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Abstract
A flexible definition of teleworking suggests it is more widespread than is generally believed. However, is telework technologically driven? This is tested with data from six countries. As the categories of the definition have distinctive social characteristics, telework seems to reflect traditional occupational practices rather than a major technological shift.

Introduction

New Technology, Work and Employment recently devoted a special issue (Vol 18:3) to the theme of telework. The authors of that issue all identify a range of concerns relating to problems of definition and measurement. In the first part of this paper we address some of these points, partly to frame own approach. In the second part of the paper we make an empirical contribution to that debate, reporting on data relevant to mapping the prevalence and contours of the telework phenomenon.

Sullivan's paper deals most centrally with definitional concerns. We use this as the focal point of our discussion but draw on other papers from that special issue as appropriate. Sullivan's key conclusion, with which we agree, is that project-specific decisions about what to include when measuring various forms of remote working depend on the interests of the researchers and the questions they wish to address. Sullivan notes that this may make some measures of what people call 'telework' incompatible, but this is inevitable. We would go further in suggesting that these different interests in part reflect the history and nature of telework as a social construction, which raises yet further doubts over the possibility of consensus. The history of the study of telework, as noted also by some of the contributors to the special issue (eg Pyöriä), reveals not one but a variety of discourses about telework, involving different images of the teleworker, different problems for which telework is a solution, and different perspectives from which to evaluate this phenomenon.

As the contributors to the special issue all note, the topic of telework started to gain publicity in academic circles in the early 1970s, when the energy crisis led researchers to consider telecommuting as an alternative to commuting physically. While that environmental interest has remained (eg Gillespie *et al*, 1995; Anderson, 2001), the concept re-appeared with various agendas in the 1980s and 1990s (Haddon and Lewis, 1994). In the 1980s a strand of analysis emerged from managerial and business schools, in particular from schools of personnel management. From this perspective telework was seen as a form of flexible labour derived from an apparent need for firms to adapt more easily to market changes.[1] This therefore forms part of the more general discussion of flexible employment (Gregg and Wadsworth, 1999) and might in principle be influenced by technological developments around the internet, 'Third Generation' mobile phones (3G) and related possibilities and practices (eg ubiquitous computing, footloose teleworking – Gareis, 2002).

A more critical approach to telework was adopted by researchers working for trade unions and bodies such as the UK's Low Pay Unit, often concerned that teleworking could entail exploitative conditions of service. In particular there has been a feminist interest, with some writers pointing out that although telework may be a solution to women's common dual role in the home and workforce, it is by no means the ideal solution (Olsen and Primps, 1984; Christensen, 1987). There has been a feminist undercurrent in much union research that draws parallels with women's negative experience of traditional homework.

Beyond these various research communities, the concept of teleworking is in the public domain. As Pyöriä notes in the special issue, the predictions of popular futurologists such as Toffler (1980) in the 1970s/80s did much to establish telework in the popular imagination. Media representations often focus on professional telework, perhaps influencing ideas about what it does and does not encompass. These in turn can have a bearing on whether people see themselves as teleworkers. Indeed, many self-employed people working mainly at home (SOHOs) do not regard themselves as undertaking telework (Gareis, 2002). Telework has also inspired research, policy-oriented documents and symposia from governments and public bodies (eg COM 2002, 263), all of which add to the public image of this form of working. Lastly, some companies, especially those ICT suppliers with an interest in promoting telework, have not only conducted their own research but have contributed to the image of telework. Many of these representations of home offices understandably emphasise the role of technology, often presenting relatively higher-tech versions of the experience.

While not exhausting all the possible approaches to telework (see also Julsrud, 1996), the aim of this summary has been to draw attention to the sense in which teleworking is a social construction in which diverse bodies and academics have an interest. It is therefore perhaps not surprising that researchers of telework have often noted a lack of consensus over how the phenomenon should be defined and measured (Felstead and Jewson, 2000).

Elements in defining telework

So, what is telework? A number of key elements that might be involved in any definition are discussed in the articles of the special issue. Here we reflect upon the familiar ones cited: technology, location, contractual arrangements, and time.

As regards technology, one issue is the degree to which ICTs form a substantial, strategic or necessary part of telework. Some of the earliest studies did not require this element. Telework looked like a new phenomenon because of the *content* of the work being done at home – now called knowledge work – and this was different from the routine, low paid labour often associated with homeworking (Huws, 1984). Yet by the late 1980s there are suggestions that we reserve the label 'telework' for those homeworkers who use new technology (Brocklehurst, 1989). The use of computers has tended in practice to form part of its definition. Yet there is a problem in determining the role of technology. For example, people might make incidental use of ICTs in the course of their work (Haddon and Silverstone, 1993; Huws, 1995). This is picked up in the Office of National Statistics (ONS) definition used in the British Labour Force survey. 'Teleworkers' are paid or unpaid workers who use a phone and a PC, whether they work at home full-time or occasionally (at least one day in the reference week). A narrower group called TC teleworkers, for whom a telephone and a computer are essential for their work, is also defined. It is also brought out clearly in the article in the special issue by Baines and Gelder, interviewing people that the authors note 'rarely fit narrow definitions of "telework"' (p223). Later they add: 'Even businesses that may be seen as the antithesis of the new, technologically mediated activities used computers' - childminders might now use them for aspects of their work (p227). Sullivan therefore recommends measuring the *level* of ICT use (p161). This makes sense, though it is not certain how 'levels' themselves should be defined (by time, intensity, technological complexity?).

The technology issue that we address in our empirical work is the nature of the telecommunications link (noted by both Sullivan and Pyöriä). A minimalist definition

would consider voice telephony to be sufficient.[2] Yet some argue that telework should entail a more sophisticated electronic link such as a modem, and in recent years use of the internet has begun to appear in definitions of telework (eWork, 2000). Sullivan points out that this has the potential to alter quite considerably the number of teleworkers we observe. This will vary not just by the use of technology but by the types of technology used (telephone, computer, internet, 3G). Our own approach in the study we report is to acknowledge technology as shaping part of the contours of teleworking practices, and then to differentiate users of different types of ICT. This takes the view that no specific technology defines a teleworker. Specific technologies may define different forms of telework.

A second key element in arguments about definitions of telework is location. A standard issue, noted by Sullivan, is whether telework should include only home-based work or other variants where there is some form of remote working, such as telecottages or remote offices. The problem here is, how do we define the workplace? We might ask whether tele-cooperation – interacting remotely with others electronically from an office – is a form of telework? This helps explain the growing preference for concepts such as eWork or distributed work, yet both open up a perhaps excessively broad spectrum of working practices. However, the factor of mobility is important. The Hardill and Green article in the special issue emphasises this, if in a very specific way. In general terms it is difficult to know how to conceptualise 'nomadic' or mobile workers. Gillespie et al (1995) observe that these tend not to be counted as teleworkers in US studies while many European managers do regard them as teleworkers. Most work undertaken from several places does not involve telework: lorry drivers or builders are typical examples. Some critics see mobile work as different from telework, while others see the two categories as overlapping. For Julsrud (1998) telework is defined as working in the home for 5 or more hours, and mobile work as working outside the home and main office site for 5 hours of more. A third of this Norwegian sample of teleworkers were also mobile workers according to this way of counting. One European study identifies 'mobile teleworkers' as working partly from home and partly from some other sites, including a main workplace (Gareis, 2002). In our view a specific locus for work where ICTs are used does not tell us whether telework is taking place but *how* it might be taking place.

We have little to add as regards contractual arrangements, with the exception of how this might relate indirectly to self-employment. In the special issue, Sullivan notes that some researchers do not like to include the self-employed in the same research as employed teleworkers. Pyöriä decides to exclude the self-employed in the Finnish study, while Baines and Gelder focus exclusively upon them. Previous research has suggested that self-employment forms a substantial part of the telework experience (Gillespie *et al*, 1995; ONS, 2002). We believe that the extent to which self-employment is relevant to the occupational basis of telework is something that has to be explored, though definitions are also a problem here. For example, a study for the UK's DTI includes self-employed people working for a single client but excludes freelancers working for several clients (Huws, 1995). Nevertheless, in the research we report below, we conform with Sullivan's recommendation to treat employment status as a variable in samples combining both the self-employed and employees.

The final element in any definition of telework is time. Some people work mainly in the office but then work at home in the evenings or at weekends as well. Both Sullivan and Pyöriä observe that 'overspill work' or 'overtime', which is

additional to office hours, is not normally included in definitions of telework, but also that this is common and often overlaps with use of ICTs for the purpose of this work. We agree that such overspill work is relevant – especially if the object of analysis is the potential employee demand for full-time ICT mediated work done from the home. This would include assessment of the demand for ICT facilities needed to work effectively from home, or the effects of home-working of any kind on the lives of the workers and their households.

Sullivan notes the wide variation in cut-off points as regards the proportion of time that should be spent working remotely, or more specifically at home for studies of tele-homeworking. Gillespie et al (1995) describe how one Dutch study defines telework as spending 20% of work time away from the office of the employer, while a study for the UK's Department of Trade and Industry operationalises telework to include only those who work at least 50% of the time at home. Many of these cut-offs would therefore exclude occasional work at home. Yet Sullivan's (but also other) evidence suggests that this is the major experience of teleworking. The Pyöriä article also shows how important such occasional work is in Finland, and that it is increasing. It is important not to understate the significance of this experience.[3] Indeed, it is possible to group teleworkers into subsets according to the intensity of teleworking: for instance, 'supplementary', 'alternating' and 'permanent' (Gareis, 2002), defined respectively as working at home less than one day a week, working at home at least one day per week, and working at home most of the time.

The above discussion serves to underline the point that there is 'no clear-cut choice between logically distinct alternatives' (Huws, 1995). It is impossible to provide a single absolute figure for the number of teleworkers. There are many decisions to make, reflecting the range of perspectives, understandings and agendas and indeed histories outlined earlier. However, with a flexible classification scheme of categories of home and telework, which will be discussed below, there need be no definitive claims about the extent of teleworking. Rather, we can say that telework varies according to the different aspects of the definition that we might be interested in at the moment.

The derivation of a telework classification

The data derive from the *e-Living* project, funded by the EU's IST Programme. The project is based on a household survey of 1750 homes in six countries – Britain, Bulgaria, Germany, Israel, Italy, Norway, undertaken towards the end of 2001. The aim was to provide comparative information across a range of EU or associate countries on key aspects of behaviour which might have links to either current or future ICT use, as well as to look into subsequent effects - for instance, on the environment.[4] The approach to the definition of telework taken below allows us to build a flexible classification derived from several components. The first part relates to location. The survey question asks those in paid work to specify their main place of work. The options are: mainly work at home/work at work premises/driving or travelling around/or work at more than one place. The last two categories do not form part of our final classification, as we use attachment to mobile phones for work purposes to indicate mobile work.[5] The main part of the schema we establish derives from a series of items relating to the frequency of working at home during the day, in evenings and weekends, and how often people use PCs or the internet to do so. It therefore includes measures of location, the technology utilised, and timing. This results in the following categories of worker:

1. People who do any work at home and use the internet to do so (Net Homeworkers)
2. People who do any work at home and use a PC to do so (PC Homeworkers)
3. People who say that their mobile phone is important for their work but are not internet or PC homeworkers (Mobile Users)
4. People who do any work at home during normal work hours but who do not use a PC or the internet and do not view the mobile phone as important for work (Day Homeworkers)
5. As in (4) but where undertaken in the evenings or at weekends (Overtime Workers)
6. People who work at one or more workplaces – excluding the home (Workplace or Standard Workers)

Much of the analysis below merges categories 4 and 5. The first group are in the EcaTT definition 'occasional workers', or in Kraut's definition (1989) 'supplementers'. The second group are often called 'overspill workers'. In both cases the above scheme treats these as homeworkers, not as teleworkers. Otherwise they would fall into categories 1-3. Because the data reveal that the numbers in 5 are small and because work flexibility is implied by both categories 4 and 5, it seems reasonable to combine them. However, distinctions are made between them at various junctures as appropriate. It should be noted that while we assert that intensity of home-based work is important, we do not build this into the classification system. Categories 1- 4 could entail either extensive or very limited work of each type. Category 5, by contrast, is defined by timing rather than by intensity ('when' rather than 'how much'). Overall, we think that teleworking should be *defined* by technology and location but *qualified* by timing. There will thus be teleworkers who fall into a particular category either a little or a lot.

In common with other researchers we observe that work at home, when home is the sole work location, is a numerically very small category, but also that this varies by intensity, as shown in Figure 1. Variation by country is limited while differences across the categories are substantial. This suggests that broadly similar factors drive these distinctions in different types of economy.

FIGURE 1 ABOUT HERE

The full picture (including the impact of location and of differences in technology) is shown in Figure 2.

FIGURE 2 ABOUT HERE

Two things should be noted. First, the proportion of people working only at the workplace varies from somewhat over 30% to over 70%, though if Bulgaria is excluded the upper limit is 50%. This means that half or more of the workforce in nearly all countries has other work modes (though use of a mobile phone need not imply a great difference). The variation between Britain, Germany and Italy is rather

limited. Norway and Israel have the lowest proportions of people in the workplace. This might reflect a higher national income plus geographical limitations in Norway, and security problems in Israel. The second point to note is the variation between countries in terms of the homeworking and teleworking elements of the classification. Israel and Norway have the largest proportions of their workforce who are 'PC homeworkers', Norway and Britain show the highest proportion of 'net homeworkers'.

Several things of significance are not revealed in the above: the role of self-employment, the amount of time spent teleworking, and the amount of time teleworkers use technology. Taking self-employment first, although the ONS report (ONS 2000) claims that the predominance of self-employment in telework in Britain is declining (ie telework is spreading to employees), it nevertheless continues to account for a large part of teleworking. In all other countries in the eLiving survey (except Bulgaria and Israel) the self-employed are over-represented in net, PC and mobile work. Self-employment is particularly associated with telework, not with work at home.

Working at home at least once a week occurs in over 20% of cases. Thus, those who take some work home mostly do so regularly. Some of this work is fairly intensive. For instance, the average number of hours a week worked at home by someone who mostly uses the net varies between eight (Norway) and nineteen (Germany), though, of course, as most people do not telework, the teleworked contribution to total work hours in the working population is small. Finally, if we look at the extent of the use of technologies, 50% of teleworkers (net plus PC) in Britain use a PC for their work at home at least half of the time. This suggests that telework is fundamentally work at home, for which technology is important yet not always necessary.

In sum, a strict definition of teleworking radically underestimates the real incidence of homeworking. A definition of teleworking based on location and the form of technology gives a fuller, more varied picture. The intensity of such work is important though it need not be a primary part of any final definition. The results of our analysis show high frequencies of homework and telework, with a substantial share coming from self-employment, though the total number of hours spent working at home is not high overall, and nor is computer technology used for the majority of this work.

The characteristics of teleworkers

In the special issue Sullivan says: 'An important question when differentiating between homeworkers that use ICTs and those who do not is whether their experiences or characteristics are sufficiently different to make research that fails to distinguish between them flawed (p160).' This raises a critical issue. We need to be concerned with the distinction between viewing telework as a characteristic of the worker as opposed to characteristics of the work. When we discuss the general concept of telework, are we talking about its organisational and perhaps technological parameters, or about the people who do the work?

Sullivan argues that telework and homework are indistinguishable from each other except in than that technology is used in specific ways in the former. This is very different from the widespread and more technology-biased view that telework is simply one aspect of eWork. What we would want to know is how home-teleworkers are different both from other homeworkers and from other types of teleworker. More generally, Sullivan agrees with some other commentators that with the growing

prevalence of ICT usage for work in the standard workplace, we cannot be sure there is any really technological difference between telework and other work. Haddon and Silverstone (1994) and Sullivan and Lewis (2001) have suggested that people may enter into telework from different routes and leave it temporarily or permanently for a variety of reasons. Such fluidity might cast doubt on the technological basis to these forms of work. In the special issue, although discussing a narrow set of occupations (telecommunications workers), Dimitrova finds that telework is broadly neutral as a form of control (or source of autonomy). The technology mostly coincides with rather than overrides normal work imperatives.

Some of the papers in the special issue also de-emphasise the role of technology within telework by focusing on other, sometimes broader, frameworks. Sullivan (in our view rightly) treats telework as part of the wider experience of homework. Hardill and Green locate telework within a variety of ways in which working life is changing, especially in terms of the mobility that it entails. In this view, the fluidity of telework parallels the fluidity of change in family life, especially as represented by the 'post-modern' family (Beck, 1992). They draw attention to the different ways in which family life is organised in response to these changes, especially ways of handling boundaries between home and work. Baines and Gelder develop a typology based on the different strategies used to deal with home-work boundaries. They can then examine the process of maintaining these boundaries in relation to how ICTs are used and experienced (a theme also covered in Haddon and Silverstone, 1993). Both of these latter papers illustrate the point that we can build classification schemes that are not based principally upon technology. However, that does not mean that we should ignore the ways in which the use of certain technologies differentiates the telework experience from other home-work arrangements or differentiates between teleworkers. Even if teleworkers and non-teleworkers both use technology, they will do so for different reasons and in different ways. The focus of some of these papers usefully draws attention to a number of social issues neglected in earlier studies. However, the wariness about and a desire to move away from technological determinism should not mean that we lose sight of how the use of technologies might still make a difference.

There is also in our view a continuing need to update an old paradigm by charting who takes up various work options. We need to take into account the characteristics of different types of teleworker and of homeworker (Stanworth, 1997) – including factors such as gender, age, education and occupation. Below we examine the relationship of the categories of the telework schema elaborated above to the distinctive characteristics of teleworkers who fall into each of these. It is possible, for instance, that telework modes are a direct reflection of occupational status – an extension of normal ways of working – with therefore no particular organisational or technological force. However, the dataset derives from a household survey and therefore carries no information on the organisational imperatives of teleworking (which ideally derives from employer-level surveys). Thus whatever interpretation is put on the findings, it is possible that organisational factors are still of some significance. The occupational influence, though, is indicated by the frequently observed fact that most teleworkers are high status workers (EcaTT, 2000a). It is likely that they normally work at home (and simply happen to use ICTs to do so).

Re-turning now to the data, the age distribution is roughly equal across the various work categories defined above, but there are clear gender differentials - apparent from Figure 3 (which for presentational purposes converts the basis of the ratio from one to zero). Net-based teleworking is largely male in all countries except

Israel. PC homeworking is generally male but less overwhelmingly so. Using a mobile phone for work is about as male-dominated as net-based telework. Homeworkers who do not use ICTs for their work are somewhat more likely to be women. The gender divide for workplace-based workers (not shown) is about equal. These differences are not explained by the fact that men are more likely to be self-employed and that the self-employed are more likely to telework. Excluding the self-employed, the male bias remains strong in the three teleworking categories. More generally, the ONS study (2002) makes the point that the occupational and industrial distributions of men and women fail to explain away the gender difference in teleworking in the UK.

FIGURE 3 ABOUT HERE

Does the gender bias shown above mean that teleworking is professional, well-paid work while predominantly female homeworking is the reverse? This can be explored through looking at the proportion of each category with a degree, shown in Figure 4.

FIGURE 4 ABOUT HERE

It should be noted that the proportion of graduates in the sample is 26% in Britain, 13% in Italy, 24% in Germany, 42% in Norway, 33% in Bulgaria and 46% in Israel. It is then clear that in all countries net-homeworking is very much a graduate activity, as is PC-homeworking, though less overwhelmingly. Those using mobile phones for work have about the same chance of having a degree as people in the labour force as a whole (though not in Israel). Homeworkers are more highly educated than the labour force in general. Non-ICT based homeworking does not appear to be undertaken by people with low levels of education and who might as a consequence be expected to be doing poorly paid and routine work.

If we now look at the nature or level of the work undertaken, the ONS study in Britain found that teleworking is dominated by managerial, professional and associate professional/technical workers (ONS 2002). In most *e-Living* countries roughly three quarters of net homeworkers are managers or professional workers. In each country the proportion of PC-homeworkers is less predominantly managerial and professional than this, but still well above average for the labour force.

FIGURE 5 ABOUT HERE

Homeworkers are broadly similar to this, while users of mobile phones for work have roughly the same profile as the rest of the labour force.

No occupational groups other than professional or managerial workers consistently have a higher proportion of either teleworkers or homeworkers than the average for the labour force as a whole. Technicians, for instance, have roughly the same proportion of net or PC homeworkers as in the workforce. Clerical workers tend to be under-represented in all forms of telework or home-work. This suggests that telework is not a major option for this more routine white-collar work. The

mobile phone is of some significance for craft workers, which implies a fairly strong occupational basis for this technology.

In sum, net-based teleworking is overwhelmingly a managerial and professional practice. This perhaps suggests that teleworking reflects social status. However, the fact that homeworkers often have degrees also suggests that this form of work, while no doubt highly heterogeneous, is in general neither low-status nor routine. Moreover, probably because of the role of self-employment in telework, in Germany 20% of net workers are engaged in blue-collar work as are around 17% of PC workers in Britain, Italy and Germany. There is no absolute link between telework and those with professional or managerial status.

The above results suggest that there are significant differences between some of the categories of the classification in terms of personal and occupational attributes. Further insight can be gained by looking at pay. Looking at this in terms of subjective indicators Akselsen *et al* (2001) show a positive relationship between work at home and workers' assessment of job performance, though female employees are perceived to be less effective the more days they work at home. (However, this might simply mean that women are more "invisible" than men when they work at home.) Hartman, Stoner and Arora (1991: 224) demonstrate in their study of variables affecting telecommuting productivity a "…lack of significant relationships between demographic and occupational variables and telecommuting productivity".

In terms of the analysis below, pay differences can be interpreted in two ways. If teleworkers receive higher pay than others, is this because teleworking makes them more productive, or because they are professional or managerial workers who are highly paid anyway and simply need to telework at least some of the time? Equally, some teleworkers might be poorly paid if they are traditional homeworkers who merely use ICTs as a work tool (eg home-based telephone sales). To evaluate the payments associated with different types of telework in comparison to other work, we regress wages on the tele-homework categories, plus a range of characteristics which we might anticipate control for background factors such as education and occupation. The expectation is that any differences between the categories that remain are in some measure a reflection of the effects of being in one or other category rather than of the characteristics of those who happen to occupy them. This analysis is undertaken through ordinary least squares regression. The figures given in Figure 6 are the number of euros per hour earned by people in each category of work over and above what they would earn given their gender, age, education, PC skills, occupation and industry. Only the results for the home and teleworking categories are shown. (The self-employed are excluded because their pay data are notoriously unreliable.)

FIGURE 6 ABOUT HERE

Here we have a very varied picture. The category of work that is excluded - those who work in the workplace - is the group of people to whom the other groups are being compared. In four countries online teleworkers clearly earn much more regardless of their education and type of job. Other than in Norway this again seems a distinctive category. It is possible that these workers are seen as being more productive by their employers or conversely that net homeworking is a perquisite of highly paid jobs. In most countries PC homeworkers earn less than home and 'net' teleworkers. It is not the case, therefore, that all forms of telework are associated with higher pay. PC

homeworking is not that well paid relative to other categories of work once the background and other characteristics of the various workers are taken into account, and seems to be rewarded less even than plain homeworking.

In sum, we agree with the authors of the special edition who in one way or another cast doubt on the distinction between telework and other forms of work. However, in our view the way forward is through further elaboration of our understanding of modes of telework, as we believe that different forms are associated with different work relations, returns to work, and social characteristics. Certainly, 'net teleworkers' – to be equated with 'teleworkers' in many discourses – stand out in many ways. However, other forms of telework exist, and these also require study. Their analytical basis has to include technology. If and when technological differences are no longer associated with occupational or social characteristics, then we can perhaps say that the concept of telework is of no further interest, as technology will have significantly re-ordered the way *all* people work. In the meantime our empirical findings suggest that telework reflects existing rather than creates new work relations.

Conclusion

This article has demonstrated how telework is not a homogeneous entity but can comprise different elements of technology and location, whose different combinations produce a range of types of work. In general it seems best not to predetermine any specific threshold of intensity in forming a definition of telework, but rather to observe how forms of home or telework vary by intensity in actuality. Following this approach, the analyses have shown the widespread practice of doing at least some work at home, the variation in teleworker type (PC against net), the degree to which ICTs are used or not in conducting work that is partly defined by technology use, and the limited amount of time that these teleworkers actually work at home. The flexible definitions utilised here show how, behind the averages indicated in the statistical analyses, it may be more useful to think of a spectrum of telework practices rather than argue from particular agendas about what should count or not as 'real' telework.

These analyses also show that there are gender, educational, occupational and pay differences between the categories of the classification discussed in the beginning of the paper. In other words, the categories are populated by different people with different personal or occupational characteristics. For instance, net homeworkers are likely to be male, professional and relatively highly paid. PC homeworkers are of significantly lower social status, as measured by occupation, than networkers. This suggests (but does not prove) the likelihood that at least some categories of home and telework reflect traditional categories of work associated with the social status of the job (rather than a new determining role for technology in the organisation of work). The one exception is the fact that female homework is associated with relatively high-status work and not predominantly with routine, low-paid work.

To return finally to the earlier discussion of the variety of discourses about telework, while there may be patterns in the experience of telework and who teleworks, the variation shown in this paper would make one wary of seeing it as a unitary phenomenon with any unitary effects. Our analysis suggests that telework tells us more about the teleworker than about the nature of telework itself.

Biographical notes on the authors

Malcolm Brynin is Principal Research Officer at the Institute for Social and Economic Research at the University of Essex. His research interests are
the relationship between education and employment, the social effects of technology at work, and the relationship between social status and political behaviour.'

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Notes

1. This is not the only discourse of interest from a company perspective. Studies of the 'enterprise economy' see telework as a stage on the road to entrepreneurship, where employees break away from their previous company to set up a small business - perhaps as a prelude to moving into separate premises (Huws, 1991).

2. In fact, after discussing the problems of the 'communications' link, the Empirica study of the 1990s chose to allow mail and courier services for delivery of the results of telework to a remote employer or subcontractor (Huws *et al*, 1990).

3. Another approach, looking at telework from the view of international time budget analysis, has been to choose a very low cut-off point by defining telework as involving at least one hour working in the home (Michaelson, 1998).

4. The data include information on family, employment circumstances, ICT access and behaviour, attitudes to and knowledge of computers, education, and leisure or other preferences. Interviews were by telephone (CATI), except in Bulgaria, and all interviews were conducted with one randomly selected adult aged 16 or over in each home. Telephone interviewing produces lower response rates than face-to-face interviewing. The average response rate across the five countries was around 40%, while in Bulgaria it was over 70%. The analysis is based on a weighted version of the data designed to compensate for non-response bias.

5. Much mobile work, for instance where transport is involved, is of no specific interest here. We acknowledge that a more complete designation of mobile work is desirable, but this also requires more extensive questioning.

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Figure 1: % working people with home as main place of work, those who work at home at least weekly, and those undertaking any work at home

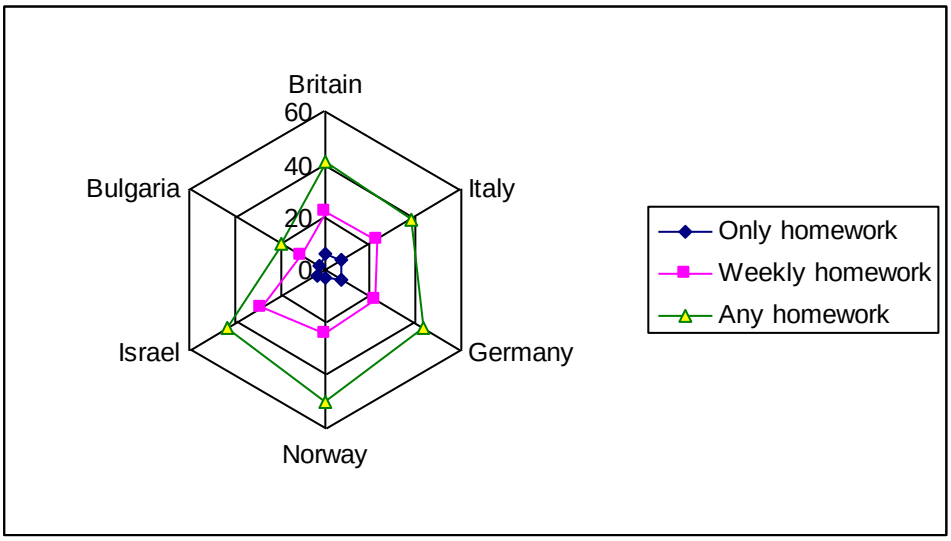

Figure 2: The incidence of telework, homeworking, and 'standard' work

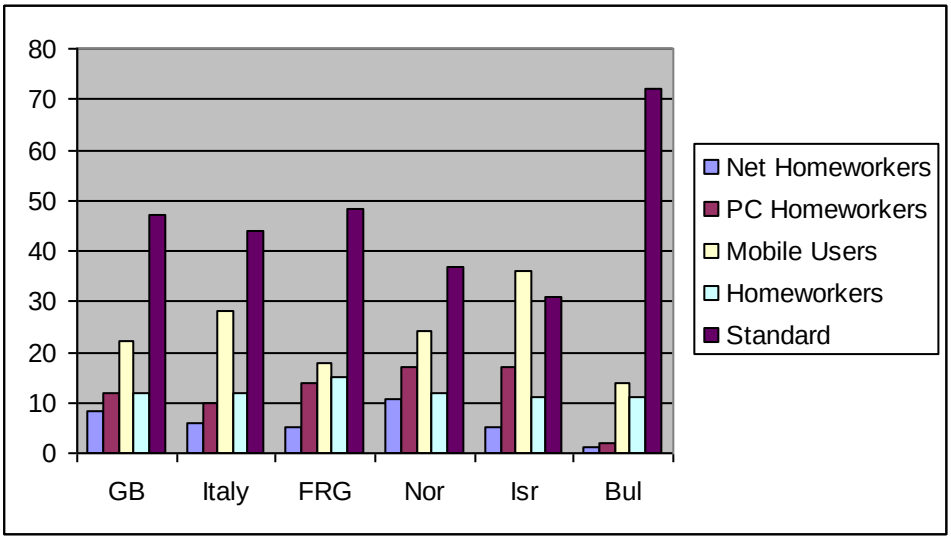

Figure 3: The gender ratio in telework and homeworking (base=0)

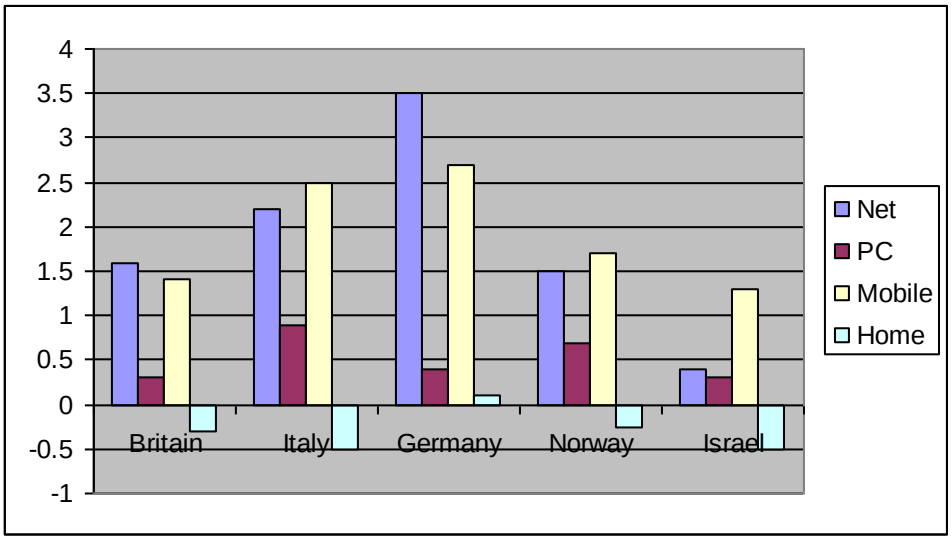

Figure 4: Percentage of teleworkers and homeworkers who are graduates

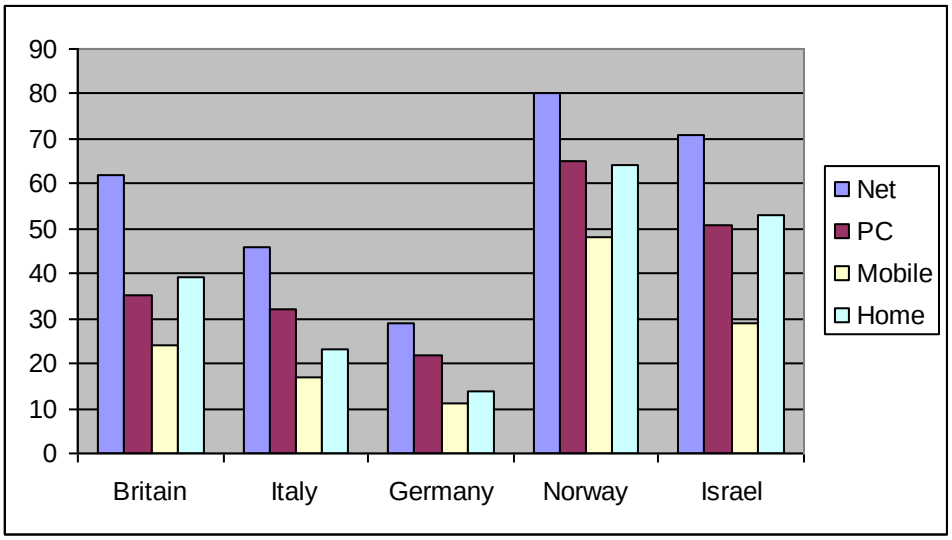

Figure 5: Percentage of teleworkers and homeworkers who are professional or managerial

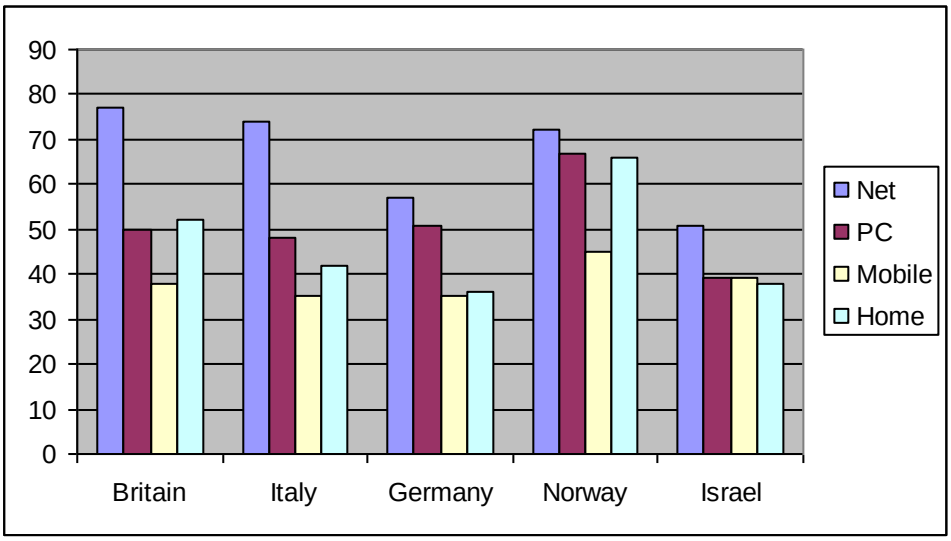

Figure 6: Contribution of teleworking modes to hourly pay (euros) of net, PC and home-workers (OLS regression coefficients)