striking results – those of 'near rationality' for instance – have been negative, demonstrating that small deviations from perfect information lead to large discrepancies from the neoclassical ideal. This is not to say that these fields are unimportant, merely that their influence has been indirect– they are invoked to justify but not to structure 'knowledge policy'. As such, they manifest a different type of force that is both discursive and political. By conceiving of problems of knowledge in terms of market failure in the ways described above, no matter how inadequately,

[118] As to whether human capital is 'capital' see Laroche (1997).
[119] See interview published by the US Federal Reserve Bank of Minneaplis on 1 September 2002 at https://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=3399&

neoclassical economists have extended and legitimised the orthodox approach of rational, utility-maximising methodological individualism.[120] This has facilitated the colonisation of other social sciences by (neoclassical) economics, despite the fact that relatively few practical problems can be resolved as problems of information or esoteric growth models.[121] The role of much of the economics of knowledge, in the continual exchange between ideology and theory, has been a supporting one – preserving the ideological hegemony by expanding the theoretical domain.

Human Capital Theory and the Principle of Intelligibility

> Educational purpose has, in large measure, been reduced to a student's calculus of job opportunities or to the state's calculus of maximum return on minimum output (Henry *et al* 2001 p.175).

Human Capital Theory, according to the OECD (1996b), has passed through three stages. The first generation came out of the Chicago schools of the 1950s and 1960s,[122] and reached its apogee in 1970 (Blaug 1985). It was broadly in favour of government involvement in supplying a public good (education) which would otherwise be under-supplied. The second generation, in the 1970s, disputed the conclusions of their predecessors – Milton and Rose Friedman (1980 p.320), arguing that "no government program … [is] … more inequitable than the funding of higher education" – but not their methods, whilst the third, Post-Washington Consensus, generation, has re-prioritised rate–return analysis to questions of knowledge, but has expanded the remit of the research, giving rise to offshoots such as Social Capital Theory (Fine 2006, Harriss 2002) and to many of the tools of measurement employed today in the knowledge economy (such as the World Bank's KAM methodology).

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[120] See Fine (2001).
[121] See Fine (2001).
[122] See Becker (1964), Schultz (1963), Mincer (1958).

The OECD review is rather an insider's perspective. Looking in from the outside, Human Capital Theory has changed very little methodologically since Becker's original papers. Indeed, the important changes are that what were once challengeable assertions are now widespread tacit assumptions. As Becker himself says in his Nobel Lecture: "Human capital is so uncontroversial nowadays that it may be difficult to appreciate the hostility in the 1950s and 1960s toward the approach that went with the term." (Becker 1992 p.43). At a policy level, Jones's remarks that World Bank education policy remains "an undiluted celebration of Human Capital Theory" as "an matter of faith rather than evidence" (Jones 1992 p.176) remains apt, despite the claims of paradigmatic shifts that are made of the Post-Washington Consensus.

What Human Capital Theory does is to present the market as a calculus for investment decisions regarding the acquisition and utilisation of 'embodied knowledge' – the skills and competences acquired over a lifetime. It starts with the assumption "that individuals decide on their education, training, medical care, and other additions to knowledge and health by weighing the benefits and costs", (Becker 1992 p.43) and provides a framework for calculating them in terms of inputs and outputs. Human Capital Theory is the extension to new areas – or 'colonisation' as Fine (2006) puts it – of what Becker calls 'the economic way of life'.[123]

Traditionally there are three ways of measuring human capital: 1) estimating the cost of acquisition of certified knowledge, such as formally recognised schooling and training; 2) testing people for competences; 3) estimating productivity based on achievement indicators such as income, job security, occupational status or past references. For Human Capital Theorists, then, the methodological issues concern questions of measurement: estimating costs of acquisition provides too

[123]The title of Becker's Nobel Lecture (Becker 1992)

little information and ignores important issues such as 'learning-by-doing'; testing is fraught with uncertainty – validity, rigidity, inconsistency, inequality and conflicts of interest; estimation on achievement assumes that competence is accurately reflected in labour market status. Very often in practice, these measurement problems have been severe – see, for instance Benell's criticism of rate-of-return analysis for the World Bank (Bennell 1996) – but the issues are also theoretical.

There is a tension between Human Capital Theory and the neoclassical treatments of knowledge mentioned in the previous subsection. For the latter, market failure is an essential object of study, but for Human Capital Theory, which depends upon the allocative efficiency of the market, it is a serious problem. A good systematic argument of why this should be so in the context of education is provided by Colclough (1996), who describes seven qualities of education which generate market failure: externalities – the benefits of education to others; merit goods – those goods which are undersupplied by being underappreciated; leads and lags – the delay in educational needs becoming apparent, hence the intrinsic problem with market response; decreasing costs – some things (eg scientific equipment) are so large that it may be necessary for a state-sponsored monopoly to function – so the market cannot operate here; equity – without efficient credit markets, privatisation will naturally lead to greater inequality with access effectively denied to the poorest; principal agent problems – since it is the parents' perception of the benefits of sending the child to education it may be the case that underinvestment is rational on the basis of this calculation; low private demand – you may have low demand for certain cases such as girls education, with which the private sector is poorly placed to deal.

The problem of market failure is serious enough to undermine the defence that Human Capital Theory has often provided for certain reactionary positions which sustain labour market inequalities. Human Capital Theory would hold that the persistence of such inequalities are evidence only of underlying differences in human capital – differences which would not justify interventionist state action, because people earn what they are worth. This rather circular position is untenable once we accept the existence of widespread market failure (Browne 2007).

In his 1992 Nobel Lecture, Gary Becker talked in detail about "the economic way of life" and its application in four contexts: crime; education; addiction; and the family. He remarked: "One reason why the economic approach to crime became so influential is that the same analytic apparatus can be used to study enforcement of all laws, including minimum wage legislation, clean air acts, insider trader and other violations of security laws, and income tax evasions."[124] For Becker, the applicability of his economic approach is both a success and a virtue. But it can also be seen as a weakness, for Human Capital Theory functions as a 'Black Box' – applicable to any situation but providing no real insight into the workings inside (Fine and Rose 2001). Robert Solow said of Becker's work that "it oscillates between the trivial and the false".[125] Interestingly, Becker's rejoinder to critics of rational choice theory was that "no approach *of comparable generality* has yet been developed that offers any serious competition [to rational choice theory]"[126] But it is this very generality that is the problem.

However, Human Capital Theory does more than oversimplify – it actively excludes alternative accounts. Through its focus on those skills and competences

[124]Becker (1992 p.42).
[125]Solow (1990 p.276).
[126]Becker (1992 p.53) (my emphasis).

that are embodied in an individual and in the decisions that individuals take, Human Capital Theory fetishises individual skills at the expense of the social. It prevents us from seeing education in terms of the production and reproduction of social relations and, as Bowles and Gintis argue, it "formally excludes the relevance of class and conflict from the labour market" and "provides an elegant apology for almost any pattern of oppression or inequality for it ultimately attributes social or personal ills to the shortcomings of individuals or the unavoidable technical requisites of production. It provides, in short, a good ideology for the defense of the status quo" (1975 p.82).

Thus far, the criticisms made of Human Capital Theory have had a common form, namely that inadequate conceptualisations of markets lead to undesirable qualities of the theory. The circularity argument was that assumptions of perfect markets lead to the defence of reactionary positions. The 'Black Box' argument was that an essentialist understanding of markets leads to a theory so devoid of context that it also becomes devoid of meaning. The 'exclusionary' argument was that social relations and political structures are formally excluded from analysis.

But critique here is not only about criticising those theories upon which discourse is based. In the Foucauldian framework, in the next part of the thesis, it will be argued that the intellectual machinery provided by discourse – which makes certain thoughts thinkable, and which make their domain amenable to management – is an essential part of government and the exercise of power. The effectiveness of government then depends upon an extensive range of practices and techniques of measurement, accounting and management, for it is through the iteration of such practices that the system of knowledge represented by discourse becomes internalised and harder to resist. In the case of the knowledge economy, such practices are largely based upon Human Capital

Theory, in calculating the rate-of-return on education, for instance, or more generally by providing the link between knowledge and economics. In this sense, the critique of power in Part 3 is not premised on Human Capital Theory being wrong as such – though there are, as has been mentioned, methodological problems – but on it being *used*.

Remarks

In Part 1 of the thesis, I discussed the difficulties in performing a critical analysis of such an elusive concept and described how, even in the institutions which are most vigorous in promoting a KE approach there is considerable ambiguity. It is not productive in analysing the KE to look for a precise list of policies or to expect individual countries that have adopted KE approaches to have done so in exactly the same way. Rather, when KE advocates describe what it might mean to adopt a KE approach, they invoke a range of ideas and intellectual influences, and when policy-makers have been receptive to this advocacy the particular interpretations they have made have depended on context. This is not to say that the KE is abstract nor that it does not generate real and practical effects nor that there is not a pattern to these effects. On the contrary, KE approaches, such as the K4D programme described in Part 1, are influential, concrete and systematic whilst KE applications, such as the example of Education reform in India which will be described in Part 3, have been at the centre of recent radical development trends. But in trying to say what the KE 'is', I have taken a more theoretical approach to try to identify and analyse the ideas that drive the KE and from whose synthesis the practical expression of the KE in action is derived. To this end, in this Part of the thesis, I undertook an intellectual history of the discourse and used it to propose an original way in which to conceptualise the KE - as the *systematic representation of questions of knowledge in terms of properties of markets*. In so

doing, I paid particular attention to the concept of market failure, the theorisation of which plays an essential part in the formulation of the KE.

To arrive at this characterisation, I first traced the extremely broad range of ideas from various schools of economic thought that my research in Part 1 revealed as having influenced the KE. These included the ideas of spontaneous order and catallaxy from the Austrian school of Hayek and Machlup, the ideas of innovation and entrepreneurship from the evolutionary school of Schumpeter and Lundvall, and the ideas of information economics, endogenous growth and human capital from the neoclassical school of Arrow, Stiglitz, Romer and Becker. I found that these ideas, though very different from one another, could all be thought of as representing an economic 'question of knowledge' in terms of the properties of a market or markets.

In examining these various ideas, I described how each school of thought offers an explicit critique of the others and how the KE discourse can be thought of as composed of three interwoven but mutually critical strands. I also explained how this apparent instability could in fact be a source of cohesion in terms of the critical way in which the discourse perceives itself. But of greatest importance to the thesis, to be explored further in the next section, is how the KE is fundamentally concerned with thinking about questions of knowledge in terms of markets.

PART 3

POLITICS, POWER AND KNOWLEDGE

In Part 1 of this thesis I described the institutional and historical context from which the Knowledge Economy emerged – specifically, a particular sequence of events at the World Bank and the OECD which took place in the 1990s and early 2000s. I argued that the KE functioned neither as a robust analytic framework nor as a consistent empirical methodology nor as a convincing or indeed coherent basis for policy. Instead, I then proposed in Part 2 that the KE should be understood as the *systematic representation of questions of knowledge in terms of markets*. I based this claim on an examination of the intellectual traditions which have influenced the discourse, and I showed how in each of the three most important such schools of economic thought – Austrian, evolutionary and neoclassical – the relationship between knowledge and markets is of paramount importance, albeit in strikingly different ways. In what follows, I will provide a critique of the KE in these terms.[127]

The aim here is not so much to challenge or criticise particular aspects of the representations that constitute the KE (ie to form a judgement about whether it is a 'good' idea to understand knowledge in terms of markets) but to try to understand the ways in which these representations generate effects and what these effects might be. The focus is rather on what a market-oriented understanding of knowledge means for development, and what alternative ways there might be to conceptualise the interaction between the two.

The first point to make is that the theoretical shortcomings of the KE discourse, discussed in Parts 1 and 2, are central to how it operates in practice, as will be

[127]As noted in the Introduction, I follow Raymond Williams in his conception of critique (Williams, 1976).

discussed below. And the most important of these shortcomings is the inadequte treatment of power and politics and the institutions through which they work. As set out in Part 2, the KE depends on a range of relationships between knowledge and markets: the Austrian idea of the market as a spontaneous ordering of knowledge; the evolutionary idea of the market as a driver of innovation; the (post-)neoclassical idea of knowledge as a specific form of market failure, as in the case of asymmetric information; and the neoclassical idea of knowledge as capital, either at a macro-level as in endogenous growth theory, or at a micro-level as in Human Capital Theory. A common theme throughout these theorised relationships is that the market is thought of in depoliticised, methodologically individualist terms and as disembedded from political relations. The assumptions regarding the behaviour of the market make little mention of the political or power relationships (or indeed any kind of social relationships) that exist between those who participate in forms of market exchange. Such assumptions are a necessary part of the formalism of the various intellectual schools which underpin the KE. In the particular case of knowledge, the exclusion of politics from analysis is especially problematic. It is not just that 'markets for knowledge' are strongly constrained by social, cultural and political factors; it is that these constraints are in some sense essential to how knowledge and development are related. Moreover, the ethical line of criticism – that there is something wrong, not just descriptively but normatively, with the KE approach – is also closely bound up with this idea of the exclusion of politics from analysis and the consequent importance of finding an alternative to the KE discourse in which we might attempt to reintroduce the political.

In what follows, I shall first consider a key empirical example of the KE in action. I shall look at the particular case of India which was one of the most important case studies that the World Bank undertook as part of the K4D Programme described in Part 1. Drawing on the 2005 World Bank Report, *India*

and the Knowledge Economy, I shall describe what adopting the Bank's '4 Pillars' approach to policy meant in practical terms and consider various initiatives that the Indian Government undertook in the mid to late 2000s to achieve these ends - and how these policy initiatives fared in the 2010s. I shall consider in particular the case of Higher Education reform, one of the 'Pillars' of the World Bank approach and specifically investigate the work of the National Knowledge Commission (NKC) which was set up in 2005 to deliver a broad range of knowledge based reforms. I shall outline how Indian Higher Education is a deeply politicised area and that politics is important to it in a number of different ways - in terms of the relationship between the central government and individual states; in regard to party politics and the association of particular reforms to particular parties; in the local politics of patronage that goes hand in hand with control over valuable resources (such as a university); in the corporate politics of the higher education market as the private sector increasingly takes advantage of new commercial possibilities; in the student politics that is such a strong part of university life; in the politics of caste and class and the questions of equity and access and finally in terms of ideological politics and the sense in which higher education reform in India is part of a wider expression of neoliberal ideology. I shall argue that the KE discourse, as expressed in the World Bank report and the National Knowledge Commission Report, is not well placed to address these political questions because the representations of markets on which it depend cannot adequately address these forms of politics. This empirical example complements the theoretical arguments that will be made throughout the remainder of Part 3, in which I synthesise a critique of the KE in terms of different ways of addressing the political economy of knowledge.

In developing this theoretical critique, the major objective of Part 3, I shall consider why it is that 'knowledge questions' (such as the reform of higher education, the development of scientific capacity, the transfer of technology, the

negotiation of intellectual property legislation) must be understood in political terms, and how we might systematically think of a politics of markets. To this end, I shall first consider Gordon White's 'fourfold typology' and discuss how it might be applied in the case of knowledge and in the special case of Indian Higher Education.

Next, I shall develop the idea of a political economy critique of the KE by considering the types of effect that are generated by its particular depoliticised approach to markets. The first of these is that the knowledge economy discourse provides a rationale – often, but by no means always, expressed in terms of efficiency or some other utilitarian argument – for the expansion of markets into areas in which access had previously been limited.[128] As such, the KE leads to *commodification* – that is, the transformation of knowledge into a commodity for the purposes of exchange in a market. Furthermore, not only is knowledge itself transformed, but so too are the social and political relations between those who exchange it. In addition, as well as a transformation of these relations into a commodified form, commodification may also generate or preserve uncommodified social structures, including organised resistance to commodification. I shall discuss Marxian and Polanyian accounts of commodification and also the approaches of contemporary authors such as Jessop and Leys.

The theme of the final section of Part 3 is one that has recurred throughout this thesis. I have presented the argument that the knowledge economy should be seen not as a robust analytic concept, but instead as a kind of discursive rationality in which to make sense of knowledge, economics and development. Such a perspective can be understood in Foucauldian terms, in particular

[128]Such as the privatisation or deregulation of higher education (Henry *et al* 2001); Slaughter and Rhoades 2004), the patenting of academic research (Drahos and Braithwaite 2002) or the commercialisation of traditional medicine (Shiva 1997).

through Foucault's concept of *governmentality*. Following a discussion of the differences between Foucault's own understanding of governmentality and that of later generations of Anglo-American Foucauldians, I will use the concept to explain the ways in which the rationalities of the KE are themselves examples of the exercise of power.

India and the Knowledge Economy

There are few developing countries which have had a more significant engagement with the Knowledge Economy discourse than India. The World Bank has for some time argued that India has certain advantages over other developing countries which make it especially well-suited to undergo a 'knowledge revolution'. These include - according to the World Bank - large numbers of English speakers[129], concentrations of particular skills, macroeconomic stability, the institutions of a free-market economy and a relatively dynamic private sector.[130] Indeed, in 2005 the World Bank published a substantial 216-page report, the longest and most detailed country specific report of its kind, which was authored by Carl Dahlman, the main architect of the Bank's K4D programme,[131] and Anuja Utz and entitled *India and the Knowledge Economy – Leveraging Strengths and Opportunities*. The report exemplifies the K4D approach, as described in Part 1, and in particular applies the 'Four Pillars' framework - Educational and Institutional Regime, Education, Innovation and ICT. In each of the pillars, the report applies the Knowledge Assessment Methodology (see Part 1) to benchmark India's position as a knowledge economy relative to other countries and then provides a set of policy recommendations which are intended to strengthen India's performance. It is therefore a direct empirical counterpart to the theoretical framework described

[129] Although, according to the 2001 Census, English Speakers made up only 10.35% of the population.
[130]World Bank (2005) *India and the Knowledge Economy: Leveraging Strengths and Opportunities* Washington: World Bank Institute, p.xv.
[131]See Part 1 for interview material with Carl Dahlman.

in Part 1. The report was presented to the Indian government and was the subject of a conference in 2004 co-sponsored with the government and the Confederation of Indian Industry and was published in January 2005. Later in the same year, at the Doha round of the WTO, India submitted an offer to GATS (Global Agreement on Trade in Services) which entailed a commitment for foreign market access to a variety of services, including higher education, effectively making education a tradable commodity, and paving the way for foreign providers to enter the market for Indian Higher Education. Although the GATS negotiations were only very recently concluded (in December 2015), the actions of successive Indian governments across the decade that followed the original treaty offer and the response to the World Bank's report (discussed below) signalled India's commitment to the KE approach.

An examination of key Indian Planning Commission documents, such as the Five Year Plans which are the cornerstones of Indian development planning, reveals the widespread adoption of the language of the KE (for example, as applied in the 2005 report) as well as the central theme of 'knowledge-led development'. For instance, the most recent national Twelfth Five Year Plan (2012-2017) calls for a "paradigm shift" to "evolve new delivery mechanisms for innovative deployment of technologies and business models for financing deployment of innovations". (IPC 2013 p.236). In language drawing directly on the Bank's K4D programme, it states "A competitive knowledge economy must be built on the pillars of: (i) an educational system that produces human resources which are employable and globally benchmarked; (ii) S&T pursued on an enormous scale to generate knowledge for long-term use and (iii) strategic translational research inspired by national needs and global opportunities"(*ibid*). There then follows a list of 18 separate proposals in the Plan, spelling this approach out in more detail. Many of these, such as the proposal to bring in more resources from the private sector to stimulate innovation, or the

earmarking of 10-15% of public R&D investment exclusively for public-private partnerships, or the setting of targets for patents, publication volumes and global research rankings belong very firmly to the KE approach, as set out by the World Bank and the OECD. Very similar language and policies may also be found in the national Tenth (2002-2007) and Eleventh (2007-2012) Five Year Plans – the Tenth Five Year Plan refers repeatedly to 'recognition' of various stylised facts of the KE approach, such as that "in the globally integrated knowledge-based world, the comparative advantage is shifting to those with the capability of absorbing, assimilating and adopting the spectacular developments in S&T for national development" (IPC 2002 p.1081) and introduces key KE policies such as the development of new models of public-private funding in Higher Education, and various measures to integrate industry-academy collaborations (IPC 2002 p.1082). By contrast, although there is continuity in some policy areas, the Ninth Five Year Plan (1997-2002) contains almost no explicit references to the knowledge economy nor any systematic use of the terminology.

Based on an analysis of these policy papers, it seems reasonable to conclude that it was indeed in the early 2000s – i.e. between the Ninth and Tenth Five Year Plans -that the KE discourse began to be adopted into the mainstream of Indian policy-making. As set out in Part 1, the K4D programme was initiated in 1998-9 and had, by 2002 (when the Tenth Five Year Plan was published), generated a number of key KE texts, such as the 2002 *Constructing Knowledge Societies* (CKS) report into Higher Education and the 1998/9 *Knowledge for Development Report* itself. The ideas developed within these were then promoted extensively worldwide, including in India,[132] so that the 2005 World Bank Report *India and the Knowledge Economy* begins with an analysis of the central goal of the Tenth Five Year Plan (the attainment of economic growth of 8% for the period 2002-2007)

[132]World Bank (2005).

and provides an argument that this target is unattainable unless India adopts a KE approach to policy.[133] It is then in the period immediately after the 2005 World Bank report that the Indian government began to establish formal institutional structures (described below) which were tasked with the implementation of the globalised language of the KE into policies to be applied at the national level. The policy recommendations made by these institutions were then explicitly adopted into the Eleventh Five Year Plan[134] and closely follow the Bank's 'Four Pillars' approach to the KE – the Economic and Institutional Regime, Education, Innovation, and ICT.[135] In what follows, I shall briefly describe what the Bank proposed India do to effect KE policy along each of the Four Pillars and what India actually did do. I shall also describe some of the criticism and opposition with which these measures were met. Then, I shall look in greater detail at one of the Four Pillars – Education – and consider what the adoption of a KE approach has meant for higher education reform in India and where the difficulties may lie in the future.

India and the Four Pillars

With regard to the first of the World Bank's Four Pillars – the 'Economic and Institutional Regime', the affinity between the KE and Indian policy-making can be seen as part of a broader connection between the general, neoliberal agenda of the World Bank and the climate of Indian politics in the era of liberalisation, which followed the economic crisis of 1991.[136] Indeed, as described in Part 1, it

[133]The argument is a calculation of the productivity growth needed to attain 8% growth. See World Bank (2005 p.2-4).
[134] For example, the Impact section of the NKC's final report (NKC 2009 pp.165-169) describes 27 separate NKC policy recommendations across 12 policy areas which were incorporated into the Eleventh Five Year Plan (2007-2012). 5 of these recommendations were in Higher Education and include the establishment of new universities, the introduction of the Science and Research Engineering Bill (2008) and other initiatives in ICT and University regulation. Further NKC initiatives, following the final report, were incorporated into the Twelfth Five Year Plan (2012-2017).
[135] See in particular Chapters 5 and 8 of the Eleventh Five Year Plan (IPC 2008).
[136]Kohli, A. (2006).

is not altogether obvious that the 'economic regime' of the KE has much to do with knowledge and it reads more generally as a kind of 'brand statement' for the Bank's approach as a whole, establishing a continuity with long-held Bank positions and its policy priorities in other non-knowledge areas. In the 2005 report, the Bank urges India to: speed up trade reform by reducing tariff protection and phasing out tariff exemptions; encourage FDI and increase its contribution to economic growth by phasing out remaining FDI restrictions; strengthen intellectual property rights (IPRs) and their enforcement; simplify and expedite all procedures for the entry and exit of firms, for example, through "single window" clearances; reduce inefficiencies in factor markets by easing restrictions on hiring and firing of workers; improve access to credit for small and medium enterprises; improve governance and the efficiency of government, and the use of ICTs to increase government's transparency and accountability (World Bank 2005 p xvii). Such a list demonstrates how well suited the Bank's general neo-liberal agenda was to India's own politics of liberalisation promoted by successive governments since the crisis of 1991 (Kamat 2011). Of course, this also raises the question as to how we should see the relationship between the Bank and India (or any other developing country). One can argue that the KE is part of what Ngaire Woods calls the Bank's "globalizing mission" – encouraging integration into the world economy with "a determination to ensure trade liberalisation, privatise state-owned enterprises, open up developing countries to foreign investment, and deregulate labour markets in member countries" (Woods 2006 p1). Taking such a position is to view the KE as a tool in a form of global governance conducted through the propagation of the Bank's own development research, as in the self-declared model of the 'Knowledge Bank'. Woods's description of the Bank (and the IMF) as 'riding three horses at once' (Woods 2006 p.4) refers to three distinct sets of forces which shape the Bank's position - the preferences of powerful governments (especially the US) which provide structural limits (the 'bottom line') to what the

Bank can and cannot do; the influence of professional economists and the particular institutional and intellectual environments from which they come (as studied extensively in Parts 1 and 2 of this thesis); and the complicated relationships with client countries, in which alignments (or conflicts) between the Bank's position and that of the client's government act as a subtle but powerful form of influence. One can also see the synergy between the Bank's position and the domestic agenda of at least a section of the Indian political classes as a case of "the Bank needs India as much as India needs it" – a slogan coined by government insider, N. K. Singh in a column in the *Indian Express.*[137] Singh went on to say that the Bank's relationship with India had passed through three phases, the first as a source of project financing; the second – following the 1991 crisis – as enforcing significant policy changes through conditional lending; and the third, starting in the mid 1990s, in which "[the World Bank's] policy prescriptions have increasingly mirrored what we have ourselves adopted in the Ninth and Tenth Five Year Plans" (*ibid*).Thus one could also characterise the relationship between the World Bank and India as one in which India has pursued its market reforms largely on its own terms at least since the late 1990s and in which the KE (and the World Bank's work more generally) is a means of sustaining a dialogue and preserving the relevance of the Bank as a development actor.[138] In what follows, I take the position that the power of the KE is not as a coercive mechanism for dictating policy from the Bank to India but rather a globalised hegemonic neoliberal discourse that has strong appeal for capitalist elites in both India and the West. In practice, looking in detail at the Bank's description of India's Economic and Institutional Regime (World Bank 2005 Chapter 2) this is manifested in the generally positive view that the Bank takes of India's policy direction at the time combined with detailed arguments made in favour of greater liberalisation and 'integration' with the global economy (World

[137]See Kirk, J., (2011) *India and the World Bank: the Politics of Aid and Influence* London*:* Anthem
[138]The question of relevance is also raised in Woods's recent Op-Ed piece *How to Save the World Bank* which argues that the Bank's has little credibility both as a lender and as a purveyor of development knowledge and risks insignificance. (Woods 2016 Project Syndicate Op-Ed January 2016)

Bank 2005, p.34), the pursuit of higher levels of FDI (*op. cit:* p.33-7) and removal of restrictions on foreign ownership (*op. cit:* p.42) and the dismantling of 'barriers to growth' by reducing tariffs and other forms of protection (*op. cit:* p.43) and reforming labour laws to encourage 'the flexibility to adjust labour use' by hiring and firing workers (*op. cit:* p.44). In summary, the Bank's assessment of India along the first of the four pillars suggests that there is a strong affinity between its own neoliberal position and that of liberalisation-era India but does not, in isolation, demonstrate why knowledge should be so important to this affinity. For this, we need to look at the other pillars.

Regarding the Innovation Pillar, in 2010, the President of India, Pratibha Patil declared 2010-2020 to be the 'Decade of Innovation' and established the National Innovation Council (NIC), under the Chairmanship of Sam Pitodra, a diasporic entrepreneur, with a mandate to manage innovation and encourage entrepreneurship (Abhyankar 2014). This body reports directly to the Indian Prime Minister and co-ordinates the activities of similar State-level and sectoral Innovation Councils. It also organised international collaborations such as the 2014 conference, *Innovative Asia: Advancing the Knowledge Economy,* which brought together policy and academic figures from across Asia, under the auspices of the Asian Development Bank, to discuss how Asian economies, including India, Indonesia, China, Korea and Kazakhstan might transform themselves into knowledge economies. The methodology used in this conference, and its smaller-scale 2013 predecessor was exactly that of the World Bank's 'Four Pillars' approach.[139] In a similar way, the Science, Technology and Innovation Policy paper released by the Ministry of Science and Technology in 2013[140] identified seven key areas of innovation policy: Funding; Linkages between

[139]"The ADB study uses the Knowledge Economy Index (KEI) rubric to benchmark the performance of developing economies in Asia against advanced economies of the world. It is clear that on all the four pillars of the knowledge economy—innovation, education and skills, ICT, and the economic incentive and institutional regime—developing economies in Asia significantly lag behind advanced nations" (Asian Development Bank 2014 p. xv).
[140]Ministry of Science and Technology (2013)

stakeholders; Promotion of Science; Risk-taking ability; Intellectual Property; the Innovation value chain and Participation in global R&D infrastructure. The policy recommendations in each area correspond closely to those made eight years earlier in Dahlman and Utz's 2005 World Bank report *India and the Knowledge Economy* (see World Bank 2005, Chapter 4). For instance, regarding the question of funding the objective is to increase the gross expenditure in research and development (from less than 1% to 2% of GDP over five years) and the key proposal to achieve this is to implement public-private partnerships to attract private investment and to underwrite risk-taking on the part of entrepreneurs with public money; regarding linkages between stakeholders the main priority is to facilitate movement of experts between academia and industry and to make research more responsive to the market and more driven by demand, and to pursue 'scientific diplomacy' by strengthening the intellectual property regime. All of these proposals may be found in the 2005 World Bank Report (Chapter 4) expressed in very similar language. In each policy area, the approach is to integrate the production and utilisation of knowledge much more closely into the functionings of the market economy (Kamat 2011).

Regarding the Information Technology Pillar, in 2006 a few years before the formation of the National Innovation Council, the Department of Information Technology of the Ministry of Communications and Information Technology launched a project on 'National Competitiveness in the Knowledge Economy'. (Chandra and Khanijo 2009). This project, completed in 2011, was a collaborative venture between academic institutions (the Indian Institutes of Technology at Chennai (Madras) and Roorkee) and government bodies (the Department of Information Technology and the Ministry of Communications and Information Technology) focused explicitly on "mapping the directions of transition from industrial economy to knowledge economy" (*op.cit:* p.4) and investigating the role that ICT might play in this. The multiple elements of the

approach taken by this project, were collected into the edited book *Knowledge Economy: the Indian Challenge* (Chandra and Khanijo 2009). At times the project draws directly on the approach of the World Bank as the authors explicitly acknowledge.[141] For instance, the project applies and extends the World Bank's Knowledge Assessment Methodology to the Indian context, by refining the KAM to a state by state basis. Conceptually, the project approaches the concept of modernity in a similar way to the World Bank and the OECD, explicitly referencing Daniel Bell and Peter Drucker,[142] and identifying a set of 'megatrends' to construct a narrative of modernity in the style of the KE.[143] And in practical terms there is also a strong focus on Knowledge Management which draws heavily on the Bank's self-identification in the 2000s as the 'Knowledge Bank'.[144]

In summary, then, there are extremely strong similarities between the World Bank's 2005 recommendations for India as a Knowledge Economy and specific policy initiatives conducted by the Indian government along three of the World Bank's four pillars (Economic and Institutional regime, Innovation and ICT). Moreover, the underlying 'philosophy' and market-oriented approach to knowledge as a object of economic exploitation are closely aligned. I shall now address the remaining pillar in greater detail - Education.

Education and the National Knowledge Commission

> *"[The] NKC's overarching aim is to transform India into a vibrant Knowledge Economy. This entails a radical improvement in existing systems of knowledge as well as the creation of avenues for generating new forms of knowledge"* (NKC 2006 p1).

[141]Mahajan, S., Chandra, A., & Sarkar, M. (2009) 'An approach to developing KE indicators for individual states' in Chandra and Khanijo (Eds) (2009) *Knowledge Economy: The Indian Challenge*.
[142]See discussions of Drucker and Bell in Part 1.
[143]Kumar, Sinvhal and Nangia (2009) in Chandra and Khanijo (Eds) (2009).
[144]Joshi, Jha and Mahajan (2009), Prakash (2009) in Chandra and Khanijo (Eds) (2009).

Perhaps the most significant of all the KE initiatives put in place by the Indian government was the creation in 2005 of the National Knowledge Commission (NKC), also under the Chairmanship of Sam Pitodra. The NKC was explicitly tasked with reforming Education and especially Higher Education and was given a three year period until 2008 to do so, later extended to 2009 when it submitted its final report. The NKC's mission statement states that: "India today needs a knowledge-oriented paradigm of development to give the country a competitive advantage in all fields of knowledge" (NKC 2006 p.11) and from the outset the NKC uses much of the familiar language that may be found in the KE discourse described in Part 1. For example, the NKC declares that "India's ability to emerge as a global player will substantially depend upon our knowledge resources "and demanding a "knowledge revolution" and a roadmap to a "massive reform of...the knowledge sector" (NKC 2009 p.3).

The NKC was set up by and reported directly to the Prime Minister and whilst it functioned only as an advisory body, is widely viewed as having been exceptionally influential in that regard (Rizvi and Gorur 2011, Kamat 2011). At times, it has been controversial, regularly coming into direct conflict with other education institutions, such as the University Grants Committee (UGC) (which has direct responsibility for overseeing India's massive and diverse Higher Education system) and occasionally also the subject of internal conflict, with two members resigning from the board in protest at the government's quota policy for 'Other Backward Castes' (OBCs) in Higher Education institutions.[145] The main purpose of the NKC was to produce a platform of reforms, which it presented in a final form in its *Report to the Nation 2006-2009* (NKC 2009) and in

[145]One of whom, Pratap Bhanu Mehta, member-convenor of the commission and president of the Centre for Policy Research, argued in his open resignation letter to the Prime Minister that quotas in elite institutions "violate four cardinal principles that institutions in a knowledge based society will have to follow: they are not based on assessment of effectiveness, they are incompatible with the freedom and diversity of institutions, they more thoroughly politicise the education process, and they inject an insidious poison that will harm the nation's long-term interest" published in The Indian Express, May 22, 2006, see link here http://archive.indianexpress.com/news/dear-prime-minister/4916/

preliminary versions throughout the period 2006-9, including one further major publication *Towards a Knowledge Society* (NKC 2008). Overall, the NKC made over 200 separate recommendations across 27 subject areas but it is with the proposed reforms to the Higher Education system that the discussion below will be principally concerned.

The Political Economy of Higher Education in India

> "Our university system is, in many parts, in a state of disrepair…In almost half the districts [340] in the country, higher education enrolments are abysmally low, almost two-third of our universities and 90 per cent of our colleges are rated as below average on quality parameters… I am concerned that in many states university appointments, including that of vice-chancellors, have been politicised and have become subject to caste and communal considerations, there are complaints of favouritism and corruption." (Prime Minister Manmohan Singh's address at the 150th Anniversary Function of University of Mumbai, June 22, 2007)

> "[T]here is a quiet crisis in higher education in India which runs deep. The time has come to address this crisis in a systematic and forthright manner." (National Knowledge Commission 2009 p.73).

The National Knowledge Commission is not alone in identifying crisis in Indian higher education (although few think of that crisis as 'quiet'). Forty years before, Philip Altbach, one of the most well-known experts in the field, wrote a famous essay entitled "The Permanent Crisis of Indian Education" (Altbach, 1969/2012) in which he gave various systemic reasons why the crisis should be so enduring.[146] Fundamentally, according to Altbach, the problem is political - "implicit in all discussions concerning Indian higher education is the crucial ingredient of politics" (Altbach 2012 p. 11). Subsequent authors, including Amartya Sen, Pawan Agarwal, Devash Kapur, Pratap Mehta, Fazal Rizvi, N.

[146] In 2007, the then Minister for Human Resource Development, Arjun Singh, in an article in the *Times of India*, referred to Indian higher education as 'sick child'. (*Times of India* September 18th 2007).

Jayaram and M. Anandakrishnan,147 have come to the same conclusion. Gould (1972 p.94) puts it succinctly: "the question, in other words, is not whether politics or politicians shall influence educational processes, but how and to what degree they will do so. This is the real issue in India today". Altbach himself, writing in 2009, argues that India "does not have a coherent differentiated system [of higher education]" (Altbach 2009 p. 6) and that current reforms are unlikely to be successful, citing "a combination of the lack of political will, entrenched academic and at times political interests, a divided political system, and resource constraints" (Altbach 2009 p.22, Jayaram 2007 p.74-76).[148]

There are several reasons why reform in Indian Higher Education might be difficult. Firstly there is the question of scale. India has the third largest student population in the world, with a current total enrolment of approximately 30 million students,[149] behind only the USA and China. Moreover, India also has by far the highest number of individual Higher Education institutions in the world - currently there are 712 Universities and 36,671 Colleges as well as 11,445 other 'Stand Alone' institutions.[150] This abundance reflects the fact that the average enrolment per institution is significantly lower in India than in China or the USA (or indeed most other countries). Moreover, these institutions come in a bewildering diversity of forms[151] and even within the standard categories there

147 Sen (1971) Agarwal (2005), Kapur and Mehta (2007, 2008), Rizvi (2011), Jayaram (2004, 2007, Anandakrishnan (2011).

148 Jayaram, N. (2007). Beyond retailing knowledge: Prospects for research-oriented universities in India. In P. G. Altbach& J. Bala´n (Eds.), World class worldwide: Transforming research universities in Asia and Latin America (pp. 70–94). Baltimore: Johns Hopkins University Press.

149All education statistics taken from the website of the Ministry Human Resource Development (MHRD) www.mhrd.gov.in unless otherwise stated.

150 In India, the average enrolment at a Higher Education institution is around 500-600 students as compared with 3000-4000 in the USA or in Europe and 8000-9000 in China (Agarwal 2009)

151Broadly, speaking India's Higher Education institutions fall into three main categories - Universities, Colleges, and other institutions. However, there are numerous subcategories, including: Central Universities, State Universities, State Private Universities, Deemed Universities, Institutions of National Importance and Institutions established under the State Legislature Act. Amongst the various types of colleges are: Government Colleges, Autonomous Colleges, Affiliated Colleges, etc. Various types of other institutions includes: Management Institutions, Technical Institutions, Science

are huge disparities. Enrolments vary widely from one state to another, with the highest enrolments being in the southern and western states and those in the east and northeast typically being the lowest (for example, according to the 2011 data, enrolment in Tamil Nadu was at 38.2% and in Jharkand at 8.4% compared with a national average of 20.4%).[152]

A second consideration is historical. The Indian Higher Education system has evolved through various phases from the pre-colonial era in which educational establishments were primarily organised along religious lines,[153] through the colonial period in which a British model was adopted, [154] to the post-independence era in which both Soviet and American influences have also featured strongly.[155] In each phase, different (and sometimes contradictory) imperatives have driven the expansion of the system, from a British preoccupation with the training of a local elite from whom an educated civil service and administrative cadres could be derived;[156] through a Nehruvian era, which saw a determination to develop an autonomous, indigenous scientific and technological capacity (in 1954, Nehru spoke of India's national laboratories as "temples of science built for the service of our motherland");[157] to the contemporary period (1991-present) where policies of liberalisation and deregulation, together with a rapidly expanding middle class have been matched by a phenomenal shift towards the private sector and the widespread

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Institutions, Technological Institutions, etc. See, for instance, the MHRD website or Agarwal (2009) for more details.

[152]Enrolments were slightly higher for men (21.6%) than for women (18.4%) - but again with large variations across the states (Kerala's enrolment was 58% female, Orissa's 18%). Enrolments for disadvantaged groups were low on average (for Scheduled Castes the average enrolment was 14.5% and for Scheduled Tribes 10.8%) and in some states extremely low (3.9% in Jharkand).Source: http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/AISHE2011-12P_1.pdf

[153] In Mughal India, there was a wide network of Islamic madarasas and maktabs, notably in Delhi, Agra and Fatehpur Sikhri as well as Hindu gurukulas and Buddhist viharas (Agarwal, 2009).

[154] The British established Colleges as early as 1818 and by 1857 had established three federal Universities in Calcutta, Bombay and Madras which were modelled on London University. By the time of Independence there were 19 Universities and several hundred affiliated colleges (Agarwal 2009).

[155]Rizvi (2011).

[156]Agarwal (2009).

[157]Arnold, D. (2013)"Nehruvian Science and Postcolonial India" *Isis* 104:2, 360-370.

marketisation of education, especially higher education (Kamat 2011). In each phase, it is striking how directly the state has sought to involve higher education reform within national policy strategy and how generally unsuccessful these attempts have been.[158] In trying to understand why this should have been the case and what the implications are for the 'knowledge revolution' that the World Bank says India needs to achieve, we need to understand the specific forms of politics which are so deeply embedded in the Indian system.

Indeed, as Altbach, Sen and the other commentators make clear it is really the politics rather than simply the history or scale of Indian Higher Education that has been the real impediment to reform. From a legislative or policy point of view, the most immediate form of political contestation comes from the structural politics of the federal Indian state, especially as manifested in the relationships between individual states and the central government. On the one hand, decision-making, budget-setting and planning are highly centralised (not least through the Five Year plans and the establishment of commissions like the NKC or the national University Grants Committee (UGC)) whilst the actual administration, regulation and implementation are increasingly devolved to state-level authorities - which itself is a source of tension.[159] The conflicts which have emerged between centralised, national level bodies, such as the MHRD, UGC or the NKC and the state-level authorities have regularly delayed or even derailed policy implementation, with some legislation languishing in parliament for years (British Council 2014, Johnson and Bowles 2010) - as we shall see, this was to be highly relevant to the experience of the NKC.[160]

At another, more local, level, the Education sector itself is highly politicised - not least in the close links between government and state, as in central

[158]Altbach (1993), (Rudolf and Rudolf 1972), (Rizvi 2011).
[159] British Council 2014 p.12.
[160] Johnson, C. & Bowles, M. (2004) 'Making the Grade: Private Education in Northern India', *Journal of Development Studie*s, 2010, Vol. 46 Issue 3.

appointments of chancellors and vice-chancellors, but also in how universities have become important sites of local power within communities. This has been a particular issue with the founding of colleges, which then become affiliated later to a university (Altbach 2006).[161] Control of a college can confer considerable local power, not only through revenue generation or job provision but also through admissions and social mobility. In many cases, local politicians or businessmen who founded colleges then used them to enhance their local power base or to dispense patronage (Altbach 2006, Kapur and Mehta 2007). The resulting vested interests in preserving the source of these forms of power or in competing for the financial resources which underpin them have in the past made Indian Higher Education bureaucratically inflexible and resistant to change - even when reforms have passed through parliament they may well be ineffectually applied (Rizvi 2012, Kapur and Mehta 2007).[162] Privatisation has increased the potential for 'patronage' politics of this kind, as Kapur and Mehta conclude, "[t]he *license raj* may have been dismantled in industry, but it is flourishing in higher education" (Kapur and Mehta 2008, p25).

Teachers' politics and student politics are also exceptionally active in Indian Higher Education and indeed throughout the Education sector as a whole. For example, Kingdon and Muzammil (2008) have written on teachers unions in Uttar Pradesh, arguing that factionalism and ideologically driven conflicts, expressed through strikes and other forms of direct action, have become entrenched as methods of securing resources and making demands. Moreover, conflict of this kind is structurally resistant to change as state legislature guarantees teacher representation in various tiers of local government. Student politics is similarly active - recent issues have included protests over freedom of debate and the treatment of Dalit students - and can also result in shutdowns and walkouts on campuses (Kapur and Mehta 2007, Altbach 1989). Political

[161]Altbach, P. (2006) 'Tiny at the Top' *The Wilson Quarterly* Autumn 2006 p.49-51.
[162] Rizvi, F., (2012).

mobilisation amongst staff and students has at times affected academic issues, such as the curriculum or choice of future hires *(ibid)*. In short, politics pervades university life.

The politics of caste and class are similarly important to Indian Higher Education. Kamat (2011) argues that because public Higher Education has typically been the preserve of the upper castes, state policy and in particular subsidies to Higher Education have tended to reproduce rather than challenge the existing caste-based inequalities. For example, according to Kamat, Dalit oriented reservation policies have generally been ineffective, whilst examples such as the successful establishment of southern engineering colleges have reflected the ability of middle-caste anti-Brahmin movements to mobilise themselves (*ibid*). Deshpande and Yadav (2006) have argued that caste quotas in their current form- a fiercely contested topic in Indian politics - do not serve social justice but rather intensify and essentialise caste identities.[163] Moreover, Subramanian (2015) argues that Higher Education, especially elite Higher Education such as that provided by the IITs, merely serve to translate privilege into merit or 'caste capital into modern capital'. As a consequence, the support or opposition that caste-based groups may exercise towards specific reforms has tended to be dictated by self-interest in a way that Mehta described in his resignation letter[164] to the Prime Minister as 'poisonous' or, as Rizvi and Gorur put it "affirmative action initiatives have themselves become a major source of debilitating identity politics that inhibits systematic institutional reform" (Rizvi and Gorur 2011 p.4).

Regarding the intersection of class-based politics with reform, the situation is similarly complex. Although the expansion of privatisation in the higher education sector is widely agreed to be linked with the rise of the middle classes,

[163]Deshpande and Yadav (2006) propose an alternative model of affirmative action.
[164]See Footnote 145.

Kapur and Mehta caution that it may be simplistic to regard the former as driven by the interests of the latter (Kapur and Mehta 2007 and 2008). Instead, they argue, the spread of privatisation is driven by the collapse of the state system and the dysfunctional attempts of the state to regulate the market. Far from a 'middle class capture' the imperatives driving education policy are a mixture of ideology and the vested interests of certain groups who stand to benefit from a marketised mode of education as described above. Indeed, attributing the rise of privatised higher education to the emergence of the 'middle classes' may be somewhat tautological, even meaningless, since who are the middle classes, if not those who demand higher education - a point made at length by the educationalist Stephen Ball (2003).

Finally, as an example of corporate politics, there has been extensive lobbying on the part of the private sector for the Indian Government to open up Higher Education to the market. This has come from both foreign and Indian providers, the former seeking to exploit the GATS negotiations (Alcorn, Christensen and Kapur 2015, British Council 2014, Anandakrishnan, 2011).

The NKC Reforms

In a series of reports between 2006 and 2009, culminating in the major *Report to the Nation* (NKC 2009), the NKC identified three main objectives for Indian Higher Education reform: expansion; excellence and inclusion. In all three areas, India's performance was deemed to be inadequate, in comparison with that of other countries, both developed and emerging. In each area, the NKC made a set of recommendations, many of which were adopted into the Eleventh and Twelfth Five Year plans.[165] The recommendations were ambitious and were

[165]See NKC 2009 p.16. Not all reforms were adopted as will be discussed.

integrated with the reforms mentioned in the previous section (concerning the other Pillars of the KE) to reflect a national vision very much in line with the KE discourse"[T]o respond to the global challenges more strongly than ever before, India today needs a knowledge-oriented paradigm of development to give the country a competitive advantage in all fields of knowledge" (NKC 2006 p.11). In particular, there is a general consensus between the NKC and the World Bank (see World Bank 2005, Chapter 3) on the *methods* by which this was to be achieved - opening up higher education to the private sector and to foreign institutions; changing governance structures and removing bureaucracy; introducing performance assessment to provide quality assurance and making academia more responsive to the demands of industry. Where the NKC goes further than the Bank is in terms of the scale of the reforms it proposes - the increases in enrolment and the institutional expansion that would be needed to achieve this.

The most eye-catching area for change, therefore, both in terms of emphasis within the report and in terms of the attention paid to it by many commentators, was the massive expansion of the HE system which the NKC said was essential for India's economic future prosperity. At the time of the first NKC reports in 2006-7, the gross enrolment ratio (GER) was around 11% which compared poorly (in the view of the NKC) with a global average of around 25% and with that of certain comparator countries, such as China (around 27%) and Brazil (36%).[166] India set itself the target of raising the GER to 15% by 2015 - which it achieved, GER was 23% in 2014 - and has now set itself the new target of a GER of 30% by 2020 which would require in the region of 40 million student positions (approximately 10 million more than at present). Most commentators

[166]Statistics taken from the MHRD website for 2013-14 available at http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/AISHE%20PDF%2013-14%2018.2.16.pdf. See also NKC (2006).

think that this latter target is unlikely to be achieved at the current rate of expansion (British Council 2014, Anandakrishnan 2011).

The NKC proposed four main measures to achieve this dramatic expansion (NKC 2009 p. 61-63) - the creation of 1500 new universities; a streamlining of the regulatory framework; an increase in funding to 1.5% of GDP and the creation of 50 National Universities. At the centre of the second of these proposals was the creation of a single centralised body, the proposed Independent Regulatory Authority for Higher Education (IRAHE - later a modified version of this body was renamed as the National Commission for Higher Education and Research (NCHER)). This would, on the one hand, permit a massive programme of construction of new institutions,[167] and on the other, allow existing institutions to expand or diversify reducing barriers to entry for new providers. This strategy was intended to heavily involve the private sector - the NKC envisaged that private providers would be able to match at least half of the anticipated demand. Indeed, the NKC remarked that "there has already been a *de facto* privatisation of the professional education sector, with more than 80% of the engineering colleges being privately funded and managed" (NKC 2008 p. 73).

The NKC's market-oriented and privatising strategy to meet the increased demand is in some ways a continuation of a trend that had been growing steadily throughout 1990s and 2000s in the post-liberalisation era, in which various forms of private sector involvement had been introduced to the higher education sector. But whereas the piecemeal *de facto* privatization of the 1990s had been accompanied by a parallel disengagement on the part of the state,[168] the KE era of the 2000s saw the state begin to actively assert a role in the privatisation process itself and to find in deregulation a simultaneous regulatory

[167]NKC 2009 calls for the creation of 50 new elite national universities and a further1500 universities in total (some of which would be created by converting colleges).
[168]Agarwal (2009).

role. Initially then, up until 2000, most of the private sector expansion had been at the level of affiliated colleges, which had certain drawbacks when viewed as commercial opportunities. Affiliated colleges are not degree-awarding bodies but are instead affiliated to a state university, which then has some regulatory powers and obligations over its affiliated colleges (Altbach 2006). Nor does an affiliated college have any easy way to expand or take over new campuses and many are located in extremely small towns or remote locations - revenue generating potential was thus limited (Altbach 2006, Kapur and Mehta 2007). But as deregulation continued into the 2000s, *new* private universities found they could apply for the 'deemed-to-be' status *de novo*. 'Deemed-to-be' universities have much greater autonomy and prestige than affiliated colleges and do have degree-awarding powers - the category had originally been introduced to recognise long-standing respected institutions (of at least fifteen years standing) which otherwise did not qualify for university status, such as the Indian Institute for Science at Bangalore or the Homi Bhaba Institute. As a result, there was a dramatic acceleration in the numbers of deemed-to-be universities in the private sector, with 26 private-sponsored institutions becoming 'deemed-to-be' between 2000 and 2006.[169] These new universities were able to avoid much of the regulatory oversight and to open campuses across India. At the same time, states were discovering that they too could create new universities and in 2002 the state of Chhattisgarh passed legislation (the Private University Act 2002),[170] permitting the creation of new private universities (134 applied and 97 were accepted) many of which did not have campuses within the state but were spread all over India and were viewed as being of extremely dubious quality. A major row ensued between the government of Chhattisgarh and the UGC, with the latter trying retrospectively to introduce regulations to control the situation. Eventually, the dispute went before the Supreme Court. Although the Supreme Court ruled in favour of the UGC, the episode was widely seen as exposing the

[169]Agarwal (2009).
[170] See also Kapur and Mehta (2007).

opportunistic nature of the private sector.[171] Indeed, new universities in general, though often accorded charitable status, were widely considered "de facto profit-oriented commercial establishments … inimical to the national interest" (Anandakrishnan 2006 p.558). Amongst the various criticisms made about India's new universities were the narrowness of their curricula; the lack of adequate mechanisms for regulation, quality control and governance; and the inconsistent and occasionally extremely poor level of education provided.[172]

The NKC's arrival in the mid 2000s came amidst a public climate of suspicion for unfettered deregulation and yet an enthusiasm amidst private sector providers to become more involved in the sector. Its response then had three elements. One was the centralisation of power (through the creation of the IRAHE as the sole regulatory body), taking powers away from the state governments and from other established regulatory bodies such as the UGC. In this way, the NKC sought to create a market for education but at the same time tried to exercise a considerable power in establishing the terms by which that market operates. The second was the lowering of barriers to entry in response to the considerable interest shown by the private sector in investing further in higher education. And the third was the attempt to achieve its financial targets by diversifying the sources of funding available to the higher education sector - universities would be encouraged to financially exploit the land on which they were built ('an untapped resource'); to introduce fees that would be expected to make up 20% of their overall budget; and to attract private sector investment and philanthropic giving by relaxing rules concerning ownership, land grants and taxation. In each of these three elements, the NKC sought to marketise the HE sector and yet also to use the apparatus of the central state to establish the conditions of and control over that marketisation.

[171]Agarwal (2009).
[172]Altbach (2011), Anandakrishnan (2011).

The NKC also applied market-oriented techniques in pursuit of its second goal - that of 'excellence'. It recommended that researchers be given productivity incentives in the forms of salary bonuses so that research is performance driven; urged that links between academia and business or industry were to be greatly strengthened and placed an expectation that research output should be market-oriented whenever possible (NKC 2009, p.65). In its 'Notes to Education' section (NKC 2009, p.67-80) the NKC uses very much the same framework as the World Bank 2005 - highlighting the importance of competition, information, differentiation, assessment and incentivisation - all ideas that can be found in the KE as described in Part 1. The NKC compares the HE system to corporate structures and argues whilst the web of incentives may be more subtle that differential salaries within and between institutions should be used to attract and retain better quality staff as in the corporate sector (NKC 2009, p.75). It places a great deal of emphasis on performance measurement which is presented as the basis for accreditation and thus competition. The NKC does not try to disguise the fact that these reforms not only require significant institutional changes *but also entail a shift in the culture of public higher education itself*: "This requires not only policy measures but also changes in resource allocation reward systems and mindsets" (NKC 2008, p.57).

Only in respect of its third goal 'inclusion' was the NKCs market orientation tempered by the political decision to balance the competing and conflicting demands of, on the one hand, those seeking reservations and affirmative action for the Scheduled Castes and Tribes with the equally strident calls for the abolition of such measures. This debate, though not new in India, was lent an extra urgency by the heightened status of higher education in policy debates. Those in favour of affirmative action appealed to the concept of equity, those against to the concept of excellence but on the additional grounds that excellence in higher education was now a national priority. The compromise struck was for a mixed system in which reservations still applied but which ran

in parallel with a 'needs-blind' system and also a fee structure (NKC 2009, p77). The NKC also proposed a 'deprivation index' which would be used to adjust admissions scores for university entrance according to the 'deprivation level of the student. (*op. cit*: p.78)

On publication of its final report in 2009, the NKC's recommendations were welcomed by the government. Interim recommendations had already been incorporated into the Eleventh Five Year plan and the intention was that the NKCs new proposals would be worked into the Twelfth Five Year plans. However, things did not go smoothly and the NKC was criticised from a number of sources. The Central Advisory Board on Education (CABE - the highest level advisory board to the Ministry of Human Resource Development) was particularly scathing, decrying above all else the establishment of the IRAHE (although later the CABE would support a similar NRAHE, which had similar policy-making powers to the IRAHE but none of the regulatory ones).[173] Zoya Hasan, of the National Council of Minorities, spoke out against the fee proposals, arguing that they would increase inequality, and there were other criticisms from state ministers and educationalists. In a further submission to the CABE, Zoya Hasan also gave a more detailed critique of the NKCs proposals, suggesting that the fee structures would lead to further commercialisation and privatisation and that the effect of applying market-oriented measures such as incentivisation through salary differentiation on a system that was already so hierarchical would only make things worse. She too opposed the creation of the IRAHE/NCHER on the grounds that it put too much power and too little accountability in the hands of one body.[174]

The widespread criticisms that were made of the NKC were swiftly followed by political obstruction. By the time the proposals had been made into a Bill (the

[173]CABE (2009).
[174]CABE (2009 p.23).See also Times of India 10th February 2009 http://timesofindia.indiatimes.com/india/Apex-body-on-education-policy-rejects-most-NKC-proposals/articleshow/4108194.cms

Higher Education and Research Bill 2011 also the National Accreditation Regulatory Authority for Higher Education Institutions Bill 2010) that could go before Parliament, the opposition to some of the proposals had mobilised politically. In particular, the state governments objected vigorously to what they saw as the betrayal of the federal organisation of education (as a joint policy area for states and centre) as did the UGC and other bodies that would have seen their powers cut or been disbanded altogether through the creation of the NCHER. The 2011 Bill languished in parliament for three years between 2011 and 2014, during which time there was a change of government. In September 2014, with the Bill still before the Rajya Sabha, it was formally withdrawn by the new NDA government.[175]

However, although the Higher Education Bill failed, other legislation did make it through. The Rashtriya Uchchatar Shiksha Abhiyan scheme (RUSA) or National Mission for Higher Education programme, was part of the 12th Five Year Plan, and aimed to implement many of the key objectives of the NKC, in particular the huge expansion in enrolment (its main priority is the achievement of 32% GER by the end of the 13th Five Year Plan). RUSA claims to "have a completely new approach towards funding, regulation and governance of higher education in state universities; it will be based on key principles of performance-based funding, incentivizing well performing institutions and decision-making through clearly defined norms" - the "inviolable principles" of the RUSA (RUSA Vision Document p.90). It was officially approved by the Indian government in October 2013 and began awarding funding in 2014 and 2015. The scheme provides significant extra funding for higher education at the state level (split between the Centre and the states in the ratio 65:35 for most states and 90:10 for more economically disadvantaged ones) and requires the establishment of state-level higher education committees - which then have to satisfy certain

[175]See http://www.prsindia.org/billtrack/the-higher-education-and-research-bill-2011-2153/

centrally determined criteria (RUSA 2013 p.83 and p.86). In effect, the governance of higher education will be largely devolved to the states, leaving only a few national level projects under the exclusive control of the Centre, and autonomy of institutions is a key theme that recurs throughout the vision document. Having said that, this autonomy is of a certain limited kind since the criteria that the state higher education committees have to adopt are quite prescriptive - in effect, the centre has granted the states their freedom but it is the freedom to build knowledge economies. The RUSA refers to the crucial role of Higher Education in building a knowledge society (RUSA 2013, p.48) and to the work of the NKC in this regard (*op. cit*: p.71) as well as the World Bank's vision of a knowledge society (*op. cit:* p.126) and maintains much of the language of its predecessors. Regarding funding, in addition to the centrally allocated funds the RUSA calls for more public-private partnerships, more private investment in the state sector and for diversification of funding through internal sources (*op. cit:* p.76) - although it stops short of calling for the commercial exploitation of university land. The states are expected to make a "pre-defined matching contribution" to the Central funding, of which 50% may be generated through the private sector (*op. cit:* p.126) and it is stated that the corporate sector as a key stakeholder can play a "pivotal role in higher education" either through "direct ownership and management of institutions" or "collaborating in research, faculty development, infrastructure creation, student scholarships or governance" (*op. cit:* p.127). Corporate involvement in the higher education sector is described as "vital" and the government needs to transform itself to "create enabling conditions" to attract corporate investment (*op. cit:* p.158).

It is very unclear what will happen next, but a survey conducted in 2014 by the British Council with a range of high level stakeholders (vice chancellors, state ministers, academics and policy makers) suggested that the trend towards marketisation and increased involvement of the private sector would continue, albeit with delays caused by the sorts of political conflict described above.

(British Council 2014). A recent, critical, article (Thakur 2016) supports this and argues that, despite the change in government, the economic principles underlying higher education remain the same as does the intention to "facilitate the privatisation of higher education...and make education a tradable commodity", Thakur points to the example of the recent Choice-Based Credit Scheme which allows students to move between courses and departments or even universities and claims that the NDA-initiated scheme is a market-oriented policy that will only "facilitate the commodification of higher education" (Thakur 2016 p.2).

Remarks

One of the central claims of this thesis is that the relationship between the Knowledge Economy and development requires a *political* analysis. Having set out an outline of the Indian experience of the Knowledge Economy, it is timely then to ask what forms of politics have affected that experience.

At the global level, the events in India over the last fifteen years support the argument of this thesis that the KE is part of a global, hegemonic discourse that has now become deeply rooted in the mindsets of 21st Century development practitioners. Successive planning documents (such as the Indian Tenth, Eleventh and Twelfth Five Year Plans) - show a striking continuity, not only of language and in specific policy goals, but also in their underlying rationality. The economic exploitation of knowledge is held to be the key driver of development and the best, indeed the only, strategy to achieve that is through the expansion of the market and of market methods to various aspects of knowledge. This consensus transcends party politics (as Thakur 2016 confirms) and there is a high degree of continuity between the relevant planning documents, irrespective of the identity of the government that authored them. The arrival of the KE in the Indian political consciousness can be seen in the early 2000s but it is in the mid 2000s, following the publication of the 2005 World Bank report and the

start of GATS negotiations later in the same year, that the KE approach is formally adopted through the establishment of various policy initiatives, such as the NKC and the NIC and legislation, such as the RUSA and the conclusion of the GATS deal.

Attributing direct causality to the World Bank's report (or any other external influence) is complicated. On the one hand, the KE dovetailed with a process of neoliberal reform that had been going on in India for at least a decade earlier, starting with the 1991 crisis. Moreover, as Kirk (2011) and Woods (2006) have argued, India is well able to pursue its own agenda and does not directly require or seek World Bank approval. However, I would argue that the entry of the KE has had at least three significant effects on India's own neoliberal discourses. The first of these has been to decisively situate and structure the economic exploitation of knowledge as a key component of the neoliberal agenda. Devices such as the KAM are seen as objective tools of measurement (as at the Asian Development Bank conference in 2014) which validate policy approaches such as the World Bank's Four Pillars. Similarly, policy goals, such as the massive increase in GER, are presented as non-negotiable, as essential pre-requirements of building a knowledge economy, and thus legitimating the involvement of the private sector and the internationalisation of higher education as a *fait accompli* since the expansion lies far beyond the capacity of the public sector. The second has been to articulate a much more involved role for the state itself. It is not sufficient, according to the KE, merely to liberalise, open markets and deregulate - the state must be directly engaged in driving that process. The state is seen not only as creating markets for knowledge but also regulating them and encouraging the participation of non-state actors. And the third has been to change, or at least attempt to change, the understanding knowledge - as the NKC (2008) put it, the 'mindset' - and to make it much more market-oriented.

In India, this engagement with neoliberalism (which is similar to that of many other countries) has also had a specifically Indian dimension, according to how

these global imperatives have interacted with, and sometimes been opposed by various forms of local politics. Most immediate of these has been the deep-rooted tensions that lie in India's federal structures and the contestation between the Centre and the states. In the defeat of the NKCs proposed centralised authority, the IRAHE, lay a victory for the states, which was further confirmed by the devolvement of other powers and the granting of greater autonomy through the RUSA. But this victory is of a certain kind because the devolvement of power is contingent upon adopting the same market-oriented, corporate-friendly strategies as the centre. Party politics has also been relevant, especially when it comes to legislation. But whilst changes in government may block certain bills (such as the NDA's discarding of the UPA's Higher Education and Reform Bill and the Four Year Undergraduate Scheme (FYUP)) they seem not to affect the process as a whole (as in the subsequent adoption of the RUSA and the Choice Based Credit Scheme).[176]

Other political concerns have not been adequately recognised or addressed by the KE influenced policy-making of recent years. There are commitments to increasing equity and access, for instance along caste or gender lines, but little consideration given to the politics of reservations or the more general question of education as a driver of social change. There is an acknowledgement of the problems of corruption and patronage but the assumption is that a market-oriented strategy of performance assessment and incentivisation will be sufficient to change that culture. There is an assumption that increased enrolments are necessary to build a knowledge economy but surprisingly little consideration given to why or what forms of education are needed, other than they be responsive to the market and the needs of the private sector. The only certainty seems to be that the commercial possibilities of increased private sector involvement, the internationalisation of Higher Education and the application of

[176] See Thakur (2016)

new technologies will continue, irrespective of any change in government (Alcorn, Christensen and Kapur, 2015).

In what follows I shall consider how we might theorise some of the issues explored above. The conclusion of Parts 1 and 2, supported by the empirical example of India above is that the KE has indeed led to the systematic representation of questions of knowledge in terms of markets but has done so in a way that inadequately addresses power and politics. The challenge now is to consider what theoretical tools we may use to describe the political economy of knowledge and to reflect how they inform our understanding of the KE in action.

The Politics of Markets

How markets work is perhaps the most fundamental of all economic questions. And yet, as economic sociologists remind us,[177] the serious study of the economic institutions of the market played little part in mainstream economics from the time of the marginalist revolution in the 1890s until the 1970s. During those decades, economics became, in Robbins's definition "a science which studies human behavior as a relationship between ends and scarce means which have alternative uses" (1932 p.16), while sociologists such as Talcott Parsons were "convinced of the essential soundness of … core economic theory"(1953 p.68) and of the separability, in theoretical terms, of economy and society. The two disciplines, in short, had little to do with each other.

Today, that relationship is much closer, and has become complex. On the one hand, prominent sociological theories such as the New Economic Sociology (Granovetter 1982, 1985, 1992, Swedberg 1997, Fligstein 1996) function as direct critiques of mainstream economic approaches such as New Institutional

[177] See Swedberg (1997), Granovetter (1992).

Economics[178] (North 1981, 1990, 2005, Williamson 1975), with the former representing an *embedded* and the latter an *atomized* view of economic interaction. And yet on the other hand, there is what Fine calls an 'affinity' between the New Economic Sociology and Rational Choice Sociology, in particular Social Capital Theory (Coleman 1988 and Putnam 2000, critiqued in Harriss 2002, Fine 2001). In shifting the burden of critique from rationality to atomisation,[179] New Economic Sociology in fact leaves many of the assumptions of neoclassical economics untouched. The sociological critique of neoclassical economics[180] does not go as far, perhaps, as some would claim.[181]

What is missing, it is argued here, from both the mainstream approaches that inform the KE and their sociological critiques is a convincing account of how market institutions emerge from the combination of politics and the exercise of power.[182] This is not to say there are *no* accounts; power relations have been extensively studied in Game Theory and in New Institutional Economics. In a series of recent articles, for example, Acemoglu and Robinson (2006)[183]have

[178] See Granovetter (1985).
[179]Swedberg (1997).
[180] Referring here to the 'networks' approach of Granovetter (1985,1992, 2002).
[181]See Fine and Lapavistas (2004).
[182] "The major downfall of the network approaches is that they are such sparse social structures that it is difficult to see how they can account for what we observe. Put another way, they contain no model of politics, no social preconditions for [the economic institution in question] and no way to begin to conceptualize how actors construct their worlds." (Fligstein and Mara-Drita 1992 p.20).
[183]Acemoglu and Robinson's model describes two classes – a finite set of elites and a continuum of citizens – who compete at a given date for the right to determine the economic and political institutions until the next date. The choice of economic institution is a choice of two modes of production (labour repressive and competitive) whilst the choice of political institution is between democracy and non-democracy. Given the choice, the elites will choose labour repression and non-democracy, whilst the citizens will choose democracy and competitiveness. The competition is resolved by determining the relative political power of the two factions which in turn has a *de facto* component related to economic resources and a *de jure* component dependent on the choice of political institution. Since the citizenry are assumed incapable of collective action the model becomes a simple game-theoretic calculation of how much the elites should spend on obtaining de facto political power (this is a very thin model of democracy). The decision over choice of institution then affects production, consumption and the allocation of resources for the next date.Given further, rather strong assumptions, it is possible to calculate Markov Perfect Equilibria and to demonstrate conditions under which the elites are able to ensure preferential economic and political institutions and other conditions under which the regime switches. The purpose then of the model is to 'explain' why economic

theorised power in game-theoretic terms, in a bid to explain amongst other things why political institutions (like democracy) may be volatile, whilst economic institutions (like repressive labour laws) may be stable. The problem with such models is that whilst aspiring to analytic rigour, they have little to say about *how* power works, but merely what the consequences would be if it behaved according to a set of assumptions, which have little to do with the (in)stability of democracy and everything to do with mathematical expediency. We do not need a mathematical model to tell us that political influence can be bought and sold.

As an alternative, this section will turn to the work of Gordon White (1993) and, in particular, his 'fourfold typology' of the politics of markets. The intention is not to devise any specific model but rather to survey and classify the different forms that market politics may take. As such, the approach is cross-disciplinary, as different analytical frameworks may be relevant in different contexts and, in fact, some of the most interesting situations may be when power in one form works against that in another. For example, whilst exploitative socio-economic relations may structure a particular form of exchange, the action of the state, or the capacity of the individual to act through association may result in institutions that regulate exchange – as in the formation of unions through which to negotiate collective bargaining, or in tenant farmers voting for land reform.[184] Alternatively, examples can also arise in which the relative effectiveness of one form of association over another may obstruct institutional change – as with, for example, the derailment of Higher Education legislation through party political intransigence mentioned in the previous section or through student and union protests, for example against the privatisation of universities. Protests of this

institutions may be stable whilst political institutions may at the same time be highly unstable (Acemoglu and Robinson 2006).

[184] See Banerjee *et al* (2002).

latter kind can be seen within the broader context of anti-privatisation movements.[185]

Behavioural assumptions are minimised in White's work and the importance of society and culture on market interaction is explicitly recognised. Indeed the substance of market politics – the purpose of market contestation – is multiple in nature, reflecting the various objectives that participants compete for: relative positioning within that market; access to resources or advantage in exchange; and the ability to influence the institutions or the boundaries of that market.

White's classification of the politics of markets has four categories: the politics of *state involvement*; the politics of *market organisation*; the politics of *market structures* and the politics of *embeddedness*. Each will be discussed briefly and some observations made on their ramifications as far as the knowledge economy is concerned, including empirical illustrations.

The Politics of State Involvement

White begins by stressing the unhelpfulness of the dichotomy between the 'political' arena of the state and the 'economic' realm of the market. Instead, it is more appropriate, he says, to think of both the state/public system and the economy as 'political matrices'. This position, which will be revisited throughout this section and the next, seems particularly appropriate for an analysis of the knowledge economy. A major theme of the rest of the thesis is that binaries

[185] Uba (2008) has demonstrated that large-scale anti-privatisation mobilisation had a significant effect on the extent and nature of privatisation in India in the period 1991-2003 Uba shows that the larger and more disruptive economically the protest the more favourable the outcome politically from the point of view of the protesters. Uba also shows that unions in India which were associated with particular political parties tended to avoid protesting even when their own parties were in opposition. This finding illustrates a situation in which the establishment of markets through privatisation involves three sorts of political action - that of the state in initiating privatisation, that of the union as a form of collective action and that of the opposition party in limiting the action of the union.

such as state/market or public/private or commodified/uncommodified are not helpful categories when considered as mutually exclusive. Instead, what we see again and again in the context of the knowledge economy are examples in which the political dynamics are generated by the interaction between the two sides. This is a phenomenon that has already been noted in the discussion on Indian Higher Education where the role of the state in actively creating a market for education was examined. In India, which has a long history of state interventionism, the deregulation of higher education and the deliberate attempts to cultivate a thriving private education market alongside the heavily subsidized public system has depended strongly on a pro-active state. The relevance of the KE, which begins to enter into policy discourses in the early 2000s and to be mainstream by the mid 2000s, in the era of the NKC and other government initiatives, is that its arrival distinguishes between a period where the marketisation of education had been haphazard and opportunistic (in the mid 1990s and early 2000s) and a later period in which the expansion of the private sector was much more centrally driven including encouraging large scale foreign entry into the education market. Marginson sees this form of neoliberalism as being closely connected with globalisation and writes of the nation-state not as having disappeared but as being 'refocused on position and strategy in the global context (Marginson 2002 p.414). On this view higher education is important not only on a national level, but also in terms of how individual states position themselves globally - Marginson interprets many of the recent trends in Higher Education, such as the adoption of worldwide university rankings, the signing of trade agreements (such as the GATS agreement at the Doha round of the WTO in 2005 which institutionalised education as a tradable good) and the growing internationalisation of education as facilitating this form of globalisation (Marginson 2011). The fact that these markets for education transcend national boundaries is another reason to think in terms of the

interactions between states and markets and not in terms of binaries between the two, as though there were separate realms in which states and markets operate.

Setting out from the position that markets and states are inter-related, White goes on to distinguish two types of state involvement in market practices. The first, *direct participation*, is when the state, or one of its institutional components, is itself an actor in a market. This may happen in a number of ways – as a central bank, or a supplier of materials or purchaser of produce – and is the most obvious respect in which politics, understood in a colloquial sense, plays a role in markets. Leading on from this is his second category of state involvement, that of *regulation*. At the simplest level this may mean the parametric policy intervention that is part of the purpose of government, but in a deeper sense it refers to the institutional arrangements – property rights, licensing laws and regulation of money for example– which need to be understood as equally subject to political contestation as direct policy intervention but which are more often considered to be 'in the background'. Finally, there is the form of regulative state power which 'saturates' the market in the sense that certain 'institutional patterns', especially in mature markets, come over time to "permeate, characterise and constitute the social body" (Foucault 1976 in Lukes 1986 p.228).[186] In this way, what may appear to be straightforward transactions (White uses the example of a chocolate bar) are, in fact, saturated with various forms of regulative state power (over the ingredients, terms of sale, etc).

In the context of the knowledge economy, the politics of state involvement are inescapable since so much of 'knowledge production' takes place or originates in sites that are traditionally under direct state control (such as military research

[186] White's description of this form of regulative state power is similar to Foucault's conception of the 'capillary' notion of power – that is, Foucault's insistence that analysis should not be directed towards the regulated and legitimate exercise of power in central locations but instead at power at the extremities, in regional and local forms (Foucault 1980 pp.96–102).

labs)[187] or which depend upon state funding (such as public universities as already discussed). Any attempts to place knowledge production on a market base will necessarily depend to a very high degree on state involvement in both the direct and regulatory forms, because even applied knowledge, such as privately produced technology, depends upon the prior production of pure knowledge, such as basic science, which takes place in the public realm overseen by the state. Paradoxically, however, the rhetoric that comes out of the KE discourse has typically underplayed the direct involvement of the state in markets. For instance, according to the 1998/99 World Development Report, the state is there to "*narrow knowledge gaps* – for example by adopting an open trade regime...or *provide information* to verify quality, monitor performance and regulate transactions to provide the foundations for successful market-based development" (World Bank 1999 p.7). In place of the state as an actor, the entrepreneurship of the private sector as a driver of innovation has been emphasised, even exaggerated.[188] To the extent that state involvement is described, it is in technocratic or bureaucratic terms, as if there were no agency within the market on the part of the state, nor any attempts by other agents, especially corporate ones, to capture or influence the state's regulatory aspect. An alternative narrative has emerged within the discourse in which technological sector innovation is driven by small firms, funded by venture capital and measured in terms of patents issued or other metrics, which are accorded a quasi-scientific status as objective and neutral indicators of the health or otherwise of the knowledge economy.[189] Accordingly, KE policy has focused on various measures – such as tax breaks for SMEs or reforms to patent law[190] – which are designed to incentivise this purported engine of innovation or to make

[187]Although, as Willetts points out, private firms are taking an increasingly dominant role in military research (Willetts 2001).
[188]See, for instance, the World Bank focus on SMEs through the MSME programme: http://www.worldbank.org/en/results/2013/04/05/msme-finance-expanding-opportunities-and-creating-jobs
[189]See Levy, Sissons and Holloway (2011).
[190]See Kohler *et al* (2012 p.11) also Mazzucato (2014) and Mazzucato and Parris (2015).

it easier to secure property rights on its products. The role of the state, as conceived of in this version of the KE, is to facilitate the dynamism of the market. The problem, however, with this rather minimal conception of the role of the state is that it seems neither particularly accurate as an explanation for the success of innovation regimes in the past[191] (in the sense that the success of SMEs in Western economies depended upon the availability of large areas of state-funded research), nor particularly plausible as a recipe for technological development in those countries which are now absorbing the KE as a development discourse (taking the East Asian countries as examples where countries such as Korea or Malaysia retained strong state control over technological sectors). Such an inconsistency between the development trajectories taken by the US and other Western nations and those advocated by the World Bank for developing countries has been described elsewhere – notably, it is the central argument of Ha-Joon Chang's *Kicking Away the Ladder*,[192] in which he argues that protectionist trade policies were essential to the success of industrial policy in precisely those countries which now push most strongly for trade liberalisation in developing markets. In the KE, the idea of a strong state involvement, not only in funding but also directing science policy as in Nehruvian India, is almost never mentioned as a positive possibility and often invoked as inflexible or insufficiently responsive to the market - by contrast, the state in the KE is there to *facilitate* the market. The importance of the Indian Institutes of Technology (IITs) to the successes of contemporary Indian science, is sometimes acknowledged, but far less so the essential role of the state in their creation, and certainly not the nationalist, technological imaginary that motivated it.[193] Thus one can argue that the KE, especially in terms of the role of the state, is vulnerable to the same critique that Chang makes in respect of industrial

[191]See Chang (2001) or Brown (1993) for a discussion of the role of state intervention in East Asia, especially with reference to Korea and Malaysia.
[192]Chang (2002).
[193] Tharoor (2007 p.21).

policy – namely, that it is part of a narrative of development which reinvents the past and distorts the future.

To understand in more detail, and at a more empirical level, why the direct agency of the state in the provision of knowledge, and in particular in the technology marketplace, should be of such importance, I turn to Mariana Mazzucato's recent book *The Entrepreneurial State* (Mazzucato 2014). Mazzucato's position – that it is only the state that can undertake the major part of the risk-taking research, from which genuine advances are made – is reinforced by refuting various KE myths concerning the relative roles played by the state, SMEs, venture capital and the patenting system. For instance, in terms of the state's direct participation in the market through investment, the NIH spending in the life sciences totalled $365 billion in 2004, and this increased in nominal terms every year between 1970 and 2009, dwarfing the wildly fluctuating funds that came from venture capital and stock market investments (Lazonick and Tulum 2009 p.10). More importantly, the risk profile adopted by the state – which is prepared to take on long-term, high-risk projects without immediate or unqualified returns – contrasts sharply with that of the venture capitalists, for whom investment is typically concentrated in areas of high potential growth, low technological complexity and low capital investment (Mazzucato 2011 p.53). The system of management fees and bonuses results in venture capital funds favouring projects where commercial viability can be established very quickly (in under five years). Indeed, Mazzucato points out that the sustained and substantial investment on the part of the US government, through the mechanism of the NIH, renders the US "the nation's (and the world's) most important investor in knowledge creation in the medical fields" (Lazonick and Tulum 2011 p.9). In other words, as soon any attempt is made to organise knowledge production along market lines, the questions of risk and uncertainty regarding the development of knowledge products are so great that it is only the

state that can manage them. So a KE approach should require the state's role to be a powerful one – a fact that KE advocates are seemingly unwilling to accept. A similar argument is made by Bill Janeway in his book *Doing Capitalism in the Innovation Economy*. For Janeway, the innovations which sustain the market economy have always required massive investments whose value in use could not be predicted in advance – "the Innovation Economy depends on sources of funding that are decoupled from concern for economic return" (Janeway 2012 p.2). Indeed, the absence of market discipline is, for Janeway, "the essence of process" since the prime economic virtue is not efficiency but the "ability to tolerate unavoidable waste" and the state has a central role to play in managing the dynamics of innovation - generating the research and building the infrastructure whose economic relevance can only be seen in hindsight (Janeway 2012 p.74). But for Janeway, there is an extra dimension to these dynamics – that of financial capitalism, which he sees as having a crucial role both 'upstream' – where speculation can be the engine of investment (as in the building of the British railway system) – but more particularly 'downstream' where financial bubbles and speculation on new economic entities are recurring features with sometimes devastating consequences when those bubbles burst. Here too, though, the state has an essential, if unenviable, role in managing those consequences and in negotiating terms with financial institutions.

Looking beyond the role of the state as direct actor to that of regulator, we again see how involved the state must be in the politics of knowledge markets. Because knowledge lacks many of the qualities of a material commodity (as has been reiterated throughout this thesis)[194] the establishment of markets through intellectual property rights, patenting law, or indeed the privatisation of education as illustrated in the previous section, is a far less straightforward task than would be the case for a material commodity. Generally, it will be an even

[194] It is important to note that although the non-materiality of knowledge still depends upon material factors for its production (schools, universities, labs etc).

more politicised process, in which every detail will be keenly contested by market agents seeking to gain some form of advantage. Again the KE discourse, while emphasising the importance of regulation (albeit of a fairly liberal kind), is largely silent as to how the politics of the regulatory process might influence the functioning of markets. In the case of Indian Higher Education, as has been seen, the issue of regulation was highly contentious, with the NKCs proposed centralising authority being unacceptable to the individual states. In the end, the RUSA created a hybrid form of regulation with local state regulators (the State Higher Education Councils) answerable to a centrally determined set of criteria.[195] In the era before the NKC, the absence of regulation, such as in the Chhattisgarh example, led to direct conflict (between the UGC and the state government of Chhattisgarh) which was only resolved through the courts.[196]

However, I now want to suggest another way that thinking about the politics of state involvement might help us better to understand the KE. Here, I want to argue that the particular take that the KE has on state involvement in markets, in which it perceives an active role but also a limited one, primarily concerned with the creation and regulation of the market, can be contextualised within a reaction to the politics of state involvement in the era immediately prior to that in which the KE emerged. To see this, we must return to the US and arguably the most important example of the politics of market *regulation* of this kind - the introduction of the 1980 Bayh–Dole Act.[197] The Act allowed – indeed actively encouraged – small businesses, universities and research labs to 'own' inventions

[195] The RUSA makes funding contingent on two sets of commitments: commitments made by States to the Centre and commitments made by institutions to the States. The former commitments essentially entail the States accepting funding obligations and governance reforms and also accepting the methodology of the RUSA. This latter point means compiling indices to measure various target areas including GER, numbers of new universities, equity, governance and private sector involvement. (RUSA p.107-8) The States are required to set out five-year plans to achieve these targets and funding can be withdrawn if they are not met (See also RUSA annexure 3)

[196] Kapur and Mehta (2007)

[197] Co-sponsored by Senators Bayh (Democrat) and Dole (Republican), the Bayh–Dole act was drafted in the final few months of the Carter administration but was not ratified by Congress until early in the Reagan presidency.

and to patent federally funded research which would previously have been the automatic property of the US government. Exclusive licences could be issued, and institutions were required to offer patent protection to researchers. Similar pieces of legislation have been or will be enacted in other countries.[198] The motivation for the Act was the perception that the US was 'losing its way' and was unable to capitalise on its significant research superiority, as evidence for which supporters cited how very few of the US governments' patents had been developed commercially.[199] Through the Act, the state directly transformed the market, fundamentally altering the incentive structure which governed R&D pathways (Boettiger and Bennett 2006) and ushering in a whole new regime of intellectual property ownership. As a direct result of Bayh–Dole there was an explosion of patents based on publicly funded research[200] and some universities saw their revenues soar as a result (although these benefits were very unevenly held).[201] Many academics used their experiences of the new patenting regime to leave academia and start up enterprises of their own which they knew would still receive federal funding under the terms of the Act – some of these businesses are today's world leaders.[202]

Opinion is divided as to the overall impact of Bayh–Dole. Various criticisms have been made, with some arguing that the Act has not only damaged the US innovation system but also broke the bond between public research and the

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[198]Mowery and Sampat (2005).

[199] In 1978, fewer than 4% of 28,000 patents held by the US government had been commercially developed (Loise and Stevens 2011 p.186).

[200]The category of patents in the United States which represent the most significant scientific applications are termed NMEs (New Molecular Entities). Following Bayh–Dole, a remarkable 75 per cent of these traced their research not to private companies but to publicly funded labs, either through the NIH in the US or from other public labs worldwide, such as the MRC in the UK. As noted before, the patents issued as a result of private sector research have on the other hand typically been for products which do not represent a significant innovation – fewer than 14% qualified for NME status – and which instead reflect the commercial possibilities of reissuing old products in new forms (Mazzucato 2014).

[201] In 1992 the top six US universities were each drawing patent-based income in excess of $12m, whilst most universities earned less than $500,000 (Drahos and Braithwaite 2002 p.163).

[202] By the late 1990s, more than one third of biotechnology companies had started in this way – see McMillan *et al* (2000).

public good.[203] Others have defended the Act; in 2002, *The Economist* trumpeted the law as "possibly the most inspired piece of legislation to be enacted in America over the past half-century" (*The Economist* 365, 2002). What is beyond debate, however, is that Bayh–Dole ushered in an era in which knowledge policy became politicised to a very high degree – and indeed was central to the identity of the Reaganite neoliberal state.[204] However, this central role has something of a dual aspect. On the one hand, Bayh–Dole represents an attempt to commodify public knowledge and to place it firmly within the market realm of private ownership and property rights. Such an attempt reflected the dualistic Cold War, Manichean binary world view – public/private, state/market, capitalism/communism – and also the deeply-held anti-government sentiment summarised by Reagan's scientific adviser, Simon Ramo, who described government as "an incompetent third party" and argued that "the market will make the best decisions as to what … represents success in that area of technology" (1984 p.39). But on the other hand, as David Dickson describes in his book *The New Politics of Science,* the Reagan administration also made science policy a key instrument of the state in achieving foreign policy and national security objectives, particularly regarding the Cold War,[205] and for this reason exercised an unprecedented degree of state political control over the production of knowledge, bolstering the massive research programmes which took place at DARPA[206] and other government agencies.

In the years that followed, with the end of the Cold War, the erosion of the Washington Consensus and the emergence of the KE, this contradiction

[203]See Burke and Leaf (2005).Boettiger and Bennett (2006) identify four main issues: first, the need to protect noncommercial research; second, the need to provide access to publicly funded inventions; third, the need for reform to address the 'anticommons' effects (discussed below); and fourth, access to patented, publicly funded technologies for humanitarian purposes.
[204] See Slaughter and Rhoades (2004) and also Peters and Roberts (2008).
[205] This strongly hawkish tendency was embodied in such men as Edward Teller (formerly of the Manhattan Project, the 'father of the hydrogen bomb') and led to massive increases in militarily relevant scientific research (Dickson 1984, Ch. 2).
[206] The Defense Advanced Research Projects Agency within the US Department of Defense.

between market fundamentalism and state control has played out in interesting ways. Ironically, the only serious threat to the privileged status that DARPA has enjoyed comes from the Republican Party, specifically the Tea Party movement who are ideologically opposed to any government spending on this scale. However, that aside, the US government continues to invest heavily in R&D. But the attempt to *fully* privatise public goods, which some saw as the eventual outcome of a process that would start with Bayh–Dole, seems now little more than a pipe dream. The reality, then as now, is that the market will never operate independently from the state.

To understand why this should be so, one must understand that Bayh–Dole was a (partial) failure because the entrepreneurial boom that it predicted did not really materialise – the few universities that did manage to make a lot of money from patents were the exception rather than the rule.[207] Although the volume of patents increased dramatically, this trend predated Bayh–Dole and those universities that set up TTOs [Technology Transfer Offices] did not necessarily see the results they expected. According to the OECD "the record of TTOs has not been one of great success because results have been skewed, with only a few discoveries yielding major revenue flows. Furthermore, the results are highly skewed across institutions since a small number of institutions account for the majority of patents." (OECD 2008 p.102). Boettiger and Bennett (2006) also describe a particular 'anticommons' effect of the Act, whereby the establishment of incentives for universities to manage their intellectual property competitively led to difficulties in aggregating intellectual property rights to work collaboratively. This was a particularly acute problem in areas of public rather than private benefit in which multiple technologies needed to be pooled together. As an example, Boettiger and Bennett cite the early development of a malaria vaccine, in which the major antigen was found to be covered by 39

[207]Marginson (2009).

separate families of patents. Thus the neoliberal project of the 1980s – to render knowledge into the form of a private good – failed in the sense that privatisation did not after all lead to *public* gain.[208] And the KE, or more precisely the political climate in which the KE emerged, can be seen as a response to this failure.

In understanding how this might be the case, it is worth reiterating that whilst the KE is the systematic representation of questions of knowledge in terms of properties of markets, this is not synonymous with total commodification. What came about from the crucial discussions in the OECD in the late 1990s and to a lesser extent in the World Bank (as set out in Part 1) was a realisation that total commodification is counterproductive because if knowledge is withheld from others then its usefulness is limited. As the OECD puts it: "The transmission of knowledge is just as significant for innovation as knowledge creation, since it is only via diffusion that new knowledge can have economic and societal impacts … commercialisation requires secrecy in the interests of appropriating the benefits of knowledge, whereas universities may play a stronger role in the economy by diffusing and divulging results" (OECD 2008 p. 30–31). The KE, therefore, accepts the limitations of commodification and of state regulation – that knowledge cannot be either a pure public or an exclusively private good – and instead specifies that at least a part of the realm of knowledge production must take place in the public sphere, hence the KE does place a value on open-access knowledge as well as that protected by intellectual property rights. [209] However – and this is the crux of the matter – whilst the KE perceives a role for state-funded, publicly owned, open access knowledge production, the solution that the KE finds for the limitations of marketisation *is itself expressed in market terms*. There are two elements to this: first, the OECD is clear that whilst the production of research capacity in the public sphere is vital, the responsibility for commercialising it lies with the private sector – hence the purpose of open

[208]Marginson (2009).
[209]See Marginson (2009 p.193)

access knowledge is, in the OECD's view, to stimulate innovation in industry.[210] Once again, the public/private dichotomy is broken – the KE is about a form of partial commodification of knowledge. The second aspect of the solution that the KE offers to the problem of uncommodifiable knowledge is a question of government – government through measurement hence the emphasis on performance assessment, university rankings, citation indices, research evaluations, league tables and knowledge economy indicators.[211] As was noted in the previously, performance assessment is of critical importance to the K4D programme, the NKC's proposals and the RUSA legislation. And, whilst the KE would seek to portray the process of measurement as an objective, scientific or neutral one, it is no less political and no less a question of government than those attempts of previous generations to regulate knowledge in other ways.

I shall return to these two important points – partial commodification and the rationalities of government – in the subsequent sections of this part of the thesis. For now, however, it suffices to observe firstly, that the politics of state involvement in knowledge markets are essential to the knowledge economy since the state must play such a leading role in every aspect of knowledge production - providing investment, establishing goals, managing institutional and regulatory structures, negotiating international protocols and underwriting risk. Secondly, as Janeway describes at a national level, the negotiation of these political arrangements is particularly subject to corporate and financial interests, through lobbying and corporate pressure whilst at an international level, the terms under which global markets for knowledge are established are disproportionately influenced by wealthy nations, especially the US, who possess institutionalised privileges and superior leverage with the multilateral forums in which these terms are negotiated, such as the WTO (see for instance Wade 2003). And finally, because the KE discourse systematically downplays the role

[210]OECD (2008 pp.31 and 42).
[211]Marginson (2009 p.209).

of the state in knowledge production whilst simultaneously bolstering its role in the creation of markets, facilitates the interests of those groups which already have the greatest influence within the market and the greatest capacity to influence the state.

The Politics of Market Organisation

The second category that White considers is that of market organisation. There are, of course, many ways in which actors in markets collaborate, co-operate and otherwise associate with each other in order to pursue their individual interests, but White suggests a further classification into three sub-categories, *formal association, networks and hierarchies.*

The first of these, *formal association*, refers to such forms of association as lobbying, trade unions and commodity cartels. As with direct state participation, this is the most visible form of market politics in that members of an association requires some form of identification and representation, although not necessarily public. It is also the form of organisation which leads most directly to interaction with the state itself and which is therefore particularly important when a market is recently established and when regulative institutions are especially contestable.

The second, *networks,* takes place at a more informal level and encompasses a range of social interactions, including trust, reciprocity etc, which influence the ways in which markets work. Network Theory is central to both New Economic Sociology (especially that of Granovetter[212]) and Social Capital Theory

[212]Granovetter (2002 and 1985).

(Coleman[213]) and yet, as observed before, neither approach makes power a central part of analysis.

Finally, in the concept of *hierarchies*, White invokes Williamson's argument that hierarchical structures, such as firms, represent alternative 'governance structures' within markets.[214] Williamson's work, which looked specifically at the 'vertical integration issue' and US antitrust law, laid the foundations for transaction cost economics, building upon famous papers by Coase and later Arrow.[215] For Williamson, under certain market conditions the firm offered a natural solution to the problem of positive transaction costs – far from being an inexplicable 'Black Box' it was instead "an island of planned coordination in the sea of market relations"(Richardson 1972 p.885).There is, therefore, an inevitable tension between the hierarchical power relations that exist within a firm and the market relations that exist between different firms. Moreover, given that adaptability is an essential ingredient of Williamson's theory – in that firms expand and contract – this relationship is dynamic. However, when one thinks of what network or hierarchical structures might mean in the context of knowledge, it is not clear that these are the only associational categories. For instance, Demil and Lecocq (2006) argue from within a transaction cost framework that open source software behaves neither as a market nor a network nor a hierarchy but has a quite separate governance structure, which they term 'bazaar governance' and which Benkler calls 'commons-based peer-production'.[216] They use Williamson's notion of a governance structure as "the explicit or implicit contractual framework within which a transaction is located" (Williamson, 1981, p.1544) and they distinguish bazaar[217] governance from the

[213]Coleman (1988).
[214] Williamson (1975 and 1981).
[215]Coase (1937).
[216]Benkler and Nissenbaum (2006).
[217] The term 'bazaar' comes from Eric Raymond, a pioneer of the open source software movement, who likened the production of open source software to a bazaar as opposed to the 'cathedral' of more traditional software production (Demil and Lecocq 2006)

other governance structures by its two distinctive properties: open access and the specific ways in which assets, both tangible and intangible, are transacted. The point is to consider what happens when transaction costs are minimal or non-existent and to theorise what types of contractual agreement are put in place to govern exchange. It would seem that at least to some extent the KE leads to partial bazaar governance, as open access seems likely to be an integral part of most knowledge-based activity, as mentioned above.

These forms of organisational market politics, which White outlines in general, are also extremely relevant to the specific case of the KE. This is for the simple reason that new knowledge – if it can be rendered into a marketable form – offers the possibility of monopolistic or oligopolistic competition. If *I* know how to produce something and no one else does, then I am in a position to profit greatly from that knowledge (provided, of course, that I can persuade others that they want what I produce). It therefore follows that if firms can collaborate with one another to keep an exclusive hold on new knowledge then they may be able to monopolise the profits between them. Knowledge cartels are big business and always have been. Even in the first half of the 20th century, the great industrial corporations – such as DuPont in the chemical industry and Ford in the automobile industry – which were already dedicating significant resources to research,[218] were no less industrious in lobbying government and pursuing and enforcing patents. Patent law was seen as the most effective and efficient way of securing the company's profitability, and the legal departments swiftly became one of the corporations' most important assets.[219] Patents were so important because, at least in the US, antitrust legislation was vigorously enforced to ensure competition. This legislation was itself a response to earlier cartels, such as the Standard Oil Trust or the American Cotton Oil Trust, which

[218] By 1958, the research laboratories of DuPont were employing 4% of all industrial chemists in the US, and the number of PhDs working for the company was equal to one third of the total number in the academic system (Hounshell and Smith 1988 p.366).
[219] Drahos and Braithwaite (2002 Ch. 3).

had caused outrage with their price fixing. But with a secure patenting system, corporations were able to form and dissolve the types of association White describes, through co-operative measures such as patent-sharing, and non-co-operative measures such as patent enforcement. Patent law facilitated monopolisation and cartelisation. Such associations were not, as Drahos and Braithwaite (2002 p.157) observe, about sharing knowledge but privatising it to ensure maximal gain, just as, in the era of the KE, legislation such as Bayh–Dole also led to negative cartelisation and an 'anticommons'[220] in US science, in which universities were encouraged to act competitively with regards to intellectual property and put their individual commercial interests ahead of the considerations of public good.

At the same time as cartelisation is a strategy for gaining supremacy within an existing market, so too is it a tactic employed to secure preferential treatment in an emerging market. From an international perspective, major US corporations have for some years made it a key priority to get intellectual property rights linked to trade treaties (which would eventually become formally inscribed as Trade-Related Intellectual Property agreements, or TRIPS) – thus permitting global knowledge cartelisation.[221] Their endeavours to do so involved two distinct phases in which political pressure was brought to bear; firstly, domestically, through the intense lobbying of Congress; and then secondly, through the aggressive brinkmanship which the US brought to bear on the WTO in order to get its own way. Drahos and Braithwaite describe the extensive use of Section 301 powers[222] against various developing countries, such as Brazil, India, South Korea, Argentina and Thailand – the culmination of which came in

[220]The 'anticommons' refers to a situation in which multiple parties owning technologies or part-technologies may impose daunting transaction costs on or otherwise prevent others seeking to utilize those technologies.
[221]Drahos and Braithwaite (2002 p.92).
[222]Section 301 was part of the 1984 Trade Act and gave the president special powers to ensure that trading nations provided 'adequate and effective' protection for American intellectual property. These included introducing protectionism, or even applying trade sanctions, as happened in the case of Brazil. See Drahos and Braithwaite (2002 pp.133-149).

the Uruguay round of talks in 1994, when the developing countries caved in and accept TRIPS, despite the fact that, as Stiglitz and Charlton observe "the vast majority of the gains … would accrue to developed countries"(2005 p.47). Some two decades after the Uruguay round, it would appear that this prediction has been confirmed (Lofgren and Williams 2013). In the context of Education, as noted previously, it was at the Doha round of the WTO in 2005 when India submitted its offer to GATS to create a market for foreign involvement in Indian Higher Education - this offer was part of a complex series of negotiations in which India sought to secure various concessions from the WTO. The actual agreement was only signed late in 2015 in Nairobi and the crucial issue that India secured was a commitment on the part of developed countries to reduce their food subsidies[223] - once the US had made concessions over its food stocks, India agreed to GATS.

Once again, the particular failing of the KE is that taking the discursive form that it does, with little acknowledgement of the political, it cannot give an account of the key forms of the politics of market organisation such as we have seen in the corporate capture of the state, and the politics of trade negotiations. It cannot explain the way in which corporate lobbying and international diplomacy actually structure the markets it says are needed. Moreover, by the omission of the important issue of market organisation from analysis and scrutiny, the KE may advantage those with the greatest capacity for organisational politics of this kind.

The Politics of Market Structures

Whilst White's previous two categories involve deliberate, purposeful action by participants in a market, the third category, *market structures*, instead refers to the

[223] See, for instance, a recent article in *The Hindu* http://www.thehindu.com/opinion/columns/will-the-gats-close-on-higher-education/article8042337.ece

patterning of market exchange by pre-existing social and political structures. Exchange is seldom symmetric, free or fair; and those asymmetries, whether from differences in individual endowments of participants in that exchange, or their relationship to the thing being exchanged, or a broader form of relationship such as class, may usefully be thought of in terms of power. So, whereas the two preceding forms of market power reflect the conscious political actions of particular agents within a market, the politics of market structures represents the process of market exchange as subject to the power dynamics of a political relationship. For instance, Bhaduri, in his 1986 paper on 'forced commerce' argues that market exchange should not be thought of in terms of allocative efficiency or competitiveness, but instead as one class extracting a surplus from another.[224] White also highlights Jankarajan's1992 work on interlocking agrarian markets in India,[225] in which certain strategically situated groups dominate transactions with other market actors and benefit from unequal exchange. To some extent the power relations which emerge are to do with the imperfect nature of these agrarian markets, but White also highlights work within the Marxian tradition, such as Roemer, Bowles and Gintis, and Evans,[226] which engage in different ways with the idea of exploitative[227] power relations being an intrinsic part of market exchange, even in competitive markets.

One important part of KE policy is the gradual (and not-so-gradual) drive to place education, especially tertiary education on a marketised basis – not necessarily through complete privatisation, but certainly as part of a broader process of 'diversification'. Recall that the theoretical underpinning of these sorts of policies is the reconceptualiasation of education at the micro-level in

[224]Bhaduri (1986).
[225]Jankarajan (1992).
[226]Roemer (1982, 1988), Bowles and Gintis (1990) and Evans (1990).
[227] Marx's use of the term 'exploitation' is often understood in a specific sense to do with an asymmetry in labour relations, whereby the exploiter appropriates surplus labour from the exploited. Here and elsewhere in the thesis it is used more loosely to refer to any pattern of oppressive exchange or redistribution in labour markets.

terms of investment in human capital – a cost that will eventually be offset by a benefit in the form of an increased return on that human capital. As such, it renders the individual as an agent in a market which is neither complete nor competitive and which trades primarily in merit goods[228]. Seen in these terms, the politics of market structures for human capital replicates the politics of the labour market. And the terms in which the individual can then participate in that market are very definitely constrained by political factors.

In any country, developing or not, the question of who has access to which tiers of education and under which terms is inextricably entwined with the historically contingent, political realities of the society in question. These social and political categories, such as class, caste, gender and race, do indeed pattern the engagement of individuals with education and hence with the knowledge economy. One cannot contemplate educational reform without considering how it will affect different groups. What, for instance, will be the effect of introducing tuition fees on students from poorer backgrounds, or how should one try to address persistent under-representation of particular groups at various educational levels?[229] Education policy has always been amongst the most politicised areas of policy because it is through education that society can most directly and radically reshape itself. In a developing country, this is especially pertinent because the very idea of development presupposes that the status quo reflects a historical legacy, perhaps colonial or post-conflict, that one would like to change. All governments, through the simple act of drawing up a curriculum, are acting politically – establishing national narratives, setting ethical parameters and equipping the next generation with a particular set of skills and expectations of how those skills are to be used. And it is impossible to provide an education

[228]In economic theory a 'merit good' satisfies two properties: firstly, that the net benefit to the consumer is not apparent at the time of consumption and secondly, that whilst the consumption of a merit good is likely to be of benefit to society, this benefit is either not known or not recognised at the point of consumption. Thus there are significant information failures and externalities associated with merit goods.

[229]See St George (2006) for a discussion of the KE approach to education in Vietnam.

system without making a political decision about how that system is to be accessed, most obviously in how it is to be paid for. In the Indian case study, the criticisms that were made of the Indian government's treatment of equity issues in Higher Education were that its simplistic treated the question of reservations in particular and inequality in general reduced the problem to a question of access and failed to adequately consider how the education system itself reinforced those inequalities.

Given all of the above, it is very clear that the KE is an essentially political undertaking. By redefining all aspects of knowledge, including education, relative to the market, the KE reassigns the political questions of who has access to education, how that access is provided, and what that education implies, into the no less political questions of who has access to markets, how we participate in markets, what we can obtain through markets and what the markets do to the residual state sector.

The Politics of Embeddedness

White's final category, embeddedness, raises the vital question of how power relations in markets are affected by the social relations in which they are embedded. Again, when one thinks of examples such as the effect of gender or caste on access to education, it seems very unlikely that any meaningful discussion of power in the context of knowledge could be 'disembedded' – abstract, idealised and atomised. However, whilst embeddedness may be a necessary condition for a putative politics of markets, it may also be insufficient, in that we need further specification by context for the theory to have content. This is the substance of Swedberg's criticism (Swedberg 1997 p.171) of

Granovetter, for whom embeddedness is one of the two pillars on which the New Economic Sociology is founded.[230]

In the context of the KE, one is confronted by an effect which is almost the opposite of that described by White; he is interested in how our social embeddedness affects our behaviour in markets, but one could equally well ask how participating in a market is itself a form of embedding. As we move towards a world where more and more of our interactions are conducted upon market lines, one might well ask what this does to our social relationships. For example, Collini's caustic attack on the Research Excellence Framework for British academia is relevant.[231] When he warns that British academics risk "becoming door-to-door salesmen for vulgarized versions of … increasingly market-oriented 'products' ", the problem is not only with the inappropriateness of market techniques, such as the criterion of 'impact' in the allocation of funding, nor even with the political imperatives that drove their introduction. The problem is also that we are fast approaching a point at which no other mode for valuing knowledge *can* be applied – other than as a "product" – and which therefore severely, perhaps fatally, undermines certain types of knowledge, and certain types of values, in a fundamental and irrevocable manner. Commodification of knowledge *redefines* its subject in terms of both production and consumption, and it *reorients* the relationships between the producers and consumers of that knowledge.

By setting out White's categories of analysis, a framework has been constructed on which to develop the detail of the critique of this thesis. In this section, I have argued two main points. The first is that when it comes to knowledge the politics of markets is an essential category of analysis which cannot be ignored. The second is that the KE, through its failure to substantively engage with this

[230] The other is the social construction of the economy.
[231] Collini (2009).

fact, has itself led to the exercise of a particular kind of political control in which policy decisions which generate very significant effects have been represented in apolitical terms. These two themes will be explored further in the next two sections. But, by way of a conclusion to this section, I wish to briefly mention Colin Leys's concept of *market driven politics*, that is to say the thesis that, increasingly, modern politics is driven by the impact of global market forces. On this view, the effect of globalisation, through the dismantling of political and trade barriers following the end of the Cold War, the deregulation of global finance controls such as were initiated through the Bretton Woods institutions, the massive expansion of trans-national corporations and the pervasive spread of market-ideology has been to place an irresistible pressure on national governments to facilitate the spread of markets at a domestic level. Given the global nature of the KE – whether we are talking about agreements on intellectual property or on the internationalisation of higher education – and the sense in which the KE is fundamentally to do with the expansion of a market mentality, there is a good fit between the critique of this thesis and the concept of market-driven politics. So whereas an understanding of the politics of markets may help us understand the shortcomings of the KE (as an account of knowledge) the idea of market-driven politics may give some insight as to why it has been so influential (as a discourse).

Commodification

In the previous section, it was argued that that the politics of markets, in its various forms, is an essential aspect in understanding questions of knowledge, and that by this token the KE is not well placed to accommodate this fact, based as it is on intellectual traditions which conceptualise market interactions in a very different, depoliticised, manner. For this reason, the KE cannot be considered effective as a descriptive framework; it does not engage with the fundamentally political nature of the relationship between knowledge and development. However, the KE is much more than a descriptive framework; it is also a discursive system, both in and of itself, through which ideas are communicated, policies constructed and effects generated. The question then becomes *how* such a system achieves these sorts of processes.

The most direct way to answer this question is to return to the argument of Part 2 – that the KE is to be understood as the systematic representation of questions of knowledge in terms of properties of markets. Recall that this characterisation is a wide-ranging one – there are many different ways in which the KE relates knowledge and markets, as discussed extensively in Part 2, and many effects that these lead to. But in this section I will focus on what is perhaps the most fundamental of these, and consider the idea of *commodification*, the transformation of a thing – in this case knowledge itself – into a commodity to be exchanged in a market. In the following, I offer an interpretation of KE in terms of the commodification of knowledge.

The key idea in invoking commodification here is that *the process of transforming knowledge into a commodity implies a simultaneous transformation in the social and political relations of those who now exchange that knowledge in a commodified form*. What we are

looking for, in other words, is a dynamic account in social and political terms of what happens when knowledge is rendered into a market form.

As a consequence, I look to political economy, and shall consider the two great conceptions of commodification, of Karl Marx and Karl Polanyi, and ask what insights we might take from these approaches in the specific case of knowledge, and also what shortcomings might arise from so doing. In revisiting these scholars, I look, especially to Marx, for an account of capitalist development as it seems that thinking of the knowledge economy in terms of the capacity of capitalism to reinvent itself in response to political change, may be a productive approach to take. Overall, my conclusion will be that commodification is indeed a valuable lens through which to examine the KE and to make sense of the relationship between knowledge and capitalist development. Both Marx and Polanyi have many insights which we could usefully seek to generalise. At the same time, however, I will also put forward three main arguments regarding the limitations of such an approach, which in turn suggest new lines of thinking and also justify and motivate other sections in this thesis.

I shall begin this section with a general caveat that the KE is a phenomenon that is broader than commodification. There are elements of the KE that are not well thought of in those terms, and so commodification supplies only a partial critique of the KE – this is one motivation for the next section, concerning Foucault and governmentality. With this in mind, the first main argument (regarding the limitations of a commodification-based critique) concerns the dialectical approach adopted by both Marx and Polanyi. Each presents a grand narrative of commodification based on the fundamental contradiction between the commodified and uncommodified forms. The nature of this contradiction, such as that between Marx's *use-value* and *exchange-value*,[232] for instance, or

[232] See Marx *Capital* Vols. I, II. (1990, 1976, 1867)

Polanyi's idea of fictitious and non-fictitious commodities,[233] is essential to their account of the dynamics of commodification. But this sort of approach is primarily concerned with *what* the effects are of a process of commodification which has already taken place (or is in the midst of doing so). However, here I would like to make the point that of no lesser importance is *how* the details of the process of commodification came to be, and *why* they took the form they did. In other words, if a commodity is to be traded in a market, then what are the ways in which that market is created and regulated, and connected to other markets? And in what ways do different agents in that market relate to one another? How does one understand the politics of markets which underlie commodification? The importance of these questions reinforces the purpose of the previous section, where these points were addressed directly and leads us to considering not only commodification itself but the steps that precede it – this, I would suggest, is an important way in which to think of the KE, as a discourse that *paves the way* for commodification. The second argument concerns the relationship between the commodification of knowledge and commodification more generally; do we see the latter as a single phenomenon of which the former is merely an element, or as multiple phenomena in which the dynamics of different commodification processes may coexist or even be in conflict with one another? I shall argue that neither Marxian nor Polanyian approaches to commodification can be easily extended to the commodification of knowledge – at least not directly - because the mechanisms of political change, such as Marx's class consciousness or Polanyi's Double Movement, do not have exact parallels. The third and final point, which extends the second argument, is that a dialectical approach may obscure the crucial fact that knowledge is typically seldom or perhaps even never wholly commodified, but instead almost always exhibits both commodified and uncommodified characteristics simultaneously. I shall argue that it is this 'unity of opposites' that generates the dynamics of the

[233] See Polanyi (2001 p.71).

KE and produces some of the most striking effects, and is consequently where our attention should be focused. It seems to me that the KE, and perhaps modern capitalism more generally, depend upon these uncommodifed or decommodified spaces, or more particularly on the exploitation of them by the commodified realm. The systematic representation of knowledge in terms of markets, explained in Part 2, is not about the extension of a market-mode of production to all aspects of knowledge but rather to connecting the non-market sphere to the market.

Commodification and the Knowledge Economy

Let us begin with some generalities about the KE and the commodification of knowledge. First, a caveat: the KE should not be thought of as equivalent to the commodification of knowledge, because the spectrum of ways in which the KE renders questions of knowledge into properties of markets is broader than just commodification. Hayek's idea of spontaneous order, for instance, is not an example of commodification; instead it is the idea of market as *ordering principle* of knowledge. Hayek is not suggesting that knowledge itself is or indeed should be exchanged in markets; he is saying that the process of market exchange communicates or co-ordinates different forms of local knowledge. In Hayek's formulation, the dynamic aspect is this process of exchange and it is the participants in that exchange whose relationship is changed rather than the knowledge itself. On the other hand, an essential property of the commodification of a thing is that of *transformation* of the thing in question. Commodification of knowledge entails a *change* in the way we either produce, consume or exchange knowledge. Moreover, this change must take us from a non-market to a market mode of production, consumption or exchange, and the markets which are actually created as a result are, in some sense, markets for knowledge. Commodification can thus be distinguished from other forms of representation (such as spontaneous order or innovation systems) in which

markets are held to have certain relevant properties concerning the creation, dissemination or utilisation of knowledge.

However, whilst the commodification of knowledge may not encompass every aspect of the KE, it nevertheless remains an extremely broad and useful concept in its own right. We can identify a hierarchy of levels at which commodification operates. At the base level is the most literal form of commodification, in which markets and formal property rights are established such that knowledge, in some shape or form, can be traded as a commodity in those markets, for instance through the mechanisms of intellectual property legislation or patenting. Indeed, KE advocates place a great deal of importance on establishing strong intellectual property regimes, explicitly promoting a commodified approach. When such formal structures are implemented, knowledge becomes something to which ownership and use may be ascribed to some and proscribed to others, and moreover, this ownership then can itself be sold or exchanged. Nevertheless, that knowledge is still unlike a conventional commodity in many important respects – for example the derivation of a monetary income from intellectual property relies not only on the production of a material product utilising that knowledge but also on the fact that its being the intellectual property of X excludes Y or Z from owning the same. However, we also see that this exclusivity is only partial – in that Y or Z may well be able to use similar knowledge to the same end – and temporary – in that almost all intellectual property has some form of temporal limitation. Therefore, the process of commodification is unlike the commodification of material objects or even of other quantities such as labour or land, but is a partial and incomplete process, where the precise nature of the type of knowledge being commodified affects the nature and extent of possible commodification. Digital technology, as applied to the marketing of music for instance, leads not only to exchange of ownership but to licensing, virtual ownership and various other forms of market

exchange. Patenting law, as another example, creates a very specific set of market dynamics, such as occur when a drug patent expires and generic drugs can be marketed. And academic research, with its growing emphasis on open access, offers an example of a process of commodification that is only partial and to which there is also a counter-movement of decommodification, as discussed in the previous section. For these reasons, it would seem optimistic to conceive the commodification of knowledge as a unitary phenomenon governed by a single set of rules.

Beyond this base level of commodification, at which knowledge is actually transformed into some sort of saleable commodity, there are also important aspects of the KE in which forms of knowledge, whilst not actually subjected to a property rights regime, are still rendered into market terms and effectively made commensurable, measurable and exchangeable with material commodities or with money, and as such governed by equivalent decision-making processes. A key example is, for instance, the idea of Human Capital Theory as applied to education, in which the decision-making process becomes one of investment (in schooling or in resources for schooling), and the criteria for such investment become the likelihood of there being a return on that investment (in terms of employment opportunities or wealth creation). In this example, the knowledge in question is not literally transformed into a commodity, as it is embodied in individuals (excepting the possibility of slavery) – but the way in which we conceptualise the value of that knowledge *is* thus transformed. So in this case the primary effect of commodification is to make us reconsider the meaning and purpose of education, by locating it within the market framework. A macro-level equivalent is the KE approach to knowledge as a form of national capital, as in endogenous growth theory, leading to a similar calculus of costs and benefits surrounding the state's decisions to invest in one form of knowledge over another. Again, it may not be that markets are actually created in which

knowledge is to be traded, but just that the mentality applied to making decisions about knowledge has become market-oriented. The crucial point, however, is that a transformation has taken place (in terms of how knowledge is conceptualised); this is why the examples above do constitute instances of commodification whereas spontaneous order does not.

Thinking about these different levels at which knowledge may be commodified reinforces the earlier observation that the KE itself, expressed in terms of, mainstream economics, would seem to lack an adequate language to describe those non-market qualities, swept away by the process of commodification. As discussed previously, standard neoclassical assumptions – that commodities are homogeneous and discrete, rivalrous and at least partially excludable, and that property rights are attributable and externalities absent – simply do not hold for those things – land, labour, money, knowledge, culture, health – which provide the most important examples of commodification as the source of social and political change. Moreover, the utilitarian criterion of market efficiency can be applied only after commodification has taken place and market relations are in force. But it is precisely this process that is of interest here. Mainstream economics fails to capture the changes that result from the imposition of market structures because it has no way of adequately describing the non-market interactions that precede them. It is for this reason that we look to political economy for an alternative account.

Commodification and Capitalist Development

Commodification has always been at the heart of the political economy study of capitalist development – it is, after all, with the 'analysis of a commodity' that Marx famously begins *Capital* (1990, 1976, 1867 p.125). Capitalism is driven by commodification, by the need to subject more and more things to commodified production, because without commodification there can ultimately be no

(capitalist) accumulation. Commodification is self-generating, in the sense that capitalist production also has a tendency to commodify the factors of production – as Sraffa says, capitalism is the 'production of commodities by means of commodities' (1960) – and also in that the competitive pressure of capitalism will always drive firms to "expand markets by occupying hitherto non-market spheres" (Leys 2001 p.83).The KE is an outcome of just this kind of competitive pressure.

With the collapse of communism in Eastern Europe and the rise of neoliberalism in the West, the relationship between commodification and capitalist development has grown stronger than ever. After three decades of unprecedented market triumphalism in most Western economies, commodification extends deeper and wider than at any previous point – into the provision of public services;[234] into the organisation of various forms of (previously uncommodified) social labour[235] (such as care, domestic and even reproductive labour);[236] and into the ways in which we develop, disseminate and utilise knowledge and information, especially scientific knowledge.[237] The language of the market saturates much of public discourse, including the practice of a large part of the social sciences; and even the functionings of the state could be said to resemble a marketplace in which political decision-making is itself a product.[238]

Such a plurality of ways in which commodification permeates daily life encourages us to look at commodification as a conceptual device broad enough to describe the multiple dimensions of capitalist development, yet specific enough for their essential qualities not to be obscured. But we immediately

[234]Leys (2001), Huws (2003).
[235] Fraser (2011), Katz (2001).
[236]Constable (2009).
[237]Jessop (2000).
[238]Harriss-White and Leys (2012).

encounter a formidable theoretical challenge: Should we think of commodification as a single phenomenon steadily encroaching in different ways upon the uncommodified world? Or as multiple phenomena which may be working with or against each other? If commodification entails a change in the social and political relations of those who produce and exchange a thing, then when so many different aspects of our lives are being commodified at once, how on earth do we describe the dynamics of all these changes? How do we characterise the impact of commodification on the intersections between, for instance, class, gender, race and other social categories or relations? Does commodification in one area always lead to commodification in others? Or are there competing forces at work here?

The Dialectics of Commodification

> *The wealth of those societies in which the capitalist mode of production prevails, presents itself as "an immense accumulation of commodities," its unit being a single commodity. Our investigation must therefore begin with the analysis of a commodity* (Marx (1990, 1867, Vol 1, p125).

> *Because labor and land were freely bought and sold, the mechanism of the market was made to apply to them. There was now a supply of labor and demand for it. Accordingly, there was a market price for the use of labor power, called wages, and a market price for the use of land, called rent. Labor and land were provided with markets of their own, similar to those of the proper commodities produced with their help. … [Yet] labor is only another name for man, and land for nature* (Polanyi 1977, p10).

Commodification lies at the heart of both Marxian and Polanyian analyses of capitalism. For Marx, commodification reveals a contradiction between *use-value*, a qualitative property manifested only through use or consumption, and *exchange-value*, the quantitative measure conferred upon a commodity through

exchange.[239] When labour itself is commodified, Marx's contradiction manifests itself as an 'estrangement' between the worker and the object of his labour, which then stands in opposition to him as an alien power.[240] The value relation between commodities no longer has any connection with their material properties, and social relations between human beings become conceived of primarily in terms of objects. Consequently, the interrelated processes of objectification, alienation, fetishism and reification form the core of a Marxist understanding of the socially and politically transformative nature of commodification. For Polanyi, on the other hand, a crucial contradiction emerges between *capitalist* commodities, those commodities produced in a labour process subject to capitalist competition, and *fictitious* commodities which, though they are commodities insofar as they may be bought or sold, are not actually produced for that purpose nor is their production subject to the competitive pressures of the market.[241] Polanyi's further and distinctive view of the formal (market) economy, as opposed to the substantive economy "submerged in social relationships" (Polanyi 2001 p.46) in which exchange may be market, reciprocal or redistributive, leads to an understanding of commodification as a reorganisation of society in which traditional norms are subordinated beneath the 'satanic mills' of the market. Whereas Marx's focus was on labour,[242] for Polanyi the three principal fictitious commodities were land, labour and money; and whilst Marx's dynamics of social change depend on class struggle and ideology, Polanyi's idea of the 'double movement' is a reaction of society at large against the 'disembedding' effects of commodification. What both accounts share, however, is the key insight that commodification is not

[239] A thing (such as air) can, of course, have use-value without being a commodity; but to be a commodity (and therefore to be exchanged) a thing requires both a use-value (otherwise it would not be purchased), and an exchange-value (otherwise it would not be produced).
[240] See for example Marx (1990, 1867, p 1025).
[241] See Jessop (2007).
[242] Note that Marx does write extensively on other forms of commodification. The commodity character of money – the 'universal whore, the universal pimp between men and peoples' Marx, K. (1961, 1844, p181) is explored in the *Economic and Philosophical Manuscripts* and then extensively, in *Capital* Volume I. In the latter volume, he also explicitly considers the commodification of nature and of virgin land.

only (or even primarily) about the ways in which goods are produced, consumed and exchanged, but rather about the ways in which both the nature of and relations between those who produce, consume and exchange those goods are transformed. Moreover, these effects will be at their strongest when the entity that is being commodified is least like a conventional commodity. The question then is: Of the Marxian and the Polanyian analyses, which might be the better applied to the commodification of knowledge? Is knowledge a fictitious commodity? Do alienation and reification occur? How are social and political relations transformed?

Commodification of Knowledge

> *The relationships of the suppliers and users of knowledge to the knowledge they supply and use is now tending, and will increasingly tend, to assume the form already taken by the relationship of commodity producers and consumers to the commodities they produce and consume – that is, the form of value. Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorised in a new production: in both cases, the goal is exchange* (Lyotard 1991 p.4).

What might the commodification of knowledge mean? The particular issues of scarcity, non-rivalry and partial excludability have already been mentioned – the consumption of knowledge by one person does not necessarily decrease that of others, and it is in general difficult to restrict the use of knowledge to one particular individual. Indeed *lack* of consumption may lead to depletion. Knowledge tends to be collectively owned, and is continually produced and consumed in non-market exchanges. As Thomas Jefferson (1831) says "It would be curious then, if an idea, the fugitive fermentation of an individual brain, could, of natural right, be claimed in exclusive and stable property".[243] Knowledge is not homogeneous in character, nor is it readily packaged into

[243] See The Founders' Constitution Volume 3, Article 1, Section 8, Clause 8, Document 12 (1813) available at http://press-pubs.uchicago.edu/founders/documents/a1_8_8s12.html

discrete units. Moreover, the value of knowledge is not easily determined prior to its 'consumption'.[244] As Arrow says:

> There is a fundamental paradox in determining the demand for information: its value for the producer is not known until he has the information, but then he has in effect gained that information without cost (1976 p.152).

Some authors take these obstructions as a starting point to argue that knowledge cannot or should not be commodified. The first of these objections seems misplaced, for the simple reason that knowledge evidently *is* being commodified – and increasingly so – in many ways and in many places. This is, after all, what the knowledge economy is about. Whether one is talking about intellectual property[245], the patenting of scientific research[246], biopiracy[247], the entrepreneurial university or the privatisation or deregulation of higher education[248], it is clear that knowledge and the institutions of knowledge can be, and indeed are being, bought and sold, codified and packaged, protected by property rights and appropriated from public commons to private ownership. That there are limits and contradictions inherent in commodification, especially in the commodification of those things which are not obviously commodifiable, should be a given; and indeed it is in seeking an approach that is based on these contradictions that motivates a Marxian or Polanyian turn. Regarding the second, normative, question of whether knowledge should be commodified, it obviously depends upon the frame of reference by which this judgement is

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[244] Nor even 'post-consumption'.

[245]The most significant development of international IP law was the negotiation of TRIPS at the 1994 round of the Uruguay of the General Agreement on Tariffs and Trade (GATT)

[246]Since the mid 1980s, the number of triadic patents (ie those registered at the European, Japanese and US Patent offices) have more than doubled reaching a total of 52,000 by 2005 (OECD 2008a)

[247]Maintaining biodiversityis the subject of international accords such as the 2010 Nagoya Protocol and the 1993 Convention for Biodiversity (CBD) – which has been ratified by all UN members, except the US, Andorra and Holy See. The UN's Economics of Ecosystems and Biodiversity Initiative calculates the value of natural 'services' under threat due to biodiversity loss to be worth between $2Tn and $5Tn per year (see www.teebweb.org)

[248]See the previous section on India.

made. It is possible to argue, as Ziman has done in the context of science,[249] that it is not so much that scientific knowledge is unsuitable for the market but rather that the market is unsuitable for science. There is no convincing historical analysis to suggest that market imperatives produce scientific breakthroughs and so no reason, from a purely scientific point of view, to structure one's scientific establishment along market lines - although (as Ziman also points out) the same criticism could also be said of central planning (Ziman 1994 p.118). It is also possible to make a range of ethical and moral criticisms of the commodification process, as indeed do Marx and Polanyi, in strong terms. But in this discussion these issues will be in the background. The first task is to try and understand how commodification works in the particular context of knowledge.

Marxian Commodification

For Marx, the commodification of labour was an essential – and corrosive – part of capitalism, alienating man from humanity and substituting the capacity to appreciate worth with the ability to calculate price. The objectification of labour, the sale of labour power as a commodity to the capitalist, creates the object of labour as something alien to the worker:

The more the worker expends himself in work, the more powerful becomes the world of objects which he creates in face of himself, and the poorer he himself becomes in his inner life, the less he belongs to himself … The alienation of the worker in his product means not only that his labour becomes an object, takes on its own existence, but that it exists outside him, independently, and alien to him, and that it stands opposed to him as an autonomous power. (Marx, 1961, 1844, p178).

[249] See Ziman (1996), also O'Neill (1992 p.149).

Commodities become fetishised, the value relation between the labour which produced them having "no connection" with their physical properties or humanity.[250] From this contradiction arises reification, in which social relations between human beings become conceived of in terms of objects:

> There is a physical relation between physical things. But it is different with commodities. There, the existence of the things *qua* commodities, and the value-relation between the products of labour which stamps them as commodities, have absolutely no connection with their physical properties and with the material relations arising therefrom. There it [*sic*] is a definite social relation between men, that assumes, in their eyes, the fantastic form of a relation between things …This I call the Fetishism which attaches itself to the products of labour, so soon as they are produced as commodities, and which is therefore inseparable from the production of commodities. *(Capital* Vol 1 pp.77–8).

Commodification, fetishisation, alienation and reification are then, for Marx, a set of inter-related processes in which social and political relations are reconfigured. Other, distinctive aspects of capitalism, such as private property, follow logically as consequences, not causes of alienated labour, "just as the gods are *fundamentally* not the cause but the product of confusions of human reason" (Marx, 1961, 1844, pp176-7).

Considering whether or not these Marxian concepts extend to the particular case of knowledge is fraught with difficulty. On the one hand there are examples such as the privatisation of education, in which Marx's vivid description of the

[250] In Marx's oft-quoted passage: "The bourgeoisie, wherever it has got the upper hand, has put an end to all feudal, patriarchal, idyllic relations. It has pitilessly torn asunder the motley feudal ties that bound man to his "natural superiors", and has left no other nexus between man and man than naked self-interest, than callous "cash payment". It has drowned out the most heavenly ecstasies of religious fervour, of chivalrous enthusiasm, of philistine sentimentalism, in the icy water of egotistical calculation. It has resolved personal worth into exchange value, and in place of the numberless indefeasible chartered freedoms, has set up that single, unconscionable freedom – Free Trade" (Marx and Engels, 2002 p.222).

'pitiless' nature of alienation translates well. Commodification in this instance does indeed submerge education in the "icy waters of egotistical calculation" (Marx and Engels, 2002 p.222) and leads to an outcome where the 'value added' is an increasingly important criterion of success. A recent report on changes in UK students' attitudes to higher education following the introduction of tuition fees in 2012 found a range of ways in which students now see their education as an investment which should represent value-for-money and increase employability (Tomlinson 2014). In a similar way, performance indices such as the UK Academic Research Excellence Framework (REF), not only generate perverse incentives but also distort the nature of the relationship between the researcher and their subject (Collini 2012). In both of these examples alienation, reification and fetishism are highly applicable concepts. On the other hand, the KE is, at least in theory, supposed to result in a continuously higher-level reskilling of the labour force, in order to keep pace with the cycle of innovation that signifies a working KE. Such an outcome is, however, unlike that which Marx envisages as a consequence of routinised industrial production in which the worker no longer expands and improves his or her skills but is bound to a life of repetitive drudgery.

I now consider how the KE complicates Marx's historical materialism, in which the mode of production of material life determines the general character of the social, political and spiritual processes of life (Marx, K, 1961, 1859, p67-8). For many authors, not necessarily Marxists, the knowledge economy represents not only a new phase of capitalism but a new mode of production, a new era – "the coming of the post-industrial age" in Daniel Bell's words.[251] There is a spectrum of positions here, with Bell himself coming from a definitively anti-Marxist perspective, but a shared sense in which economic history is written in terms of metanarratives.

[251] Bell's *The Coming of the Post-industrial Age* (1973).

The problem, however, with metanarratives is not so much the unfulfilled predictions, such as Marx's (and Polanyi's) views on the inevitability of socialism, but because when a narrative becomes totalising – when it transcends historical, institutional and cultural contexts – it becomes compelling, because it denies meaning to any alternative account. The Knowledge Economy could not be said to be totalising in this strong sense, since it admits a plurality of perspectives, some of which (for example, those coming from the Innovation Systems approach) do take account of historical specificities. Nevertheless, in its methodological aspect, which is more dominated by neoclassical ideas, and, more importantly, in its general de-politicised and market-oriented approach, it does operate in just this way, excluding *a priori* a political economy account of the relationship between knowledge and development. Indeed it is precisely this implicit assertion of epistemological certainty that the critique of this thesis is intended to challenge. What would be desirable in an alternative account, therefore, would be to maintain an "incredulity towards metanarratives" (Lyotard's definition of post-modernism, 1984, pxxiii) but at the same time retaining the core ingredients of a Marxian/Polanyian account of commodification. This is something of a balancing act, but the rereading of Marx has in itself a long history. Peters (2007) and Olssen (2006) have made claims for a 'post-structuralist' reading of Marx, whilst Carver (1988) has argued that Marx should no longer be read as the theorist of the proletarian revolution but rather as "the premier theorist of commercial society". In Carver's view, this reassessment of Marx's work entails a threefold revision: of *what* Marx is read, of *how* Marx is read, and of *why* Marx is read. Such selectivity, according to Peters, permits a bridge to be built between the Marxian analysis of commodification and certain other ideas, such as: the post-modern critique of metanarratives; the Foucauldian idea of power; the non-dualistic conception of state and market; and an appreciation of the endlessly self-transforming nature of capitalism.

The key question to consider regarding the dynamics of capitalism is what social or political structures are responsible for driving those dynamics. In the Marxian approach to the commodification of labour, the idea of class and the processes of class formation and class struggle are, of course, central. In the context of knowledge, there are various reasons for positing a more complex and differentiated notion of class than a strict Marxist analysis of 19th-century capitalism. Specifically, if knowledge is now to be regarded as a force in production, then a definition of class that derives from a relationship to the means of production is going to have to reflect the multitude of ways in which this may happen. The rise of the Knowledge Economy is intimately connected with the decline of industrial labour in wealthy nations, accompanied by the spread, through globalisation, of internationalised labour in the developing world. Knowledge, or rather the control over knowledge, plays a key role in organising these relationships, but if we are to talk of 'classes' of knowledge workers and knowledge capitalists, then the stratification of society is likely to be into overlapping, dynamic categories subject to repeated disintegration and coalescence. More immediately, if we wish to understand the commodification of knowledge in a way analogous to a Marxist reading of the commodification of labour or land – that is to say with reference to alienation or reification – then we also need to understand how separate commodification processes impact upon one another. In other words, as soon as we view commodification as operating on multiple levels – labour, land and knowledge (itself no unitary concept) – then alienation and reification are also multiple, and very possibly conflicting forces. Someone may be alienated in one regard and integrated in another[252], exploitative in one relationship and exploited in another. In the particular case of knowledge, the reflexivity implied by the capacity of

[252] For instance, the process of teaching may have simultaneously commodified and uncommodified aspects. Privatised education is a form of commodification of both labour and knowledge and yet will also (almost certainly) involve a significant non-commodified element in terms of the relationships between teachers and students and the academic and social environments in which knowledge circulates.

knowledge to generate more knowledge means that relations of commodification and decommodification play out simultaneously. Scientific research, for instance, generates some knowledge that may be commodified (through intellectual property) and subsequently appropriated – and some that is not (the acquired knowledge of researchers). The crucial Marxian insight that the relationship to the means of production is itself a political quality, and that the contradiction between capital and labour is what *drives* the dynamics of the system, has no parallel in the KE discourse.

Indeed, an important critique of the KE is the idea of 'dematerialisation', that the KE's focus on knowledge occludes or at least diminishes the significance of the discussion of the material relations of production. In the OECD literature, the term 'dematerialisation' is used to mean the process of decreasing the rate at which material and natural resources are consumed in economic activity and is seen to be essential for sustainable development to take place without environmental degradation (see for instance OECD 1998 p.64-74). Building a KE is seen as intimately connected with the dematerialisation of the economy through the harnessing the 'efficiency of the information age' and the promotion of the competitive environment in which new technologies are meant to emerge. But the focus on the technological or efficiency side of material production (and the role of knowledge in it) implies a lack of focus on the political economy side of the relations of production. For this reason, issues such as land reform and the organisation of labour - central to agricultural and industrial production respectively - are demoted in importance.. Whilst KE advocates do not deny the importance of the material aspects of production, the emphasis is on the role of knowledge – so that innovation does not have to involve a new piece of technology, for instance, only a new application of technology or an old idea in a new context. Hence some problems in transforming agricultural or industrial production could be viewed as innovation challenges or information problems.

But for the reasons given above, if we do not engage with how the material relations of production govern the interactions between those involved in the production process, it seems unlikely that these information problems could be resolved.

Polanyi – Knowledge as a Fictitious Commodity

> *To narrow the sphere of the genus economic specifically to market phenomena is to eliminate the greatest part of man's history from the scene.* (Polanyi 2001 p.6).

The essentialist, 'disembedded' and idealised conceptualisations of the market upon which much of the Knowledge Economy discourse depends are generally regarded as undersocialised. Equally, however, they could be viewed as socialised, but in a very particular way – namely, by implicitly assuming that the process of market exchange operates independently of, or even overrides, all other forms of social relation. Neoclassical economists, for the most part, do not bother to defend this assertion. The assumptions of the neoclassical model, with large numbers of exchanges operating under conditions of perfect competition, leave no space for any sociologically significant interaction between individual agents.[253] Defences, such as they are, depend upon contestable claims, such as Adam Smith's famous maxim of the natural propensity "to truck, barter and exchange" (Smith, 1982, 1776, p91) or the new institutional economics of Douglass North, with its transaction-cost approach to behavioural psychology.[254] Otherwise, neoclassical economics has simply ignored this problem, as in Samuelson's remark that "many economists … would separate economics from sociology on the basis of rational and irrational behaviour" (Samuelson 1947 p.90).

[253]Hirschman (1982 p.1473).
[254]North (1990, 2005).

The opposing position –'embeddedness' – holds that market behaviour can *only* be understood as embedded in social relations, and cannot be reduced to atomised individual behaviour. It is often associated with the work of Karl Polanyi, especially in his magnum opus, *The Great Transformation*.[255] Polanyi stresses that a market is only one possible way of allocating resources, with *redistribution*, designating "approportional movements towards a center and out of it again", and *reciprocity* –"movements between correlative points of symmetrical groupings" (Polanyi, Arensberg and Pearson 1957 p.251-4), providing other alternatives to, and historically more important ones than, the market. A *market system* only comes into being when there is a market for the 'fictitious commodities' of land, labour and money.[256] It is only when income – the core element of survival – becomes dependent upon the market that the market becomes the market economy. At this point the market takes society over, and in fact *becomes* society.

The central thesis of *The Great Transformation* is, then, that the market economy: "an economic system controlled, regulated and directed by markets alone" (Polanyi 2001 p.68) is built upon the 'fictitious commodification' of land, labour and money, "to subordinate the substance of society itself to the laws of the market" (Polanyi 2001 p.71). This commodification makes human social life dependent upon the fluctuations of the market – upon the supply and demand of the market – and hence threatens to annihilate humanity. Polanyi saw socialism as a self-preservation measure, society protecting itself from the 'satanic mills' of the market.

[255] Although in fact the term itself occurs only twice in that volume, and Polanyi's original usage of the term was to emphasise certain elements of pre-capitalist markets. Embeddedness in contemporary accounts has been extensively studied by, for example, Granovetter, Swedberg and Callon, as discussed in the previous section.

[256] As mentioned earlier, a fictitious commodity is one which, whilst it may be bought in a market and sold, is not originally produced for that purpose (eg land, labour and money). See Polanyi (2001).

Polanyi's theory, therefore, most definitely views commodification in terms of social change, just as Marx's premise is that the commodification of labour reconfigures social relations; but what of commodification of knowledge? What qualities does a thing have to possess in order that the commodification of it should involve such a profound transformation not only in the mode of its production and consumption but also in the nature of those who produce and consume it? Jessop (2000, 2007) has argued, in a Polanyian vein, that viewing knowledge as a fictitious commodity permits a structural answer to this question.

Jessop's analysis begins by arguing that the status of knowledge in capitalist economies is very often thatof a fictitious commodity, in line with Polanyi's classic treatments of land, labour and money. In other words, the market exchange of knowledge almost always involves the use of knowledge which is not originally produced for that purpose. So, for instance, when a pharmaceutical company markets a drug, whilst it may operate within the commodified realm, it is also involved in the commercial exploitation of a great store of knowledge (the scientific understanding of that drug) which was not produced for commercial purposes and is commonly owned. Jessop's first observation is that the crucial reorganisation of society that is necessary for capitalist competition and hence commodification to take place, has three crucial aspects – the *codification* of knowledge, in which knowledge is detached from manual labour and the minds of workers and relocated in formal, exchangeable products and services; the *disembedding* of knowledge from its social roots, through which the primary code governing its use becomes one of profit, rather than 'truth', 'need' or 'beauty'; and the expansion of the *market* as means of circulation and redistribution of knowledge ahead of previously existing reciprocal relationships between and within specific economic units, such as the household.

Commodification, in Jessop's view, needs to be understood as a complex and structured process, and indeed his work should be seen as an extension rather than an application of Polanyi. He identifies four levels to which commodification may be said to have taken place. In this way, Jessop is clear that what is being considered is the *process* (or processes) by which a thing is transformed into a commodity rather than any intrinsic properties peculiar to that thing. The first level is that of a *non-commodity*, that is to say when knowledge exists as an intellectual commons, circulating more or less freely through reciprocal exchange and produced largely under non-market conditions. The second, that of a *simple fictitious commodity*, is when these intellectual commons have been enclosed by some non-market mechanism, some form of primitive accumulation, so that they may be regarded as private property to be exchanged within a market. Jessop draws an analogy with Polanyi's own treatment of the Enclosure movement in *The Great Transformation*. The third is when intellectual labour has formally been subjected to and subsumed under capitalist exploitation, and transformed into immaterial goods and services; in this case knowledge may be considered a *fictitious commodity*, as with labour power. The final and fourth level, that of *fictive commodity*, is when the revenue streams generated by intellectual labour are formally protected by intellectual property rights, enabling 'technological rents' to accrue to the holders of those rights and facilitating the abstract exchange of these rights and the establishment of derivative transactions and secondary markets upon them. These rents are the price the market pays for the use of knowledge as a commodity and are in direct correlation with wages (the price paid for labour by the market); rents (the price paid for land and housing by the market); and interest (the price paid by the market for money).

Underlying Jessop's analysis is the question of whether there is anything that approximates a Polanyian 'Double Movement',[257] that is, a response of society as a whole against market expansion, in the commodification of knowledge today. There is clearly no simple answer to this, and Jessop himself describes the complex interplay of action and reaction between State and society that has accompanied the development of the Knowledge Economy thus far. Nevertheless, regardless of the criticisms which can be made of the Polanyian framework,[258] there are evidently contradictions and tensions that may be identified within transitions between the four levels of commodification (non-commodity, simple fictitious, fictitious and fictive) described above.

The dialectical presentation that Jessop derives could be interpreted as both a Polanyian and a Marxian account in which the basic contradiction between use-value and exchange-value is reflected in the capital relations which accompany the various stages of commodification. What is far less clear, however, even in Jessop's own work, is exactly how the contradictions between various stages of commodification can be said to drive political processes or the dynamics of development. That is to say, we can understand that these contradictions exist and that they lead to tensions, or even conflict, but whether we can confidently specify what kinds of political outcome may result is not so certain.

The first stage at which these contradictions manifest themselves is at the level of primitive accumulation, in which one goes from the first to the second level of commodification. Jessop mentions three issues – the appropriation of indigenous, tribal or peasant knowledge and its transcription without compensation, as in biopiracy; the separation of intellectual labour from control over the means of production of knowledge; and the 'creeping extension' of

[257] See Polanyi (2001 Ch. 11).
[258] See Searcy (1993).

copyright into broader forms of property rights and an accompanying erosion of public interest.[259]

The second stage is then at the level of subsumption to a capitalist mode of production, ie in going from the second level of commodification to the third. Robins and Webster (1987) argue that the role of intellectual technology in establishing capitalist competition results in another level of appropriation from the worker. Jessop himself emphasises the potential for social polarisation in a globalised knowledge economy.

The third stage concerns the dynamics of those rents which are associated with the final phase of commodification. The contradiction lies in the continual pressure to innovate and the continual need to protect rents. In other words, the reflexivity and generalisability of knowledge create an intrinsically unstable system in which there is an inbuilt tendency to seek to decommodify knowledge inputs – and so to minimise costs – whilst commodifying outputs and hence maximising profits.

Thinking about these contradictions, even if we cannot say where they lead, at least not with the same dialectical certainty of Marx or Polanyi, does reveal some interesting relations between the politics of markets and commodification. In order to have commodification, one must first create a market, and so the politics of that market affects the way that commodification proceeds. But once commodification is in place, there is a reciprocal relationship in that the political changes that result (for instance from the kinds of contradiction Jessop describes) then affect the nature and indeed extent of the market. We can see something similar in the work of several other scholars who have worked on commodification in other contexts.

[259] See, for instance, Drahos and Braithwaite (2002), Robins and Webster (1987) and Shiva (1997).

In the context of rent-seeking, the phenomenon of Schumpeterian or learning rents[260] becoming monopoly rents has been explored in political economy terms by Mushtaq Khan.[261] His work relates different patterns of rent-seeking to a number of political factors: patron–client relationships; the capacity of the state to discipline capitalists; and the requirements of political stability. Certain conditions, such as the 'fragmented clientelism' (Khan 2000 p.21)[262] of South Asia, are argued to be especially likely to see a trade-off between the capture of Schumpeterian rents on the one hand and the price of political stability on the other. Effectively, factions form in order to secure rents from the state and the state grants these rents because to fail to do so is to risk political instability. But the factions that form in this way have no equivalent to class consciousness or other political identity and are themselves highly unstable, splintering or dissolving and reforming into different coalitions.

On another track, the more general idea of commodification as part of 'market-driven politics' has been studied by Colin Leys,[263] with particular reference to the commodification of public services such as health and public sector broadcasting. Leys describes in detail various conditions that typically have to be met for commodification to take place – many of which are deliberate strategic moves on the part of the state (such as the systematic under-funding of a public service, prior to its privatisation, or its re-branding into the language of private enterprise, with terms that delineate the kind of service on offer such as 'patients' or 'passengers' being replaced with those that emphasise that that service is now being paid for – 'customers' or 'consumers'). As well as the transformation required in the commodity itself, he highlights the social

[260] See Khan and Jomo (2000 p.16) Khan, M and Jomo, K (2000) Ed, *Rents, Rent-seeking and Economic Development: Theory and Evidence in Asia*. Cambridge: Cambridge University Press.
[261] See Khan (2005, 2007).
[262] 'Fragmented clientelism' refers to a system of patron–client relations within a country, in which competing factions seek redistribution from the State and it is the negotiation of this redistribution that becomes the primary political process rather than the enactment of policies to enhance growth. Such systems are common in Asia and typically result in a form of state paralysis. See Khan (2000).
[263] Leys (2001, 2008).

transformations in those who now become wage labourers (or unemployed) and the economic risks of commodification, the costs of which capitalists typically seek to offload onto the state. Once again, commodification as Leys describes it exhibits the reciprocal relationship in which the steps that lead up to commodification are subject to strong political influence (eg corporate lobbying) but that once commodification has taken place, a new set of political relationships come into being.

Harriss-White, whose contribution is especially interesting in this regard, provides the example of the politics of technology markets in renewable energy in India.[264] In this process, the commodification of energy is seen to have complex and unhelpful consequences for the capacity of the state to devise and implement a coherent energy policy. Harriss-White also reveals the extent to which the interests of capital are enmeshed with the political structures underlying these markets; in particular, technological development (for instance solar energy) is seen to be politically constrained where those constraints reflect relative positions of power within markets. Such an outcome is much less benign than a KE approach might lead one to expect. As Hobsbawm says: "It is often assumed that an economy of private enterprise has an automatic bias towards innovation, but this is not so. It has a bias only towards profit" (1969 p.40).

The Limitations of Dialectics and the Unity of Opposites

Taking all of this into consideration suggests certain difficulties in extending a Marxian or Polanyian account to the commodification of knowledge. Marx and Polanyi present grand narratives of the ways in which commodification leads to social and political change – how the transformation to market-based modes of production and exchange results in further changes in the relations between those who now participate in markets. But what they do not do is give a detailed

[264]Harriss-White (2008).

analysis of *how* these markets are organised, nor even of how they arise in the first place. And yet these questions – about how commodification takes the forms that it does – precede those regarding its consequences. If we are to study commodification as a means to understanding social and political change, then we need to know how political opposition to the creation of markets is overcome, what changes need to occur and what conditions need to be met for commodification to take place. We also need to understand how the structure of the markets which arise out of commodification reflects the underlying political economy, and how questions of power enter into the operations of markets.

Polanyi, in particular, gives little indication as to the mechanism by which the double movement would take place. He provides a vague description of the disembedding effects of commodification leading to a reaction by society at large, provoked by a collapse in social values – but it is hard to find in Polanyi's own writings much that would explain why or when this collapse might happen. Marx, of course, does offer a dynamics of class formation and class struggle, the unspecified teleological elements of this notwithstanding. But in so doing, orthodox Marxism gives an ontological privilege to the commodification of labour relations which does not register, at least not to the same degree, those other elements of commodification which we would like to address.

If we assume, then, that the systematic study of the politics of markets can provide an analysis of commodification, there is an important aspect which is still to be addressed: in distinguishing between a commodified realm in which social, political and economic relations are organised along market lines and an uncommodified realm in which alternative modes of production and exchange are possible, we should not be drawn into thinking of the two as independent of – or indeed exclusive to – one another, nor should we see commodification as an inevitable and unidirectional process that is steadily taking over the whole of

the uncommodified realm. In fact, commodified and uncommodified structures typically co-exist locked into complex, often exploitative, relationships which may well be stable and resistant, at least to some extent, to further commodification. Or it may be the case that the process of commodification actually creates uncommodified social structures, which may depend upon the commodified realm and yet operate according to a quite different set of rules. In this sense, the logical endpoint of commodification may not be the commodification of everything.[265] We need to understand how the commodified and the uncommodified are in fact a 'unity of opposites'.[266]

For example, as Leys (2001) describes, the privatisation of public services is generally a piecemeal affair, with private firms keen to cherry-pick those parts of the service which are most profitable and easiest to run, leaving the state with the responsibility for those areas which are less readily commodifiable – and which may well remain uncommodified. In such cases, the private sector also looks to the state to underwrite the risk involved to capital, further entrenching the relationship between the commodified and uncommodified. Whilst the co-existence of public and private alternatives may lead, as Leys observes,[267] to a situation in which the public provision is systematically devalued, and also to a cultural change in which the workforce is remotivated and redefined in market terms, it still remains the case that the private sector very much depends for its profitability on the exploitation of various uncommodified structures, such as the investment made by the state in infrastructure or training. Likewise, the commodification of knowledge through patenting and the extension of intellectual property legislation depends crucially on the vast repository of

[265] Leys and Harriss-White's Open Democracy article (Leys and Harriss-White 2012) argues, on the other hand, that the logic of commodification is further commodification. But it would seem that the 'equilibrium' point which commodification may ultimately reach is a mixture of the commodified and the uncommodified.

[266] "[T]the recognition (discovery) of the contradictory, *mutually exclusive,* opposite tendencies in *all* phenomena and processes of nature *(including* mind and society)" Lenin, V. (1965, 1914 p.220).

[267] Leys (2001, p.85).

publicly available scientific knowledge – the common heritage of mankind.[268]As has been seen in the previous section, the outcome of the Bayh-Dole Act was not an unfettered expansion of privately owned, patent-protected research, and if it had been then the commercial possibilities for its exploitation would have been immeasurably smaller, for the simple reason that very little would have been produced. Indeed some of the world's most powerful corporations (including Google and Apple) not only derive their enormous wealth from government funded research (eg the internet) but also, through complex tax arrangements, use their market power to avoid paying monies back to the state (Stiglitz 2015). The point in each case is that what drives the dynamics of the system as a whole is not only the internal logic of the commodified sector but the external logic – that is, the interaction between it and the uncommodified. The contradiction between the two is very much a unity of opposites.Indeed in a more general sense, the state itself, especially a democracy, is subject to market influence of many kinds. Conversely, just as there is no state without markets, so is there no market without states – every market is created and to some extent regulated by the state (or by states). Finally, dualisms of this kind which are unhelpful at the national level are completely inappropriate at the international level, where there is, of course, no global state.

Harriss-White's work provides a good illustration of the complexity of these relationships. In her work on the Indian informal economy, for example, she describes how the global commodification of money leads to "labour trapped, more intensely commodified in the 'space of flows' connecting the metropolises and less commodified and even increasingly decommodified in the 'space of places' in which most of the population is embedded" (Harriss-White 2010b, p.176). The resulting process of 'informalisation' creates an informal economy, in which the distinction between State and market is blurred at the local level,

[268]Salam (1989).

whilst the informal economy itself is regulated by a host of non-State and non-market means: family ties; repeated, interlocking contracts and networks; trust, reputation; and private protection forces (Harriss-White 2003 pp.74–5). Despite the rapid economic growth that India has experienced in the formal sector in recent years, there is no evidence whatsoever that the informal economy is diminishing as a result. In fact, the reverse seems to be the case (*ibid*). As such it provides another important example as to how the actions of the market and processes of commodification actually generate non-market and non-commodified structures in turn.

Returning to the example of Indian Higher Education, one can consider the commodification of higher education and the responses to it in the terms set out above. There is a great anxiety and sometimes anger in India about the process of commodification, much of which centres around the first level of analysis here - the question of *what* has changed when a thing (here education) becomes commodified. For many, the move towards a market-oriented paradigm threatens some of India's most cherished ideals - of creativity, independent thought, a sense of social justice and an awareness of spirituality. According to (Patnaik 2015) "Commoditisation of education destroys creativity, originality, and any desire to go beyond the given" and Singh (2006) writes of higher education being "ruined" (Singh 2016). With less anger but no less concern, Pathak (2009) writes of a moral crisis to marketisation and also, quoting Bok of its insidious nature.

> "Individual faculty members, especially in the best universities found new ways to supplement their incomes with lucrative activities on the side. As biotechnology boomed, life scientists not only started to seek patents on their discoveries and take attractive consulting assignments; they also began to receive stock from new firms eager for their help and even to

> found new companies based on their new discoveries. Outside the sciences, business school professors travelled to corporations willing to pay substantial sums for day spent consulting or teaching their executives. Legal scholars began to collect large fees for advising law firms on their corporate clients. Economists, political scientists, psychologists and many others discovered that their counsel was worth a tidy sum to companies, consulting firms and other private organizations (Bok 2003 p.13)"

Patnaik also raises concerns over the narrowness of marketised knowledge and the question of whether what is relevant for the market is also relevant for society. In these criticisms and the many similar ones there is a sense of how commodification has transformed the relationship between producers of knowledge and the knowledge they create, as well as the social and political relationships between them. What we have also seen, in the case study, is that the process by which that transformation came about has also involved political contestation of various kinds (states versus centre, student activism, caste politics, corporate lobbying etc) and from the previous section on the politics of markets we are able to describe how political contestation is related to the structures of markets. Finally, as has been noted before, the intrinsically simultaneously private and public characteristics of education as a knowledge commodity/public good ensure that this phenomenon is not well understood through the binary lens of 'commodified' vs. 'uncommodified' but is once again a unity of opposites.

The simultaneous co-existence of commodified and uncommodified social structures (with regard to the commodification of labour) may, in the case of knowledge, have something to do with the simultaneously public and private nature of knowledge itself. As has already been noted, knowledge is only partially excludable as an economic good, and even when produced in a public

context, such as a university, is likely to involve all sorts of privately held benefits to those who have acquired that knowledge. Yet, the range of examples in which we see the persistence of an uncommodified or decommodified core may suggest that this is, in fact, a general feature of modern capitalism and commodification. And in these examples, perhaps the most important thing to understand is how the commodified realm retains a hold on the uncommodified, how is it that private companies exploit public research, how is it that the informal economy of petty production in India is held in check by the formal sector, how is it that 'too-big-to-fail' banks can get away with financial recklessness that any individual would be severely punished for? Answers to these sorts of questions are not easily found in the kinds of political category we have been studied up to now and are raised in part to motivate the approach of the next section.

Remarks

In conclusion, commodification may well be useful as an analytical device, as it directly concerns the social and political consequences which follow a transition to a market-oriented mode of behaviour, whatever its context. In the specific case of the KE, this is especially relevant, since it is this sort of account which is so lacking in the treatment provided by the discourse itself. I have argued, following Marx and Polanyi, that it is crucial to ask *what* is fundamentally altered by commodification and what effects does this generate on those involved in that transformation? However, I have also argued that we must understand *how* a process of commodification takes place, that is to say not only the market that now exists but also the politics of that market and its creation. There is nothing neutral or natural about markets, nor about their absence. It is imperative that we understand how commodification takes place and in whose interest it does so, and how the operations of markets reflect the underlying political economy

of those who create, regulate and participate in them. Again, following Polanyi, the commodification of knowledge displays many of the disembedding characteristics that follow when commodification significantly alters the purpose of what is being commodified. Finally, regarding the highly complex question of the relationship between the commodified capitalist realm and the uncommodified, I have suggested that it is a mistake to see this relationship as a stark binary, and that instead there is typically not only a necessary coexistence of the two, but also that they are intertwined, often in an exploitative form – a 'unity of opposites'. As such, the question of resistance to commodification is not so much a futile enquiry into ways of putting the genie back in the bottle as how to bolster and defend social structures to minimise the potential for exploitation in the relationship between the commodified and the uncommodified.[269]

[269] There are, of course, alternative points of view – Niall Ferguson used his Reith Lectures in 2012 to argue the Hayekian position that markets solved problems of information in a way that no other system could, and that marketisation should be welcomed and regulation feared. See Ferguson's BBC Reith Lectures - http://www.bbc.co.uk/podcasts/series/rla76

Governmentality: Rationalities of Knowledge

> *We live in a social universe in which the formation, circulation and utilization of knowledge presents a fundamental problem. If the accumulation of capital has been an essential feature of our society, the accumulation of knowledge has not been any less so. Now, the exercise, production and accumulation of this knowledge cannot be dissociated from the mechanisms of power; complex relations which must be analyzed.* (Michel Foucault, Remarks on Marx: Conversations with Duccio Trombadori 1991 p.165)

What does it mean when we say that the Knowledge Economy should be understood in terms of power? Is power a property, or a relation? Is it structural or behavioural? Is it possessed or exercised? And if so, by whom, or by what? Over what domain does it operate, and at what levels? In the previous section, the KE was discussed in terms of the commodification of knowledge and with the transformation from the uncommodified to the commodified form. The approach taken there was to consider the material effects of adopting the KE and asking for an explanation of them in political terms. In contrast, however, in this section I will study the ways in which discourse itself gives rise to the exercise of a particular form of power and, to this end, consider how Foucault's theorisation of power might shed new light on the KE discourse.

I will take as my key text Foucault's critique of Chicago-school neoliberalism (which comes from his 1979 Lectures at the Collège de France, which were also the source of the concept of governmentality) and try to unpick the essential components of that critique to see if something analogous can be said of the Knowledge Economy discourse today. I would like to argue that there is a parallel between Foucault's description of Human Capital Theory as a critique of classical political economy and the characterisation of the Knowledge Economy

as a critique of Washington Consensus neoliberalism. The substance of both critiques concern the relationship between market and state, and the way in which that relationship is itself related to particular questions of knowledge. For Foucault the defining property of the Chicago School's 'generalisation of the economic form of the market' (2008a, p243) is that it acts as a 'principle of intelligibility' (*ibid*) of human behaviour and so solves certain questions of knowledge, and I will argue that we may make an analogous claim for the Knowledge Economy discourse. The difference is that the epistemological role that the market plays has become that much more complicated and now encompasses all of the different ideas described in Part 2, and not merely that which comes from human capital theory.

In putting forward this argument, I will make an important technical point, in that the way in which many Foucauldian scholars use the term 'governmentality' differs from that used by Foucault himself – the former emphasising what I shall refer to as the 'microphysics of power' and the latter the 'genealogy of the state'. Interestingly, most of the governmentality scholars this applies to are from the Anglophone world, to whom the Lectures were largely unavailable for many years, the terms of Foucault's will having prohibited their translation. Instead one had to listen to them on tape in French in the archive at the Bibliothèque du Saulchoir; only since 2008 has the full text of the Lectures been available in English. This change is significant, because it allows us to place Foucault's later work directly within the tradition of the history of political thought that concerns the rationality of the state rather than within the more empirically driven Anglo-Foucauldian field of governmentality studies. Retaining the idea of the state – albeit as one element in a unity of opposites in which market and state co-exist – creates a link to the approach of the previous section on commodification. At the same time, the micro- and macro-understandings of

governmentality should be thought of as different perspectives on the same subject separated only by a sense of scale.

The Lectures

In his 1978–79 Lectures at the Collège de France, Foucault set out a critique of Chicago School neoliberalism, with a particular emphasis on the Human Capital Theory of Gary Becker. The essence of Foucault's critique lay in two striking claims regarding the Chicago School's 'generalisation of the economic form of the market'. Firstly, according to Foucault, the market served as "a principle of intelligibility and a principle of decipherment of social relationships and individual behaviour", (Foucault 2008a p.243) and secondly it acted as a "form of permanent economic tribunal" (*op. cit.* p.247), according to which the state could be held to account according to the criteria and demands of the market. Taken together, these two representations of the market demonstrate the kind of reciprocal 'Power/Knowledge' relationship between the *relations and exercise of power* on the one hand, and the *systems and practices of knowledge* on the other – a relationship which had always occupied a central theme in Foucault's work.[270] But whereas Foucault's earlier works – on madness, sexuality and criminality – considered subjectification and the impact of disciplinary technologies on the individual, the focus of the 1978–79 Lectures extends the 'art of government' or the 'conduct of conduct' to the level of the modern sovereign state. The result is

[270] In terms of Foucault's methods, and the way in which his perspective shifted on the vital power/knowledge question, one can identify at least three (overlapping) periods: an 'archaeological' period, which includes the early books, the historical studies *Madness and Civilization* (1961) and *The Birth of the Clinic* (1963) and the more theoretical *The Order of Things* and *The Archaeology of Knowledge* (1969); then a 'genealogical' period which develops through *Discipline and Punish* (1975) and *The History of Sexuality Volume 1* (1976); and finally the 'governmentality' period which emerges out of the 1978–79 and 1979–80 Lectures, and which contains elements from both archaeology and genealogy. Whilst all three approaches take discourse or 'discursive formations' as their subject matter, the emphasis is different in each. Archaeology is principally interested in uncovering the *episteme* – the epistemological field consisting of all possible statements on a subject at a particular time and place – and the 'rules of the game' which govern discourse. It has some affinities with the French structuralist tradition although Foucault himself was always keen to distinguish himself from 'taxonomic' structuralists like Levi-Strauss, Barthes or Althusser. Genealogy, on the other hand, is much more dynamic and instead traces *descent* and *emergence* in understanding the existence and transformation of elements of theoretical knowledge (*savoir*) within structures of power.

Foucault's concept of *governmentality*, which he defined as "the ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics, that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principal form of knowledge political economy, and as its essential technical means apparatuses of security" (Burchell *et al* 1991 pp.102–3).

In Foucault's treatment of American neoliberalism as a mode of governmentality, his starting point is his description of Human Capital Theory as a critique of classical political economy, and in particular of the treatment of labour in classical political economy as undifferentiated:[271] "Labour is a blank sheet on which the economists have written nothing."(Foucault 2008 p.219). The neoliberal response "to bring labour into the field of economic analysis … to study work as economic conduct practiced, implemented, rationalized, and calculated by the person who works" (Foucault 2008 p.219) is an epistemological one, opening up labour and human activity to the language of capital, enterprise and investment. A wage is an income, a return on an investment in a capital that is embodied within a worker, in other words a *human* capital. In this process, the analysis of human activity is opened up to the methodology of rational choice and *homo economicus,* the putative subject of neoliberal governmentality, is described not as a partner in an exchange but as an *entrepreneur of himself* … who responds systematically to modifications in the variables of the environment … someone who is eminently governable (Foucault 2008a, my emphasis, pp.270–1).

Crucially, neoliberalism does not assume rationality – it sets out to create it.[272] As Hayek says: "Rational behaviour is not a premise of economic theory though it

[271] See also Foucault's remarks on Marx: Foucault 2008 Lecture.
[272] Just as the NKC set out not just to reform the institutions of Indian HE but also the mindsets of those who participate in it.

is often presented as such. The basic contention of theory is rather that competition will make it necessary for people to act rationally in order to maintain themselves … Competition is as much a method for breeding certain types of mind as anything else."(Hayek 1973 Vol. 3 p.75).Elsewhere, Hayek's demand for a "liberalism that is a living thought"[273] is echoed in Foucault's observation that "liberalism in America is a whole way of thinking and being. It is a type of relation between the governor and the governed much more than a technique" Foucault (2008 p.218). What Foucault is suggesting here is that we see neoliberalism not so much as an ideological rhetoric or a political theory but, in Lemke's words, as a "political project that endeavours to create a social reality that it suggests already exists" (Lemke 2001 p.203).

The core idea in this project is that the practice of government is achieved through the realisation of a particular relationship between market and state. On the one hand the market acts not only as a means of *rationalising* the social world and the state's place within it, but also as a means of *regulating* that interaction, through a codified set of practices of measurement. But on the other hand, the political subject, actively engaged in these practices, is also *governed* by them. No longer the 'intangible partner of laissez-faire', *homo economicus* now becomes the "correlate of a governmentality which will act on the environment and systematically modify its variables" (Foucault 2008 p.270-271). Over time, these systematic responses may come to be seen as natural or scientific phenomena, and a 'government of the self' is achieved. A key purpose – both polemical and normative – in Foucault's genealogical method is the exposure of and resistance to such presentations. In 1971, in a live debate on Dutch television between Foucault and Noam Chomsky,[274] the Dutch presenter asks Foucault, "Why are you interested in politics?" Foucault laughs the question off – how could anyone

[273] According to Senellart's notes on *The Birth of Biopolitics*, this description of Hayek's position comes from Foucault's reading of *The Constitution of Liberty*. See Foucault (2008a p234 Note 11)
[274] See Paul Rabinow's preface to "The Foucault Reader" Rabinow (1984 p.3)

not be interested in politics? – but a few moments later asks the question he feels should have been asked: "*How* am I interested in politics?", and then answers it himself:

> The real political task in a society such as ours is to criticise the workings of institutions, which appear to be both neutral and independent; to criticise and attack them in such a manner that the political violence which has always exercised itself obscurely through them will be unmasked, so that one can fight against them(See Foucault and Chomsky, 1971).

The subversive, radical tone of his reply typifies the commonly held perception of Foucault as an iconoclast. Indeed, this is also the basis of much of the criticism of Foucault – as a nihilist, an anti-rationalist, a breaker of images who had nothing to put in their place – or worse, in Habermas's attack a "young conservative … paradoxical and politically suspect" (Habermas 1981 p.13).Such a criticism is unfair; Foucault's work, whether in critique or in the methods of genealogy and archaeology is programmatic, and his governmentality project especially so. The deconstructive element in his analysis of systems of thought is a valid position from which to start – it is no paradox to rationally critique the *forms* in which rationalism expresses itself. But in any case, the focus of Habermas's criticism is misplaced – the important words in the quote above are not 'fight' and 'attack'. Rather, the key observation which links the earlier Foucault with the Lectures is that it is the unquestioned assumption of 'institutions' or systems of knowledge as 'neutral' or 'independent' that permits the 'obscure' exercise of power. Foucault himself explains that:

> What I want to say is this: it is the custom, at least in European society, to consider that power is localised in the hands of the government and that it is exercised through a certain number of particular institutions, such as the administration, the police, the army, and the apparatus of the state....

> But I believe that political power also exercises itself through the mediation of a certain number of institutions which look as if they have nothing in common with the political power, and as if they are independent of it, while they are not.
>
> One knows this in relation to the family; and one knows that the university and in a general way, all teaching systems, which appear simply to disseminate knowledge, are made to maintain a certain social class in power; and to exclude the instruments of power of another social class. Institutions of knowledge, of foresight and care, such as medicine, also help to support the political power (*ibid*).

Foucault's insight is that the social sciences themselves, far from uncovering an objective reality, actually construct and ultimately constrain the ways in which we think. In a crude form, this results in slogans – 'development is economic growth', for instance, or 'knowledge is development' – which, through familiarity of use, not only influence policy but also mask underlying epistemological assumptions.[275]

The Anglo-Foucauldian School – The Microphysics of Power

In the thirty years or so since the Lectures were delivered, governmentality has become a key concept in a range of disciplines – indeed 'governmentality studies' is now a field in its own right, a more or less well-defined intellectual toolkit that has been used to investigate historical and contemporary forms of neoliberal governmentality in a wide variety of contexts. But significantly, the

[275] Chomsky is sympathetic to Foucault's position: "[One] task is to understand very clearly the nature of power and oppression and terror and destruction in our own society. And that certainly includes the institutions you mentioned, as well as the central institutions of any industrial society, namely the economic, commercial and financial institutions and… the great multi-national corporations…. Those are the basic institutions of oppression and coercion and autocratic rule that appear to be neutral despite everything they say" (*Ibid*)

approach taken in the great majority of these studies owes more to later authors, and in particular the 'Anglo-Foucauldian' school which emerged in the 1990s, than it does to Foucault's Lectures themselves. For scholars in this tradition, such as Nikolas Rose or Peter Miller, the Lectures are only the germ of an idea – "sketched out – no more than that" (Miller and Rose 2008 p.8) or, as Brown (2006 p.79) argues, "insufficient", being too narrowly conceived of in relation to Foucault's other historical interests.

These authors, and others associated with the Anglo-Foucauldian school, were strongly influenced by the translation of *Discipline and Punish* in 1977 and the publication in 1980 of *The Foucault Effect*, a collection of lectures, interviews and other writings delivered between 1972 and 1977.[276] But the sudden death of Foucault in 1984, and the conditions in his will, meant that the bulk of the annual Lectures at the Collège de France (1970–1984), including the two seminal courses in 1977–78 and 1978–79, remained available only as audiotapes, until publication in French in 2004 and English only in 2008. This was long after governmentality studies had become an established field, in the 1990s. Intellectually, a sense of disillusionment with Marxist political philosophy in the late 1970s and 1980s had led many Anglo-Foucauldians to welcome in Foucault an alternative, more modern, account of state sovereignty and the exercise of power. They saw in his writings a rejection of the state as a locus of centralised power, and a discarding of the 'cold monster' of the state as sovereign entity – a denial of 'juridico-discursive' formulations. According to this reading of Foucault, sovereignty was an effect not a source of power, or, as Miller and Rose put it "sovereignty is a minor part of the ways in which power forms modern politics. Modern political power does not take the form of domination of subjects but instead depends upon a web of rationalities and technologies for fabricating and maintaining self-government"(2008 p.52). Foucauldians

[276] See Rose *et al* (2006 p.86).

celebrated Foucault's depiction of the 'microphysics of power' and the 'capillary' model of power. On this understanding, power is: relational rather than possessed; constitutive of subjects, not merely held by them; productive as well as repressive; and bottom-up not top-down:

> [Power] functions as a multiplicity of force relations throughout the entire social formation and should be thought of as circulating rather than as a fixed or defining relationship between one individual, or class, and another. Analysis should be concentrated not on regulated and legitimate forms of power in central locations, but at the extremities, that is through regional and local forms and institutions' (Foucault 1980 p.96–102).

Where this led the Anglo-Foucauldian school was to adopt an approach that is largely empirical in character, concerned as it is with the decentralised or multiply centred manifestation of power, with the state then arising as the effect of these governmental strategies (Donzelot).[277] The goal, as Nikolas Rose says, was not to provide a 'general theory of governmentality' but rather to empirically study, in specific contexts, not just *government* as 'the conduct of conduct'[278] and *biopolitics* as 'politics through the regulation of life rather than the threat of death'[279] but also what came to be called the *technologies of power* – "the complex of mundane programmes, calculations, techniques, apparatuses, documents and procedures through which authorities seek to embody and give effect to governmental ambitions"[280] – and *political rationalities*, "the changing discursive fields within which the exercise of power is conceptualized, the moral justifications for particular ways of exercising power by conceptions of the proper distribution of such tasks among secular, spiritual, military and familial

[277]See Burchell*et al* (1991, Ch. 8).
[278] Miller and Rose define government more fully as "the historically constituted matrix within which are articulated all those dreams schemes strategies and manoeuvres of authorities that seek to shape the beliefs and conduct of others in desired directions" (2008 p.54).
[279]Foucault (2003 p.241)
[280]Miller and Rose 2008 p.55

sectors"[281]. The Anglo-Foucauldian understanding of neoliberalism is then as "the range of techniques that would enable the state to divest itself of many of its obligations, devolving those to quasi-autonomous entities that would be governed at a distance by means of budgets, audits, standards, benchmarks, and other technologies that were both autonomizing and responsibilizing" (Rose *et al*, 2006p. 91).

Such an approach, according to Miller and Rose, needed to "free itself from a focus upon 'the state' and from a restricted conception of the mechanisms through which authorities seek to regulate... social agencies" (2008 p.51). As a consequence the *state*, far from being Nietzsche's 'cold monster',[282] no longer has the unity or functionality that many accounts of political theory ascribe to it. The multiple and heterogeneous conceptualisation of power denies a view of the State as agent, giving rise to government as domination, and instead posits the state as a particular form that government has taken – and one that is itself subject to the same constituting forces, rationalities and technologies on which government is based. Nor is there any such entity as 'the Market', except as an abstract ideal; nor any state/market dualism in which distinct forms of power could be said to operate. For just as there are no markets without states to create and regulate them (or choose not to regulate them), the market is itself a regulating and ordering principle of the state – a system of knowledge from which a vast assemblage of discursive and practicable tools follow. On this view, the retreat of the state from certain domains through privatisation or deregulation is itself a form of government – one founded upon the production within the individuals who will become consumers within those domains of an entrepreneurial mentality, which is the fullest expression of a neoliberal governmentality.

[281] *Ibid*
[282] *Thus Spake Zarathustra* I.11.

From this brief summary of the Anglo-Foucauldian interpretation of governmentality, there are at least two reasons to be positive about incorporating it into a political critique of the Knowledge Economy as well as one negative to be discussed subsequently. The first positive is that the model of power that it describes fits well with at least part of the description by White in his typology of market politics, as does the idea of the state/market nexus. The second is that Anglo-Foucauldian governmentality is nothing if not practical. It is a systematic, programmatic field in which the practical task is to identify the rationalities which govern our beliefs and then examine the technologies which enforce them. It tells us what to do.

For the KE, the first such rationality to study is the application of Human Capital Theory, especially in the area of education, as illustrated by the Indian example above. As has already been discussed, the extension of Becker's 'economic approach' is the quintessential example of neoliberal governmentality, the most direct example of a particular kind of market logic (cost–benefit analysis) as organising principle, and a core element of policy positions of leading Knowledge Economy proponents (the World Bank, the OECD). Human Capital Theory does indeed function simultaneously as a principle of decipherment and as a technique of measurement. Secondly, there are the processes and formal machinery of commodification discussed earlier, which have been crucial in establishing the essential market characteristics of property rights and exchangeability on the discursive space of knowledge. Thirdly, there is the notion of 'performance' – that is, the ideas of performance efficiency, performance management and accountability regimes which increasingly dominate academic life and which are themselves rooted in Principal-Agent Theory, New Institutional Economics and New Public Management.[283] Associated with performance are a panoply of techniques of measurement:

[283] See Peters (2007 Ch. 13), McKenzie (2001) and Jasanoff (1990).

citation indices; bibliometrics; knowledge indicators; and quality assurance assessments, which reinforce the connections between market-led modes of governance and quantifiable measures of achievement.In all of these modes of expression the KE can be thought of as form of neo-liberal governmentality acting on and constraining the individual according to the rationalities and technologies set out above. The exercise of power, according to an Anglo-Foucauldian interpretation, lies in the iteration of these technologies and their extension to more and more aspects of life. The point then, is that not only do economic models fail to capture the complexities of social or political relationships, but, as Miller and Rose (2008 p.11) remark, that "the 'economy' is not a given domain with its own natural laws, but instead is brought into existence as a way of thinking and acting in particular historical and intellectual events, and that it is transformed as those ways of thinking and acting are themselves transformed". The 'knowledge economy', by this token, is not something that has happened or is going to happen in certain places under certain circumstances. It is instead a set of thoughts and actions, concerned with knowledge, economics and development. We are at a point now, when those thoughts and actions have attained a coherent enough form to have a transformative power of their own and to lead to new forms of governing and the construction of policy to formalise and institutionalise these ideas.

The Anglo-Foucauldian school of governmentality is by now quite well-established. Whilst no specific study of the KE exists within its orbit, there are other studies which have attempted to describe how the economisation of social life constitutes a form of government. There is no doubt that the methods it specifies – the examination of the practices of commodification and performance measurement – produce valuable results. However, it seems that such an account is incomplete, perhaps overly focused on the 'microphysics of power'. How are we to take the kind of sophisticated view of power that

governmentality offers but apply it beyond the level of a disciplinary technology operating at the level of individuals in the remainder of this section? How are we to recapture the role of the state?

To answer this question, I propose that we set to one side the Anglo-Foucauldian school (valuable though it may be in certain contexts) and return to Foucault himself, recalling that the two lectures from which the Anglo-Foucauldian school developed represented only a small part of the work as a whole.

The Genealogy of the State

Far from being "sketched out" or "insufficient", the Lectures had in fact emerged out of a substantial and intensive period of research carried out not only by Foucault, but also by his assistants, including Francois Ewald, Pasquale Pasquino, Daniel Defert, Giovanna Procacci, Jacques Donzelot, Catherine Mevel and others. Certainly, as far as overall objectives go Foucault's position seems somewhat contrary to that of the Anglo-Foucauldians:

> I have not studied and do not want to study the development of real governmental practice by determining the particular situations it deals with, the problems raised, the tactics chosen, the instruments employed, forged, or remodelled, and so forth. I wanted to study the art of governing, that is to say […] the study of the rationalization of government practice in the exercise of political sovereignty (Foucault 2008b p.2).

The most explicit difference between the Anglo-Foucauldian approach, with its focus on de-centred power, and that of the Lectures concerns the state as an object of analysis. For Foucault himself, "[t]he problem of state formation is at the centre of the questions that I want to pose" (2004 p.79) and the idea of a

'genealogy of the state' recurs throughout the 1977–78 and 1978–79 Lectures.[284] Especially in the former he returns again and again to the connections between governmentality and the reason of the state, remarking at one point: "Why should one want to study … 'governmentality'? My immediate answer will be to tackle the state and population" (Foucault 2008 p.116).The historical trajectory between the juridical and governmental forms of state sovereignty is painstakingly detailed, and it is the central object of study which informs the theoretical arguments made by Foucault.

What links these two key themes – the genealogy of the state and the microphysics of power – is a sense of perspective, of governmental reason acting simultaneously on the individual subject and the state:

> What I wanted to do – and this was what was at stake in the analysis – was to see the extent to which we could accept that the analysis of micro-powers, or of procedures of governmentality, is not confined by definition to a precise domain determined by a sector of the scale, but should be considered simply as a point of view, a method of decipherment which may be valid for the whole scale, whatever its size. In other words, the analysis of micro-powers is not a question of scale, and it is not a question of sector, it is a question of a point of view (2008b p.186).

In the 1977–78 Lectures Foucault asks: "Can we talk about something like a 'governmentality' that would be to the state what techniques of segregation were to psychiatry, what techniques of discipline were to the penal system and what biopolitics was to medical institutions? These are the kinds of questions that are at stake [in these lectures]" (Foucault 2008b p.120). If we believe, as Foucault

[284] Later courses return to the idea of the self and subjectification but the same general method as is found in the 1978-79 and 1979-80 Lectures still applies. The 1982–83 Lectures are titled "The Government of the Self and Others" and define modern philosophy to be a "practice which tests its reality in its relationship to politics. It is a practice which finds its function of truth in the criticism of illusion, deception, trickery, and flattery. Finally, it is a practice which finds the object of its exercise in the transformation of the subject by himself and of the subject by the other" (Foucault 2010 p.354).

appears to have done, that these questions may admit an affirmative answer, then we may be able to formulate a critique of the Knowledge Economy which recaptures a genealogy of the state and permits a bridge to be built with development theory and the Marxian and Polayian themes of the previous section.

In making such a claim, I refer to Thomas Lemke's account of Foucault and Marxism (Lemke 2000). Lemke begins by quoting Balibar who wrote that:

> Foucault's work is characterised by some kind of "genuine struggle" (1992, p. 39) with Marx, this struggle being one of the principal sources of its productivity. According to Balibar, Foucault moved in his theoretical development from a rupture with Marxism as a theory to a "tactical alliance", the use of some Marxist concepts or some concepts compatible with Marxism (Lemke 2000 p.1).

Lemke, who agrees with Balibar's assessment, argues further that it is precisely Foucault's work on governmentality, that has been described hereas 'the genealogy of the state' that makes this alliance with (at least some elements of) Marxism possible.

Governmentality and the Knowledge Economy

Foucault's critique of Chicago School neoliberalism has four central components. First, he presents neoliberalism as a critique of classical political economy (ie that the latter cannot differentiate labour). Next, he makes an epistemological claim about the way in which markets are conceptualised by neoliberals – that the market can be used to define and calculate human capital and so solve the problem of undifferentiated labour. More generally, he claims that for neoliberals it is the generalisation of the economic form of the market

that serves as a principle of intelligibility for the social world. Furthermore, there is a parallel claim regarding the relationship between market and state – that the former acts as a permanent economic tribunal over the latter. And from these two claims comes the whole conceptual apparatuses of rationality, *homo economicus* and neoliberal governmentality. Together with this, comes an awareness of governmentality operating at both a micro and macro scale – an awareness that seems to have been airbrushed out in the Anglo-Foucauldian interpretation. Yet, as Foucault makes clear, the analysis of governmentality is not defined or limited to a particular scale, but should be thought of as a 'point of view' which I suggest here we might apply to the KE.

As was argued in Part 1 of this thesis, the KE is at pains to distinguish itself from earlier development discourses, especially that of the Washington Consensus. Certainly, the widespread adoption of 'building a knowledge economy' as a policy goal seems to represent a significant shift – at the rhetorical level at least – in reconceptualising 'knowledge development' as the *mechanism* of economic development, as opposed to merely the *consequence* of it. This position contrasts with that of an earlier generation of policy-makers, who were in general dismissive of the capacity of developing countries to organise themselves in this way; a position summarised in 1993, by the World Bank's insistence that "in most developing countries … the extent of government involvement in higher education has far exceeded what is economically efficient"(LfE, World Bank 1994 p.56).

Yet, for a concept which commands such universal approval there seems little consensus as to how to go about achieving it, nor even any precise sense of what it might mean to do so - beyond the general sense of applying a market-oriented approach to knowledge; as a result, what is presented as 'knowledge economy policy' is highly dependent on the local politics of the country in which it is

applied (as has been seen in the case of India). It would seem that as the *language* of policy becomes more and more globalised, homogeneous and independent of context, the *practice* of policy becomes ever more local, heterogeneous and specifically politicised (again, as seen in the case of India). Indeed, as argued previously, the debate as to whether the Knowledge Economy *could* be made rigorous as a concept may no longer be relevant. Knowledge Economy discourse should not be viewed as an objective, scientific investigation of some underlying phenomenon, but instead should be accepted as a term that is used in different, even contradictory, ways in different circumstances – and moreover, we need to understand that this fluidity of meaning is an essential part of the term's usefulness to those that employ it.

Whilst one might struggle to say *what* the knowledge economy might actually mean, we have identified with some precision *when* and *where* it started to take hold. As we have seen in Part 1, what is absolutely crucial in terms of the intellectual and institutional history of this period (the late 1990s) is that it was, especially at the World Bank, a time of *crisis*. With the market fundamentalism of the Washington Consensus coming under severe criticism theoretically, even from within mainstream economic circles, and with its policy principles, such as the Structural Adjustment Programmes, discredited – the Bank was indeed suffering from what (Bank insider) Mundy called a 'legitimacy deficit' and considerable internal dissent as well as deep unpopularity in wider circles. It was out of this chaos that the Post-Washington Consensus of Stiglitz was formed, with the Knowledge Economy at the centre, functioning as a development but also a *critique* (of the Washington Consensus). The substance of (this part of) the KE critique was that the Washington Consensus focus on *market failure* had been far too narrow and dogmatic, that what Stiglitz (1994 p.5) calls the new information-theoretic paradigmoffered a superior way to understand market failure and the institutional failures which cause them. So, whereas the role of

the state in the Washington Consensus was often interpreted in an orthodox neoliberal manner as being limited to the creation of free markets and the correction of market failures, (and hence, by definition prioritising efficiency), in the Post-Washington Consensus the state is there to *address the market failures* which will always arise out of asymmetries of information and for other reasons.[285] In this way, on an epistemological level the KE's relationship to the Washington Consensus is very similar to that which Foucault attributes to Human Capital Theory in regard to classical political economy; both of these relationships are critiques based on epistemological claims about what the market tells us.

In fact, what the argument of Part 2 shows, is that as the KE absorbed more and more intellectual sources, the nature of the critique it offers became correspondingly more complex. Recall that there are a range of distinct ways in which the KE reconceptualises 'knowledge problems' (such as education reform, science policy, intellectual property rights legislation etc) in terms of the behaviour of markets. It is therefore, both a system of knowledge (about knowledge) and also a critique of an earlier neoliberal discourse. The substance of the critique is that the latter fails to address those market failures which are not only characteristic of knowledge and knowledge processes but are in fact, an essential part of them, and that the relationship of state to market needs to be reassessed accordingly. Each one of these leads to a refinement of the basic neoliberal premise of the market as a principle of intelligibility and permanent economic tribunal of the state and thus to a form of governmentality that is new in certain respects but in which the core neoliberal features are preserved.

[285]The extent to which the Post-Washington Consensus is a genuine departure from the Washington Consensus is debatable – See Fine (2001 Ch.1) for a critical account.

Remarks

With this in mind, let us reconsider, from a Foucauldian point of view, the foundations of the KE as a development discourse, namely the epistemological claims that *questions of knowledge considered from an economic viewpoint are fundamentally questions of market failure* and that *the problems of development are fundamentally to do with the economic exploitation of knowledge.*[286] Recall that the discourse is premised on the belief that these two claims taken together represent a paradigm shift, in that they view knowledge, markets and development in a radically new light. What this depends upon in turn is a change in what Foucault would term the 'episteme', that is to say, a new set of statements about knowledge can be made, because the language of economics has grown sufficiently to accommodate them. Each of the topics of Part 2 illustrate this – the information economics of Stiglitz, the endogenous growth theory of Romer and Lucas, the expansion of Becker's human capital theory into social capital and the advent of Lundvall's innovation systems approach. With the more or less simultaneous emergence or re-emergence of these theories, the fact that knowledge violated the assumptions of the neoclassical paradigm[287] is no longer a technical problem but the basis for an epistemological readjustment.

The second Foucauldian observation is that the KE exhibits what Foucault referred to in his debate with Chomsky as the 'obscure' use of power through institutions which appear 'neutral' and 'independent'. And these institutions most definitely operate at all levels and at all scales in the Knowledge Economy, from the individual student or academic researcher whose educational progress or capacity for original thought is subject to ever more overbearing forms of

[286]Or as Stiglitz puts it "To a large extent the problem of development is... that of the acquisition of information about technology" (Stiglitz 1998c p.200).

[287] That is to say: as a good, it is non-rivalrous and only partially excludable; it does not come in discrete units nor is it homogeneous in nature. As technology, it is continually changing, dependent upon human agency, and generates externalities. As information, it is incomplete and asymmetric; it is depleted by lack of use, not by use.

measurement; to the demotion from importance and instrumentalisation in form of academic research, especially that which has no immediate economic impact; to the exploitative capture of publicly produced, uncommodified knowledge by private firms through mechanisms of patent protection and intellectual property; to the tremendous imbalances of power which persist in the globalised knowledge economy through the mechanisms of such fora as the WTO.

Thirdly, as a discursive point, the generalisation of the market as a principle of intelligibility of the social world seems more prevalent than ever, with the KE being but one of a number of forms that this can take. Why this should happen no doubt has something do with the same analytic apparatus being used in multiple contexts – as Becker says "no approach *of comparable generality* has yet been developed that offers any serious competition [to rational choice theory]" Becker (1992 p.53, my emphasis). There will always be an asymmetry between arguments that are homogeneous and totalising on the one hand and those that are heterogeneous and specific on the other.

But the final point I want to make by way of conclusion is to suggest that an effective critique of Knowledge Economy discourse is to be found not in an analysis of what it says but in what it does *not* say, or does not permit to be said. For all its insistence on knowledge as market failure, are there not many aspects of knowledge which cannot be described in terms of markets, nor even in terms of market failure? For all the emphasis on asymmetries of information are asymmetries of power not worthy of consideration. And are these not the substantive ways in which knowledge and development could be said to be related?

CONCLUSION

This thesis is about an idea – that development should be thought of as the successful economic exploitation of knowledge – which appears as simple as it is seductive. Certainly, if one goes by the number of governments (developing or otherwise) that have pledged to 'build a knowledge economy', then it is an idea which commands near-universal approval. It is a powerful idea, not least because it projects the complex, multi-faceted concept of development onto a realm in which a recognisable set of economic methods can be brought to bear. It is also an idea of the powerful, in that it originated in some of the most influential organisations in the world, is supported by most of the major Western nations, and is based on the work of some of the world's most distinguished economic scholars. It has been the purpose of this thesis to critique that idea.

Critique, as I have said in the Introduction, is a 'not a judgement but a practice'. That is to say it depends not on assembling a list of criticisms of a thing – in this case the Knowledge Economy discourse - but on the systematic exposure of the epistemological assumptions that underlie it. The critique envisaged in this thesis is political in nature, in the sense that the central epistemological claim is that the Knowledge Economy discourse neglects questions of power and politics. Moreover, not only do these omissions undermine the discourse as an account of development but are also a political phenomenon in themselves.

In trying to understand this latter point, I make three main arguments. First, that in an era when material relations and the political capacity to control them is of paramount importance, the Knowledge Economy discourse offers a means of 'dematerialising' the process of development, relegating questions of the material relations of production to a lower status than that of the acquisition of knowledge or information. Second, that whilst the slogan that 'knowledge is

development' could suggest a rich and substantive understanding of both terms and a complex relationship between the two, that those are not the senses in which either term is understood within the KE discourse. Rather, it is through the prism of the market that the KE makes sense of both 'knowledge' and 'development' and as such sees only those aspects of either concept which can themselves be understood in market terms. Third, that because the KE is based on a depoliticised understanding of the market, it fails to recognise and therefore fails to challenge those asymmetries of power which derive from asymmetries in access to markets or in ways of participating in them.

In providing a critique of the KE discourse, my first task was to understand when, where and how the discourse came about. The term 'knowledge economy' is by no means a new one, and indeed it and other cognate terms such as 'knowledge society', 'learning economy', 'information economy' have been used in various forms for decades. However, my research showed that the point at which 'building a knowledge economy' started to become a significantly influential concept at the level of public policy was in the late 1990s, and in particular through a major research programme at the OECD and, a little later, the adoption of similar ideas at the World Bank. In particular, I identified three major works as key: first in 1996, the OECD's *Knowledge-Based Economy*, then in 1998 the World Bank's World Development Report – *Knowledge for Development* – and finally, in 2002, the World Bank's *Constructing Knowledge Societies*. These publications set out the theoretical and policy parameters of the KE discourse and were hugely influential internationally as illustrated through my empirical work that consisted of a series of elite interviews with a range of present and former staff at the World Bank and OECD as well as other key actors who played a part in the emergence of the discourse. I was fortunate enough to secure interviews with the lead authors of all three of the major KE publications (for example, Joseph Stiglitz, David Ellerman, Bengt-Ake Lundwall, Carl

Dahlman and Jamil Salmi) and with various of their colleagues. This opportunity provided for a unique insight into the complex interplay between ideas, individuals and institutions leading to the creation of the KE discourse - no such study exists elsewhere. I have tried to avoid caricaturing the World Bank or the OECD as ideological monoliths in which only one set of views is permissible. Rather my research shows that the evolution of the discourse was driven by the entry of outsiders into these institutions with the purpose of incorporating new ideas from economic theory which, at least from the perspective of the institutions themselves were viewed as radical. Importantly, these theoretical ideas also lent themselves to the construction of indicators and other metrics which greatly appealed to client policy-makers (irrespective of whether what was being measured really captured anything substantively new). Another vital ingredient that contributed to the success of the KE discourse was the way in which the incorporation of new theoretical ideas gave the discourse a sense of being different from previous approaches – this was especially important within the World Bank, where the KE was central to the formation of the Post-Washington Consensus and therefore to addressing the various criticisms, both internal and external, that had been made of the Bank in the Washington Consensus era. However, to some extent, the KE discourse was also limited by internal politics, for instance the unpopularity of the cross-sectoral approach of the KAM with senior Bank figures or the competition between Directorates at the OECD or intellectual differences between key actors (indeed, some of the key actors were later to leave their respective institutions and write critically of their experiences). Even within the Bank and the OECD several researchers would concede that not only was there a 'flexibility' in meaning but that the KE's fuzziness was in fact one of its most appealing features to policy-makers. Ultimately, as my research shows, the eventual form that the KE discourse took reflected these micro-political aspects.

Having concluded then, that the KE could not be considered as a robust analytic concept, sound empirical methodology or unambiguous basis for public policy, I proceeded in Part 2 to develop my own original characterisation of what the KE actually is. To this end, I based my characterisation on the intellectual history of the discourse, and the economic theories that had influenced it. In doing so, I argued that the best way to think of the KE was as *the systematic representation of questions of knowledge in terms of properties of markets.* In characterising the KE in this way, I sought to avoid over-simplifying the discourse as a crude agenda of marketisation in which all knowledge was to be put on a market footing, for this is certainly not the case. The KE most definitely does see a role for the state, for instance, and emphasises the non-market aspects of innovation and the importance of some degree of public knowledge. However, and crucially, even these non-market aspects were still to be conceptualised relative to markets (for example, in terms of market failure) or else excluded altogether.

To further illustrate the complexity of this characterisation of the discourse, my research indicated that there are three main schools of economic thought which have influenced it most strongly - the Austrian, evolutionary and neo-classical – and that within each school there are different ways in which knowledge might be related to markets. On the face of it, these three schools, which are based on very different micro-foundations, seemed difficult to combine into any coherent whole. But once again, such tensions turned out to actively contribute to the success of the discourse, as they are not only permitted a 'broad church' approach but also a sense, on the part of KE advocates, that the KE approach was radically different to previous discourses of development due to its inclusion of economic ideas from schools other than the neo-classical. I described the whole as composed of three interwoven strands, each of which offers a critique of the others and illustrated this point with detailed discussions of the work of Hayek on spontaneous order, Machlup on knowledge accounting, List on

mental capital, Schumpeter on entrepreneurship, Lundvall on innovation, Arrow on the allocation of resources, Stiglitz on asymmetric information, Romer on endogenous growth theory and Becker on human capital theory. Of these, I note that several refer to research that was considered ground-breaking at the time of the KE and argue that a great deal of the KE discourse's attraction in its early days was due to its association with cutting-edge economics. In trying to explain why and how the KE came to be, therefore, it is in this unusual constellation of institutional and intellectual factors that the answer lies rather than any profound shift in the way in which economies work.

Finally, in Part 3, I turned explicitly to questions of power and politics. As set out in Part 2, the discourse depended upon a particular set of representations of knowledge in terms of markets, each of which comes from one or other of the three schools. The common problem, however, was that for each of the schools, these treatments of markets made little acknowledgement of the various ways in which power and politics manifest themselves. In so doing, the discourse promotes certain questions (regarding the production, diffusion or application of knowledge) and relegates others (especially concerning the material relations of power). Moreover, it ignores the ways in which participation in markets is an uneven business, that trade is seldom free or fair, and that these inequalities in the politics of markets may be even more acute when those markets are markets for knowledge. Finally, it fails to take account of the fact that the act of participating in a market may actually change the social and political relations and indeed the mentality of those who do so, if what they are now exchanging in that market was previously produced in a non-market manner. These sorts of issues were illustrated in Part 3 which begins by describing a case of the KE in action - Indian Higher Education reform in the 2000s. India had been the subject of one of the most detailed of all the World Bank's country reports - the 2005 report *India and the Knowledge Economy*. This report was a direct application

of the K4D methodology of the '4 Pillars approach' that I had examined in Part 1 and included a set of recommendations for transforming India into a knowledge economy. I then examined the close similarity between these recommendations and the policy initiatives that India actually undertook in the period immediately after the publication of the report. I argue that the KE does not function as a coercive mechanism for dictating policy from the World Bank to India. Rather the hegemony that the KE represents is of a global kind, favouring capitalist elites in both the developed and developing world. Nevertheless, the KE is more than just neoliberalism since it also articulates and promotes a whole range of understandings regarding knowledge, markets and the role of the state. I then looked in more detail at the work of the National Knowledge Council in reforming India's Higher Education system along KE lines. I describe the various forms of politics that operate within Indian education - federal politics, party politics, student politics, caste and class politics all of which challenge or obstruct the application of the KE. I then used this empirical example to motivate a theoretical critique of the KE based on a synthesis of different approaches to the political economy of knowledge. I first considered a classification of the various forms of market politics, following Gordon White's 'fourfold typology'. These four forms are the politics of state involvement, the politics of market organisation, the politics of market structures and the politics of embeddedness. In each case, I argue that these forms of political engagement are especially relevant when it is a market for knowledge that is being created. Next I considered commodification (the transformation of a thing into a commodity to be exchanged in a market) and examined whether we might understand the KE in terms of the commodification of knowledge. I discussed Marxian and Polanyian approaches to commodification and suggested that their fundamental insight – that commodification is as much about the transformation of the social and political relations of those who now exchange that commodity as it is about the

transformation of the commodity itself – is an important one. However, I also argued that dialectical presentations such as those of Marx and Polanyi, which are based on a contradiction between the commodified and uncommodified forms, may not pay sufficient attention to the fact that the commodification of knowledge is only a partial process and that it tends to generate de-commodification or at least the preservation of an uncommodified core. I suggest that this latter feature may be a defining quality of 21st Century capitalism – that the continued existence of at least a part of the uncommodified realm is actually a crucial part of commodification, providing a perpetual means of appropriation and, at the same time, a politically stabilising counterweight against the chaos of the market. Lastly, I consider the Foucauldian concept of governmentality and in particular Foucault's critique of Human Capital Theory and American Neo-liberalism, which comes from his recently translated Lectures at the Collège de France. Foucault's great insight that the market functions as a 'principle of intelligibility' and a 'permanent economic tribunal of the state' can, I argue, be generalised to the KE today, albeit in a much more complex form. I discuss how Foucault viewed neoliberalism as a critique of classical political economy, based on the differentiation of labour, and propose that an analogous critique can be constructed for the KE, but in relation to earlier discourses of development, such as the Washington Consensus. The substance of this critique concerned the representations described in Part 2 – that the KE offers a way of relating fundamental aspects of knowledge relative to properties of markets, such as the concept of market failure. In so doing, I draw a line between the common reading of Foucault that has led to the modern Governmentality School with its focus on the 'microphysics' of power and that of Foucault's own work which I argue is better understood as the genealogy of the state. I argue then that the KE can be thought of as a refinement of a neoliberal governmentality, operating at all levels of society.

To conclude, it seems almost axiomatic that those areas of policy, which are increasingly being subsumed into the knowledge economy discourse, are indeed 'political'. If one asks, for example in any specific context, why successful higher education reforms have proven to be so hard to achieve,[288] or why scientific capacity remains so persistently under-developed,[289] or why a particular piece of technology seems to benefit some and not others,[290] then it is hard to conceive of any plausible answer that does not involve the political factors mentioned above. If the suggestion is that developing countries should massify or diversify their provision of higher education, or to make it more responsive to the interests of the market or simply 'make it better', then one needs to understand the historically contingent factors – class, culture, etc – that have limited its provision and quality in the past, and which drive the demand for expansion and reform today. If there is to be a focus on those aspects of learning which make the individual more productive, then there should not be a blindness to those that affect society at large, such as the production (or reproduction) of social or cultural relations or the construction of national (or other social) identity, or those that act in an emancipatory, liberating or otherwise transformative manner. If knowledge is to be codified and commodified, produced and consumed, and valued by and exchanged in markets, then those markets and the institutional arrangements – intellectual property rights, patenting laws and systems of innovation which govern them – will surely be subject to the same dominant interests – corporate, military and political – and the same patterns of appropriation, accumulation and rent-seeking as any other. Finally, if these 'sites of knowledge production' – universities, classrooms and laboratories – are to be reformed, it should not be forgotten that they are also political spaces – the sources of ideas, the foci of political organisation and even, on occasion, the scenes of dramatic violence and bloodshed. The global orthodoxy which the KE

[288] See for example, World Bank/UNESCO (2000) and Bloom, Hartley and Rosovsky (2006).
[289] See for example, UNESCO (2005).
[290] See for example, Harriss-White *et al* (2009).

represents is largely blind to these issues and for this reason one cannot consider that 'building a Knowledge Economy, as it is currently understood, is a good model for development.

APPENDIX

Transcription Codes:

H=Relevant History of the Knowledge Economy; M=Knowledge and Markets T=Theoretical ideaswhich underpin the Knowledge Economy D=Discourse and Policy I=Significant Internal Politics and Institutional issues

Key Publications/ Programmes:

WDR = World Development Report; **CKS** = *Constructing Knowledge Societies*; **P&P** = *Peril and Promise;* **K4D** = *Knowledge for Development;* **KAM** = *Knowledge Assessment Methodology;* **LfE** = *Lessons from Experience;* **OECD 1996** = *The Knowledge-Based Economy;* **KB** = *Knowledge Bank;***SIP =** Skills and Innovation Programme; **OECD MOST =** Ministry of Science and Technology (China) Innovation Report

No.	Institution	Department/Role	Publications/Projects/Area of Expertise	Date of Interview	Most Relevant Codes
1	IAP/TWAS [Mohamad Hassan]	Former President	Science in Developing Countries	26/07/11	M D
2	OECD	Education/CERI/ Senior Analyst	OECD Innovation Strategy, Higher Education Policy	15/06/11	M T D I
3	OECD	STI/ Senior Analyst	OECD MOST, Innovation Strategy	15/06/11	H M I

4	OECD	DAC/ Analyst	Fragile States	08/04/12	I
5	(former) OECD	Former Education/ Director	PISA, Education Policy	12/08/11	M T D I
6	WB	Education/ Senior Analyst	CKS, Education Policy	24/03/13	H T D I
7	(former) WB [Carl Dahlman]	Senior Analyst	WDR, K4D, STI, KAM	24/03/13	H M T D I
8	WB	Education Analyst	SIP, Education Policy	23/03/13	I
9	WB	Economics/ Senior Analyst	K4D, KAM, growth	23/03/13	H T I
10	WB	Education/ Senior Analyst	SIP, Education Policy	22/03/13	M T D I
11	WB, OECD	Crisis and Growth, Education/STI Senior Analyst	K4D, KAM, SIP, Economics, Education Policy	24/03/13	H M T D I
12	(former) WB [Jamil Salmi]	Education/ Department Head	CKS, LfE, Education Policy	27/05/13	H M T I
13	(former) WB	Education Analyst	K4D,	16/03/13	H
14	(former) WB/UNESCO /OECD/CERI	Human Development Africa/ Former Director	Education Resource Mobilisation, Education in Developing	28/03/13	H M D I

			Countries, Human Development		
15	(former) WB [David Ellerman]	Economic Adviser to Chief Economist WB	KB	14/03/13	H M T D I
16	(former) UNESCO/WB (consultant)	US Census, WB Consultant	P&P, Taskforce,	30/03/13	H M T D I
17	(former) WB/UNESCO (consultant)	Consultant	P&P, Taskforce	30/12/13	H D I
18	Washington thinktank	Director	Macroeconomics	27/03/13	D I
19	New York thinktank	Director	Policy Research	31/03/13	M D I
20	(former OECD/IKE [Bengt-Ake Lundvall]	Deputy Director STI Directorate,	OECD 1996, Innovation	09/12/13	H M T D I
21	(former) OECD	Senior Analyst STI Directorate	OECD 1996, Innovation	21/01/14	
22	UNESCO	Consultant	P&P Taskforce	16/12/12	H D I
23	(former)	Former Dean,	P&P Taskforce	20/12/13	H M T

	WB/UNESCO (consultant)/Harvard [Henry Rosovsky]	Professor of Education			D I
24	UNESCO	Consultant	P&P Taskforce	21/12/13	H M T D I
25	WB (former) [Joseph Stiglitz]	Previous Chief Economist	K4D, WDR, CKS	13/02/14	H M T D I

Coding Examples

Interviews were semi-structured, and inevitably specific to the interviewees' involvement with knowledge economy projects and their experiences within organisations. However, general questions regarding theoretical understandings of knowledge economy terms and the relevance of particular economic concepts were also asked. Transcripts were then coded according to the five main themes:

H=Relevant History of the Knowledge Economy; M=Knowledge and Markets T=Theoretical ideas which underpin the Knowledge Economy D=Discourse and Policy I=Significant Internal Politics and Institutional issues

Example from Interview No. 7 [former World Bank senior analyst]

Umar Salam (US) – How do you define a Knowledge Economy?

Interview No. 7 – A KE is an economy that is effective at using knowledge to improve its performance, so it's a very general definition; and also it doesn't

have to be domestically generated, since we are focusing on developing countries … Now, we didn't get into the more knowledge society type things; we did it from the economic view. This was the core view of the Bank.

US – And by a knowledge society you would mean thinking about social and political aspects of knowledge?

Interview No. 7 – That's right; and that's what we didn't get into. In part because these were not fertile areas for the Bank, and secondlybecause it was really hard to get some way of quantifying them. We were trying to have some way of helping people compare themselves with other countries, and then think about performance.

From Interview 3

US – When we speak of building a knowledge economy, do we have one model in mind?

Interview No. 3 – We don't have it, but more than ten years ago, the mid-1990s, the actual term we used to describe the term was twofold: the growth project and the jobs project. The growth project was to look at new mode of growth, the new drivers of growth – and through that project we identified the knowledge economy as the way to describe the mode of our current economic development. So, contrary to previous growth models where we looked at labour/capital endowment, knowledge plays much more of a role. The OECD played a very strategic role in identifying what's new; the OECD is here to help governments tackle the new policy issues. (I use the knowledge economy as a typical example of how the OECD helped governments, because with the new mode of growth you need to tackle a range of related issues. This where the OECD adds value.)We first have to look at how the OECD can help in a broader context. The model we identified at that time was summarised in the

growth report. It identified four pillars – that is, policy issues that are important: Education, R&D, Framework Conditions and ICT

From Interview 2

US – So in what ways does your work on Education interact with other directorates?

Interview No. 2The Innovation Chapter for the thematic review was written by the Directorate for Science and Technology, and there were some linkages with the Directorate for Employment. For my project in CERI, on the internationalisation of trade in education we worked with the directorate for trade and with other directorates – but mainly trade. For the future of higher education we worked with the Secretary General of the International Future Unit. For other topics we may have had links with other departments.

Interview No. 2 The directorates have different cultures; there are strong and the weaker directorates, and those that are closer to the main focus of the organisation, which is economics. Then there is a divide between economic and social directorates – clearly we don't see things the same way; if you work in education you can't forget equity. The other directorates 'tend to focus on structural frameworks. They will have a much more technical point of view – technical in the sense they will think about efficiency, but not so much about the social consequences. But when you work in education/ employment / health, you can't do that

From Interview 5

US – Do you see increasing marketisation (in higher education) – as a danger?

Interview No. 5 – No – an opportunity! But one that has to be grasped.

BIBLIOGRAPHY

Aberbach, J., and Rockman, B. (2002) "Conducting and Coding Elite Interviews" *PS: Political Science & Politics,* 35, pp.673–676.

Abhyankar, R. (2014) "The Government of India's Role in Promoting Innovation through Policy Initiatives for Entrepreneurship Development" *Technology Innovation Management Review.*

Abramovitz, M., and David, P. (1996) "Technological Change and the Rise of Intangible Investments: The US economy's growth-path in the twentieth century" *Employment and Growth in the Knowledge-based Economy* Paris: OECD.

Acemoglu, D., and Robinson, J. (2006) "Persistence of Power, Elites and Institutions" MIT Working Paper 06-05.

Agarwal, P. (2006) "Higher Education Services and Trade Liberalisation" in: R. Chanda (ed), *Trade in Services and India: Prospects and Strategies*. New Delhi: Wiley-India, pp.299–358.

_____, (2008) "India in the Context of International Student Circulation: Status and Prospects" in H. de Wit *et al* (eds), *The Dynamics of International Student Circulation in a Global Context*. Rotterdam: Sense, pp.83–112.

_____ (2009) *Indian Higher Education: Envisioning the Future*. New Delhi: Sage.

Agarwal, P. (Ed) (2012) *A Half Century of Indian Higher Education: Essays by Phillip Altbach*. London: Sage.

Alcorn, B., Christensen, G., and Kapur, D., (2015) Higher Education and MOOCs in Indian and the Global South. Change: The Magazine of Higher Learning. Vol 47. No.3 pp42-49.

Altbach, P. (1969/2012) 'The Permanent Crisis of Indian Education' in Agarwal, P. (Ed) (2012) *A Half Century of Indian Higher Education: Essays by Phillip Altbach*. London: Sage.

Altbach, P. (1989) "The Dilemma of Change in Indian Higher Education" *Higher Education*, Vol. 26, No. 1, Perspectives on Higher Education in India, (Jul., 1993), pp. 3-20

Altbach, P. (2006) "Tiny at the Top" *The Wilson Quarterly* Autumn 2006 p.49-51

_____ (2005) "The Private Higher Education Revolution: An Introduction" in: P. Altbach and D. Levy, *Private Higher Education: A Global Revolution*. Rotterdam: Sense Publishers, pp.1–13.

_____ (ed) (2003) *The Decline of the Guru: The academic profession in developing "middle-income" countries*. London: Palgrave Macmillan.

Anandakrishnan. M,. (2011) Private sector participation in Indian higher education FICCI Higher Education Summit 2011. http://www.ey.com/Publication/vwLUAssets/Private_sector_participation_in_Indian_higher_education/$FILE/Private_sector_participation_in_Indian_higher_education.pdf

Armingeon, K., and Beyeler, M., (eds) (2004) *The OECD and European Welfare States* Cheltenham: Edward Elgar Press

Arrow, K. (1962) "The Economic Implications of Learning by Doing" *The Review of Economic Studies*, Vol.29, No.3 (June 1962), pp.155–173.

_____ (1976) *Essays in the Theory of Risk-Taking*. Amsterdam: North-Holland.

Asian Development Bank (2014) *Innovative Asia: Advancing the Knowledge-Based Economy* Mandaluyong City: Asian Development Bank

Aubert, J.,E., and Reiffers, J-L. (2003) Knowledge Economies in the Middle East and North Africa: Toward New Development Strategies. World Bank Institute Series 28038, Washington: World Bank.

Balibar, É. (1992) "Foucault and Marx: The question of nominalism" in T. J. Armstrong (ed.), *Michel Foucault philosopher*, New York: Routledge, pp. 38-56.

Banerjee, A., Gertler, P., and Ghatak, M. (2002) "Empowerment and Efficiency: Tenancy Reform in West Bengal", *Journal of Political Economy* Vol.110, No.2, pp.239–280.

Barro, R., and Sala-i-Martin, X. (1995) *Economic Growth*. New York: McGraw-Hill.

Batteson, C., and Ball, S. (1995) Autobiographies and Interviews as Means of Access to Elite Policy-Making in Education. *British Journal of Educational Studies*, Vol.43, (No.2), pp.201–216.

Beck, U. (1992) *Risk Society: Towards a new modernity*. London: Sage.

Becker, G. (1964) *Human Capital; A theoretical and empirical analysis, with special reference to education.* National Bureau of Economic Research. New York: Columbia University Press.

Becker, G. (1992) *The Economic Way of Looking at Life.* Nobel Prize Lecture, available at http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1992/becker-lecture.pdf.

Bell, D. (1973) *The Coming of Post-Industrial Society: A venture in social forecasting*. New York: Basic Books.

Benkler, Y., and Nissenbaum H. (2006) "Commons-based Peer Production and Virtue" *The Journal of Political Philosophy,* Vol.14, No.4, pp.394–419.

Bennell, P. (1996) "Rates of Return to Education: Does the conventional pattern prevail in Sub-Saharan Africa?" *World Development* 24(1): 183–199.

Berry, M. (2002) "Validity and Reliability in Elite Interviewing" *PS: Political Scienc e and Politics*, 3, 4, pp.679–682.

Bhaduri, A. (1986) "Forced Commerce and Agrarian Growth". *World Development*, Vol.14, Issue 2, pp.267–272.

Birdsall, N. (1996) "Public spending on higher education in developing countries: too much or too little?" *Economics of Education Review* 15, pp.407–419.

Blair, T. (1998) *The Third Way: New politics for the new century*. London: The Fabian Society.

Blankenburg, S. (2000) "Knowledge, economic growth and the role of policy: On the role of 'public–private partnerships' in the new 'knowledge-driven economy' ". ESRC Centre for Business Research, Department of Applied Economics, Working Paper 185.

Blaug, M. (1985) "Where are We Now in the Economics of Education?" *Economics of Education Review* 4: pp.17–28.

Bloom, D., Canning, D., and Chan, K. (2005) "Higher Education and Economic Development in Africa" available at http://siteresources.worldbank.org/EDUCATION/Resources/278200-1099079877269/547664-1099079956815/HigherEd_Econ_Growth_Africa.pdf.

Bloom, D., Hartley, M., and H, Rosovksy (2006) *Beyond Private Gain: The public benefits of higher education. International Handbook on Higher Education* Vol.18: Springer, pp.293–308.

Boettiger, S., and Bennett, A. (2006)"Bayh-Dole: If We Knew Then What We Know Now" *Nature Biotechnology* 24, pp.320–323.

Boettke, P. (2006) in E. Feser, (ed) *The Cambridge Companion to Hayek,* pp.51–67 Cambridge: Cambridge University Press.

Bok. D., (2003) *Universities in the Marketplace: The Commercialization of Higher Education* Princeton and Oxford: Princeton University Press

Bowles, S., and Gintis, H. (1975) "The Problem with Human Capital Theory – A Marxian Critique" *The American Economic Review*, Vol.65, No.2, Papers and Proceedings of the Eighty-seventh Annual Meeting of the American Economic Association (May 1975), pp.74–82.

British Council (2014) *Understanding India: The future of Higher Education and Opportunities for International Co-operation* British Council available at https://www.britishcouncil.org/sites/default/files/understanding_india_report.pdf

Brown, J. (1993) Asian Development Bank Staff Paper 52 http://www.adb.org/sites/default/files/publication/28148/es52.pdf.

Brown, W. (2008) *Regulating Aversion: Tolerance in the age of identity and empire.* Princeton: Princeton University Press.

Browne, J. (2013). "The Default Model: Gender Equality and Structural Constraint", *Politics & Gender* Vol.9, Issue 02, pp.152–173.

Buchert, L., and King, K. (1995) *Learning from Experience: Policy and Practice in Aid to Higher Education,* CESO Paperback No.24.

Burchell, G., Gordon, C. and Miller, D. (1991) *The Foucault Effect.* Chicago: University of Chicago Press.

Burmeister, E. (2000) "The Capital Theory Controversy", in: *Critical Essays on Piero Sraffa's Legacy in Economics* (ed H. D. Kurz). Cambridge: Cambridge University Press.

Butler, J. (2002) "What is Critique? An Essay on Foucault's Virtue", Raymond Williams Lecture in: D. Ingram (ed) *The Political: Readings in Continental Philosophy*. London: Basil Blackwell, also available at http://tedrutland.org/wp-content/uploads/2008/02/butler-2002.pdf.

Caldwell, B. (2004) *Hayek's Challenge: An intellectual biography of F.A. Hayek*. Chicago: University of Chicago Press.

Callon, M. (ed) (1998) *The Laws of the Markets*. London: Blackwell Publishers.

Carter, A. (1996) "Measuring the Performance of a Knowledge-based Economy", in: Foray, D. and B.-Å. Lundvall (eds), *Employment and Growth in the Knowledge-based Economy*. Paris: OECD Documents.

Castells, M. (1996; 2nd edn, 2000). "The Rise of the Network Society" in: *The Information Age: Economy, Society and Culture* Vol. I. Cambridge, MA; Oxford, UK: Blackwell.

Chang, H-J. (2006) The East Asian Development Experience: The Miracle, the Crisis, and the Future, London: Zed Press

Chang, H-J. (2010)*Twenty-three Things They Don't Tell You About Capitalism* London: Allen Lane

Chang, H-J. (2012) *Kicking Away the Ladder: Development strategy in historical perspective*. London: Anthem Press.

Chen, D., and Dahlman, C. (2005) *The Knowledge Economy, the KAM Methodology and World Bank Operations*. Washington DC: World Bank.

Clay, E., and Schaffer, B. (eds) (1984). *Room for Manoeuvre: An explanation of public policy in agriculture and rural development*. London: Heinemann.

Coase, R. (1937) "The Nature of the Firm", *Economica* 4 (16): pp.386–405.

Colclough, C. (1995) "Diversifying the funding of tertiary institutions: is the Bank's agenda the right one?" in: L. Buchert and K. King (1995) *Learning from Experience: Policy and Practice in Aid to Higher Education*, CESO Paperback No.24. The Hague, the Netherlands: CESO, pp.145–157.

Coleman, J. (1988) "Social Capital in the Creation of Human Capital", *The American Journal of Sociology*, Vol.94, pp.S95–S120.

Colander, D., Holt, R., and Rosser B, Jr. (2004) The Changing Face of Economics: Conversations with Cutting Edge Economists. Ann Arbor: University of Michigan Press.

Chandra, A., and Khanijo, I., (eds) (2009) *Knowledge Economy: The Indian Challenge* New Delhi: Sage India

Collini, S. (2009) "Impact on Humanities",13 November. *London: Times Literary Supplement.*

_____ (2012) *What are Universities For?* London: Penguin.

Conti, J., and O'Neil, M.

(2007) "Studying power: qualitative methods and the global elite", *Qualitative Research*, 7, 1, pp.63–82.

David, P., and Foray D. (2003) "Economic Fundamentals of the Knowledge Society", *Policy Futures in Education*, 1(1), pp.20–49.

deLong, J. (1999) "Speculative Microeconomics for Tomorrow's Economy", available at http://www.j-bradford-delong.net/OpEd/virtual/technet/spmicro.html.

Deakin, S. and Wilkinson, F. (2000) 'Capabilities, Spontaneous Order and Social Rights, *CBR Working Paper 174*, University of Cambridge

Demil, B., and Lecocq, X. (2006) "Neither Market nor Hierarchy nor Network: The emergence of bazaar governance" *Organization Studies,* Vol.14, pp.633–349.

Deshpande, S., and Yadav, Y. (2006) "Redesigning Affirmative Action Castes and Benefits in Higher Education". *Economic and Political Weekly* . June 17, 2006 pp2419-2424.

Dethier, J-J.(2009) "World Bank Policy Research – a Historical Overview". World Bank Policy Research Paper 5000.

Dexter, L. (2006) *Elite and Specialized Interviewing.* Colchester: University of Essex/ECPR Press.

Dickson, D.(1984)*The New Politics of Science.* Chicago: University of Chicago Press.

Drahos, P., and Braithwaite J. (2002)*Information Feudalism: Who owns the knowledge economy?* London: Earthscan.

Dreyfus, H., and Rabinow P. (1982) *Michel Foucault: Beyond structuralism and hermeneutics*. Chicago: The University of Chicago Press.

Drucker, P. (1969) *The Age of Discontinuity: Guidelines to our changing society*. New York: Harper and Row.

Drucker, P. (1993) *From Capitalism to Knowledge Society, in Post-Capitalism Society*. New York: Harper Collins.

Drucker, P. (1998) "From Capitalism to Knowledge Society" in: D. Neef (ed) *The Knowledge Economy*. Woburn MA: Butterworth.

Edwards, J., and Ogilvie S. (2002) "Educational Objectives in Advanced Countries: Some economic considerations", in: B. Smith (ed), *Liberal Education in a Knowledge Society,* Chicago/LaSalle: Open Court, pp.35–65.

Ellerman, D. (2005) *Helping People Help Themselves*. Michigan: University of Michigan Press.

Etkowitz, H., and Leydesdorff L. (2000) "The Dynamics of Innovation: From national systems and 'Mode 2' to a triple helix of university–industry–government relations". *Research Policy 29* pp.109–123.

Euractiv (2009) "Sweden admits Lisbon Agenda 'failure'". 3rd June. Euractiv.comAvailable at http://www.euractiv.com/priorities/sweden-admits-lisbon-agenda-fail-news-221962

Evans, D. (1989) "Alternative Perspectives on Trade and Development", in: H. Chenery and T.N. Srinivasan (eds), *Handbook of Development Economics*, Vol II, Amsterdam: North-Holland, pp.1241–1296.

Ferguson, J. (1994) *The Anti-Politics Machine*. Minneapolis: University of Minnesota.

Fine, B. (2000) "Endogenous Growth Theory: A Critical Assessment". *Cambridge Journal of Economics*, 24 (2) pp.245–265.

_____ (2001) *Social Capital versus Social Theory*. London: Routledge.

_____ (2003a) "New Growth Theory" In Chang, H.-J. (ed), *Rethinking Development Economics*. London: Anthem Press, pp.201–217.

_____ (2003b) "Callonistics: A disentanglement", *Economy and Society*, 32: 3, pp.478–484.

Fine, B., Lapavitsas, C. and Pincus,J. (2001) *Development Policy in the Twenty-first Century: Beyond the post-Washington Consensus*. London: Routledge.

Fine, B. and Lapavistas, C. (2004) "Social Capital and Capitalist Economics" *South Eastern Europe Journal of Economics* 1 (2004) pp.17–34.

Fligstein, N. (1996) "Markets as Politics: A Political-Cultural Approach to Market Institutions" *American Sociological Review*, Vol.61, No.4, pp.656–673.

Foray D., and Lundvall, B-Å. (1996) "The Knowledge-Based Economy: From the economics of knowledge to the learning economy", in: *Employment and Growth in a Knowledge-based Economy*. Paris: OECD.

Foucault, M. (1972) *The Archaeology of Knowledge* (trans, A. Sheridan Smith). London: Tavistock.

_____ (1976) "Disciplinary Power and Subjection" in: Steven Lukes (ed), *Power*. Oxford: Basil Blackwell: 229–43, reprinted from *Power/Knowledge: Selected Interviews and Other Writings 1972–1977*, ed Colin Gordon. London: Pantheon Books.

_____ (1979) "Governmentality", *Ideology and Consciousness*, No.6, Summer 1986, pp.5–21.

_____, (1980) "Two Lectures on Power" *in:* Gordon, C. (ed) *Power/ Knowledge: Selected Interviews and Other Writings,* 1972–77 Brighton: Harvester Press, pp.63–77.

_____, (2003) (eds. M. Bertani and A. Fontana, translated D. Macey) *Society Must Be Defended*: *Lectures at the Collège de France 1975–6*New York: Picador

_____ (2008a) *The Birth of Biopolitics: Lectures at the Collège de France 1978–9*. London: Palgrave MacMillan

_____ (2008b) *Security, Territory, Population France 1977–78*. London: Palgrave MacMillan.

_____ (2010) *The Government of Self and Others: Lectures at the Collège de France 1982–83*. London: Palgrave MacMillan.

Foucault, M., and Chomsky, N. (1971) Human Nature: Justice versus Power. The International Philosopher's Debate: Live Debate. Transcript Available at http://www.chomsky.info/debates/1971xxxx.htm

Foucault, M., and Gordon C. (1980) *Power/Knowledge: Selected interviews and other writings, 1972–1977*.London: Pantheon.

Fraser, N. and Gordon, L. (1994) "A Geneaology of Dependency: Tracing a keyword of the U.S. Welfare State". *Signs*. Vol.19. No.2 pp.309-336

Freeman, C. (2008) *Systems of Innovation: Selected essays in evolutionary economics*. Cheltenham: Elgar.

Friedman, M., and Friedman R. (1980) *Free to Choose*. New York: Harcourt Brace Jovanovich.

Fuller, S. (2000) "Forward" in: M. Jacob and T. Hellström (eds) *The Future of Knowledge Production in the Academy*. Buckingham: SHRE/Open University Press, pp.xi–xv.

Gamble, A. (2006) in E. Feser, (ed) *The Cambridge Companion to Hayek*. Cambridge: Cambridge University Press, pp.111–132.

Gibbons, M., Limoges C., Nowotny, H., Schwartzman, S., Scott, P., and. Trow, M. (1994) *The New Production of Knowledge: The dynamics of science and research in contemporary societies*. London: Sage. .

Giddens, A. (1979) *Central problems in Social Theory: Action, structure and contradiction in social analysis*. London: Macmillan.

Gilbert, C., Powell, A. and Vines, D. (1999), "Positioning the World Bank", *The Economic Journal*, Vol.109, No.459, Features, pp.F598–F633.

Girdwood, A. (1995) "Shaping the World Bank's Higher Education paper: Dialogue, Consultation and Conditionality" in: Buchert, L. and K. King (1995) *Learning from Experience: Policy and Practice in Aid to Higher Education*, CESO Paperback No.24. The Hague: CESO, pp.41–74.

Godin, B. (2003) "The New Economy: What the concept owes to the OECD", Project on the History and Sociology of S&T Statistics, Working Paper 21.

_____ (2006) "The Knowledge-Based Economy: Conceptual framework or buzzword?" *Journal of Technology Transfer* 31, pp.17–30.

Gooptu, N. (2013) *Enterprise Culture in Neoliberal India*. London: Routledge.

Gordon, R. (2012) "Is US Economic Growth over? Faltering innovation confronts the Six Headwinds", NBER Working Paper 18315.

Gould, H., (1972): "Educational Structures and Political Process in Faizabad District – UP", chapter 7 in Rudolph and Rudolph (1972).

Graham, L. (2002) *Science and the Soviet Social Order*. Cambridge MA: Harvard University Press.

Granovetter, M. (1985) "Economic Action and Social Structure: The problem of embeddedness", *American Journal of Sociology* 91: 3, pp.481–510.

_____(1992) "The Sociological and Economic Approaches to Labor Market Analysis: A Social Structural View", in: M. Granovetter and R. Swedborg (eds), *The Sociology of Economic Life*. Oxford: Westview Press, pp.233–64.

_____(2002). "A Theoretical Agenda for Economic Sociology" in: M. Guillen, R. Collins, P. England and M. Meyer (eds), The New Economic Sociology: Developments in an emerging field. New York: Russell Sage Foundation, pp 35-59.

Gray, J. (1982) "F.A. Hayek and the Rebirth of Classical Liberalism", *Literature of Liberty: A review of contemporary liberal thought,* Vol.4, pp.19–101.

Gupta, A., Levy D. and. Powar, K. (eds) (2008): *Private Higher Education: Global trends and Indian perspectives*. Delhi: Shipra.

Habermas, J., and Ben-Habib, S. (1981) *New German Critique*, No.22, Special Issue on Modernism (Winter, 1981), pp.3–14.

Harriss, J. (2002) *Depoliticizing Development: The World Bank and social capital*. London:Anthem.

Harriss-White, B. (2010a) 'Globalization, The Financial Crisis and Petty Production in India's Socially Regulated Informal Economy.'*Global Labour Journal*: Vol. 1: Iss. 1, p. 152-177.

Harriss-White, B. (2010b) 'Work and Wellbeing in Informal Economies: The Regulative Roles of Institutions of Identity and the State' *World Development* Vol. 38, No. 2, pp. 170–183.

Harriss-White, B., Singh N., and Rohra S. (2009) "The Political Architecture of India's Technology System for Solar Energy". *Economic and Political Weekly*, Vol.XLIV, No.47, pp.49–60.

Harvey, W. (2010) "Methodological Approaches for Interviewing Elites" *Geography Compass* 4 (3),pp.193–205.

Hayek, F. (1936) *Economics and Knowledge,* Presidential address delivered before the London Economic Club; 10 November 1936, available at http://www.virtualschool.edu/mon/Economics/HayekEconomicsAndKnowledge.html.

____ (1945) "The Use of Knowledge in Society", *American Economic Review, XXXV,* No.4; September, pp.519–30.Also available at http://www.virtualschool.edu/mon/Economics/HayekUseOfKnowledge.html.

____ (1960) *The Constitution of Liberty*. Chicago: Chicago University Press.

____ (1973) *Law, Legislation and Liberty*. London: Routledge.

____ (1974) *The Pretence of Knowledge*, Nobel Prize Lecture – see http://nobelprize.org/nobel_prizes/economics/laureates/1974/hayek-lecture.html

____ (1988) *The Fatal Conceit.* Chicago: Chicago University Press.

Henry, M., Lingard, B., Rizvi F., and TaylorS. (2001) *The OECD, Globalisation and Education Policy.* Oxford: Pergamon.

Hirschman, A. (1982) *Shifting Involvements: Private interest and public action*. Princeton, NJ: Princeton University Press.

Hoekman, B., and Kostecki M. (2001) *The Political Economy of the World Trading System: The WTO and beyond.* Oxford: Oxford University Press.

Huws, U., (2003) *The Making of a Cyberteriat: Virtual Work in a Real World* New York: Monthly Review Press

IPC (2002) *Tenth Five Year Plan (2002-2007)* Planning Commission, Government of India, available at http://planningcommission.nic.in/plans/planrel/fiveyr/10th/volume1/10th_vol1.pdf

IPC (2008) *Eleventh Five Year Plan (2007-2012)* Planning Commission: Government of India, New Delhi: OUP also available at http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v1/11th_vol1.pdf

IPC (2013) *Twelfth Five Year Plan (2012-2017)* Planning Commission, Government of India, New Delhi: Sage (India) also available at http://planningcommission.gov.in/plans/planrel/12thplan/welcome.html

Jacob, M., and Hellström T. (eds) *The Future of Knowledge Production in the Academy*. Buckingham: SHRE/Open University Press.

Janakarajan, S. (1992) "Triadic Exchange Relations: An illustration from South India", paper presented at the CIRAD Workshop on *Commodity Exchange and*

Food Systems in Developing Countries: Processes and Practices, Mèze, France, 31 August–4 September 1992.

Janeway, W. (2012) *Doing Capitalism in the Innovation Economy* Cambridge: Cambridge University Press

Jasanoff, S. (1990) *Designs on Nature: Science and democracy in Europe and the United States*. Princeton NJ: Princeton University Press.

Jayaram, N. (2004). Higher education in India: Massification and change. In P. G. Altbach & T. Umakoshi (Eds.),Asian universities: Historical perspectives and contemporary challenges(pp. 85–114). Baltimore, MD: Johns Hopkins University Press.

Jayaram, N. (2007). Beyond retailing knowledge: Prospects for research-oriented universities in India. In P. G. Altbach & J. Bala´n (Eds.), World class worldwide: Transforming research universities in Asia and Latin America (pp. 70–94). Baltimore: Johns Hopkins University Press

Jefferson, T. (1986) *The Founders' Constitution*. Chicago: University of Chicago Press – also available at http://press-pubs.uchicago.edu/founders/ .

Jessop, B. (2000) "The State and the Contradictions of the Knowledge-Driven Economy" in: J.R. Bryson, P.W. Daniels, N.D. Henry and J. Pollard (eds), *Knowledge, Space, Economy*. London: Routledge, pp.63–77.

Jessop, B. (2007) '' In A. Bugra and K. Agartan (eds) Reading Karl Polanyi for the Twenty-first Century: Market economy as political project. Basingstoke: Palgrave Macmillan, pp.115–134.

Johnson, C. & Bowles, M. (2004) 'Making the Grade: Private Education in Northern India', Journal of Development Studies, 2010, Vol. 46 Issue 3.

Johnstone, D., Arora, A., and Experton, W. (1998) "The financing and Management of Higher Education: A Status Report on Worldwide Reforms". World Bank Working Paper, hhtp://www-wds.worldbank.org.

Jones, P. (1992) World Bank Financing of Higher Education: Lending, learning and development. London, Routledge.

____ (1997) "On World Bank Education Financing", *Comparative Education,* 33(1) pp.117–29.

Joshi, H., Jha, V. and Mahajan, S., (2009) " Knowledge Management Initiative and Practice for Moving towards Learning Organization and Business Excellence" in Chandra and Khanijo (Eds) (2009) *Knowledge Economy: The Indian Challenge*.

Kamat , S. (2011) "Neoliberal Globalization and Higher Education in India" in King, R., Marginson, S. and Naidoo, R. (eds) (2011) *Handbook on Globalization and Higher Education* Cheltenham: Edward Elgar

Kapur, D. and Mehta P. (2007) "Indian Higher Education Reform: From Half-Baked Socialism to Hal-Baked Capitalism" *CID Working Paper 108*, Brookings Institution

Kapur, D., and Mehta, P., (2008) "Mortgaging the Future? Indian Higher Education," *Brookings-NCAER India Policy Forum* 2007-08, Volume 4, 2008, p. 101-157. On-line version Kapur, D., and Mehta. P. "Mortgaging The Future? Indian Higher Education" Centre for Policy Research Brookings-NCAER India Policy Forum. pp1-57.

https://casi.sas.upenn.edu/sites/casi.sas.upenn.edu/files/uploads/IPF_Final_dft.pdf

Kenway, J., Bullen, E., Fahey, J., Robb, S. (2006) Haunting the Knowledge Economy. Oxford; Routledge.

Kelm, M. (1995) *Institutional Determinants of Economic Evolution*, PhD Thesis (unpublished), University of Cambridge.

Khan, M., (2005) *Investment in Knowledge*. IC Conference. Paris: OECD

Khan, M. and Jomo, K., (2000) (Eds). Rents, Rent-seeking and Economic Development: Theory and Evidence in Asia. Cambridge: Cambridge University Press.

King, K. (1995) "World Bank Traditions of Support to Higher Education and Capacity Building: Reflections on 'Higher Education: Lessons from Experience' " in: B. Lene and K. King (eds): *Learning from Experience: Policy and practice in aid to higher education*, CESO Paperback No.24. The Hague: CESO,

Kingdon, G., and Muzammil, M. (2008) "A political economy of education in India: The case of Uttar Pradesh" *Oxford Policy Institute Working Paper* pp.19–41.

Kirk, J (2011) *India and the World Bank: The politics of aid and influence*. London: Anthem.

Knowledge Commission (2008) "Towards Knowledge Societies" available at http://www.knowledgecommission.gov.in/downloads/documents/booklet_student.pdf.

Köhler, C., Laredo, P. and Rammer, C. (2012) "The Impact and Effectiveness of Fiscal Incentives for R&D". Nesta Working Paper 12/01 www.nesta.org.uk/wp12-01.

Kohli, A. (2006) "Politics of Economic Growth in India, 1980-2005: Part II: The 1990s and Beyond" *Economic and Political Weekly* Vol. 41, No. 14 (Apr. 8-14, 2006), pp. 1361-1370.

Krugman, P. (1992) "Toward a Counter-Revolution in Development Theory," *Proceedings of the World Bank Annual Conference on Development Economics, 1992*.

Krugman, P. (2006) "Review of *Knowledge and the Wealth of Nations* by David Warsh*"*. *New York Times* 7 May, or available online at http://economistsview.typepad.com/economistsview/2006/05/krugman_review_.html.

Kumar, K. (2004) *Post-Industrial to Post-Modern Society: New theories of the contemporary world.* Oxford: Blackwell Publishers.

Kumar, V., Sinvhal, H., and Nangia, V.
(2009) Mapping the Directions of Transition from Industrial Economy to Knowledge Economy in Chandra and Khanijo (Eds) (2009

Lawson, T. (2015) *Essays on the Nature and State of Modern Economics* London: Routledge

Lazonick, W., and Tulum O. (2009) "US Biopharmaceutical Finance and the Sustainability of the Biotech Boom". *The Open University Innovation Knowledge Development Working Paper Series* No. 51 July.pp1-29

Lazonick, W., and Tulum O. (2011) "US biopharmaceutical finance and the sustainability of the biotech business model", *Research Policy* Vol.40, Issue 9, pp.1170–1187.

Leaf, C. (2005) "The Law of Unintended Consequences", *Fortune* No.6, 250–268.

Lemke, T. (2000) "Foucault, Governmentality and Critique" Paper presented at the Rethinking Marxism Conference, University of Amherst (MA), September 21-24, 2000. Available at http://www.andosciasociology.net/resources/Foucault$2C+Governmentality$2C+and+Critique+IV-2.pdf

Lemke, T. (2001) "The Birth of Bio-Politics". Michel Foucault's Lecture at the Collège de France on Neo-Liberal Governmentality, in: *Economy & Society*, Vol.30, No.2, pp.190–207.

Lenin, V. (1965 1914) *Collected Works* Volume 38 Moscow: Progress

Levy, C., Sissons, A. and Holloway, C. (June 2011) *A Plan for Growth in the Knowledge Economy: A knowledge economy programme paper*. London: The Work Foundation. Available at http://www.theworkfoundation.com/assets/docs/publications/290_Plan%20for%20growth%20in%20the%20knowledge%20economy.pdf.

Leys, C. (1996) *The Rise and Fall of Development Theory* London : Currey

_____ (2001)*Market Driven Politics: Neoliberal democracy and the public interest.* London: Verso.

_____ (2008) *Total Capitalism: Market politics, market state*. London: Merlin.

Leys, C., Harriss-White, B. (2012) "Commodification; The essence of our time". *Open Democracy*. 2nd April. https://www.opendemocracy.net/ourkingdom/colin-leys-barbara-harriss-white/commodification-essence-of-our-time

Lipsey, R., and Lancaster, K. (1956) "The General Theory of Second Best", *The Review of Economic Studies*, 24(1), pp.11–32.

List, F. (1997, 1845) *The National System of Political Economy* in: L. Magnusson *Free Trade: 1793–1886,* Vol.2.London: Routledge.

Lucas, R. (1988) "On the Mechanics of Economic Development", *Journal of Monetary Economics,* 22, 3, pp.3–42.

Lukes, S. (1986) *Power: A radical view*. London: Macmillan Press.

Lundvall, B.-Å. (ed) (1992) *National Systems of Innovation: Towards a theory of innovation and interactive learning*. London: Pinter Publishers.

Lundvall, B- Å (2007) "Innovation System Research: Where it came from and where it might go". *Globelics*. Working Paper Series No 2007-01.

Lundvall, B-Å.(2009) "Knowledge Management in the Learning Economy", Druid Working Paper No.06-6.Also available at http://www3.druid.dk/wp/20060006.pdf.

Lundvall, B- Å. (2010) *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*. London: Anthem Press.

Lundvall, B.-Å and B. Johnson (1994) "The Learning Economy" *Journal of Industry Studies* 1(2).

Lundvall, B- Å. and L. Borrás (1997) The globalising learning economy: Implications for Innovations Policy. TSER programme DG XII, Brussels: Commission of the European Union.
Also available at http://www.globelicsacademy.org/2011_pdf/Lundvall%20Borras%201997.pdf.

Lyotard, J. (1984) *The Postmodern Condition: A report on knowledge*, G. Bennington and B. Massumi (trans.). Minneapolis: University of Minnesota Press.

MacKenzie, D. (2001) *Mechanizing Proof: Computing, risk, and trust*. Cambridge MA: MIT Press.

_____ (2007) *Do Economists Make Markets? On the performativity of economics*. Princeton: Princeton University Press.

Mahon, R., and McBride, S. (2009) *The OECD and Transnational Governance* Vancouver: UBC Press

Manicas, P. (2006) "Endogenous growth theory: The most recent 'revolution' in economics?" *Post-Autistic Economics Review* 41 pp.41:39–53.

Marginson, S., (2002) "Nation-building universities in a global environment: the case of Australia". *Higher Education,* **43** pp.409-28

Marginson, S. (2007) "The Public/Private Divide in Higher Education: A global revision", *Higher Education* 53: pp.307–333.

_____ (2009) "University Rankings and the Knowledge Economy", in: M. Peters, S. Marginson and P. Murphy (eds) *Creativity and the Knowledge Economy*. New York: Lang, pp.185–217.

_____(2011) in King, R., Marginson, S. and Naidoo, R. (eds) (2011) *Handbook on Globalization and Higher Education* Cheltenham: Edward Elgar

Marx, K. (1961, 1844) "Economic and Philosophical Manuscripts" in *Karl Marx: Selected Writings in Sociology and Social Philosophy*. (ed) Bottomore, T. and Rubel, M. London: Pelican/Penguin Press.

Marx, K. (1961, 1859) "Preface: A Contribution to the Critique of Political Economy" in *Karl Marx: Selected Writings in Sociology and Social Philosophy*. (ed) Bottomore, T. and Rubel, M. London: Pelican/Penguin Press.

Marx, K. (1990, 1976, 1867) *Capital: Critique of Political Economy*, Vol 1. (trans.)B., Fowkes., (ed) E., Mandel. London: Penguin.

Marx, K., and Engels, F. (2002,1888,1848) The Communist Manifesto, (trans.) S., Moore., (ed) G, Steadman Jones, London: Penguin

Mazzucato, M. (2011) *The Entrepreneurial State*. London: Demos. Also available at http://www.demos.co.uk/files/Entrepreneurial_State_-_web.pdf

_____ (2013) *The Entrepreneurial State*. London: Anthem Press.

Mazzucato, M. and S. Parris (2015) "High-growth firms in changing competitive environments: the US pharmaceutical industry" (1963 to 2002), *Small Business Economics*. Vol.44, Issue 1, pp.145–170.

McMillan, G., Narin, F. and Deeds, D. (2000) "An Analysis of the Critical Role of Public Science in Innovation: The case of biotechnology", *Research Policy* (1), pp.1–8.

Miller, P. and Rose, N. (2008) *Governing the Present*. Cambridge: Polity.

Mincer, J. (1958) "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy)*~66(4): 281–302.

Ministry of Science and Technology (2013) *Science, Technology and Innovation Policy* New Delhi: Government of India

Morris-Suzuki, T. (1988) *Beyond Computopia: Information, automation, and democracy in Japan*. Kegan Paul International, New York: Routledge.

Mowery, D., and Sampat, B. (2005). "The Bayh–Dole Act of 1980 and University-Industry Technology Transfer: A Model for Other OECD Governments?" *Journal of Technology Transfer* 30, pp.115–127.

Moyser, G., and Wagstaffe, M. (1987) *Research Methods for Elite Studies.* London: Allen & Unwin.

Mundy, K. (2002), "Retrospect and prospect: education in a reforming World Bank", International Journal of Educational Development 22, pp.483–508.

Mustapha, R., and Abdullah, A. (2004) "Malaysia Transitions Toward a Knowledge-Based Economy". *The Journal of Technology Studies*. Vol XXX, 3. pp51-61.

NKC (2006) *Report to the Nation (2006).* National Knowledge Commission. New Delhi: Government of India also available at http://www.aicte-india.org/downloads/nkc.pdf

_____ (2008) "Towards Knowledge Societies" New Delhi: Government of India also available at http://www.knowledgecommission.gov.in/downloads/documents/booklet_student.pdf

_____(2009) *Report to the Nation (2006-9).* National Knowledge Commission. New Delhi: Government of India. also available at http://www.aicte-india.org/downloads/nkc.pdf

Nayyar, D. (2007) "Globalisation and Higher Education", *Economic and Political Weekly,* 15 Dec 2007, pp.30–35.

Nelson, R., and Winter, S. (1982) *An Evolutionary Theory of Economic Change.* Cambridge MA: Harvard University Press.

Nietzsche, F. (1993) *Thus Spake Zarathustra.*New York: Prometheus Books.

North, D. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

_____ (2005) *Understanding the Process of Economic Change*. Princeton: Princeton University Press.

Nowotny, H., Gibbons, M. and Scott, P. (2003) "'Mode 2' Revisited: The new production of knowledge", *Minerva* 41: 179–194.

OECD (1992) *Technology and the Economy: The key relationships*. Paris: OECD.

OECD (1996) *The Knowledge-Based Economy.* Paris: OECD. Also available at http://www.oecd.org/sti/sci-tech/1913021.pdf

OECD (1998) *Globalization and the Environment: Perspectives from OECD and Dynamic Non-Member Economies* Paris: OECD

OECD (1999) *The Knowledge-Based Economy: A set of facts and figures.* Paris: OECD.

OECD (2002a) "Public dimensions of the knowledge-driven economy: a brief introduction to the OECD/CERI project" http://www1.oecd.org/edu/innovation-education/2074404.pdf.

OECD (2002b) *Dynamising National Innovation Systems*. Paris: OECD.

OECD (2008) *Tertiary Education for the Knowledge Society* Paris: OECD

OECD (2008a) *Compendium of Patent Statistics* Paris: OECD

OECD (2013) OECD Factbook, available at http://oberon.sourceoecd.org

Olssen, M. (1999) *Michel Foucault: Materialism and education*. Westport, Connecticut, and London: Bergin & Garvey.

Olsson, B. (1995) "The Power of Knowledge: A Comparison of two Policy Papers on Higher Education" in: L. Buchert and K. King (1995) *Learning from Experience: Policy and Practice in Aid to Higher Education*, CESO Paperback No.24. The Hague: CESO, pp.235–246.

O'Neil, J. (1998) *The Market: Ethics, knowledge, and politics*. London: Routledge.

Pathak, A., (2009) Recalling the Forgotten: Education and Moral Quest, New Delhi: Aakar Books

Patnaik, P. (2016) "The Destruction of Education" *People's Democracy* Vol XL No. 18

Pavitt, K. (2002) "Knowledge about Knowledge since Nelson and Winter: A mixed record", SPRU Working Paper 83.

Peters, M. (2003) "Classical Political Economy and the Role of Universities in the New Knowledge Economy", *Globalisation, Societies and Education,* 1(2), pp.153–168.

_____ (2004) "Education and Ideologies of the Knowledge Economy: Europe and the Politics of Emulation", *Social Work and Society* 2 (2) pp.160–172.

_____. (2005) "Knowledge Networks" in: M.A. Peters and T. Besley, *Building Knowledge Cultures: Education and development in the age of knowledge capitalism.* Lanham and Oxford: Rowman & Littlefield.

Peters, M., and Besley, T. (2006) *Building Knowledge Cultures: Education and development in the age of knowledge capitalism*. Lanham and Oxford: Rowman & Littlefield.

Pincus, J., and Winters, J. (eds) (2002) *Reinventing the World Bank*. London: Cornell University Press.

Polanyi, K., Arensberg, C. and Pearson, H. (eds) (1957) *Trade and Market in the Early Empires.* Glencoe*:* Free Press.Also available at http://irows.ucr.edu/cd/courses/281/readings/polanyi.pdf.

Polanyi, K. (2001) *The Great Transformation*. Boston: Beacon.

Polanyi, M. (1969) *Personal Knowledge: towards a post-critical philosophy* Chicago: University of Chicago

Post, D., Clipper, L., Enkhbaatar, D., Manning, A., Riley, T., and Zaman, H. (2004) "World Bank okays public interest in higher education", *A Review of Higher Education in Developing Countries: Peril andpromise, task force on higher education and society*. Washington, DC: The World Bank.

Presidency Conclusions (2000) Lisbon European Council.23 & 24 March.European Union. Also available at http://www.consilium.europa.eu/en/uedocs/cms_data/docs/pressdata/en/ec/00100-r1.en0.htm

Psacharopoulos, G. (1981) "The World Bank in the World of Education: Some policy changes and some remnants", *Comparative Education* 17 (2), pp.141–5.

_____ (1985) "Returns to Education: A further international update and implications," *The Journal of Human Resources* Vol.20, No.4 (1985),pp.583–597.

_____ (1993) "Returns to Investment in Education: A global update". World Bank Policy Research Working Papers, WPS 1067.

_____ (1994) "Returns to Education: A global update", *World Development* Vol.22, No.9 pp.583–604.

_____ (1996) "A Reply to Bennell", *World Development* Vol.24, No.1 (1996), p.201.

Putnam, R. (2000) *Bowling Alone*. New York: Simon & Schuster.

Rabinow, P. (1984) *The Foucault Reader*. London: Random House.

Ramphele, M. (2013) *A Passion for Freedom*. Cape Town: Tafelberg.

Richards, D. (1996) "Elite Interviewing: Approaches and Pitfalls". *Politics*, 16, 3, pp.199–204.

Richardson, G. (1972) "The Organization of Industry", *Economic Journal* 82: pp.883–96.

Rizvi, F., (2012) "Dilemmas of Reform in Indian Higher Education" in Adamson, B., Nixon, J. and Su, F. (eds) *The Reorientation of Higher Education: Beyond Compliance and Defiance*, New York and Hong Kong: Springer

Rizvi, F. & Gorur, R. 2012, Indian Higher Education and the Dynamics of Global Collaborations, in *Globalization, Culture and Education in South Asia*, Kapoor, D., Barua, B., & Al-Karim Datoo (Eds.), Palgrave Press: London.pp.17-36.

Roberts, P. and Peters, M. (2008) *Neoliberalism, Higher Education and Research.* Rotterdam: Sense Publishers.

Robertson, S. (2008) 'Producing' Knowledge Economies: The World Bank, the KAM, Education and Development' in (2008) M. Simons, M. Olssen and M. Peters (eds) *Re-reading Education Policies: Studying the Policy Agenda of the 21st Century*

Roemer, J. (1988) *Free to Lose: An Introduction to Marxist Economic Philosophy*. London: Radius.

Robins, K. and Webster, F. (1999) *Times of the Technoculture: From the information society to the virtual life.*London: Routledge.

_____ (2004) "The Long History of the Information Revolution" in: Webster, F. (ed): *Information History Reader*. London: Routledge, pp.62–80.

Roemer, J. (1982) *A General Theory of Exploitation and Class*. Cambridge, MA: Harvard University Press.

Romer, P. (1986) "Increasing Returns and Long-Run Growth" *Journal of Political Economy*, Vol.94, No.5, pp.1002–1037.

_____ (1990) Endogenous Technological Change, *Journal of Political Economy* 98(5), pp.71–102.

Rose, N., O'Malley, P., and Valverde, M. (2006) "Governmentality"*Annual Review of Law and Society*, 2 pp .83-104

Rudolph, L. and Rudolph, S. (1972) *Education and Politics in India*, Cambridge, Mass.: Harvard University Press.

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) (2013) National Higher Education Mission Delhi: Ministry of Human Resource Development.

Ryle, G. (1949/2000) *The Concept of Mind* London: Penguin

Samuelson, P. (1947) *Foundations of Economic Analysis*. Cambridge MA: Harvard University Press.

Schacht, W. (2012) "The Bayh–Dole Act: selected issues in patent policy and the commercialization of technology". Washington, DC: Congressional Research Service, 3 December, 2012.

Schultz, T. (1963) *The Economic Value of Education*. New York: Columbia University Press.

_____ (1988) "Education investment and returns" in: H. Chenery and T. N. Srinivasan (eds), *Handbook of Development Economics,* Vol.1, New York: North-Holland, pp.543–630.

Schumpeter, J. (1942) *Capitalism, Socialism and Democracy.*London: Routledge.

_____ (1949) "The Communist Manifesto in Sociology and Politics", *Journal of Political Economy* 57 (3):199–212.

Searcy, D. (1993) "Beyond the Self-Regulating Market in Market Society: A critique of Polanyi's Theory of the State" *Review of Social Economy*, Vol.51, pp.217–231.

Sen, A. (1971) Crisis in Indian Education *Lal Bahadur Shastri memorial lectures* Michigan: Institute of Public Enterprise.

Serra, N., and Stiglitz, J. (2008) *The Washington Consensus Reconsidered: Towards a new global governance*. Oxford: Oxford University Press.

Shiva, V. (1997) *Biopiracy: The plunder of nature and knowledge.* Boston: South End Press.

Singh, V. (2016) Higher Education of India on the Way to Nairobi for GATS Peoples Democracy. Vol XL No. 18. http://peoplesdemocracy.in/2015/0816_pd/higher-education-india-way-nairobi-gats

Slaughter, S., and Leslie L. (1997). *Academic Capitalism: Politics, policies, and the entrepreneurial university*. Baltimore, MD: The John Hopkins University Press.

Slaughter, S., and Rhoades G. (2004). *Academic Capitalism and the New Economy: Politics, markets, state and higher education*. Baltimore, MD: The John Hopkins University Press.

Smith, A. (1982, 1776) *The Wealth of Nations.* (ed) A. Skinner. London: Penguin.

Smith, K. (2002–6) "What is the Knowledge Economy? Knowledge Intensity and Distributed Knowledge Bases" UNU Discussion Paper.

Standing, G. (2000) "Brave New Words?A critique of Stiglitz's World Bank Rethink" *Development and Change* 31, pp.737–763.

St. George, E. (2006) "Positioning higher education for the knowledge based economy", *Higher Education* Vol.52, Issue 4, pp.589–610.

Stiglitz, J. (1998a) "More Instruments and Broader Goals: Moving towards the Post-Washington Consensus". 1998 Wider Lecture, Helsinki.

_____ (1998b) "Towards a New Paradigm for Development: Strategies, Policies and Processes". 1998 Prebisch Lecture, UNCTAD, Geneva. http://siteresources.worldbank.org/CDF/Resources/prebisch98.pdf.

_____ (1998c) *Markets, Market Failures and Development*, in: C. Eicher and J. Statz (eds) *International Agricultural Development*. Baltimore: JHU Press.

_____ (1999a) "Knowledge as a Global Public Good". September: http://www.worldbank.org/knowledge/chiefecon/articles/undpk2/.

_____ (1999b) "Public Policy for a Knowledge Economy".Remarks at the Department for Trade and Industry and Centre for Economic Policy Research, London, 27 January, http://www.worldbank.org/html/extdr/extme/jssp012799a.htm.

Stiglitz, J., (2009) "The World Development Report: Development Theory and Policy" in S.,Yusuf. *Development Economics through the Decades: A Critical Look at 30 Years of the World Development Report*. Washington: The World Bank. pp139-151.

Stiglitz, J., and Charlton, A. (2005) *Fair Trade for All*: *How trade can promote development*. Oxford: Oxford University Press.

Stiglitz, J., (2015) "Joe Stiglitz and Steve Hilton on Inequality".*Start the Week*. 18th May, 9.00am. London: BBC Radio 4. Available at http://www.bbc.co.uk/programmes/b05v7tbr

Subramanian, A., (2015) "Making Merit: The Indian Institutes of Technology and the Social Life of Caste". *Comparative Studies in Society and History*. Vol. 57. Issue 2. pp291-322.

Sugden, R. (1998) "Spontaneous Order", in: P. Newman (ed) *The New Palgrave Dictionary of Economics and the Law*Vol.III. London: Macmillan, pp.485–495.

Swedberg, R. (1997) "New Economic Sociology: What has been accomplished, what is ahead?"*ActaSociologica*40; pp.161–182.

Tharoor, S., (2007) *The Elephant, the Tiger, and the Cell Phone: Reflections on India, the Emerging 21st-century Power* Delhi: Penguin India

Toffler, A. (1990) *Powershift: Knowledge, wealth, and violence at the edge of the 21st century*. London: Bantam Press.

Tomlinson, M. (2014) "Exploring the impact of policy changes on students' attitudes and approaches to learning in higher education" *HEA Policy Paper* available at https://www.heacademy.ac.uk/sites/default/files/resources/exploring_the_impact_of_policy_changes_student_experience.pdf

Touraine, A. (1971) *The Post-Industrial Society. Tomorrow's Social History: Classes, conflicts and culture in the programmed society*. New York: Random House.

Tunis Declaration (2009) "On Building Knowledge Economies" 3rd December. Government of Tunisa. Available at http://info.worldbank.org/etools/docs/library/252535/TunisKEDeclaration.pdf

Uba, K. (2008) "Labour Union Resistence to Economic Liberalisation in India: What can national and state level patterns of protests against privatisation tell us? " *Asian Survey*. Vol 48. No. 5 pp 860-884.

UNESCO (1990) *The Jomtiem Declaration* EFA. Available at www.unesco.org/education/efa/ed_for_all/background/jomtien_declaration.shtml

_____ (2005) *Towards Knowledge Societies*. UNESCO World Report.

UK Government Department of Trade and Industry (1998) *Our Competitive Future - Building the Knowledge Driven Economy* (Cm 4176) December. White Paper. DTI. HMG: London.

Vestergaard, J., and Wade, R. (2013) "Protecting power: how Western states retain the dominant voice in the World Bank's governance". *World Development*, 46 . pp. 153-164

Wade, R., (2003) "What strategies are viable for developing countries today? The World Trade Organization and the shrinking of 'development space". *Crisis States Research Centre working papers series* 1, 31. Crisis States Research Centre, London School of Economics and Political Science, London, UK.

Warsh, D. (2006) *Knowledge and the Wealth of Nations*. New York: Norton.

Weber, M. (1922)*Economy and Society: An outline of interpretive sociology*. Berkeley, CA: University of California Press.

White, G. (1993) "Towards a Political Analysis of Markets". *IDS Bulletin* 24:3, pp.4–11.

Willetts, S. (2001) "Introduction: Globalisation and Insecurity". *IDS Bulletin* Vol.32, Issue 2, pp.1–12.

Williams, R. (1976) *Key Words: A vocabulary of culture and society*. Oxford: Oxford University Press.

Williamson, J. (1990) "What Washington Means by Policy Reform", in: J. Williamson (ed) *Latin American Adjustment: How much has happened?* Washington: Institute for International Economics, pp.7–40.

Williamson, O. (1975) *Markets and Hierarchies: Analysis and antitrust implications*. New York: Free Press.

_____ (1981) "The Economics of Organization: The transaction cost approach". *American Journal of Sociology* Vol.87, No.3 pp.548–577.

Witt, U. (1993), Evolutionary Economics, Aldershot, Edward Elgar Publishers.Wolfensohn, J. (1996) *Address to the Board of Governors: People and Development*. Washington, DC: World Bank.

Woods, N., (2006) *The Globalisers: The IMF, the World Bank, and Their Borrowers* Ithaca and London: Cornell University Press

World Bank (1994) *Higher Education: Lessons of experience*. Washington, DC: World Bank.

_____ (1995) *Priorities and Strategies for Education*. Washington, DC: World Bank.

_____ (1998a) *Knowledge for Development*, World Development Report. Oxford: Oxford University Press.

_____ (1998b) *Partnership for Development: Proposed actions for the World Bank: A discussion paper*, available at www.worldbank.org/html/extdr/pfd-discpaper.pdf.

_____ (1998c) *Republic of Korea: Transition to a knowledge-based economy*. Washington DC: World Bank.

_____ (2002) *Constructing Knowledge Societies*. Washington DC: World Bank.

_____ (2005) *India and the Knowledge Economy: Leveraging Strengths and Opportunities* Washington DC: World Bank

_____ (2008) *Building Knowledge Economies: Advanced Strategies for Development.* Washington DC: World Bank.

World Bank/OECD (1980) *Education Sector Policy Paper*. Washington, DC: World Bank.

World Bank/UNESCO (2000) *Higher Education in Developing Countries: Peril and promise.*Report of the Independent World Bank/UNESCO Task Force. Washington, DC: World Bank.

Yin, R. (1989) *Case Study Research*. London: Sage.

Ziman, J. (1994) *Prometheus Bound: Science in a Dynamic Steady State* Cambridge: Cambridge University Press

Ziman, J. (1996) "Is Science losing its objectivity?"*Nature* 382 pp.751–3.