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The Ignorance Economy[1]

JOANNE ROBERTS & JOHN ARMITAGE

Abstract *The purpose of this article is to investigate the concept of ignorance. The article employs ignorance and related writings on the lack of knowledge and new Information and Communication Technologies (ICTs), education, and on the state of being ignorant with the aim of expounding an ignorant approach to the critique of the knowledge economy. This perspective necessitates a discussion of those subjects and objects apparently lacking in knowledge in addition to deliberations on the nature of new ICTs. Various studies by educators, economists, and management theorists are introduced and examined as instances of an ignorant standpoint on the knowledge economy. The authors argue and find that whilst an ignorant viewpoint regarding the knowledge economy might initially appear as one that is itself founded on a state of ignorance, a deeper investigation reveals its usefulness when considering the knowledge economy. Thus, the value of the article is that it introduces the concept of the ignorance economy and considers it from an original standpoint in the light of ongoing debates over the knowledge economy.*

Keywords: knowledge economy; ignorance; knowledge commodification; intellectual property rights; knowledge workers

Introduction

The intention of this article is to examine the significance of the concept of ignorance and to produce a critique of the supposed appearance of the knowledge economy. Ignorance, of course, refers to a 'lack of knowledge or information',[2] as in 'they acted in ignorance of essential managerial procedures'. Originating from Middle English by way of Old French from the Latin *ignorantia,* from *ignorant*, ignorance can thus be defined as 'not knowing'. Our aim in this article is to generate a detailed analysis and appraisal of the purported materialization of the knowledge economy in the advanced countries [e.g. the United States (US), Canada, the United Kingdom (UK), Australia, and Japan etc.] in the present period. Clearly, preparing such a critical assessment of the knowledge economy involves evaluating the theories and practices associated with it. As such, any critique worthy of the name entails proffering a thorough investigation and review of the methods and

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procedures used in research on the knowledge economy. We shall have occasion to consider the idea of the knowledge economy below in detail. It is, however, useful to define what we mean by the knowledge economy at the outset. Primarily, knowledge is concerned with the facts, information, and skills obtained through experience or education. To possess knowledge is therefore to possess, for example, a theoretical or practical understanding of the subject of management. For instance, we can speak of academics' thirst for knowledge or perhaps of their considerable knowledge of questions of organization. Yet to attach the notion of knowledge to the concept of the economy is to attach the sum of what is known to the state of a country or region in terms of the production, transmission, and consumption of knowledge-based goods and services. Nevertheless, this is not merely concerned with, say, the supply of information or even money, but also with, for example, computerized systems designed to administer government taxation regimes to rationalize the role of the state in the economy. Hence, in this article, we are not concerned with the philosophy of the knowledge economy, that is, with whether what is being said or written about it is literally true, is a warranted conviction, or a certain understanding, as opposed to opinion. Instead, we are concerned with the knowledge economy as a particular contemporary system or stage of the advanced economies, and with what the concept of the knowledge economy might or might not mean. Thus, we shall rely on a number of theorists whose critical approach to ignorance and to the knowledge economy not only shares common ground with each other, but also with our own critical theoretical position, concerns, and previous work on these topics.[3]

Consequently, the main body of the article begins with a short conceptual account of the notion of ignorance. It then shifts to an introduction to the main thrust of our theoretical attempt to augment both the understanding of critique and our appreciation of the assumed arrival of the knowledge economy. Attention is subsequently paid in the second section to the core theme and significance of contemporary theoretical and empirical work on the idea of the knowledge economy. Given space restrictions, we shall not enter into debates concerning particular aspects of the knowledge economy, such as the contemporary debate over the diffusion of knowledge through, for instance, national and regional innovation systems.[4] In the third section, the concept of the ignorance economy is predominant in our interpretation and theoretically specific contribution to debates concerning the knowledge economy. In the conclusion, we reiterate our critical evaluation of the knowledge economy, associated theoretical work, and assess not only the impact of this concept but also the importance of the idea of the ignorance economy.

Ignorance and the Knowledge Economy

What, then, is ignorance? Of what possible use could a lack of knowledge or information be? And how might we act in ignorance? One way to set about answering such questions is not through a discussion of Middle English or Old French, but through a deliberation on definitions of *ignorantia*, of the ignorant, and of those subjects whose ignorance is defined by their not knowing, by, in fact, their status as an *ignoramus*, as an 'ignorant or stupid person'.[5] In Latin, to be an ignoramus literally meant 'we do not know' whilst in the legal sphere it was interpreted as 'we take no notice of it'. However, the modern sense of ignorance, of the ignoramus, 'derives from the name of a character in George Ruggles' *Ignoramus* (1615), a

satirical comedy that exposes a lawyer's ignorance'.[6] But to be ignorant is also to be lacking knowledge and/or awareness in general. The ignorant are thus uneducated, unsophisticated, and unintelligent. They are deficient in knowledge, information, and have little understanding of the effects of their actions. It is not that the ignorant act ignorantly on purpose, although, of course, one interpretation of being ignorant is to be discourteous or rude. In this case, one can be accused of being ignorant, of being or acting, for example, in a hare-brained manner. In this way, the ignorant can generate unease, sometimes anger, and especially in the knowledgeable, that is in the intelligent and well informed. This is because the ignorant are those who lack knowledge. Yet to be ignorant is not, at least not yet, a crime. It merely means that one does not know. It does not necessarily mean one cannot and never will know. Naturally, here we do not want to indulge in *ignoratio elenchi*, or the philosophical and logical canard that consists in seemingly refuting one's opponents whilst actually disproving something they did not maintain. Nor do we wish to be *ignored*, that is, we do want to find ourselves in the position where people take notice of our arguments and acknowledge their worth. For nothing is worse than being disregarded intentionally. Clearly, some may want to ignore our questions. But in so doing they would fail to consider the significance of ignorance, of not knowing, or what might be termed the privilege of the ignorant. On the other hand, we do not want to overcomplicate matters by engaging in *ignotum per ignotius* or the action of offering a rationalization that is harder to comprehend than the thing it is meant to explain, of, in fact, discovering the unknown through something even more unknown.

Rather, our aim is to begin the critical evaluation of the supposed emergence of the knowledge economy in the advanced nations of the contemporary world. We need, then, to think in terms of detailed analyses and assessments of the so-called knowledge economy from the perspective of the literature of management theory and related political studies and economic theories. However, in order to present a critical assessment of the knowledge economy we must have some means of evaluating the theories and practices associated with it. Hence, to mount such a critique, we need to offer a thorough investigation and review of the methods and procedures used in extant research on the knowledge economy.

Critique, of course, needs to be differentiated from mere criticism as criticism assumes an impartial perspective on the idea of the knowledge economy. Accordingly, any critique of knowledge or the economy must adopt a standpoint within the object of study, within the knowledge economy, and aim to draw out its opposing propensities. In other words, it must bring to the fore those compelling aspects of the facts of ignorance. Here we mean the critique of knowledge and information in the broadest sense. We do not mean criticism simply in terms of skills, or even an argument against experience, but actions by which other educational traditions are considered both for what knowledge may produce and for what present-day theory and practice may impede. Our critique thus involves taking on board the more practical constituents of management and the academy and discarding the impractical. But a critique of knowledge applies similarly and more generally to the critical study of economic and political processes. Nevertheless, it is not to be understood as a research agenda for a particular theoretical perspective, such as Marxism, or clique. A critique of the knowledge economy is therefore a very important aspect of our engaged and current intellectual work on the ignorance economy.

Thus, our goal is to reflect on the concept of the knowledge economy. We want to ask how useful are current definitions of the knowledge economy for those of

us working in the arena of facts and information, abilities, experience, and education. We want to consider the control and denial of knowledge and their theoretical and practical implications for management scholars and practitioners. How does the academy presently describe knowledge relative to questions of organization and the economy, production, distribution, and the consumption of goods and services? For us, such issues are not just connected to problems involving the provision of information and capital, of computer systems and the state, or of philosophy, but also to the question of the knowledge economy as the contemporary structure or phase of the advanced economies. In what follows below, then, we shall be questioning what the knowledge economy might and might not signify from the perspective of existing management theory. Yet, as noted, our own approach will draw attention to what we increasingly believe to be the vital significance of the concept of ignorance, a concept that, hitherto, has largely been absent in recent discussions of the knowledge economy.

The Knowledge Economy

As exemplified by the pioneering work of Fritz Machlup, the role of knowledge in society has attracted scholarly interest for many decades.[7] However, in recent years, the knowledge economy has become a popular term used among economists, managers, and politicians to describe the economies of the advanced industrialized countries. Indeed, since the 1990s, the governments of the developed countries, together with international organizations, have published numerous policy papers concerning the knowledge economy.[8] For instance, according to the Organization for Economic Cooperation and Development (OECD), knowledge-based economies are 'economies which are directly based on the production, distribution and use of knowledge and information'.[9] Meanwhile, the UK's Department of Trade and Industry (DTI) defines the knowledge-driven economy as:

> … one in which the generation and exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about the most effective use and exploitation of all types of knowledge in all manner of economic activity.[10]

Similarly, for Powell and Snellman, the knowledge economy refers to:

> … production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence. The key components of a knowledge economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process, from the R&D lab to the factory floor to the interface with customers.[11]

These various definitions and discussions of the knowledge economy point to a number of common characteristics, which we will briefly review following a concise discussion of knowledge within the context of a knowledge economy. Here, knowledge can be defined as the application and productive use of information. Knowledge is more than information since it involves an awareness or understanding gained through experience, familiarity or learning. However, the relationship

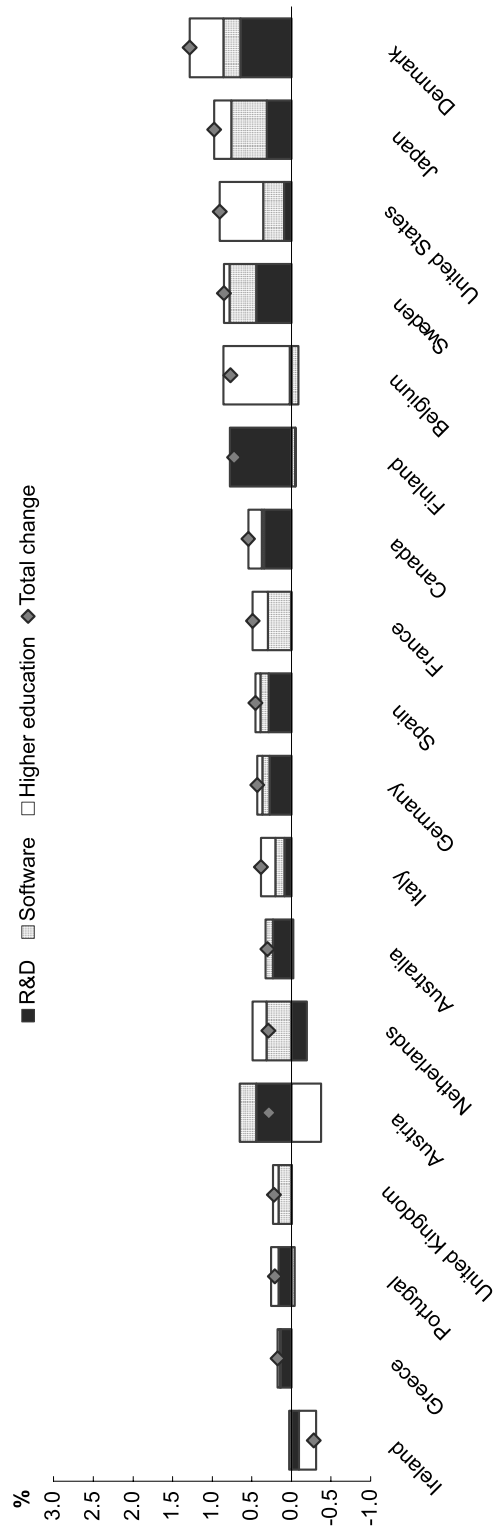
between knowledge and information is symbiotic, for knowledge creation is itself dependent upon information. Yet relevant information can only be collected with the application of knowledge. There are significant differences between knowledge and other commodities, differences that have fundamental implications for the organization of a knowledge economy.[12] For example, the idea of the knowledge economy is a challenge to the basic economic principle of scarcity, for once knowledge is consumed, unlike many other commodities, it does not disappear; rather its consumption may result in the development of further knowledge. Additionally, the consumption or use of knowledge is non-rivalrous and may be non-excludable. Furthermore, knowledge is not subject to diminishing returns.[13] Such characteristics present challenges to our ability to measure and assess the value of knowledge, to the establishment of ownership rights over knowledge, and consequently, to its market exchange. Despite the insurmountable difficulties of measuring knowledge, as we shall see below, proponents of the knowledge economy can identify ample evidence, however problematic, to support the growing significance of knowledge in the economies of the advanced nations.

The first characteristic of the knowledge economy according to its proponents is that knowledge is more important as an input to the production process than in previous types of economy. This argument is supported by Figure 1, which, through the aggregation of investment in the areas of research and development (R&D), software, and higher education, demonstrates the growing contributions to investments in knowledge as a percentage of Gross Domestic Product (GDP) between 1997 and 2004 for selected OECD countries. Apart from Ireland, which lags behind the European Union (EU) average in the development of its own indigenous knowledge creating capacities despite being a popular location for high technology manufacturing and service foreign direct investment,[14] all countries experienced a rise in the growth of investment in knowledge as a percentage of GDP for the period.

Of course, knowledge has always been of significance in economic activity. Yet, in the past, it was knowledge of production techniques, resource availability, market demand and supply conditions that were of central importance. Mokyr traces the historical origins of the knowledge economy, arguing that during the past three centuries there has been a transformation not only in the amount of technical knowledge, but also in the accessibility of such knowledge through publishing, universities, and professional networks.[15] This improved access stimulated a continuous process of new knowledge production and with this came sustained economic growth. Over the past three decades, there has also been a significant improvement in access to knowledge through the widespread application of Information and Communication Technologies (ICTs), which facilitate the acceleration of new knowledge production and with it the rate of technological change and innovation. For many commentators, then, it is knowledge of knowledge that is central to economic success in the twenty-first century.[16]

A second and closely related feature of the knowledge economy is its association with the ICT revolution, so much so that they are often thought to be synonymous. Castells, for instance, argues that the information technology revolution is central to the rising emphasis being placed on knowledge in economic activity.[17] Moreover, for Castells:

> What characterizes the current technological revolution is not the centrality of knowledge and information, but the application of such knowledge and



Note: For Belgium, Australia and Austria the period of reference is 1998–2003.
Source: Adapted from OECD, *Science,Technology, and Industry Scoreboard 2007,* OECD, Paris, 2007.

Figure 1. Contributions to the growth of investment in knowledge, as a percentage of GDP, 1997–2004.

information to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation.[18]

Without a doubt, the growing availability of ICTs, as evidenced in Table 1 illustrating the growth in telephone and cellular communications and Internet usage for selected countries, 'radically changes the conditions for the production and distribution of knowledge as well as its coupling to the production system'.[19] Like the development of the printing press in fifteenth century Europe, new ICTs have significantly increased the capacity to codify knowledge and thereby facilitate the widespread diffusion of new production techniques and knowledge-based products. The growing levels of connectivity facilitated by ICT networks, such as the Internet, are allowing the collection and distribution of knowledge on an unprecedented scale. When combined with the computational power currently available, the potential for new knowledge creation is expanding rapidly. For instance, the connectivity between producers and consumers, apparent in, for example, customer and producer websites, and Client Relationship Management (CRM) systems, is pres-

Table 1. Indicators of technological diffusion

Human development index		Telephone mainlines (per 1,000 people)		Cellular subscribers (per 1,000 people)		Internet users (per 1,000 people)	
Rank		1990	2005	1990	2005	1990	2005
1	Iceland	512	653	39	1,024	0	869
2	Norway	503	460	46	1,028	7	735
3	Australia	456	564	11	906	6	698
4	Canada	550	566	21	514	4	520
5	Ireland	280	489	7	1,012	0	276
6	Sweden	683	717[a]	54	935	6	764
7	Switzerland	587	689	19	921	6	498
8	Japan	441	460	7	742	(.)	668
9	Netherlands	464	466	5	970	3	739
10	France	495	586	5	789	1	430
11	Finland	535	404	52	997	4	534
12	United States	545	606[a]	21	680	8	630[a]
13	Spain	325	422	1	952	(.)	348
14	Denmark	566	619	29	1,010	1	527
15	Austria	418	450	10	991	1	486
16	United Kingdom	441	528	19	1,088	1	473
17	Belgium	393	461[a]	4	903	(.)	458
18	Luxembourg	481	535	2	1,576	0	690
19	New Zealand	426	422	16	861	0	672
20	Italy	394	427	5	1,232	(.)	478
21	Hong Kong, China (SAR)	434	546	23	1,252	0	508
22	Germany	401	667	3	960	1	455
23	Israel	349	424	3	1,120	1	470
24	Greece	389	568	0	904	0	180
25	Singapore	346	425	17	1,010	0	571

Note: [a]Data refer to 2004.

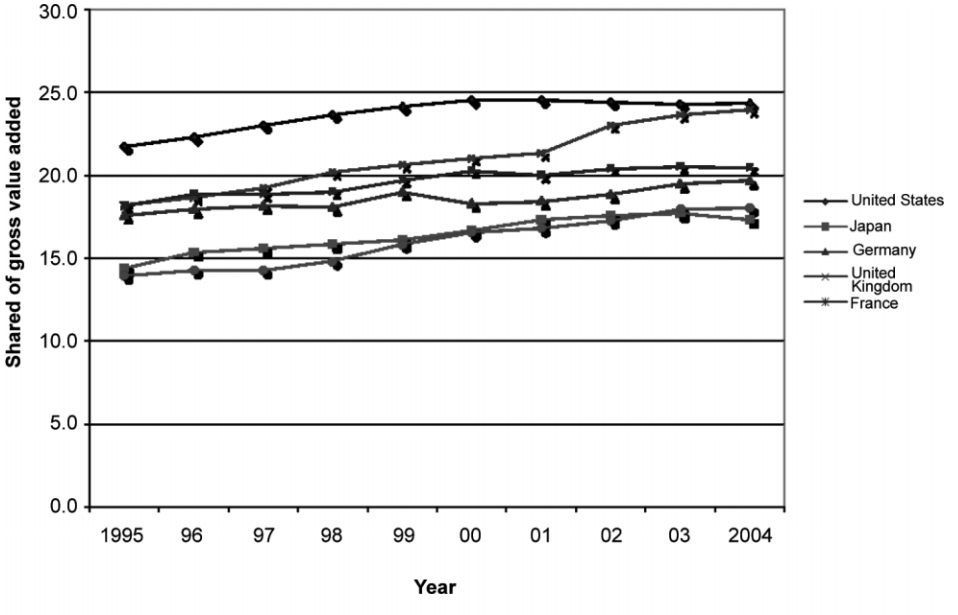
Source: Adapted from United Nations Development Programme, *Human Development Report*, Palgrave Macmillan, Basingstoke, 2007.

ently influencing both the development of new products and services as well as production and marketing techniques. In such cases, the combination of ICTs, knowledge production, and diffusion is resulting in the acceleration of the pace of innovation and technical change.

A third aspect of the knowledge economy is the growing importance of knowledge as a commercial output to be exchanged in the market place, whether this is in terms of, for instance, access to databases, research journals, R&D services, educational services, consultancy services, licensing of technological know-how or high technology products. This characteristic is illustrated in Figures 2 and 3, which show the rise in output of knowledge-intensive market services and high technology-intensive manufactures.

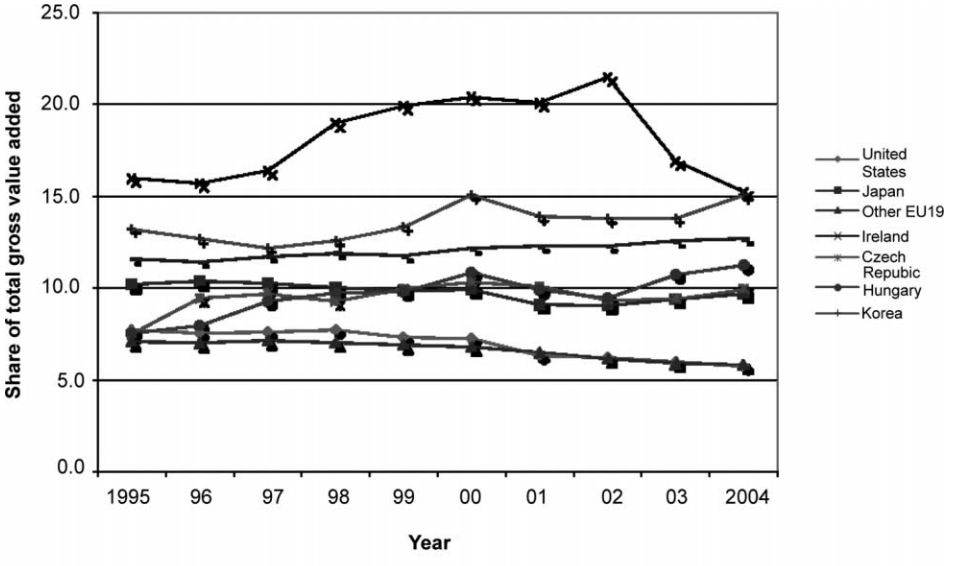
A fourth characteristic related to the growing commodification of knowledge is the growing significance of Intellectual Property Rights (IPRs). As the importance of knowledge to the competitiveness of firms both as an input and output grows, so too does the need to protect this knowledge. Knowledge may be protected in a number of ways, inclusive of secrecy, copyrights, trademarks and patents. The upward trend in the use of patents can be seen in Figure 4, which is illustrative of the growing importance of IPRs more generally.

Fifth, in the knowledge economy, knowledge workers become an essential resource, both for nations and firms, necessary to develop and sustain competitiveness.[20] The rise of the knowledge economy consequently produces a growing demand for highly educated workers, as illustrated in the increasing employment of graduates relative to the overall growth in employment for selected OECD countries in Figure 5. Meeting this demand requires a growing investment in education, and particularly in the production of graduates.



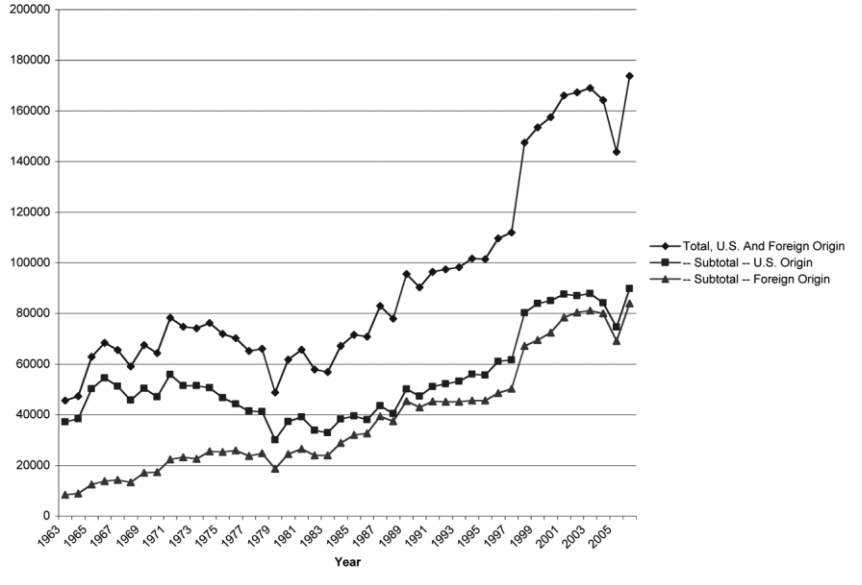
Source: Adapted from OECD, *Science, Technology and Industry Scoreboard 2007,* OECD, Paris, 2007.

Figure 2. Share of gross value added 1995–2004, knowledge-intensive 'market' services.



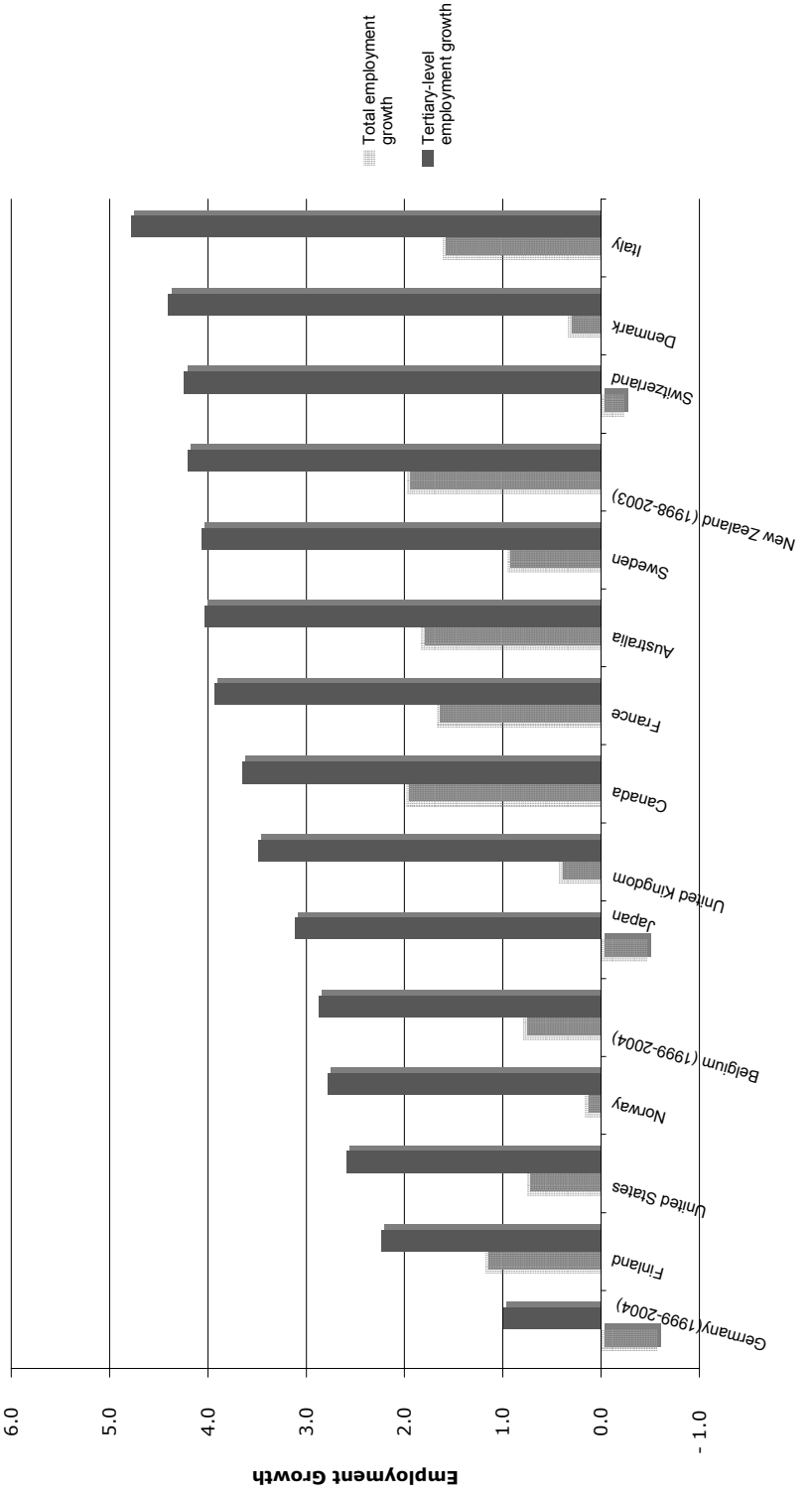
Source: Adapted from OECD, *Science, Technology and Industry Scoreboard 2007,* OECD, Paris, 2007.

Figure 3. Share of total gross value added, 1995–2004, high and medium technology manufactures.



Note: These patents are utility patents (patents for invention).
Source: Calculated from data available from US Patent and Trademark Office, Electronic Information Products Division Patent Technology Monitoring Team, available from: http://www.uspto.gov/go/taf/cst_utlh.htm (accessed 13 May 2007).

Figure 4. US patents granted, 1963–2006.



Source: Adapted from OECD, *Science, Technology and Industry Scoreboard 2007*, OECD, Paris, 2007.

Figure 5. Employment of tertiary-level graduates, 1998–2004, selected OECD countries.

Sixth, while the knowledge economy is most evident in the knowledge intensive and high technology sectors, the transformations being brought about are occurring across all sectors of the economy. Hence, while the production of certain industries may be less knowledge intensive, the organization of production and distribution of the final product is increasingly influenced by the ability to access and to communicate relevant knowledge and information both within and across an ever-expanding number of industries.

Seventh, the recognition of the value of knowledge in economic activity has given rise to the discipline of knowledge management, a new management technique focusing on maximizing the returns to organizations from their knowledge assets. Initially, knowledge management was focused on the management of codified knowledge through the application of ICTs to construct sophisticated information systems. However, the rise of knowledge management is also related to the new emphasis on learning and continuous innovation within firms.[21] More recently, the focus of knowledge management practices has turned to the management of tacit knowledge through practice-based models of knowledge distribution and creation. In particular, the concept of 'communities of practice' has attracted a great deal of attention.[22] There is, then, growing and widespread recognition of the role of communities as conduits for the distribution and production of knowledge.[23]

A final feature of the knowledge economy relates to globalization. Unquestionably, the process of economic globalization has contributed to the development of knowledge economies. The rise of cross-border trade and multinational companies has, in addition, facilitated the widespread distribution of knowledge.[24] Globalization and the associated deregulation and privatization programmes of various nation states have resulted in an intensification of competition between firms, stimulating innovation and technological change.[25] The economic impetus to push forward the boundaries of knowledge and to use existing knowledge more effectively is certainly heightened because of the forces of globalization.

Thus far, then, we have focused on the knowledge economy as a concept and as a defining feature of the advanced economies, and also on eight central themes associated with it. There can be little doubt that knowledge and ICTs, the growing commercialization of information, IPRs, knowledge workers, the informationalization of the wider economy, knowledge management, and globalization are of critical importance to work on the knowledge economy. In the next section, we critique the concept of the knowledge economy by way of an exploration of the concept of the ignorance economy.

The Ignorance Economy

Unlike the knowledge economy, the ignorance economy is not, or at least not yet, a common expression used amongst economists, managers, and policymakers. Yet, we want to portray the advanced economies as ignorance economies. To our knowledge, there are no other approaches to the knowledge economy founded on the notion of ignorance. Nevertheless, we want to argue, the knowledge economy is precisely rooted in the production, distribution, and consumption of ignorance and lack of information. What we are suggesting, then, is that the knowledge economy is one wherein the production and use of knowledge also imply the creation and exploitation of ignorance, for not only knowledge but also ignorance now play a main role in the formation of advanced global capitalism. The knowledge

economy is at the same time an ignorance economy. While it might be accurate to say that some production methods and services founded on knowledge-intensive activities are key factors in today's accelerated rate of technoscientific improvement, it is also true to say that many such production methods and services are predicated on ignorance-intensive activities, on activities that contribute to a decelerated pace of technoscientific development. Indeed, as we shall see below, the knowledge economy is necessarily engaged in the speedy obsolescence of knowledge and thus in the expansion of ignorance. The important mechanism of the knowledge economy is not necessarily its greater dependence on intellectual abilities, but its greater determination to inhibit such intellectual capabilities. Meanwhile, physical inputs and natural resources continue to be wasted in the process and united with attempts to rationalize even further the production and consumption processes of the advanced economies. These 'improvements', moreover, often have less to do with genuine research and development than they do with the rationalization of both producers and consumers as they 'interface' with global capitalism.

Our first challenge to the notion of the knowledge economy from the standpoint of the ignorance economy concerns the claim that knowledge is now more important as an input to the production process. This growing emphasis on knowledge, of course, arises from the central economic features of advanced nations: specialization and the division of labour. Adam Smith argued that '[t]he greatest improvements in the productive powers of labour, and the greater part of the skill, dexterity, and judgement with which it is any where directed, or applied, seem to have been the effects of the division of labour'.[26] However, and importantly, Smith also recognized that the 'man whose whole life is spent in performing a few simple operations … generally becomes as stupid and ignorant as it is possible for a human creature to become'.[27] For Smith, the degree of specialization was limited primarily by the extent of the market. Yet, as Becker and Murphy note, specialization is also limited by the costs of coordination and the growth of human capital and technological progress.[28] Consequently, as economies become more advanced, the division of labour becomes more sophisticated and increasingly dependent on specialists. Moreover, as Becker and Murphy argue,

> [a]lthough workers in modern economies have considerable knowledge of principles and have access to complicated technologies, a typical worker also commands a very much smaller share of the total knowledge used by the economy than do workers in simpler and more backward economies.[29]

Expertise at an individual level therefore comes at the expense of ignorance about what other people know and do. There is, then, some truth in the description of an expert as 'someone who knows more and more about less and less'. So, while the aboriginal people of the Malaysian Highlands can satisfy all their basic needs from hunting and gathering in their local environment, this is unquestionably not the case for those of us living in the cities of the advanced world. The collapse of the complex physical and informational infrastructures of advanced economies often has a devastating impact not just on populations, as witnessed in the aftermath of 'natural' disasters (for example, Hurricane Katrina's impact on the city of New Orleans in 2005), but also, crucially, on their ability to comprehend and subsequently cope with such disasters. Moreover, the increasing specialization of individuals gives rise to the demand for goods and services that the individual

cannot produce because of lack of time or knowledge. Specialization therefore opens up areas of ignorance that can be exploited for commercial purposes. The more specialized the knowledge base of an economy, the more opportunities there are for the exploitation of ignorance for commercial purposes. So, despite the claim that the knowledge economy is based on increasing amounts of knowledge in the production process, one important consequence of this is the production of more ignorance and therefore a growing demand for all types of knowledge to overcome and exploit this ignorance. To some extent then, the ignorance economy can be seen as synonymous with the knowledge economy.

Our second assertion challenges those aspects of the knowledge economy that relate to the importance of ICTs from the standpoint of ignorance. Indeed, it is our contention that ICTs lead to a growth in ignorance. First, increasing amounts of knowledge are being codified and embedded in information management systems, databases, websites and so on. While this makes the information easily retrievable for those with access to the technologies (and we must remember that many even in the advanced nations have limited or no access), it also leads to the discarding of important tacit elements of knowledge that are not amenable to codification. Landes provides the following example that usefully illustrates this point. In the First World War, the French, needing additional supplies of their 75mm field guns, sent their blueprints to the US.[30] However, the US manufacturer could not reproduce the guns to the required standards from the blueprints alone. A team of workmen had to accompany the blueprints to facilitate the complete transfer of the knowledge needed to produce guns of the appropriate quality. In short, the codification of knowledge does not always facilitate its transfer.[31] Additionally, the codification of knowledge necessitates choices about which knowledge should be codified. Hence, there is a danger that the knowledge base becomes skewed towards that knowledge valued by those elements of society that have the resources to codify knowledge. Jean-Noël Jeanneney raises this concern in relation to Google's library project, arguing that its unsystematic digitization of works predominantly written in English and from a few partner libraries ignores the complexity of the world's cultural heritage.[32] The result of such codification projects is the loss of valuable knowledge and the development of path-dependency in terms of future creativity and innovation.[33] Finally, although ICTs allow the collection of information on an unprecedented scale, this in itself gives rise to challenges, such as the need for classification. According to Kallinikos and Mariategui, organizations have less than 10% of their information classified, and 95% of the content of the Internet is unstructured data.[34] Thus, the more information collected the greater the management task becomes. Moreover, the process of managing information further increases the amount of information to be managed 'because the organization of data items is often itself information, produced out of the rearrangement of these items. When your bank orders and sorts out your transactions, significant information about your spending habits is revealed'.[35] Therefore, while the collection and classification of information produces many opportunities for the recombination of information to produce new knowledge, there is also the mounting difficulty of managing ever-greater quantities of information. Information overload thus results in a kind of ignorance, for our capacity to manage and comprehend information is not keeping pace with either the growth of information or its management.

Our third challenge to the knowledge economy from the vantage point of the ignorance economy is that, despite the growing importance of knowledge as

a commercial output, ignorance too can be seen as a commercial output. Consumers, for example, enhance their ignorance as they purchase an increasing number of goods that require less and less knowledge for their effective use. As products from cars to computers become more and more technologically sophisticated, many consumers are content to let manufacturers and service companies take on the burden of understanding how such products work and how to repair them. Thus, ignorance is actually a commercial product. Consumers happily purchase ignorance in their quest for hassle-free consumption and businesses enthusiastically encourage consumer ignorance in order to create increased demand for knowledge services and products. For instance, this article is being written on a computer of which the authors have very little understanding, beyond a basic appreciation of the word processing package.

This brings us to our fourth challenge to the concept of the knowledge economy from the standpoint of the ignorance economy and concerns the growing commodification of knowledge. Increasingly, the knowledge upon which products and services are based is protected through various IPRs, secrecy, or technical systems that restrict access to knowledge. The last is evident in the commercial software world where source codes have traditionally been protected. As Gillespie notes, the strategy of 'technical copy protection' adopted by the commercial software sector is now becoming widespread among media content providers.[36] As Gillespie puts it:

> Current encryption techniques allow content owners to decide who gets access to their work according to much more precise, subtle, and modifiable criteria. Today, digital content can include information indicating how, when, and where that content can be used, rules that will be honored automatically by the devices we use to consume it. With these innovations, film and music distributors are going far beyond what the software industry had once imagined, to govern not only whether we copy their work, but also how we buy, share, experience, and interact with it.[37]

Although the persistence of hackers, bootleggers, and cultures of sharing restrict the effectiveness of technical copy protection, Gillespie is right to highlight the need for a critical understanding of the potential consequences of such strategies.[38] One result of successful protection strategies is the propagation of ignorance. The protection of knowledge, whether through IPRs, technology or secrecy, is not only a measure of the commercialization of knowledge but also an indication of the growth of ignorance. The profitability of the monopolization of knowledge depends on the escalation of ignorance. The expansion of ignorance through the appropriation of knowledge previously freely available is a global phenomenon with major consequences. Well-known examples include the patenting of the components of traditional medicines from developing countries by the large pharmaceutical companies and the promotion of patented seed varieties by agribusiness.[39] For instance, according to Shiva *et al.*:

> … [IPRs] increase the cost of seed for the farmers leading them deeper into debt. They also lead to the destruction of biodiversity, as the IPR claims of corporations are so broad-based that they cover the genetic material contained in the variety. For example, the RiceTec patent on a rice variety derived from two basmati varieties from the Indian subcontinent claims protection for the

> genetic material that has gone into making the variety. The two parent lines have themselves been derived from many traditional as well as domestically derived varieties. Thus the patent claim in effect is a claim on all these varieties, and if enforced strictly, will prevent farmers from using these varieties on grounds of patent infringement. Lack of use over a period of time will destroy the vast agricultural biodiversity that exists still in many Third World countries including India.[40]

Our fifth challenge to the idea of the knowledge economy from the viewpoint of the ignorance economy relates to the growing importance of knowledge workers. As noted above, the increased specialization of knowledge workers also results in the growth of ignorance. This creates demand for all manner of services that specialists in one field do not have when active in another field. But not all new job opportunities in the advanced nations are for knowledge workers, for the high rewards available to the knowledge specialists come at the cost of intensive patterns of work, leaving little time for the fulfilment of menial, though often pleasurable, activities like walking the dog, shopping or tending a garden. The result is the perpetuation of demand for low skilled workers to provide the services required to support knowledge workers. The growing importance of knowledge workers is also transforming patterns of work and organization. On the one hand, it allows more autonomous working environments for highly skilled workers: on the other, it involves the development of greater surveillance of less skilled workers engaged in standardized and unskilled work. Thus, while the knowledgeable workforce is given autonomy in the workplace, the ignorant are subjected to ever-tighter regulation, which suggests that the ignorant are not to be trusted. In addition, it is also worth noting that the levels of educational attainment in the advanced nations are highly variable. As Table 2 below shows, North East England, with 14.4% of its working age population with a degree or equivalent level qualifications, falls well below the UK average of 19.6%, and well below regions like South East England with 21.4% and London with 30.5%. Discrepancies are similarly evident in the percentage of the working age population with no qualifications. Here Northern Ireland is well above the UK average of 13.5% with 21.7% of its working population with no qualifications. Put differently, over a fifth of Northern Ireland's population is qualified to do precisely nothing at all. So, just as policymakers talk of promoting regional knowledge economies, it is possible to point to evidence of regional ignorance economies.

Our sixth challenge to the idea of the knowledge economy from an ignorance economy perspective concerns the rise in the significance of knowledge intensive services. It is ignorance that is creating an increasing demand for knowledge intensive services of all sorts. These include business services and various personal services, from financial and health services to fashion and design advice. Yet such services are intended to allow consumers to remain ignorant in the security of knowing that they do not need to know what they can afford to buy.

Our seventh challenge is to the rise of knowledge management as a constituent feature of the ignorance economy. The focus on the management of knowledge within organizations is actually leading to the neglect of ignorance. Harvey, Novicevic, Buckley and Ferris, for instance, argue that organizations need to manage ignorance. For them '[o]rganizational ignorance is emerging as a legitimate construct corollary to that of organizational knowledge'.[41] Indeed, they argue that:

Table 2. UK population of working age[a] by highest qualification, second quarter 2007 (%)

	Degree or equivalent	Higher education qualification[b]	GCE A-level or equivalent[c]	GCSE grades A*–C or equivalent	Other qualifications	No qualifications
United Kingdom	19.6	8.6	23.0	22.6	12.7	13.5
North East	14.4	8.4	26.0	24.8	12.2	14.1
North West	16.9	9.0	23.3	25.4	11.0	14.6
Yorkshire and the Humber	15.7	7.6	23.6	24.3	13.5	15.3
East Midlands	16.5	8.7	22.6	24.4	13.6	14.2
West Midlands	16.7	8.8	20.8	25.7	11.3	16.7
East	18.4	7.8	22.2	24.8	14.4	12.4
London	30.5	6.3	16.6	15.3	17.5	13.9
South East	21.4	8.8	24.5	23.4	12.2	9.6
South West	19.1	9.5	25.6	23.7	12.4	9.7
England	19.9	8.2	22.4	23.0	13.3	13.2
Wales	17.2	7.7	24.0	23.8	11.5	15.8
Scotland	18.5	13.4	27.7	18.1	9.3	12.9
Northern Ireland	17.5	7.3	24.0	22.4	7.1	21.7

Notes: [a] Males aged 16–64 and females aged 16–59.
[b] Below degree level.
[c] Includes recognized trade apprenticeship.
Source: Adapted from *Labour Force Survey*, reproduced in *Regional Trends 2008*, p. 108, available at: http://www.statistics.gov.uk/downloads/theme_compendia/Regional_Trends_40/RT40_EduTrain.pdf (accessed June 2008).

> The transition from an asset-based to a knowledge-based economy has caused a shift in organizational outcomes, from rational and efficient to behavioural and effective outcomes. However, organizational stakeholders are often ignorant of the causal structures underlying effective outcomes, due to active, informal, and interest-driven efforts to manage shared meaning by decision makers and takers for purposes of promoting their own self-interests. As a result, the boundaries between organizational ignorance and organizational knowledge have become fluid, permeable, and invisible to the stakeholder, and organizational ignorance has become the referent rather than a complement of organizational knowledge.[42]

Clearly, an appreciation of organizational ignorance will improve the ability of an organization to compete in fast changing markets. However, it is also worth considering the benefits of ignorance in relation to knowledge creation and innovation more generally. The development of new ideas and products often requires the creators to 'think outside the box' or indeed to bring about a paradigm shift. Ignorance of the box or the dominant paradigm can facilitate creativity that would otherwise be stifled by existing knowledge. A knowledge economy obviously requires engagement in learning new knowledge. Nevertheless, as Lundvall and Johnson note, learning to forget is also important.[43] There is, of course, no need for the ignorant to forget. Consequently, the saying 'ignorance is bliss' may have benefits not just for the individual, but also for society as a whole. The state of not knowing can drive curiosity, exploration and creativity.

Our final challenge to the idea of the knowledge economy from the stance of ignorance is a challenge that considers the relationship among the knowledge economy, globalization, and ignorance. Clearly, globalization is opening up new knowledge opportunities and simultaneously exposing new areas of ignorance. On a global scale, the hegemony of Northern epistemologies is leading to the homogenization of knowledge and to restrictions in terms of access to knowledge.[44] Such developments can only result in the escalation of ignorance through the process of monopolization of knowledge assisted by global regulatory regimes, such as the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which effectively provides a global set of intellectual property principles.[45] Ignorance borne out of the restriction and monopolization of knowledge is detrimental for human development. However, ignorance also arises from new knowledge, in the sense that the more we know, the more we know that we do not know. Such ignorance is more likely to have positive outcomes in the form of curiosity-driven creativity than ignorance arising from the monopolization of knowledge.

In this section, therefore, and as our article's title implies, we have not just issued a series of challenges to the concept of the knowledge economy as a model and as an important feature of the advanced economies, but also emphasized the idea of the ignorance economy. What has been of significance in our interpretation has been our challenge to the eight core premises we have associated with the knowledge economy. Accordingly, we regard our particular contribution to be our concentration on the notion of ignorance relative to the knowledge economy and to ICTs, to the growing commercialization of information, IPRs, knowledge workers, the informationalization of the general economy, knowledge management and globalization. Yet what is of critical import in this area of work, it seems to us, is the introduction of the concept of the ignorance economy. Thus, in the conclusion, we shall restate our understanding of ignorance, the knowledge economy, and the ignorance economy.

Conclusion

The conclusion of this article is that an investigation into the importance of the concept of ignorance, of not knowing, is long overdue. Ignorance is a crucial, if a somewhat neglected, aspect of contemporary thought within management studies. To be sure, engaging with a lack of knowledge and information is no easy task. However, as we have demonstrated, it is necessary to issue a series of challenges, and to act in ignorance, if management and social theorists are to understand the key features of the knowledge economy. Ours has not been an effort to characterize the knowledge economy as a fundamental attempt on the part of the knowledgeable to claim a power over the ignorant. Rather, it has been an endeavour to show that ignorance, even when defined as not knowing, is a form of power. Nevertheless, our objective in this article has been to engender a contemporary assessment of the supposed manifestation of the knowledge economy in the advanced countries. We have reflected on the notion of the knowledge economy at length but with a view to illuminating what the knowledge economy is, or might be. From the beginning, our goal has not been to suggest that the knowledge economy is some kind of illusion. Instead the aim of this article has been to use lack of knowledge to reveal fresh insights into the contemporary economic environment. It is for these reasons that we have written of our desire for another kind of knowl-

edge that does not set out to maintain that an ultimate idea of the knowledge economy is either possible or desirable. Here, our purpose has not been to centre on knowledge as an issue of organization, but as an issue of ignorance.

We have, of course, critically engaged with the concept of the knowledge economy throughout. But we have done so only insofar as this idea relates to states, countries, and regions corresponding to their production, distribution, and consumption of knowledge-based goods and services. Moreover, we have done so based on a deep misgiving about the solidity of the world of information and computerized systems, governmentality, and the ongoing rationalization of both the state and the economy. We have not concerned ourselves with the philosophy of the knowledge economy, but instead with the incompleteness of current discussions regarding the knowledge economy. It is, then, a matter of recognizing the limits, extent, and indeed the accuracy of the idea of the knowledge economy. Indeed, it is time to start paying attention to alternative views of the status of knowledge today. The significance of the knowledge economy is that the notion is based on a set of completely unrealistic and misleading managerial theories that seek to know everything. In contrast, our critical methodology has set out to go beyond the quest for total knowledge of the economy and to engage with the ignorance economy.

It is perhaps fitting to end by reminding ourselves of the importance of forgetting, of not knowing. We have to enter into such debates for no other reason than that they raise profound political, economic, and indeed moral questions concerning the 'need to know' at all costs. What is crucial to question today is the way in which both the concept and the debates about the knowledge economy are being framed by management scholars and policymakers. This means, amongst other things, pointing out that the knowledge economy is simultaneously an ignorance economy. Future work, then, should begin the task of assessing the knowledge economy in terms of the quest for total knowledge. In this task, the idea of an ignorance economy might prove useful.

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