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Review of Telework in Britain: Implications for Public Policy

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Preface

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Executive Summary

Telework in Context

- Although the idea of teleworking has been around for some time, there is currently a growing interest in the phenomenon among journalists, academics, policy-makers and the general public
- There is increasing political backing for policies to promote the adoption of telework, particularly from the European Commission.
- Telework originally appeared on the public policy agenda in the context of concerns about fuel consumption, traffic congestion and transport-related pollution.
- More recently this environmental concern has been matched and, in Europe at least, overtaken by a concern with teleworking as an issue for employment policy.
- New models of business organisation have increased the attractiveness of telework to businesses.
- Although technological development is making teleworking easier to implement and adopt, the costs of equipment and telecommunications services are still relatively high.
- Conceptually, telework can be thought of as all work carried out at a distance using information and communications technologies.
- Within this definition, it is possible to discern a number of more or less distinct forms of telework:
 - ◆ Electronic Home Working;
 - ◆ Telecottages and Neighbourhood Centres;
 - ◆ Mobile or Nomadic Working;
 - ◆ Group or Team Telework;
 - ◆ Call Centres and Remote Offices.
- While electronic home working is the form of telework which has garnered most of the attention and interest, it is important to place this form of telework in this wider set of computer and telecommunications supported working patterns.
- The purpose of this review is:
 - ◆ to examine the current incidence of various types of teleworking in Britain, and the likely pattern of growth in the future;
 - ◆ to outline the technological and other drivers and barriers which will influence the growth of teleworking;
 - ◆ to reach some preliminary conclusions concerning the contribution which teleworking could make to both the environment and to the creation and more even distribution of employment opportunities;
 - ◆ to identify the public policy issues arising from the development of teleworking, and to provide a preliminary check-list of priorities for public policy action in Britain.

Electronic Home Working

- The form of working mostly widely associated with the term telework, and which has received most attention in the literature and from the media, is electronic homeworking.

- A “telework mythology” has been established in recent years based on the experience of the relatively few firms which actively promote electronic homeworking. This has led to an exaggerated impression of the scale of home-based telework.
- No official figures are published by government agencies which allow us to draw firm conclusions regarding how many people are currently involved in electronic homeworking.
- A small number of quantitative studies have been carried out by academics and others with an interest in telework. The findings of these studies vary considerably, depending how a teleworker is defined and on the methodology employed.
- The most rigorous recent study of electronic homeworking in Britain (by Ursula Huws, 1993) suggests that 6 per cent of organisations are involved in this form of teleworking. However, the study also suggests that *under half of one per cent of the labour force can be classed as electronic homeworkers*. This study excludes certain self-employed workers, however, and no detailed studies of this group appears to have been carried out in the UK.
- An analysis of the 1991 UK Census of Population by CURDS suggests an upper limit of 2.5% of the total workforce undertaking home-based telework.
- Study evidence suggests that the UK has the highest level of home-based teleworking in Europe with France in second place.
- There is a fairly widespread belief in the teleworking literature that there will be a significant growth in electronic home-based work in the next ten years. Several factors are cited in support of this view. These include advances in technology, falling prices of technology, environmental concerns, new forms of lifestyle, and changing working practices – including moves towards flexibility, downsizing and outsourcing.
- History, however, suggests that forecasts of future growth in home-based telework should be treated with caution. We could find few forecasts supported by scientific analysis. One forecast which was based on a rigorous study suggested that the numbers involved in this form of teleworking in European Union (based on 12 States rather 15 States) could easily reach 11 million. However, wisely, the study authors would not specify a date when that figure would be reached.
- Teleworking from home is not confined to any particular occupation. Examples of home-based teleworkers can be found in a wide range of occupations, ranging from data-processing to professional and managerial specialists. There is general agreement, however, that work tasks will involve handling, processing and retrieving *information*, rather than producing a tangible products.
- Firms involved in home-based teleworking can be found in a range of industries, but research suggests that the financial and business sectors, government and defence, education, and the media-related industries are best represented.
- Contrary to popular believe electronic homeworking appears to be largely an urban phenomenon, though examples can be found of teleworkers seeking “the good life” in rural areas.
- The technologies required by the electronic homeworker will vary depending on the tasks to be performed and on the level of inter-activity with clients or employers. In many cases fairly unsophisticated technologies such as PCs and

modems will suffice. In other cases teleworkers will have more extensive (and expensive) requirements.

- A number of benefits are claimed to result from teleworking. On the employers part these include reduced costs, enhanced flexibility, retention of skilled staff, improved productivity, reduced space costs, and extended labour markets.
- There are also a number of disadvantages for the employer, mostly associated with management control in the widest sense of the term; i.e. not only problems of control and discipline, but problems of motivation and socialisation into the firm.
- For the employee potential advantages of electronic homeworking include flexibility of work hours, improved employment opportunities, eliminating commuting, and enhanced autonomy.
- Disadvantages for employees include social isolation, career marginalisation, routinisation of tasks, and blurring of the division between work and home life.
- A range of barriers to electronic homeworking can be identified, but few of these are technical. Rather they are of an human or organisational in nature. The most commonly cited barrier is the conservative attitude of employers and managers towards the practice.
- Most studies suggest that those employed as electronic homeworkers have a longstanding relationship with their employers and/or clients and that trust has been built up over time. Furthermore, most telework schemes are small-scale and remain "made-to-measure", and represent short-term expedients to overcome a particular problem. Given this it is not clear how the practice can be extended beyond a relatively small number of workers.
- A number of legal and regulatory barriers also exist in the areas of land use planning, taxation, health and safety at work, and insurance.
- Concerning predictions of future trends, there is a pervasive assumption that teleworking from home is about to 'take off' and that it is about to fundamentally transform the nature of work. However, it is not self-evident to us that home-based teleworking is likely to be sustainable on any appreciable scale. Rather than representing a permanent and inevitable shift in the nature of work, we contend that home-based teleworking is best understood as one aspect of flexible working arrangements, representing an attractive and realistic option at any one time for a relatively small minority of individuals.

Telecottages and Tele-Service Centres

- In order to overcome some of the problems associated with electronic homeworking, such as social isolation and costs of capital equipment, advocates of teleworking have suggested the establishment of "shared facility centres". These are small offices located "close to housing" which are open to people from a number of firms and to individual entrepreneurs.
- Two forms of shared facility centres are suggested in the literature – "neighbourhood centres", catering for up to ten workers, and "local work centres" designed to accommodate a larger number of workers.
- The rationale behind these centres is to take work to the workers, thus reducing the social, economic and environmental costs associated with the concentration of work in a limited number of central locations.

- A number of pilot shared facility centres have been established in the USA and Japan. Early evidence of the success of these centres is mixed. It is not yet clear whether there is a demand for such centres. There are also management problems associated with several organisations sharing space and facilities.
- There is little evidence of the shared facility centre model finding favour in Europe.
- An alternative model, the “telecottage”, has emerged in Europe and is particularly strong in Scandinavia, where the term was first coined, and in the UK and Ireland.
- Telecottages, like shared facility centres, have a range of information and communications available for use by locals. Most telecottages, however, have a wider set of social objectives than shared facility centres and are not only concerned with employment provision.
- In the UK telecottages represent the main policy instrument for local authorities and other economic development agencies in the area of information and communications technologies.
- The majority of telecottages receive some start-up funding from public agencies.
- Telecottages can be found in all UK regions, but the largest concentrations are in Wales and South-West England.
- Telecottages are predominately a rural phenomenon, but examples do exist in urban areas where they tend to be known as telecentres or Electronic Village Halls.
- The vast majority of telecottages were established in the last four years, so they are mostly at an early stage in their development.
- Telecottages, in general, do not employ large numbers of people. The average numbers of full-time staff employed at UK telecottages is 1.5, with between 4 and 5 part-time or voluntary staff.
- Based on the activities of the telecottages it is unlikely that there are many teleworkers engaged in performing work for remote clients using ICTs.
- Telecottages face considerable difficulties in winning and retaining telework from remote clients. These difficulties include:
 - ◆ establishing skills for which there is a demand;
 - ◆ identifying potential clients;
 - ◆ gaining access to potential clients once identified;
 - ◆ meeting the quality thresholds at an agreed price;
 - ◆ keeping pace with technological change;
 - ◆ retaining work against competitors.
- There may be a role for public agencies in helping to overcome some of these problems of reaching markets. In particular, government departments and agencies, and local authorities could contract out work to telecottages.
- Telecottages have a range of valuable functions beyond teleworking. These include training, awareness raising and confidence building.

The Mobile or Nomadic Teleworker

- Developments in information and communications technologies are allowing more people to carry out work away from their traditional office bases not only at home but also “on the road” or at clients’ or customers’ premises: such workers are termed mobile or nomadic workers.

- No official statistics are produced to chart the growth of this phenomenon, but one source (Gray *et al.*, 1993) estimates that there are over 2 million such workers in the UK.
- The growth in mobile working is likely to continue as the functionality of mobile telecommunications increases, the price of these technologies falls, and new entrants to the mobile market sharpen competition.
- Firms are now thinking strategically about how to organise their mobile workforce, taking advantage of developments in ICTs, to improve customer service and to cut costs through reducing office space.
- Concepts such as “hot-desking” are being introduced in tandem with technological developments in order to maximise the time mobile workers spend out of the office. Research suggests that considerable space savings can be made in this way.
- These changes within corporations may have implications for the volume, type and location of office space in the future.
- The growth in mobile working is also likely to lead to new patterns of travel and may reduce the number of journeys made, though more research is required in this area.

Call Centres and Remote Offices

- Firms in a range of industries are taking advantage of the increasing functionality and falling costs of ICTs to reorganise the way they operate, physically separating parts of the production process from each other, or separating the producer from the final consumer, thus creating *distance offices*. Early definitions of telework would not have included such offices, but they can be included under more recent, less narrow, definitions which regard distance as the main factor in teleworking.
- This reorganisational process features both a centralisation at the corporate level, as certain functions are concentrated into specialist offices, and a process of spatial decentralisation at intra-regional, inter-regional and, in some cases, international levels, as firms seek out more cost efficient locations in which to perform these tasks.
- Three forms of distance office can be identified:
 - ◆ *Back offices* where certain corporate *internal* services are concentrated and are increasingly located at a distance from other parts of the company.
 - ◆ *Call centres* where certain functions which relate directly to the customer, and which were at one time carried out face-to-face are now mediated by telephone, are concentrated in large single office (or a few offices, often linked together by ICTs to form a virtual single office) at a distance from the company’s customer base and, perhaps other parts of the organisation. We refer to the services produced by these offices as *teleservices*.
 - ◆ *Business process outsourcing centres* which may combine both back office and call centre tasks, but are operated by a third party organisation.
- The growth of these offices can be seen in a range of sectors including, banking and other personal financial services sectors, travel and tourism related industries, the computer industry, the utilities, and now in central and local government.
- Distance work in large offices represents an area of rapid employment growth, but, in the main, does not represent new employment. Rather it replaces existing less cost-effective forms of work. Furthermore, given the efficiency savings to be made,

teleservices will in fact reduce the amount of labour required for any given level of output.

- Early research suggests that the largest comparative growth in employment in teleservices is occurring in the UK is in metropolitan areas outside the South-East, though examples of the phenomenon do exist in that region.
- The growth in teleservices appears to be an urban or peri-urban phenomenon, but examples are beginning to emerge in more rural areas.
- There is a danger that some of this work may go off-shore. This is particularly true of traditional back office work. Firms may be less inclined to locate call centres, dealing directly with the customer, offshore for a number of reasons including language and culture. However, there are examples of this process occurring. Further research is required here.
- The UK would appear to have competitive advantages: English is the global business language; and wages are relatively low by European standards. The UK, therefore, may also be in a position to attract inward investment in this area and if this investment is in export-oriented services then net employment gains could result.
- The growth in distance offices also has implications for urban form, as they tend to be located, in line with wider office location trends, outside city centres on business park-type locations.
- These locational trends, in turn, have implications for transport patterns, though further research is required in this area to ascertain more precisely the nature of these new patterns.

Group or Team Telework

- Group or team telework is where workers work at a distance from each other, but using ICTs to communicate across space to form a “virtual team”.
- Some teams will be permanent in nature. Others will come together on a temporary basis for a single project or series of projects.
- Teams may consist of workers from a single firm or from a number of firms engaged in joint ventures.
- Growth in team telework appears to be part of a more general trend towards more “task-focused teams” which are part of a new paradigm of work organisation.
- Team telework can also be seen as part of the process of the globalisation of production. In particular it provides an example of the way firms are utilising geographically-distributed labour resources to enhance competitiveness.
- The essence of team telework is the geographical movement of work between workers via telecommunications networks, thus substituting for the movement of workers.
- Group telework is facilitated by the use of a number of technologies known collectively as “groupware”. These include:
 - ◆ Voice and electronic messaging;
 - ◆ Computer conferencing;
 - ◆ Shared (electronic) calendars;
 - ◆ Shared databases;
 - ◆ Workflow technologies

- A number of major multinationals now undertake group telework, at both national and international levels, including IBM, Arthur Anderson, Citicorp, Coca-Cola, Digital, Price Waterhouse and Proctor and Gamble. These firms are likely to be joined in the future by smaller firms wishing to work with them in joint ventures.
- Although group work appears to “go with the grain” of many of today’s corporate restructuring processes, there remain a number of technological and organisational barriers to the widespread implementation of the practice. As regards technology, a particular area of concern is whether sufficient “social presence” can be built into technologies to overcome the lack of face-to-face contact, which is a necessary feature of distance working. Questions also remain as to whether distance group work can replicate or substitute for unplanned informal interactions, which often contribute to the vitality of an organisation.

Telework, Transport and the Environment

- This area is very complex methodologically and all findings need to be treated cautiously.
- Research to date has been too narrowly focused on the impact of home-based teleworking (telecommuting), ignoring the impact of other forms of teleworking.
- Home-based teleworking (telecommuting) has been found to reduce the number of commuting trips undertaken by workers — the best available estimates for the UK suggest that, in 1993, teleworking reduced total UK car miles by some 1% and that the long-term potential is for some 5-12% of total car use to be substituted by telecommuting.
- The proportional reduction in the number of Person Miles Travelled (PMT) is, however, generally smaller than the reduction in the number of commuting trips due to the need to make non-work-based trips (e.g., to take children to school, or to undertake shopping) which were formerly incorporated into the work commute.
- There is an even smaller proportional reduction in the number of Vehicle Miles Travelled (VMT) because telecommuting has been found to replace a disproportionately smaller number of individual car-based commutes.
- US research suggests that as much as half of the saving in VMTs from telecommuting could be taken up by latent demand stimulated by reduced congestion.
- The proportional reduction in energy consumed is smaller still compared with the reduction in total VMTs due to the need to increase energy consumption in the home and the decrease in average fuel efficiency of the remaining, shorter, slower trips.
- In terms of unwanted emissions, the proportional reduction is smaller than the reduction in fuel use due to the slower average speeds of remaining trips and the higher proportion of cold starts.
- The benefits of telecommuting in terms of transportation, energy consumption and harmful emissions are small in comparison with other technological and policy developments.

Public Policy Issues

- If teleworking was felt to be an important area of policy interest, one clear priority would be to improve the statistical basis upon which reliable forecasts could be made and informed decisions based.
- The Report considers the contribution which teleworking could make to reducing the demand for travel. The Department of Transport's position appears to be one of cautious interest, tempered by a recognition of the complexity of the transport-telecommunications substitution relationship. On the basis of the material we have reviewed this caution is justified. Although it might seem obvious that home-based teleworking would contribute to reducing car travel and harmful emissions, the extent of this contribution is likely to be tempered by a range of other factors.
- Given such uncertainties and ambiguities over the travel and environmental benefits of home-based teleworking, and within the context of our contention that there are grounds for believing that it will be less prevalent in future than some of the more optimistic predictions suggest, there is as yet no overwhelming case for government action to stimulate the general development of home-based teleworking. There would, however, be much sense in a more vigorous programme of teleworking pilots within government itself in order to build up a fuller understanding of its travel and environmental implications.
- We also believe that the longer-term implications for spatial organisation should also be investigated, beyond the immediate travel substitution/generation effects. This point is illustrated by a 'doomsday scenario', in which far from contributing to a *solution* to current problems of congestion and urban sustainability, teleworking may even *exacerbate* such problems.
- Given the extent of the jobs crisis in Europe, it is perhaps not surprising that one of the claims being made for teleworking is that it can create new jobs. We believe that such claims are, in any generalised sense, unrealistic, and that it does a disservice to the teleworking cause to pretend otherwise.
- In most cases teleworking is best understood as a means of undertaking an existing job in a new way, while in the case of teleworking from distance offices, new jobs are created in the process of undertaking an existing *service* in a new way, while jobs are lost in the traditional means of delivering that service. In neither case is it plausible to expect that teleworking could create *net* new jobs. We conclude that there is no generalised public policy case for intervening in the teleworking field in order to create jobs.
- It appears to be more justifiable to expect that teleworking can contribute to improving competitiveness than to increasing employment levels. Given that the different forms of teleworking offer potential productivity and competitiveness benefits to organisations, there are at least three ways in which public policy might have a role to play in encouraging their successful adoption:
 - ◆ In promoting research into these forms of teleworking and in facilitating the widespread dissemination of this research in order to encourage best-practise adoption.
 - ◆ With the exception of home-based teleworking, many of the teleworking innovations we have reviewed are likely to have the greatest application, and be easiest to implement, in large, multi-site enterprises. A case can be

made for facilitating the use of these technological and organisational innovations by small- and medium-sized enterprises (SMEs).

- ◆ All of the forms of teleworking we have considered will be stimulated by the development of telecommunications networks with greater functionality, speed of transmission and bandwidth, as well as lower costs. Although the Government's liberalised telecommunications environment will ensure the rapid deployment of new services demanded by large corporate users, it is by no means guaranteed that the interests of SMEs, or of rural areas will be so well served by this regime.
- To varying extents, each of the forms of teleworking we have examined offer a locational independence which, potentially at least, could contribute considerably to bringing about a more even geographical distribution of employment opportunities.
- It is by no means inevitable that the growth of electronic homeworking will disproportionately benefit such areas; indeed it is more likely that the majority of teleworking will take place within, or on the fringes of, metropolitan regions. If home-based teleworking is to be seen within the context of rural development or diversification strategies, therefore, it will need stimulating by policy action.
- We believe that telecottages are worthy of support, in that they are one means of ensuring that remote or rural areas do not get 'left behind' as society enters the information age. The single most significant action the Government could take in this field would be to out-source blocks of work currently undertaken in government offices to groups of telecottages with the capacity to undertake such work.
- The geographically footloose nature of distance offices and teleservice employment provides important opportunities for lower cost areas to attract mobile investment. We believe that there may be considerable scope for attracting such activities to the UK, both from the US and from parts of Europe.
- If the government decided for any reason to undertake a more regional economic policy, call centres and teleservices could have an important role to play.
- Towns in rural areas similarly have the potential to benefit from the geographical decentralisation of teleservice employment, though many rural areas will not have adequate access to the intelligent networks and information superhighways upon which such activities depend.
- The Report concludes with a list of policy areas which need further investigation or which offer sound priorities for action.