

W(h)ither Manchester?

Contemplating the Future of the First Industrial City in the Emerging Spatial Division of Labour Associated with the Age of Telecommunications

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Abstract

Manchester, as is well known, was at the centre of the first industrial revolution, which was based on cotton processing and steam power. Two hundred years late, many argue we are on the cusp of a new technological age – based on information processing, knowledge, electronics and the Internet. Recent research suggests that, within the UK, the new (or emerging) information economy is highly focused on London, whilst outside the UK, the US has become the dominant centre of Internet activities. Manchester, like other peripheral areas of the UK, appears to be becoming marginalized in the emerging globalised economy, although the city is ‘competing’ for and internationally footloose, low grade routine information processing activities, such as that undertaken in call centres. In the longer run, Manchester’s position, as a second tier city, appears threatened by developments from two sides – high value added activities appear to be increasingly concentrated in the ‘world cities’, whilst the declining and soon to be negligible cost of telecommunications means that in low value added activities Manchester will increasingly have to compete with yet lower cost locations outside the UK, as well as against its ‘sister’ cities in the north of Britain. Our paper therefore considers how these economic and technological changes are altering the spatial division of labour, and focuses particularly on how these changes are affecting second tier, former industrial cities like Manchester.

Introduction

Manchester, the city at the heart of the first industrial revolution,¹ is not held in the highest regard by most of the rest of the United Kingdom, even amongst many of those who support ‘United’ from afar. As one commentator has put it:

The citizens of Manchester are largely held in derision by the majority of Englishmen. ...Manchester, which does not contain a single beautiful building,² is a filthy, crime-ridden old sock. (A. N. Wilson)

This image of Manchester as a grimy industrial city - where it always rains – is not new. Almost a hundred years ago another commentator (Howells, 1909)³ wrote grudgingly of ‘Some merits of Manchester’, but complained the city smelt of coal-gas, and that, despite being August, the weather was more like that of early November [‘[T]he light, what little there was of it, was very cold and gray (p. 21)], yet the people of the city maintained ‘the local delusion that it was then summer’ (Howells, 1909, p. 22).] On the positive side, however, Howells realised that ‘Probably the most liberal and intelligent populations of Great Britain are those of Manchester [and Birmingham]’ (Howells, 1909, p. 21). Eighty years before Howells, De Tocqueville wrote of Manchester (near its ‘height’):

From this foul drain the greatest stream of human industry flows out to fertilise the whole world. From this filthy sewer pure gold flows. Here humanity attains its most complete development and its most brutish. (De Tocqueville, 1834)⁴

Some things change, others remain unchanged.

Our paper is about the reconfiguration of space, and the spatial division of labour (Massey, 1995), through the implementation of technological innovations, particularly in telecommunications, and especially what this means for second tier, former industrial, cities, such as (and particularly) Manchester. We admit two difficulties at the outset. Firstly there

¹ See <http://www.spartacus.schoolnet.co.uk/ITmanchester.htm> a brief history of Manchester and the industrial revolution.

² It could have been worse – post war town planners considered demolishing Manchester’s gothic town hall and replacing it with a concrete building (Ravetz, 2000)

³ No relation to the current author.

is a problem of generalities and specifics. Sometimes we will be speaking of Manchester as a particular place, although even here there are difficulties; there is no clearly defined boundary to Manchester as a place. Manchester is, at one level, the few square miles that constitute the heart of the city. At the other it is the city-region, which comprises a large part of Northern England. At other times we will be speaking more generally, about the position of second tier, former industrial cities and the places within their surrounding regions. Thus to some extent we are asking parallel questions such as W(h)ither Leeds?, W(h)ither Liverpool?!, W(h)ither Rochdale? Secondly, we stress that this is only a start – this is a scoping paper which has been undertaken to collect ideas. We will be deliberately painting on a large canvas, and many of the details of the argument are missing. We hope to develop the questions raised by this analysis into a fuller account of the relationship between the use of telecommunications and the reconfiguration of economic spaces.

The paper is divided into the following sections: Section 1 provides a brief and generalised review of the history of cities as innovation hubs, including how their role in innovation has changed over time. This section also provides a summary of the received understanding of the advantages of cities as centres of innovative activity. Section 2 reviews the evidence for the increasing spatial division of labour in information and knowledge related activities in the UK, looking especially at the position of London, the South East, and the North West, the region in which Manchester is the principal ‘hub city’. Section 3 then turns to policy issues, asking the question whether the emerging information economy/society is something that should be left to ‘the market’, or whether there is a need for greater government involvement in shaping the impact of information technology on (the space) economy and society.

A Brief and Generalised Review of the History of Cities as Innovation Hubs

Cities have long been linked with (technological) innovation. Cities have both been influenced by innovation in terms of their shape and form (for example, with the elevator (or lift) enabled high rise, spatially constrained, office developments in the US and later elsewhere) and have been places for generating innovation. Thus innovation has been both a major factor associated with the rise of urban development and economic growth (Hoover

⁴ We should remember that Manchester was the place where Frederick Engels worked in his father’s factory, and the conditions of the working class in Manchester especially shaped his political views. See Engels (1844) *The Condition of the Working Classes in England*.

and Vernon, 1959) whilst urban development has equally helped to foster and shape technological innovation. Allan Pred links these two processes:

Inventive activity is, to a considerable degree, a function of unique supply-and-demand conditions that prevail in the cities of an industrializing economy such as that of the United States between 1860 and the early twentieth century. More precisely, many technological advances in the late nineteenth century were reliant upon a *demand for inventions*. This demand was most likely to occur in the burgeoning cities where manufacturing was agglomerating, where there already was an adequate supply of both potential inventors (including skilled labourers) and investment capital. (Pred, 1966, p. 90 - *our emphasis*)

We contend that cities as places of innovation has changed over time. There are arguably at least three periods that can be identified. They relate to: 1) a period first starting with the appearance of urbanisation itself but more particularly since the start of the seventeenth century through to the late nineteenth century; 2) a stage from the early twentieth century through to the mid 1960s; and, 3) a period from the mid 1960s through to the present day

The first period may be characterised as the time when cities were *the* places for innovation, bar that in agriculture and mining. Cities represented the heartlands of innovation, especially technological innovation in manufacturing. Thus, in the United States, New York, Philadelphia, Boston and Baltimore alone accounted for between 24% and 38% of all patents between 1805 and 1840 (Pred 1977, p. 79). Over the period 1860 to 1980, 35 of the largest US cities accounted for around 40% of all US patents (Feller 1973, pp. 290-291). Yet during this period of rapid population growth, urbanisation also occurred at the sites of key industrial activities away from the large existing concentrations of population. Manchester was one such city. Cities were therefore places where innovations emerged, were developed and were commercialised, but - as places - they were also profoundly shaped by the processes of industrialisation and by innovation associated with industrialisation.

Towards the end of the nineteenth century, however, the supreme position of cities in the (technological) innovation process appeared to be waning, particularly in manufacturing. By 1910 only 31% of all US patents came from the top 35 cities, compared with 44% in 1860 (Feller 1973, p. 293). Moreover, the role of cities appeared to be changing, albeit gradually. Cities no longer held on to the downstream developments associated with manufacturing

inventions (i.e., innovation). Rather, they were emerging as incubators for technological innovation associated with the emergence of ideas or inventions and their initial development. That is, there was an emerging separation of inventive (and commercial) activity from production activity. Howells (1909) comments that at the time of his visit textile mills were nowhere to be found in Manchester itself, their having migrated out to the surrounding mill towns. The centralisation of invention continued, and by the early 1950s Ullman notes that 'The situation is not the same ... as it used to be when a local invention resulted in a local industry.' (Ullman, 1958, p. 191)

Geographers, economic historians and economists examining the period of the first half of the twentieth century became strongly influenced in their perceptions of this changing situation by the notion of life cycles, originating from Kuznets' (1930) and Burns' (1934) work and subsequently incorporated into product life cycle models. Innovation was closely linked with the urban hierarchy and the concept of trickle down. Major urban agglomerations are seen as particularly favourable breeding places for innovation due to agglomeration effects, the concentration of qualified labour and positive externalities from knowledge centres (Thompson 1965). Thus Thompson (1972, p. 100) notes 'Invention, or at least innovation, takes place more than proportionately in the larger urban areas of more industrially mature regions.' Thompson (1972) equates this with the fact that larger cities possess a greater labour skill potential which is associated with innovation. As industrial activities reach a more mature stage in their life cycle they become less dependent on their original breeding place (Hoover 1948, 174-5) and instead increasingly find low cost locations in smaller urban centres or more rural, non-metropolitan areas. There is an associated transition in the increasing focus of innovative efforts on processes rather than, as previously, on products.

A series of studies emerged in the 1950s which lent some support to this model, using data largely from the inter-war period (Thompson 1962), as well as some more recent studies have found support for this hypothesis (see, for example, Erickson 1976; Ewers and Wettmann 1980; Brouwer et al. 1999). Others, however, have found the model less sustainable (Howells 1983; 1985; Storper and Walker 1983; Taylor 1986), or the reality more complex (Tödtling 1995, pp. 182-3). At a more conceptual level, within this perspective cities appear to be permanently set within a kind of dynamic stasis, with little or no change expected between the relative performance of cities according to their status in the urban hierarchy. We do not accept this perspective, for reasons that we will discuss later in this paper.

The position of cities as the (supposed) powerhouses of economic and industrial growth was further challenged during the 'urban crises' of the 1970s and 1980s in North America and Europe. Cities appeared to lag behind in terms of economic and industrial performance. Even their innovation incubator role appeared to be declining, particularly in relation to manufacturing activities. Discussion, however, focused on the simple explanation of large deconcentrations of population and economic activity out of cities, particularly the inner city.⁵ Cities were no longer seen as 'fit' environments for manufacturing activity, in particular that associated with high technology manufacturing. Yet, especially in the U.S., this trend was debatable. At least up until the mid 1980s the large cities of the U.S. actually held onto their shares of high-technology jobs, despite recording declines in their relative share of manufacturing jobs (see, for example, Glasmeier 1990, pp. 84-85).⁶

What was not adequately discussed then was whether all cities remained equally innovative? Are all cities permanently fixed in terms of their position implied by the product life cycle/filter-down model? And if not, what factors characterised such declines (or improvements) in innovative performance? Little consideration or analysis of these issues has been undertaken. Perroux (1955) linked those places that grew most rapidly with those that were the loci of Schumpeter's innovative industries, but these newer industries were not necessarily concentrated in the largest cities and he did not develop this notion within his wider growth pole work. Malecki (1979), in his study of corporate R&D laboratories over the period 1965-1977, found that such laboratories did agglomerate in large urban areas, although there were a number of key shifts in this pattern. The share of such units in the New York-New Jersey area declined over this time period from 22% to 16.5%, compared with Los Angeles whose share grew from 9.5% to 12.1%, whilst there was a shift of R&D laboratory location to smaller metropolitan areas and indeed to some non-metropolitan areas.⁷

This suggests that (some) large cities may not be holding on to their share of technological innovative activity, particularly in relation to manufacturing. (Some) smaller, lower-tier

⁵ Interestingly here, a key issue not adequately discussed was that of whether the incubator role of cities was declining or whether it was that economic activity surrounding new innovations no longer 'hung around' city locations long enough for them to benefit from the full downstream benefits of such innovative activity (accepting for a moment such a linear view of the innovation process)?

⁶ Other studies have, though, revealed a more general long term decline of core, central U.S. regions in terms of their mix of high technology industries (Norton and Rees, 1979), implying that some kind of wider decentralisation phenomenon may be occurring in innovative activity.

⁷ This was often linked with the decentralisation of corporate headquarters as many R&D laboratories were co-located with headquarters location

metropolitan areas may be gaining in terms of their (technological) innovative capacity, again particularly in manufacturing. Indeed, Storper (1986) has argued that secondary centres and 'new areas' may be better locations for new industries or radical innovations because they are less dominated by structures of firms which were successful in the past.

These considerations relate mainly to the location of technological innovation activities in manufacturing. Services, however, have risen greatly in economic significance, and cities are likely to be the centres of service sector innovations, and service innovations. We explore the growing importance of services and information activities in the next section. First, however, we summarise the generalised advantages of cities as centres of innovation.

The Generalised Advantages of Cities as Centres of Innovation Activities

There are a number of reasons *why* cities should be centres of innovation. These are outlined below (in conjunction with reasons why these advantages might decline):

- 1) *Concentration of types of knowledge generation workers:* These workers are often associated with innovative activities. Any *decentralisation of knowledge workers* therefore represents a potential threat to cities as places of innovation. In some cities, the dispersal of this type of labour has been relatively greater than the dispersal of employment overall.⁸
- 2) *Agglomeration effects:* There are benefits of *concentration*,⁹ but, beyond these, benefits of agglomeration in production will provide advantages to producers, both in demand and supply terms, which will encourage innovation (Townroe and Roberts, 1980). Hoover (1948, pp. 120-121) has outlined three specific *urbanization* economies associated with agglomeration economies, namely: exceeding minimum size thresholds allowing the availability of a whole variety of specialised support

⁸ Green and Howells (1988) found that by the mid-1980s many of Britain's second tier cities had lower concentrations of advanced knowledge and information-intensive employment (relative to their total workforces) than the wider metropolitan region of London – this suggests the decline of advanced knowledge and information-intensive employment in the second tier cities and/or the concentration of this work in the London area.

⁹ If one expects the likelihood of where innovators originate as a random process, cities as places of large, concentrated populations of individuals will pro rata have more innovators and therefore inventions and innovations. As Feller (1973, p. 295) notes 'If the ability to invent is indeed randomly distributed throughout the population, then locations with large numbers of people will tend to have more patents than locations with smaller numbers of people.' Taking this argument forward, then presumably (and *ceteris paribus*) if the population density of cities declines then pro rata, cities will be less likely to generate innovations. However, the *ceteris paribus* condition is unlikely to remain over time.

services; pooling of reserves, making for the efficient use of materials and labour; and, the ability to undertake bulk transactions, allowing favourable rates and better service.

- 3) *Concentration of flows:* Cities, as places of concentrated information flows, encourage and facilitate information and knowledge generation and code-sharing required for innovation. This relates to factor 2; thus Törnqvist (1970) found that Sweden's three major urban areas had half of the most contact intensive personnel who formed the upper echelon of decision-makers. Moreover, the concentration of such flows was encouraged by technical developments in, for example, telegrams and telephones (Pred 1966). With more information, uncertainty could be reduced which would further encourage the innovative process (Webber 1972). There is debate as to whether information communication technologies have reinforced or reduced the importance of distance, but that is debated later in this paper.
- 4) *Cultural and institutional factors – leading to 'demand-pull' benefits:* Cities tend to be places where there are above-average concentrations of people generating new styles (or designs) and consumption patterns. This concentration of 'early adopters' positions cities as important centres of 'market (or demand) knowledge' which firms are keen to tap into. However, as more demand and new patterns of consumption are becoming electronically mediated (through information communication technologies), the element of place in encouraging the formation of new types of demand may be dissipating. (Elsewhere, we suggest this is not the case).
- 5) *Innovations as solutions to urban problems:* Cities encourage the generation of certain types of technological and organisational innovation; often to overcome congestion (elevators/lifts, underground transport and so on) and/or incurring concentration benefits. For example, cities were the first places where mobile telecommunication and wireless communication networks were established because of concentration of consumers and ease of putting up wireless aerials on tall buildings. And arguably even congested roads create new demands for telecommunications, with mobile phones helping to transform the 'dead time' whilst stuck in a traffic jam into 'live' working time (Graham and Marvin, 1999).

- 6) *Concentration of information-rich, tacit knowledge*: Related to many of the above factors, cities are places associated with heavy concentrations of ‘sticky’ information (Von Hippel 1990), and especially tacit knowledge. These favour places which have dense, information rich networks of face-to-face contact, encouraging the sharing of tacit knowledge an essential component in the innovation process.

We explore some of these issues in further detail in the next section.

The Rise of Services and the Knowledge / Information / Communication Economy

The discussion of the role of cities as centres of innovation in the previous section privileged the importance of technological innovation associated with manufacturing and tangible products. This reflects the prominence of these activities in the industrial age. Services, though significant, were neglected. The growing importance of services was only recognised in the 1960s, by Victor Fuchs (1965) and Daniel Bell (1967, 1968). Fuchs found that by the late 1950s / early 1960s roughly similar numbers of people were employed in the service sector as in the ‘goods sector’ in the United States. Around the same time, Malchup (1962) recognised the growing importance of information (and knowledge) activities in the economy. Porat (1977)¹⁰ further developed these ideas, finding that, by the mid-1960s, roughly half the US economy was engaged in information activities. Subsequently, Castells (2000) and others have illustrated the growing significance of services and information activities in the economy.

Castells and Aoyama (1994)¹¹ show the growing importance of service sector in terms of employment. For the UK (actually England and Wales) they found that in 1921 the ‘extractive sector’ accounted for 14.2% of employment, the ‘transformative sector’ (i.e., manufacturing) for some 42.2% of jobs, whilst the service sector accounted for 43.7%. By 1990 the share of ‘extractive sector’ had declined to only 3.3% of total employment, and the

¹⁰ Porat (1977) classified information workers into four sub-categories (information producers; information processors; information distributors; and information infrastructure workers), but recognised that several occupations are ‘ambiguous’, that is, they are not easily classified into information and non-information jobs. Examples included factory foremen and women, proprietors of small retail stores. ‘We are not saying that information workers deal exclusively in information and other kinds of workers never deal in information. Rather we assert that certain occupations are primarily engaged in the manipulation of symbols, either at a high intellectual content (such as the production of new knowledge) or at a more routine level (such as feeding computer cards into a card reader). And for other occupations, such as in personal service or manufacturing, information handling appears only in an ancillary fashion.’ Porat (1977, p 3)

¹¹ The OECD (1981) derived as classification of information occupations to allow international comparisons.

transformative sector to little over a quarter (27.3%), whilst the service sector had expanded greatly, to just under 70% of total employment. Yet within services there was also a shifting distribution of employment: personal service declined from 13% to 9%, distributive services remained roughly stable at around 20%, whilst social services (9% to 27%) and producer services (2.6% to 12%) grew considerably. The growth of producer services has certainly continued into the 1990s, as has the decline in manufacturing employment.¹²

Castells and Aoyama (1994) also divide employment into that related to goods handling and that related to information handling. For the UK, they found the proportion of people employed in information handling increased from less than a quarter (23.7%) in 1921 to almost half by 1990 (45.8%).¹³ It seems likely that in 2000 the proportion of persons employed in information handling exceeds half the workforce.

These are important changes in the nature of work, and in the structure of employment. Our concern here is with how these changes have ‘played out’ in the UK space, and particularly how the ‘new geography’ of services production relates to the ‘old geography’ of goods production (as well as how telecommunications have facilitated, and continue to facilitate, this evolving spatial division of labour). In considering this, we must also consider the importance of information communication technologies (ICTs) that are central to the ways in which many (if not most) service are now undertaken. There can be little doubt that the production and utilisation of ICTs is extremely important to the economy, and to economic growth. Although it is difficult to be precise, the sectors most closely associated with the production and/or use of ICTs (i.e., those that produce ICT goods, and those which use ICTs to provide ICT based services) are thought to directly contribute approximately 10% of GDP, and the total market size for ICT activities in the UK, including content, is approximately £80 billion (Tether et al., 2000). Moreover, the ‘core ICT sectors’ (including content) directly employ about 1.2 million people,¹⁴ whilst their indirect significance is greater still. Some estimate that just over half the economy is heavily dependent on ICTs (Tether et al., 2000).

¹² There is a substantial literature on the geography of producer services and their role in regional economic growth. See, for example: Begg (1993 – Regional Studies, Vol 27.8); Daniels (1991 – Progress in Human Geography; 1995 – Professional Geographer); Howells and Green (1988 – Avebury); and Marshall and Wood (1992 – Environment and Planning A).

¹³ See notes on data in Castells and Aoyama (1994). For the United States these proportions were 26.7% and 48.3%; for France 20.2% and 45.1%; for Germany 21.2% and 39.2%; and for Japan 23.2% and 33.4%.

¹⁴ ICTs are account for a substantial proportion of the total value of the stock market – in February 2000 approximately 35% of the FTSE-100 companies by value are ICT based firms. The UK, however, has few large ICT companies by world standards.

In relation to economic growth, it is thought that ICTs are responsible for as much as one third of economic growth (Tether et al., 2000).

The Role of Telecommunications in Effecting a Reconfigured Spatial Division of Labour

In the early 1970s, during the wave of interest sparked in services and information activities by Bell, Fuchs, Malchup and others, several commentators predicted that telecommunications would lead to a 'death of distance', of space, and thus of cities as the most significant economic places. Abler (1971), for example, considered that telecommunications would reduce the 'friction of distance' and thus the importance of place. Berry (1970) predicted a decline in the need for face-to-face contacts as contacts became more telemediated, in turn encouraging the out-migration of key workers.

This transformation has clearly not come about to the extent envisaged by Abler and Berry (although telecommunications have facilitated a reconfiguration of the spatial division of labour), and since the 1980s commentators have provided more subtle or complex analyses for the impact of information technologies on cities and the spatial division of labour. In a perceptive analysis, Gottman argued that communications technologies (and particularly the telephone) have worked in two directions, making it possible to both concentrate and to disperse economic activities, thus they have had a 'dual impact' on office location: 'First, it has freed the office from the previous necessity of locating next to the operations it directed; second it has helped to gather offices in large concentrations in special areas' (Gottman, 1983).

Explanations for the concentration of offices focus on the continued need for face-to-face interactions, and the significance of tacit knowledge. Howells (1996), for example, argues tacit knowledge remains difficult to share and transfer through codified information that is transmitted purely via electronic means. In another recent contribution, Thrift (1996) argues that the growth of supply of information available to information workers in the City of London probably led to more rather than less face-to-face interactions, because of the difficulties inherent in sifting through vast amounts of information and deciding which bits of information to trust or base decision on.

The issue of codifying tacit knowledge is non-trivial, and it is likely that geographical proximity will remain important to the sharing of knowledge (as well as to trust, friendship

and to the sifting of information - Blanc and Sierra, 1999, Roberts, 2000), thus encouraging localised learning (Maskell and Malmberg, 1999, p. 180). We should also not forget that humans are social creatures – relatively few of us desire to live on the top of a mountain away from everyone else (even if the problem of the physical distribution of goods and services to our *berghof* could be overcome).

Yet the above is not to say that the urban hierarchy and the spatial division of labour has remained unchanged. We, like others, perceive the transformation of places, and particularly cities, with the transition from a goods economy to a service or information economy. There is evidence of an increasing centralisation of high level financial and control functions, combined with a transformation of some of the old manufacturing spaces into (new) service processing spaces. This transformation has been facilitated by the development of telecommunications (and by rapid physical transport systems – particularly air transport).

To illustrate this transformation and spatial division of labour we first assess the distribution of information workers according to Porat's (1977) taxonomy, using data for the UK in 1981 and 1999. We then assess the geography of employment in the information communication technology sectors in the UK (in 1995). After this, we consider three activities in more detail – the geography of corporate control (and the emergence of World Cities), the geography of the 'content (or cultural) industries', and the geography of routine information processing, the later by looking at the particular case of 'call centres'. We conclude this section with an analysis of the emerging geography of the Internet.

The UK Geography of Knowledge, Information and Communications Work¹⁵

We begin with the changing geography of information (or knowledge) employment. We use Porat's (1977) taxonomy (of information producers, information processors, information distributors and information infrastructure workers) and compare the distribution of these workers in 1981 and 1999. Note that we would expect that many of the occupations Porat did not identify as information activities have increased their information intensity over time, such that they may now be considered information professions. For example, policemen and women are now much more information workers than they were in the 1970s. However, for the sake of comparisons we maintain Porat's original classification.

¹⁵ Note to authors – find Higgins (? - of Cardiff) report for the ESRC on the Concentration of Knowledge Firms.

The first notable result is the growing proportion of information workers. Hepworth et al. (1987) found, for 1981, 45% of Great Britain's workforce was engaged in 'information occupations'; our analysis suggests this increased to 51% by November 1999. But notable also is the spatial concentration of this work. Hepworth et al. (1987) found 58% of those employed (in 1981) in Greater London were information workers; whilst we found this has risen (in November 1999) to 64% - and reaches 81% in Central London. According to Hepworth et al., the proportion of employees (at 44%) in the North West region of the UK lagged slightly behind the national average in 1981, and we find this remained the case, although Greater Manchester had a slightly higher proportion of information workers than the national average.

Table 1
Information Workforce as a Proportion of Total Employment in
London, the South East and Greater Manchester and the North West in 1999

	Central London	All London	Rest SE	All SE	Gtr Man.	Rest NW	All NW	Great Britain
A	28%	18%	14%	17%	12%	11%	11%	12%
B	46%	38%	33%	36%	32%	29%	31%	31%
C	4%	6%	5%	5%	5%	5%	5%	5%
D	3%	3%	3%	3%	4%	3%	3%	3%
A-D	81%	64%	55%	61%	53%	48%	50%	51%

A – Information Producers; B – Information Processors;

C – Information Distributors; D – Information Infrastructure Workers

Source: Labour Force Survey, November, 1999 (N.B. A Preliminary Analysis)

For each of the individual categories of information workers, Hepworth et al. (1981) found London had (in 1981) more information workers than could be 'expected' on the basis of its share of total employment, whilst the 'Rest of the South East' also had at least as many information workers as could be 'expected' on this basis. The North West, meanwhile, had slightly fewer than 'expected' information producers and information processors.

Our analysis for November 1999 found¹⁶ London continued to have a greater than 'expected' share of information workers in each of the four categories, but, interestingly, London's concentration of 'information producers' had strengthened further, whilst its strength in

¹⁶ Note this is a preliminary analysis, and we will have to check through the findings for errors.

information infrastructure workers had declined. London's strength in information processors and information distributors diminished only slightly. Information producers include most of the information professionals (such as scientists, engineers, surveyors, accountants, lawyers, doctors and vets) and this would appear to support the hypothesis that London's position in the key activity of information production strengthened rather than weakened during the 1980s and 1990s.

Table 2
Composition of the Information Workforce in
London, the South East and North West in 1981 and 1999

	1981 R-Lon.	1999 R-Lon.	1981 R-RSE	1999 R-RSE	1981 R-NW	1999 R-NW	1999 R-GtrM
A	1.35	1.47	1.11	1.14	0.93	0.95	0.98
B	1.26	1.22	1.03	1.07	0.98	0.99	1.05
C	1.14	1.12	1.07	1.01	1.00	0.98	1.03
D	1.59	1.09	1.00	1.04	1.04	1.08	1.26
A-D	1.28	1.26	1.05	1.08	0.97	0.99	1.04

A – Information Producers; B – Information Processors;

C – Information Distributors; D – Information Infrastructure Workers

Lon – London; RSE – Rest of South East

NW – North West; GtrM – Greater Manchester

R - is relative to the national average – i.e., Region% / GB%

Source: 1981 data - Hepworth et al., 1987, p. 797, Table 2; 1999 data Labour Force Survey

Meanwhile, the relative position of the North West appears, by this analysis, to be little changed, although there has been a slight strengthening. With Greater Manchester in particular, we found the city had slightly fewer than 'expected' persons employed in information producing activities, and slightly more than expected in information processing, distribution, and substantially more than expected in information infrastructure work.

According to Hepworth et al. (1987, p. 801) 'The primacy of Greater London in the British information economy is highlighted [by the finding that] one fifth of Great Britain's information jobs are located in Greater London, compared with one eighth of non-information jobs. London and the South East together account for 38% of national information employment, but for only 29% of the non-information jobs.' Our analysis shows

that, by this measure, London's primacy remains, although it has declined slightly with the overall growth in information work. However, these analyses are based on simple 'head counts' that take no account of the significance of the workers – thus a call centre clerk has the same significance as a chief executive officer of a major corporation. Further analysis (presented below) suggests the concentration within London of information work weighted by power has actually increased.

Table 3
The Relative Specialisation by Employment of London,
the South East and North West in 1995

	London	All SE	NW	GB	R-Lon	R-RSE	R-SE	R-NW
Total Employment in 1995	3,192.5	7,149.8	2,321.9	21,438				
ICT Production Sectors	20.2	98.5	23.7	285	0.48	1.49	1.04	0.77
ICT Service Activities	94.5	214.0	34.2	401	1.58	1.61	1.60	0.79
Associated Service Activities	24.8	61.9	13.9	141	1.18	1.42	1.31	0.91
Content Activities	159.3	248.7	21.9	489	2.19	0.99	1.52	0.41
Banking, Finance and Insurance	943.7	1,704.4	347.1	3,657	1.73	1.13	1.40	0.88
Non-ICT Manufacturing	249.5	784.5	467.4	3,659	0.46	0.79	0.64	1.18
Non-ICT Private Services	884.5	1,996.5	679.2	6,007	0.99	1.00	1.00	1.04
Construction, Utilities, Agriculture	109.9	322.4	125.0	1,317	0.56	0.87	0.73	0.88
Public Sector	706.1	1,718.9	609.5	5,481	0.87	1.00	0.94	1.03

Employment in thousands – source, Annual Survey of Employment, 1995

Before that, however, we present an analysis of the location of work (by industry) related to the production and use of information communication technologies. This shows that in 1995 London had less than half the manufacturing employees (in ICT and non-ICT sectors) than that that could have been 'expected' on the basis of the city's share of total employment, whilst its share of employees in ICT services (telecommunications and computer services) and associated services¹⁷ exceeded that 'expected', as did its share of employment in banking and finance and in 'content activities' (such as television, radio, news agencies, recording and publishing). London also has almost as many non-ICT private service sector employees as could be expected on the basis of the city's share of total employment, but otherwise it lags in non-ICT related sectors.

¹⁷ Including the rental, repair and wholesale of office equipment and computers and electronic goods.

Interestingly, with the exception of content activities, the 'rest of the South East' region is also over-represented by employment in the ICT producing and using sectors, but also of interest is the fact that the 'rest of the South East' is relatively strong in terms of its employment in ICT production (i.e., manufacturing), such that, overall and in combination with London, the South East is slightly stronger than 'expected' in terms of its employment of ICT related workers.

Contrast this with the North West region – the region in which Manchester is the principal hub city. The North West has fewer than expected employees in all of the 'ICT related sectors', including the production (i.e., manufacturing) sectors.¹⁸ By contrast, the North West's only real relative strength is in the manufacture of non-ICT goods.

The Concentration of Corporate Control and the Creation of World Cities

The above analyses show that, on the basis of headcounts, London has a significant concentration of (higher level) information workers and workers in the key information communication technology sectors beyond that that could have been 'expected' on the basis of the city's size per se. This analysis, however, fails to convey the full significance of the centralised nature of power in the UK within the city of London.

London is the centre of Government, of finance and of corporate control. Here we concentrate on corporate control. London has long been centre of corporate control in the UK. Fothergill and Vincent (1985) found, in 1983, that 458 of the firms in the list of the 1,000 largest companies in the UK¹⁹ had their headquarters in London. A further 121 were headquartered in the Home Counties²⁰, and a further 60 in the other counties of the South East and East Anglia.²¹ Thus, 639 of the largest 1,000 firms were headquartered in or near London.

We have not yet replicated this analysis for the list of firms on the current list of Times 1,000 companies, but an analysis of the headquarters of firms in the FTSE-100 index²² shows

¹⁸ Amongst the sub-sectors that make up this broader sector, it is notable that the North West is only strong in the older technology activities – such as the production of insulated wire and cable – see table in appendix.

¹⁹ According to the Times 1,000 list for 1983.

²⁰ Kent, Surrey, Berkshire, Buckinghamshire, Hertfordshire and Essex.

²¹ East and West Sussex, Hampshire, Oxfordshire, Bedfordshire, Cambridgeshire, Norfolk and Suffolk.

²² In February 2000, prior to the entry of several 'dot.com' firms into the index.

London remains by far the most important city for corporate control in the UK. Of these 100 firms, 70 are headquartered in London, with a further 11 in the Home Counties. Only 15 of the FTSE-100 firms were headquartered outside the South East. This pattern suggests the location of head-offices has become even more focused on London. Thus, whilst the range of activities undertaken at the head office has often been reduced (Aksoy and Marshall, 1992), the highest level functions remain at the headquarters, and, in the UK, these are very likely to be located in or near London.

The concentration of corporate control together with the highest level financial functions has combined to increase further the significance of London, such that it is often described as a 'Global' or 'World City' (usually alongside New York, Tokyo and sometimes one or two other cities – like Los Angeles – Sassen, 1994). According to Sassen, through the centralisation of control and higher management functions, which is itself facilitated by information communication technologies: 'Global cities become sites of immense concentrations of economic power, while cities that were once major manufacturing centres suffer inordinate declines' (Sassen, 1994, p. 120). It is notable that whilst there is a growing literature on Global or World Cities, little attention appears to have been paid to the second order cities that may be being left behind.

The Concentration of Cultural and Content Industry Activities²³

Yet the concentration of power in London is not confined to economic (i.e., financial and corporate) and political power; it extends to power over the cultural industries and the media, activities which are central to the so called 'content industries'.

Employment in London accounts for about 15% of Great Britain's total employment, yet three quarters of those who work in news agencies, two thirds of those who work in motion picture productions, 57% of those who work in television and radio activities, 46% of those who work in the reproduction of recorded media, and 40% of those who work in advertising do so in London. In all of these activities, London has 2.5 times or more people employed than could be 'expected' on the basis of its share of total employment; in news agency activities the city has five times its 'expected' number of workers.

²³ Note to authors – see Dave Murphy (UMIST) about Media Concentration.

Contrast that with the North West region, which accounts for about 11% of Great Britain's total employment. Only in advertising does the North West have a greater share of persons employed than that that might be 'expected' on the basis of its overall share of employment. The North West has less than half its 'expected' share of people employed in radio and television, for example.

Again, however, this analysis is based on a simple headcount; it takes no account of the type of work done by the people employed in the various regions. Within these media and cultural sectors, London is overwhelmingly the place where the key control personnel are situated. As Christopher Dunkley of the Financial Times said recently of the power structure in British television:

Television [in the UK] ... is run by a tight-knit band of metropolitan trendies. Their backgrounds, like Mr Blair's tend to include a privileged education, life and friends in Islington (or Hampstead or Dulwich)²⁴ ... and bands of acolytes hanging on their every word. Of course, you can find television people who come from Manchester or Norwich or Swansea, but by the time they have acquired any clout within the industry, they have abandoned and forgotten any identity with their roots that they ever had. (Christopher Dunkley, Financial Times, 14th June 2000, p. 20)

It has not always been thus. The regions and provincial cities, and Manchester in particular, previously had much more significant local media and cultural industry activities, but there has been a long term decline of media activities in the major provincial cities of (northern) England.²⁵ To illustrate this point, we consider two of Manchester's (and the North West's) primary media assets – The (Manchester) Guardian and Granada Television.

The Manchester Guardian, founded in 1821, is no more. It is now *The Guardian*, having dropped 'Manchester' in 1959 and moved its editorial offices to London in 1964. According to the paper's own web-site, it moved to London in order to become a national paper. Prior to this move its Manchester base had given rise to 'eccentric virtues' and 'peculiar

²⁴ Places within London.

²⁵ It is no accident that Scotland (and Edinburgh and Glasgow in particular) retains a significant media sector. There is a debate about the extent to which Scotland should have its own television news service, separate from that provided by the BBC (from London).

idiosyncrasies' - such as 'the absence of [coverage of] horse racing' (!).²⁶ Ironically, the people of Manchester subsidised this flight to London, with the city's (profitably) evening newspaper, the *Manchester Evening News*, subsidising the loss-making *Guardian*.²⁷ By 2000 the *Guardian* had become so London centric a newspaper that it barely commented on the near doubling of the standard rail fare between its old home city and the Capital.

Our second concern is with the Granada television company. Granada Television is the oldest of the UK's independent and regionally organised television companies. It is based in Manchester. The company now broadcasts to 47% of the UK population through its four (regional) licences (which are regionally based). Its first licence was for the North West region, but in 1994 it acquired London Weekend Television, the licence holder for the London area at weekends, and in 1997 it acquired Yorkshire Television, which had itself previously acquired TyneTeles Television. This series of acquisitions reflects a process of consolidation in the UK's independent television industry. Carlton Communications, a London based firm, has also been allowed to acquire several of the regional independent television licences, as has United News and Media, which is also based in London. Carlton and United are looking to take this consolidation further, by merging. Granada will not stand idly by, and has itself sought to merge with one or other of Carlton or United (and perhaps ultimately both). Granada and Carlton are already 50:50 collaborators in the new ON-Digital television venture - the world's first digital terrestrial television service. These developments may be blocked in the short run by the competition authorities, but it seems unlikely that in the long run they will not be allowed to proceed, particularly given the expansion of satellite (BSkyB)²⁸ and cable television (NTL, Telewest).²⁹ The result will be a single independent television (ITV) company in the UK, and in all likelihood this will be based in London or the South East.³⁰ The North West will become just another outpost, where 'idiosyncratic programmes' with 'eccentric virtues' - such as *Coronation Street* - are made.

²⁶ In comparison to the other (London based) papers on Fleet Street, however, the *Guardian's* eccentric virtues often seemed to be outweighed by its peculiar idiosyncrasies: the absence of horse racing, high-handed moral posturing and woolly leaders. (From *The Guardian's* own web-site - see <http://www.guardianunlimited.co.uk/guardian/article/0,5814,211600,00.htm>.)

²⁷ This is part of a wider trend - the loss of regional newspapers and an increasingly London centric media

²⁸ Again, London based.

²⁹ Head offices in Winchester, Hampshire and Woking, Surrey respectively.

³⁰ It is doubtful whether the spatial aspects of this consolidation would be within the terms of reference of an inquiry by the competition authorities.

The Decentralisation of Routine Information Processing - The Case of Call Centres

We have argued that the high level activities and functions associated with the information (knowledge and communications) economy are highly centralised (and increasingly so) in and around London. But equally there has been a decentralisation of low level, routine activities, which have exploited the pools of labour available in the large, formerly production based, cities of the north, including Manchester (See Figure 1). We illustrate this development by considering the recent expansion of call centres.

Telecommunications and the Evolving Spatial Division of Information Labour

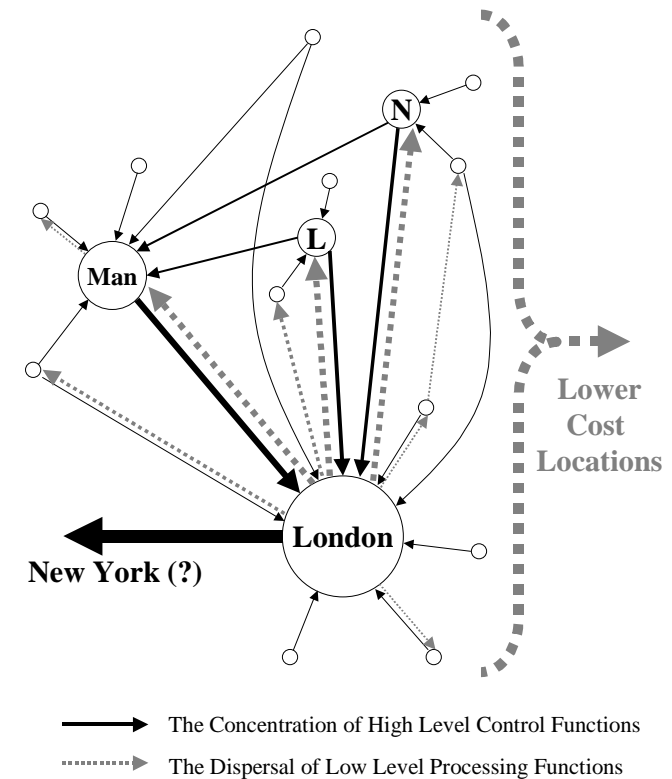


Figure 1

Call centres are a recent phenomenon, being introduced in the financial services sector in tandem with the closure of high street bank branches (Bristow et al., 2000). They have since diversified into a number of service industries, including retailing. They are dedicated offices where the work revolves around the computer assisted answering of telephone calls, normally for the provision of routine customer service information. According to Bristow et al. (2000) approximately 250,000 people worked in call centres in the UK in 1998 (around 1% of the workforce) and this was forecast to at least double by 2002.

By decentralising their routine operations to call centre, large firms are exploiting the pools of relatively well educated female labour in the northern industrial cities. Richardson and Marshall (1996), for example, found that 40% of the call centre employees in their Newcastle based study had A levels (or higher qualifications). Interestingly, this closely parallels the A-level ('equivalents', or higher educational qualifications) profile of the whole of the North East at 40.1% (Regional Trends 1999); whilst this proportion is smaller in Newcastle itself. This supports the contention that by locating call centres in the northern cities firms are able to gain relatively well educated labour at a much lower cost than in a central location in or around London. Not only do they have to pay the workers less, but they achieve much lower staff turnover into the bargain. For example, according to Bristow et al. (2000) when British Airways moved part of its reservation system from London to Newcastle it saved between £3,000 and £4,000 per employee, despite paying the workers in Newcastle slightly more than the local 'going rate' in order to attract better quality workers (to a job with little or no career prospects due to the lack of managerial positions). They also benefited from much reduced staff turnover by moving some operations to Glasgow: 'In London, [staff] turnover had been as high as 35% per annum, whereas in Glasgow it was as low as 3%-4%' (Bristow et al., 2000, p. 522)

But the use of call centres, and organisation of work within them, appears to be much more cynical than the simple movement of an activity from a high cost location to a low cost location would suggest. For many firms are using the technology to effectively make the pools of labour in the different cities compete against each other, and to reduce almost to the point of elimination the chances that the labour force will take collective industrial action. Thus, by using labour on temporary contracts and by setting up several small call centre in several different cities, firms are able to instil competition between the available labour pools in Newcastle, Leeds, Manchester, Liverpool, Glasgow and Belfast. This reduces costs, which

is reinforced by local pay bargaining, a work practice which is aimed at resisting collective action. Even if strike action is taken by one call centre (which is unlikely if the workers are on temporary contracts), the company has the others to fall back on and thus never becomes too dependent on one particular location. As Bristow et al. state: 'For many call centre operators, the risk of one call centre being immobilised is a major factor in choosing more than one call centre site' (Bristow et al., 2000, p. 522).

What is even worse is that the local authorities and regional economic development companies seem to see nothing amiss with the development of call centres in their locations and often actively encourage inward investments in them. For example, Stockport, the metropolitan borough on the south-east fringe of Greater Manchester identifies (and announces on its web-site) 'call centres' as one of the 'key sectors' in which it is seeking investment. The web-site states:³¹

Approximately 2000 people are employed in Stockport's call centre sector. Companies view the borough's proximity to Manchester and the motorway network and the skilled local workforce to be major factors in choosing Stockport as a call centre location. Key areas of activity are in financial services and customer enquiry handling. Companies include Ikea, The Co-operative Bank, AA, RAC, Hotpoint and British Gas. Prestigious purpose built office premises are available across Stockport, including the new Cheadle Royal Business Park, the refurbished Infirmary building and Cheadle Place close to junction 2 of the M60. Opportunities are also available in the town centre area and design and build options are available across the borough. Rentals are competitively priced at approximately £5 to £12 per square foot.

Another example is Glasgow, which (almost) styles itself the call centre capital of Europe. Glasgow's Development Company (GDA)³² advertises the city as a place to establish call centre on its web site.³³ This states:

³¹ <http://www.stockport.gov.uk/newsmbc/council/industry/sectors.htm>

³² Glasgow Development Company was established in April 1991 as a Local Enterprise Company (LEC) under the terms of the Enterprise and New Towns (Scotland) Act 1990. It is a company limited by guarantee, and is a 'quango' – a non-elected largely autonomous state development company – which the Thatcher and Major governments were so keen on, and which the Blair government has not been too quick to remove..

³³ <http://www.glasgowdevelopment.co.uk/Locating/1g-call.htm>

Glasgow has been placed at the top of the league as the most important call centre location in Europe. It currently employs some 9,000 people across a wide range of economic activity in some 65 companies. This number is set to increase as more and more international companies discover Glasgow's many benefits - the city's advanced communications and transport infrastructure, high quality city centre office accommodation and an abundant and skilled workforce.

This state owned company is also involved in establishing qualification standards for call centre workers through a 'Talking Jobs Initiative'. However, it appears they are doing this primarily in the interests of the employers rather than the employees.³⁴

GDA's Talking Jobs campaign, introduced to support this development, was designed to raise awareness throughout Central Scotland of the job opportunities in this sector. It has had significant success in attracting new people into the sector Glasgow is firmly established in this dynamic high growth industry and is well placed to adapt successfully to any future changes.

There seems little doubt that 'places' (such as Stockport and Glasgow) are in competition for this 'footloose' investment, but a delicious irony is that the Glasgow web-site quotes in its favour a businessman who has set up a call centre in Glasgow as saying: 'Geography is a non-issue.'³⁵

The indirect state sponsorship of call centres through disjointed local initiative might not be so bad, but it is not at all clear how long this phenomenon will sustain. It is already possible to fill out forms directly over the Internet (such as when seeking an insurance quote), thus replacing the activities formerly done by people in some call centres. Thrift also doubts how

³⁴ The web-site reveals the development company is also involved with establishing qualification standards for Call Centre workers, but it appears they are doing this in the interests of the employers rather than for the employees. It states: 'The GDA and the Call Centre Association joined forces with the Scottish Qualifications Authority to initiate a Professional Development Award for Call Centre Operators aimed at introducing national performance standards for the industry. At the same time, working closely with leading players in the sector, GDA and the CCA have developed training programmes tailored to the needs of companies. Scottish Qualifications Authority officials worked with six established call centre companies to develop the performance standards. Based on existing vocational qualifications for customer care, the standards reflect the special skills required by call centre companies. These standards have proved so successful that they are now available to all call centres as a Professional Development Award which fits in with the existing company monitoring arrangements and links with SVQs/NVQs in customer services at levels II and III. More recently a second Professional Development Award Certificate in Introductory Call Centre Skills has been introduced to help new entrants build up the skills needed to work in a call centre environment'.

³⁵ David Farquhar - Managing Director, Hugur International, and Icelandic Software Company.

long this activity will remain in the peripheral cities of the UK, due to the seeking out of even lower cost locations and due to advances in technology:

'[I]t will not be long before a considerable amount of current call centre activity is run by voice-activated software with obvious consequences – one recent estimate is that 40% of current call centre employment will disappear over the next ten years – and it would not be surprising to see some of the financial call centre activity that is left being displaced to countries like India as banks and other financial institutions pursue lower costs' (Thrift, 2000, p. 382)

It is very likely that when the labour process is replaced by a machine the machine will be recentralised to be located near the highest level functions in the company (being looked after by a few highly paid workers). For example, American Express has centralised its computer based activities for the whole world in New York.

*The Internet – Dissolving Space or Reinforcing the Existing Hierarchy?*³⁶

Finally in this section we turn to the Internet. Interestingly, popular discussion seems to assume immediately that the Internet will lead to a death of distance, or space and of place – a conceptualisation that has a strong similarity with the way in which writers such as Abler and Berry perceived telecommunications would impact on economic geography. It is of course far too early to tell how the Internet will be used and so affect economic geography. Moreover, we stress that whatever the eventual geography of the Internet (which includes the geography of production and consumption and not just the geography of the physical network of technologies) there will be nothing inevitable about the outcome. There is a real danger of passively accepting a rhetoric of technological determinism here – but we discuss that further in the final section.

Contrary to most popular opinion, the emerging geography of the Internet appears, at least at the time being, to be reinforcing rather than reducing spatial inequalities, particularly in terms of the production of Internet technologies and content, but also in terms consumption. The existing studies have focused on the United States, where the Internet is most developed.

The Internet is reinforcing the economic and intellectual hegemony of a handful of states and regions in the United States. ... 50% of all US Internet hosts are located in

³⁶ See <http://www.telecities.org/telset.htm>; <http://www.digitalcities.org.uk/>; <http://www.infocities.g-ming.net.uk/>

just five states: California, Massachusetts, New York, Texas, and Virginia. And within these states, Internet hosts are densely concentrated in a small number of metropolitan regions. ... [Thus, a] clear hierarchy in the concentration of Internet hosts in major metropolitan regions in the United States. (Moss and Townsend, 1996).³⁷

Since the introduction of the World Wide Web in 1993 [and until January 1997], the number of domains per capita in New York City has grown nearly 10 times more quickly than in the nation as a whole. (Moss and Townsend, 1997).

In relation to Internet content provision, Zook (2000) finds:

The emerging business of Internet content creation, which is best prepared to take advantage of the space-transcending ability of the Internet, exhibits much of the traditional unevenness that has characterized urban and economic development throughout history. The fact that information and content can be easily and widely distributed is often mistaken for an indication that the organization of this business is also widely distributed. ... [In fact] three regions – San Francisco, New York, and Los Angeles – appear as leading centres for Internet content in the United States. (Zook, 2000, p. 411)

Zook (2000) also finds a stronger spatial connection between Internet content and information-intensive industries than between Internet content and the industries providing the computer and telecommunications technologies necessary for the Internet to operate.

The geography of the Internet is unstable and undergoing change. Its early geography reflected the geography of its original users - the military and academia – particularly within the United States. With the introduction of the World Wide Web and the increasing commercialisation of the Internet, activity has shifted to those places with existing specialisations in finance, high technology and the media (Kellerman, 2000). In so doing, the

³⁷ Furthermore, 90% of all Internet hosts are in 21 states. ... More than half of the fifty states do not have a substantial number of Internet hosts. ... The 13 eastern seaboard states and California together have almost half of the nation's Internet hosts. ... After the top five regions ... there is a second tier of regions that includes cities like Pittsburgh, Chicago, Minneapolis-St. Paul, Charlotte, North Carolina, Atlanta, Georgia, Dallas and Austin, Texas, Boulder, Colorado, Salt Lake City, Utah, and Seattle, Washington. There is a significant dearth of Internet hosts in the southern states, in parts of New England, and in the states of the Great Plains [and] some of the nation's major cities, like Houston, Miami, Detroit, and New Orleans are not major participants in the Internet.

Internet may be being used as a device to further centralise control over globalising markets, and systems of production.

Little research appears to have been published on the geography of the Internet in the UK or Europe, although Kellerman (2000) cites research that found London – ‘and particularly Central London’ – was the fourth ranked Internet centre after the three leading US sites.³⁸

These approaches (based around counting domain names or host computers by location) to assessing the geography of the Internet are interesting, yet crude. We have seen earlier that merely counting the number of persons employed in an industry does not necessarily give an objective view of the significance of that employment. Similarly, the geography of the Internet cannot be described by counting the infrastructure of the network alone. The way in which the Internet will be used by business will almost certainly have profound geographical implications, as well as economic and social implications. It is not the place here to predict what these might be, but a likely outcome is the increasing concentration of power coupled with increasing automation of routine tasks and international and intercontinental flows of information which may well mean that labour pools in Manchester are increasingly in direct competition with labour pools in the third world.

The Information Economy – An Active or Passive Role for Government?

Joseph Schumpeter is widely interpreted as being the champion of innovation and the role of the entrepreneur in challenging the existing system and bringing about creative destruction. There can be no doubt that the telephone has been one of the most profound innovations,³⁹ whilst it is very likely that whatever the way in which the Internet comes to be used it will have profound impacts on the economy, on society, and on the spatial division of production and consumption. We began this paper with a concern for the position of Manchester, or rather her people, in the coming information age. Manchester, it seems, is on the fringe of the information age, which is focused on London and other World Cities. Manchester appears lame and in need of assistance – the irony being that this ‘great city’ is a product of one era of laissez faire capitalism but is now increasingly a victim of another.

³⁸ The references cited are: Dodge and Shioda (1999 – forthcoming) – a chapter in Wheeler, J. O. et al (eds.) Cities in the Telecommunications Age – Routledge, and Zook (1999) – paper presented at the conference on Cities in the Global Information Society, Newcastle, UK.

³⁹ We do not mean this is a technological determinist sense – rather as a shorthand for the way in which the telephone has come to be used by economy and society.

Assessments of information technology are normally characterised by statements about the awesome development of these technologies; Moore's law is often cited (e.g., Gray, 1998 – Turing lecture).⁴⁰ This states that: performance to price doubles every 18 months, and improves 100 times in a decade. Thus progress in next 18 months will equal all previous progress. New storage will equal all old storage (ever), and new processing will equal all previous processing. Separately, the awesome growth in bandwidth (now doubling every 8 months) is also cited. Although we do not doubt these 'facts', we also believe they are being used as a rhetorical device by 'techies' and businessmen keen to invest in these technologies but also to keep amateurs out, including governments. This community likes to foster the image of the information technology revolution as a rapidly moving tidal wave over which society has no control – this creates a sense of inevitability about the magnitude if not the form of these developments. The 'certain' magnitude of the impact means governments cannot afford to overlook these technologies, yet the uncertainty as to their form means that only the bravest risk takers should ride this wave, and therefore this risk-taking is something that should be left 'to the market'.

Government, at least the UK Government seems to have bought into this perspective. Although the Blair government 'is committed to making the UK the best place in the world for e-commerce' its approach is essentially to set the framework and let business take all the risks. This is illustrated by the perspective of one of the civil servants at the heart of e-policymaking. At a recent conference on the future of e-commerce, Chris Parker, a Director in the Office of the e-Envoy, the government office charged with achieving Blair's vision, gave his 'personal view' of the future of e-commerce.⁴¹ This was: 'Somethings will change; Somethings will stay the same; Big implications for business, for Government, and for the research community'. None of these were illuminated on any further. Parker also used the analogy that we are 'moving into the second half of the chess board'⁴² as far as information technologies are concerned – that is the possibility space is infinite. His view, and that of the

⁴⁰ <http://Research.Microsoft.com/~Gray>

⁴¹ 'The Future of Consumer e-Commerce', seminar held on the 15th and 16th of June 2000, Consumers Association, London.

⁴² This is the story of a Chinese civil servant's request on being granted a prize for some service to the Emperor. He says: 'All I ask, Emperor, is that you grant me one grain of rice on the first square of the chess board, two on the second, four and the third and so on.' The Emperor, considering this a modest request grants it instantly. The point is that the chess board has 64 squares – so that, by agreeing to this 'modest' request, the Emperor had agreed to pay 18,446,744,073,709,600,000 grains of rice. Needless to say, the clever civil servant paid an even higher price – indeed the ultimate price. In the current context the relevance of the story is that by the 33rd square (the first in the second half of the 'chess board'), the amount of rice is, at over 4 billion grains, so large that it is effectively incalculable.

Government, is clear – government should not directly interfere with the process of market selection. The ghost of the Concorde programme looms large.

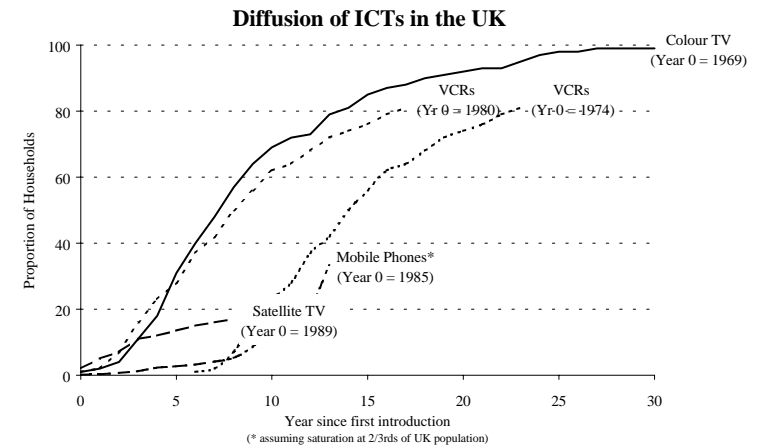


Figure 2 - Source: Tether et al., 2000

Yet there are two major problems with this 'wait and see' perspective.

Firstly, it is very likely, if history is any guide, that the new forms of information technology will take a great deal longer to diffuse than could be supposed from all the hype. The diffusion of telephones in the City of London took a remarkably long time (Thrift, 1996), despite the 'obvious advantages' of that technology over the existing messenger-boy system. And most information technologies used in the home have also diffused over decades rather than years (Tether et al., 2000). There is therefore likely to be plenty of time to take action.

Secondly, there is a big difference in our minds between governments getting directly involved in the actual processes of production (as happened with Concorde) or market selection, and the current Government's position which is merely seeking to provide the framing conditions whilst abstaining from any overt involvement in shaping the use of information technology in society, not least across space. This is particularly the case as, perhaps inadvertently, government policies such as deregulation (and the removal of universal service guarantees) actually lead to the focusing of investments in particular places (for particular types of people). One example is the development of digital cable television. Telewest, one of the two major companies (which again have regional licenses) admits that

its service will only be available to 70% of households within its licensed region. Rural areas are likely to miss out, but so too are inner city areas of extreme deprivation.⁴³

Whilst we agree with the Schumpeterian perspective that in most cases innovation should be left to businessmen and ‘the market’, there are instances in which the potential impact of innovations (shaped by private decisions) will be so huge that they cannot be left to the market alone. Thus, just as Clemenceau⁴⁴ considered war to be ‘too serious a matter to entrust to military men’, so we consider the emerging information economy to be too serious a matter to entrust entirely to businessmen and to the vagaries of ‘the market’.

In any case government must relate to space. What does it mean when the Blair government declares it wants Britain to be the leading site for e-commerce in the world? And, assuming this is not just rhetoric, how will success be judged? For example, average revenues per household might be one criteria, but this may vary tremendously over space – perhaps being very high in some affluent suburbs of London and very low in some deprived inner city areas of Manchester, Liverpool and Leeds. The measurement of success is clearly central here.

It follows from this that the measurement of competitiveness in e-commerce (or anything else) is partially a matter of spatial levels. The success of the UK may not be mirrored by success in places like Manchester. Despite the continuity of space, the different spatial units (or levels) of government tend to concern themselves with different spatial levels of competition. Thus the UK is ‘in competition’ with Germany, France, Italy, etc, and competitiveness is benchmarked against these. Yet, within the UK the competitiveness of London as the country’s primary hub city is particularly important (as is the success of the major firms, such as Vodafone Airtouch, which base their key functions in and around London). The UK government must therefore concern itself with the future of London and London based firms, particularly as the future of London may not be secure in the globalising information age. Thrift (2000), for example, has argued that, in the longer term (5 to 10 years hence), London may, as a financial centre, face increasing competition from New York, partially because ‘new forms of communication both make it easier for direct competition [between places] and also make it easier to compete around the world from the United States, without needing to use other financial centres’ (Thrift, 2000, p. 382).

⁴³ See similar patterns for the diffusion of US cable television; Brown et al. (1974)

⁴⁴ Quoted by J. Hampden Jackson in Clemenceau and the Third Republic

Table 4
Spatial Levels of Competition and Government – Manchester as a ‘Competitive’ Place

Scale	Manchester as Place	Rival ‘Places’ (e.g.)	Levels of Government
Local	Manchester (district)	Salford, Trafford, Stockport, etc.	Local Government (democratic)
City	Greater Manchester	Liverpool, Leeds, Newcastle, Glasgow	
Region	North West (Manchester as hub)	South East England, West Midlands, Scotland	Agencies (non-democratic – except Scotland (& Wales))
National	United Kingdom (Manchester as secondary hub)	Germany, France, Italy	Central Government
Supra-National	European Union	USA, Japan	European Union

Because of its physical location in London, and the primacy of London within the UK’s urban system, we contend that the Government is in effect over concerned about the future of London, whilst the major northern cities are being neglected.⁴⁵ Moreover, the centralisation of power in London has diminished these cities abilities to tackle their own problems. The lack of resources available severely restricts the ability of cities to take action without external assistance, and it is notable that Manchester’s Information Society initiatives have been heavily dependent on money from the European Union’s regional development funds. It is also notable that the lack of a citywide level of government since the abolition (in 1986) of the Greater Manchester Council causes problems of co-ordination (Gibbs et al., 2000). Indeed, worse than that, the existing system actually encourages competition within and between the northern cities. In a recent talk at our institute an economic planning officer from Manchester city council repeatedly commented on the city’s initiatives with respect to the information age by benchmarking these against the progress in other cities (like Liverpool and Leeds) and even boroughs within Greater Manchester (such as Salford or Stockport).

⁴⁵ This is not helped by a system of representation which treats the northern cities as certain to return Labour members of parliament and therefore outside of the contested political battlegrounds of ‘middle England’. In a situation where the government has a large majority, the representatives of these cities are reduced to lobby fodder. Interestingly, Howells (1909) notes that Manchester ‘had no representation in Parliament from Cromwell’s time to Victoria’s.’ In the late 20th Century, and early 21st, it seems Manchester and the other great northern cities become effectively disenfranchised by an outdated political system (which has its origins long before the first industrial revolution).

The message was unmistakable; at the level of local government Manchester city council sees the city as being in competition with its neighbouring boroughs and 'sister' peripheral cities. This is incredible, yet could be countered by a coherent decentralisation of power within the UK.

Ultimately it is impossible to predict with a high degree of certainty the future of Manchester or any other place within the future information economy. The available evidence suggests there will be an increasing concentration of power (perhaps even moving from a few World Cities, including London, to just one – New York?) rather than a dispersal of economic activities (other than the most routine work). Yet in the short run the future of Manchester may not be too bleak (at least for the majority of its citizens). The city of Manchester is currently enjoying something of a boom in its office and housing markets, perhaps reflecting a concentration of servicing activities for the North of England within the city. Thus northern cities like Leeds and Newcastle may be losing functions which are being centralised in Manchester as well as London. At this stage the greater worry may not be with the future of Manchester, but with the mill-towns that grew up around the city as a result of the first industrial revolution. The future for Rochdale, for example, does not look bright.

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Appendix Table 1
Porat's Classification of Information Occupations

	Category of Information Worker	Example
A	Information Producers	
A1	Scientific and Technical	Chemists, Engineers
A2	Market Search and Co-ordination	Sales People and Buyers
A3	Information Gatherers	Surveyors, Quality Inspectors
A4	Consultative Services	Accountants, Lawyers
A5	Health Related Consultative Services	Doctors, Vets
B	Information Processors	
B1	Administrative and Managerial – Government	Senior Civil Servants
B2	Administrative and Managerial - Corporate	Production Managers
B3	Managers and Proprietors	
B4	Process Control – Supervisory	Office Supervisors
B5	Process Control – Foremen	Factory Foremen and Forewomen
B6	Clerical and Related	Clerks and Bank Tellers
C	Information Distributors	
C1	Educators	Teachers and Lecturers
C2	Public Information Disseminators	Librarians, Archivists
C3	Communications Workers	Newspaper Editors, TV Directors
D	Information Infrastructure	
D1	Printing and Publishing	
D2	Information Machine Workers	Computer Operators, Printing Pressmen
D3	Postal and Telecommunications	Mail Carriers and Telegraph Operators

Appendix Table 2
Composition of the Information Workforce in London, the South East and North West in 1981

	GB	London	SE	NW	R-Lon	R-SE	R-NW
A	10.6	14.3	11.8	9.9	1.35	1.11	0.93
A1	2.0	2.3	2.7	1.9	1.15	1.35	0.95
A2	2.9	4.2	3.2	2.6	1.45	1.10	0.90
A3	1.7	1.6	1.6	1.8	0.94	0.94	1.06
A4	2.8	4.9	3.0	2.4	1.75	1.07	0.86
A5	1.2	1.4	1.2	1.3	1.17	1.00	1.08
B	27.6	34.7	28.5	27.0	1.26	1.03	0.98
B1	0.9	1.5	0.9	0.7	1.67	1.00	0.78
B2	4.4	5.8	4.9	4.1	1.32	1.11	0.93
B3	4.5	4.3	4.6	4.8	0.96	1.02	1.07
B4	1.4	1.9	1.6	1.3	1.36	1.14	0.93
B5	2.4	1.7	2.1	2.6	0.71	0.88	1.08
B6	13.9	19.5	14.5	13.5	1.40	1.04	0.97
C	4.2	4.8	4.5	4.2	1.14	1.07	1.00
C1	3.4	2.9	3.6	3.6	0.85	1.06	1.06
C2	0.1	0.2	0.1	0.1	2.00	1.00	1.00
C3	0.7	1.6	0.7	0.5	2.29	1.00	0.71
D	2.7	4.3	2.7	2.8	1.59	1.00	1.04
D1	0.7	0.9	0.7	0.9	1.29	1.00	1.29
D2	1.4	2.0	1.4	1.3	1.43	1.00	0.93
D3	0.7	1.3	0.6	0.6	1.86	0.86	0.86
All	45.2	58.0	47.4	43.9	1.28	1.05	0.97

R is relative to the national average – i.e., Region-% / GB-%

Source: Hepworth et al., 1987, p. 797, Table 2

Appendix Table 3
Composition of the Information Workforce in London, the South East and North West in November 1999

	Central London		Greater Manchester		NW	GB	R-Central London		R-SE	R-SE	R-Gtr-Man	R-RNW	R-NW
	All	London	All	SE			Rest	London					
A	683	1429	1645	3757	320	7417	2.33	1.47	1.14	1.39	0.98	0.93	0.95
A1	100	233	511	844	70	1792	1.41	0.99	1.46	1.29	0.88	1.06	0.99
A2	149	280	284	713	89	1509	2.50	1.42	0.97	1.29	1.34	0.97	1.12
A3	31	97	150	278	32	792	0.99	0.94	0.97	0.96	0.91	0.86	0.89
A4	329	569	505	1403	85	2268	3.67	1.92	1.14	1.69	0.85	0.85	0.85
A5/A6	74	250	195	519	44	1056	1.77	1.81	0.95	1.35	0.94	0.83	0.88
B	1126	3023	3932	8081	880	18921	1.51	1.22	1.07	1.17	1.05	0.95	0.99
B1	75	194	192	461	62	1332	1.43	1.11	0.74	0.95	1.05	1.33	1.22
B2	515	1246	1419	3180	294	6524	2.00	1.46	1.12	1.33	1.02	0.92	0.96
B3	40	154	302	496	43	1531	0.66	0.77	1.01	0.89	0.64	0.85	0.76
B4	63	249	376	688	100	1779	0.90	1.07	1.08	1.06	1.27	1.03	1.13
B5	14	48	91	153	15	320	1.11	1.15	1.46	1.31	1.06	0.61	0.80
B6	419	1132	1552	3103	366	7435	1.43	1.16	1.07	1.14	1.11	0.93	1.01
C	92	477	644	1213	148	3269	0.71	1.12	1.01	1.02	1.03	0.95	0.98
C1	57	374	586	1017	139	2948	0.49	0.97	1.02	0.94	1.07	0.98	1.02
C3	35	103	58	196	9	321	2.76	2.45	0.93	1.67	0.63	0.61	0.62
D	65	247	352	664	97	1738	0.95	1.09	1.04	1.05	1.26	0.95	1.08
D1	9	44	59	112	16	307	0.74	1.10	0.99	1.00	1.18	0.74	0.93
D2	27	83	107	217	40	586	1.17	1.08	0.94	1.01	1.55	1.09	1.28
D3	29	120	186	335	41	845	0.87	1.09	1.13	1.09	1.10	0.93	1.00
A - D	1966	5176	6573	13715	1445	31345	1.59	1.26	1.08	1.20	1.04	0.94	0.99
Other	464	2863	5414	8741	1271	30154	0.39	0.73	0.92	0.79	0.95	1.06	1.01
Total	2430	8039	11987	22456	2716	6488	61499						

Labour Force Survey – November, 1999 (This is a preliminary analysis – i.e., needs rechecking)

Appendix Table 4
The Relative Specialisation by Employment of London,
the South East and North West in 1995

	% London	% RSE	% All SE	% N- West	R - London	R - RSE	R - All SE	R - NW
Total Employment	14.9%	18.5%	33.4%	10.8%				
Manufacturing	6.8%	15.5%	22.4%	12.4%	0.46	0.84	0.67	1.15
Public Admin., Education and Health	12.9%	18.5%	31.4%	11.1%	0.87	1.00	0.94	1.03
Construction	11.0%	15.2%	26.3%	11.0%	0.74	0.83	0.79	1.02
Transport & Communications	20.8%	19.8%	40.6%	10.7%	1.40	1.07	1.22	0.99
Other Service Industries	21.3%	16.6%	37.9%	10.6%	1.43	0.90	1.14	0.98
Distribution, Hotels and Restaurants	14.5%	19.7%	34.2%	10.6%	0.97	1.07	1.02	0.98
Banking, Finance and Insurance	25.8%	20.8%	46.6%	9.5%	1.73	1.13	1.40	0.88
Energy and Water Supply	7.7%	14.9%	22.6%	8.3%	0.52	0.81	0.68	0.76
Agriculture, Forestry and Fishing	1.1%	19.8%	20.8%	6.1%	0.07	1.07	0.62	0.56
Insulated Wire and Cable	10.3%	9.7%	20.0%	16.9%	0.69	0.53	0.60	1.56
TV & Radio Transmitters (322)	6.7%	30.6%	37.3%	12.5%	0.45	1.66	1.12	1.16
Advertising (744)	39.5%	21.7%	61.2%	12.1%	2.65	1.18	1.83	1.12
Repair of Electrical H/hold Goods (5272)	10.5%	19.7%	30.3%	11.8%	0.71	1.07	0.91	1.09
Photographic Activities (7481)	22.1%	18.6%	40.7%	10.6%	1.48	1.01	1.22	0.97
Retail Sale of Electrical H/hold Appliances (5245)	16.0%	22.7%	38.7%	10.4%	1.07	1.23	1.16	0.96
News Agency Activities	75.9%	3.8%	79.7%	10.1%	5.10	0.21	2.39	0.94
Industrial Process Control Equipment (333)	3.4%	36.4%	39.8%	9.1%	0.23	1.97	1.19	0.84
Electronic Valves & Tubes, etc. (321)	5.0%	18.7%	23.7%	9.1%	0.34	1.01	0.71	0.84
Wholesale of Office Machinery & Equipment (5164)	20.1%	32.1%	52.3%	8.9%	1.35	1.74	1.57	0.82
Telecommunications (642)	24.4%	24.6%	49.0%	8.9%	1.64	1.33	1.47	0.82
Instruments and Appliances for Measuring (332)	8.5%	35.2%	43.8%	8.4%	0.57	1.91	1.31	0.78
Renting of Office Machinery & Equipment (7133)	25.0%	25.0%	50.0%	8.3%	1.68	1.35	1.50	0.77
Computer and Related (Service) Activities (72)	22.8%	34.3%	57.1%	8.2%	1.53	1.86	1.71	0.76
Radio and TV Activities (922)	57.5%	6.9%	64.4%	5.0%	3.86	0.37	1.93	0.46
Computers and Other IPE (3002)	8.8%	30.8%	39.6%	5.0%	0.59	1.67	1.19	0.46
TV & Radio Receivers (323)	3.9%	23.0%	26.9%	3.3%	0.26	1.25	0.81	0.30
Office Equipment (3001)	7.1%	31.3%	38.4%	3.0%	0.47	1.70	1.15	0.28
Motion Picture Production (9211)	66.7%	14.8%	81.5%	2.8%	4.48	0.80	2.44	0.26
Publishing (221)	26.0%	19.8%	45.7%	2.5%	1.74	1.07	1.37	0.23
Reproduction of Recorded Media (223)	45.8%	14.6%	60.4%	2.1%	3.08	0.79	1.81	0.19
Prepared Unrecorded Media (2465)	15.4%	n.a.	15.4%	n.a.	1.03	-	0.46	-

Source: Annual Employment Survey – Results for Great Britain, September 1995 – Office for National Statistics