eWork and Pro-Active Work Organisation: Reaping the Benefits of ICT-based Forms of Working

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***Abstract**:*

Much of the debate around telework, eWork and other ICT-based ways of remote work has been driven by notions of technology-driven progress. Often, this has led to the assumption that locationally flexible forms of working had an "inbuilt" tendency to benefit workers by giving them more flexibility. The paper argues that for analysing the benefits and downsides of real-world cased of telework and eWork from the viewpoint of workers, an approach which makes reference to the research on new forms for work organisation (NWO) and the notion of pro-active work is more useful. The key elements of these concepts are outlined and then discussed in relation with available evidence on the impacts of telework and eWork.

1 Introduction and Background

For many years, most proponents of telework and eWork appeared to assume that locationally flexible forms of working had an inbuilt tendency to benefit workers. In fact, there was some amount of technological determinism involved when telework was praised as a logical development on the way towards liberation of workers from "artificial" constraints of time, place and "management by eyeball"[1].

Once the necessary technology became widely available, forms of work related to the concepts of telework and eWork diffused into everyday practice across Europe. Rather than being determined by the potential for change opened up by ICT[2], this development is best understood as a process of social shaping of technology. In fact, data which became available towards the end of the decade (Gareis 1999; Empirica 2002) showed that the way telework is being implemented in practice has little to do with the original notion of the "electronic cottage". These data showed that most telework is supplementary and/or multiple location-based in nature[3]. More and more evidence also appeared which suggested that, while telework doubtless has potential

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1 For critical discussion, see Gillespie & Richardson (2000); Gillespie et al. (2001); Dimitrova (2003); Hanhike & Gareis (2004); Gareis et al. (2006)

2 As described in the futurist literature of the 1970s and 1980s, the most influential of which has been Toffler's "The Third Wave" (1980)

3 Compare Sturesson (2000); Helminen et al. (2003); Ylöstalo (2003); Brynin (2004)

to increase levels of job satisfaction and productivity – it is not beneficial *per se* (cp. Millard 2005; Richter et al. 2006). No wonder, then, that telework has more or less disappeared from the political agenda across Europe in recent years.

Clearly, closer scrutiny of real-world developments is required. While much of the debate around telework, eWork and other ICT-based ways of working has been driven by notions of technology-driven progress, this has not helped to get a grasp of developments which can be observed in reality. A conceptual approach based on other, more well established (but not ICT-related) research strands may be required.

One of these is research on new forms for work organisation (NWO), usually understood as "the application of principles and practices within enterprises which aim to capitalise on, and develop the creativity and commitment of employees at all levels in achieving competitive advantage and in meeting the business and service challenges posed by the social, economic and technological environment in which the enterprise exists" (Savage 2001). This topic is not a new one, but rather stands in a tradition with efforts to "humanise work" which reached their apex in the post-war decades of high industrialisation. Against a background of growing shares of employment in knowledge-intensive jobs in the service sector, modern work organisation attracted renewed interest – now with a focus on office work – in the mid-1990s, especially in the Nordic countries (for an overview see Gareis 2006). This trend has gained speed after the so-called Internet bubble and the related hype around radically forms of work flexibility[4] ended in 2000/2001.

2 New Forms of Work Organisation and Pro-Active Work

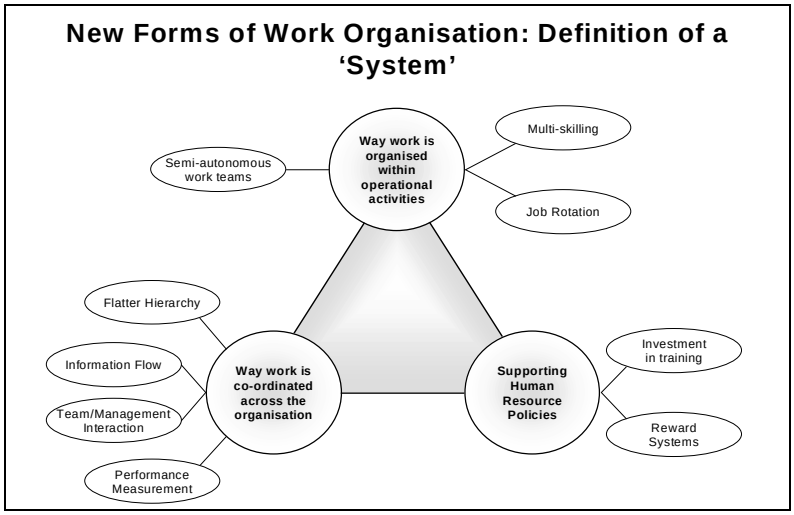
2.1 Defining NWO

Definitions of NWO usually need to be understood against its presumed antidote, i.e. the "scientific management" principles associated with the names of Frederick Winslow Taylor and Henry Ford. Using the categorisation of Atkinson (1984), NWO is related to functional flexibility, rather than numerical or wage flexibility. Other terms which have been in use to describe the phenomenon include "High Performance Work Organisation" and "High-Involvement management" (cp. Bessant 2003). Antila and Ylöstalo (2002; 2005), in their research on Finland, talk about "pro-active workplaces", key characteristics of which are that workers have increased possibilities to exert influence, and at the same time increased responsibility.

A pro-active work organisation is simultaneously (a) able to implement new workplace practices within operational activities (for example semi-autonomous teams); (b) able to coordinate work across organisation (for example flat organisation or interaction) and (c) it has an active HRM policy as support and assistance (for example training). This is illustrated diagrammatically in Figure 1 (from BDL 2002).

[4] See, for example, the discussion around the so-called e-lancing phenomenon (Malone & Laubacher 2003)

Figure 1: Systematic approch towards NWO



From the extensive literature on the issue, we can summarise the main features of modern, flexible, pro-active work organisation as follows (cp. OECD 2001: 8-9; BDL 2002; Ylöstalo & Antila 2002, 2005):

- Decentral organisational structures: Flat hierarchies and decentralisation of decision-making (reduction of the number of management layers; fewer different functions, i.e. job enlargement; improved flow of information between shop floor and management); Semi-autonomous work teams; Process focus; Direct cooperation links with stakeholders (customers, business partners, public authorities, R&D units etc.) at every hierarchic level;
- Flexible ways of working: Flexibility in working times and locations; Flexible working methods (multi-skilling, job enrichment);
- Flexible business practices: Focussing on quality management and continuous improvement; Customer focus = continuous assessment of business processes according to value created for customers; High responsiveness to market changes, but also ability to develop operations systematically and in a long term perspective;
- Corporate cultures which focus on people and learning: Systematic approach to skill acquisition (lifelong learning) with a focus on widening skills rather than simply adapting skills to changing functional requirements; Strong focus on soft skills such as communication skills, team-working, conflict management etc.; Wide participation in training, also involving less qualified members of staff;
- Innovative performance measurement & reward schemes: Management by objectives (for teams and individuals); Financial and non-financial performance measures; Performance-related remuneration.

While each of these components have been extensively dealt with in the management literature, evidence suggests that they provide the biggest benefit to companies if deployed in a systematic approach (see OECD 2001; BDL 2002; Gareis 2006).

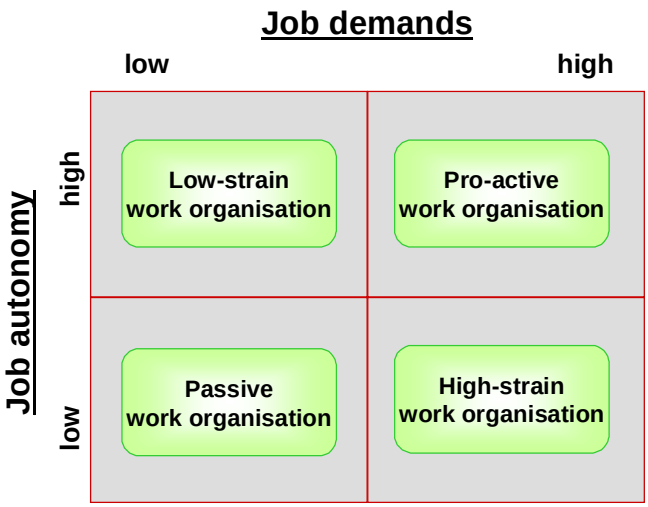
2.2 Impact on Workers

While decentralisation of control is generally praised as an ideal means to achieve greater labour flexibility as well as higher motivation and (following from that) higher productivity, there are also risks involved. It is certain that increasing responsibility and self-control at all hierarchical levels tends to increase the work pressure as perceived by employees (Voß 1998, Gottschall & Voß 2005; Cullen et al. 2003). In particular, modern work organisation appears to be associated with high work intensity and stress (Boisard 2002, Houtman 2005), which themselves tend to increase the likelihood of health problems such as the widespread cumulative trauma disorders (Brenner et al. 2004; see also Askenazy 2001; Houtman 2005).

The literature (see Richter et al. 2006: 233) distinguishes between mental workload ("external factors impinging upon a human being") and stress. Mental workload only leads to stress if individuals feel that their abilities are insufficient for the requirements and expectations placed upon them: "An event is likely to cause stress if a person perceives it as important with respect to his/her goals, while at the same time it exceeds his/her capability" (Richter et al. 2006: 234; cp. Houtman 2005). On the other hand, it is clear that there has to be some degree of mental strain (or "creative tension") in order for the job to produce good results and for the worker to feel motivated by it.

In order to better understand this interrelation, Dhondt et al. (2002) suggest to use a "time constraints/job demands" model as originally developed by Karasek & Theorell (1991), see Figure 2.

Figure 2: The "job demands/job autonomy" model



Using the two dimension job demands (time constraints and other mental workload) and job autonomy (extent of control over the job, including access to resources), four types of work organisation can be distinguished:

- Active work organisation: Workers experience high levels of demands but at the same time enjoy enough opportunities to control these demands. This type is associated with our definition of "pro-active work organisation".
- Passive work organisation: Workers experience low job demands and have low job autonomy concerning changes to their work organisation. Low motivation, low productivity.

- High-strain work organisation: Workers experience high demands but have no way of controlling what happens. They have to passively adapt to ever-changing and possibly conflicting demands. Very widespread in practice. Low social sustainability in the medium to long term, but employers may be able to pass social costs on to the state.
- Low-strain work organisation: Workers experience low demands and have enough control to deal with problems. Low productivity, therefore not sustainable.

Via empirical research Dhondt et al. (2002) found that high strain work situations are correlated with stress-related problems, while there is no association between (pro-) active work organisation and stress-related health problems. In survey-based research carried out in Finland, Antila and Ylöstalo (2002; 2005) found that proactive workplaces are associated with higher rates of job satisfaction, motivation and productivity. They also found evidence that workplaces which put high demands on employees in terms of mental workload (work pressure) are nevertheless associated with high rates of job satisfaction, but *only if* high work pressure goes hand-in-hand with high job autonomy, i.e. worker control over their job.

3 Placing Telework Within the Context of Pro-Active Work Organisation

We argue that by applying the concept of pro-active work organisation to the analysis of real-world cases of telework and eWork, it will be better possible to assess the benefits and downsides of ICT-based types of work. It may also help to get better insight into the relation between the original notion of telework and today's business practice. Below we use the five key characteristics of pro-active work listed in chapter 2.1 to discuss research findings on the effects of telework and eWork from the viewpoint of workers.

3.1 Decentral Organisational Structures

One reason why the notion of telework attracted considerable interest in the 1980s and 1990s was that it appeared to fit nicely within the general debate about the need for more flexible organisational structures (Malone et al. 2003). Telework, it seemed, demands decentralised decision-making and management procedures that are target-oriented. This relates directly to the issue of job autonomy discussed in Figure 2. Based on developments in the last two decades or so, however, there are some doubts whether ICT-enabled remote work always goes hand-in-hand with job autonomy, for four main reasons:

First, research by Dimitrova (2003) and others suggests that task discretion and job autonomy – contrary to popular assumptions – do often not increase as a result of remote supervision, as direct forms of control are replaced by more formalised interaction between superiors and remote workers (see also Lehndorff & Voss-Dahn 2005; Gerlmaier & Latniak 2005). An example is call-centre work which usually takes place in dedicated offices (what once was called "telework centres"), but can also be organised via home-based telework. Because of the strict protocols applied in call-centre work and the fact that these are typically programmed into the software which form the workplace infrastructure, a high degree of control is possible without any need for co-location of supervisor and workers. In fact, call-centre jobs have led

some researchers to talk of Neo-Taylorist working conditions (Bain et al. 2002). There is little need to point out here that call centre work is often associated with precarious employment.

Second, there is clear evidence that – while low-skilled workers carrying out, for example, clerical work, may suffer from more formalised forms of control – remote management can provide tangible benefits to high-qualified workers in advanced job positions. Dimitrova (2003) concludes that eWork reproduces pre-existing social relations and inequalities. But there are risks for high-qualified knowledge workers as well. Research by Treier (2003) found that the level of perceived stress is greater for teleworkers who have a lot of task discretion, which may be explained by stronger difficulties to "switch off" after the end of the working day. Montreuil & Lippel (2003) and Richter et al. (2006) also found that perceived stress tends to be bigger for more enriched working tasks and in virtual teams. This brings up the question whether workers are actually equipped with the resources they need to accept a large share of the responsibility for the success of their work (Voß 1998).

Third, the concept of decentralisation is directly related to company decisions about whether to keep certain functions in-house or whether to outsource them in order to benefit from greater flexibility and lower costs. This is one of the reasons why union representatives were less than enthusiastic about telework when it was first introduced in the public debate (in the 1980s). They feared that telework was part of an attempt of employers to weaken the bargaining position of labour. Today we know that these fears were not totally unfounded. For example, Dahlmann & Huws (2007) researched a group of editorial workers in the U.K., who used to have permanent employment relationships. In the 1990s, they were transferred into a freelance, home-based workforce, before losing their jobs more recently to an Indian business service company to which the parent company now offshores the editorial work. We follow that workers should not be considered as benefiting from job autonomy if they do not also have either high job security or high employability (i.e. are likely to find new work if they lose their current job).

Fourth, decentralisation of organisational structures is often intended – not always explicitly – to make the sharing of tacit knowledge (as opposed to codified knowledge) easier (Malone 2004). Whereas flows of codified knowledge can be planned well and can therefore be incorporated in business processes and support structures, tacit knowledge-sharing is by definition hard to predict and messy. As a rule, tacit knowledge-sharing is easiest when communication takes place face-to-face, and hardest when communication is mediated through technology which allows for only little media richness. It is commonly accepted that sharing of tacit knowledge is of of utmost importance for the process of innovation and collective learning, both of which are key requirements companies are facing today (Bessant 2003). While it would be a misunderstanding to assume that co-location is a necessary (or, for that matter, sufficient) condition for knowledge-sharing, it appears that eWork and telework tend to be at odds with the attempt of organisations to improve knowledge-sharing and step up their capability for innovation. Moreover, to the extent that pro-active work organisation is associated with semi-autonomous work teams and more direct cooperation between workers at all hierarchic levels and with externals (e.g. customers, business partners, public authorities), it appears obvious that co-location, supplemented by the effective application of ICT-based communication tools, has advantages over location at a distance.

Comparative disadvantages of ICT-mediated work are, of course, less of an issue if telework does not, or only little, reduce the time spent on co-located collaboration. This is the case for so-called supplementary telework and most of mobile telework. This may explain why these types have grown most strongly in recent years (Julkunen et al. 2004; Gareis et al. 2006).

We should also take care to consider that ICT-based ways of communication are developing all the time, with a general tendency to decrease the difference in "media richness" between face-to-face and ICT-mediated communication.

3.2 Flexible Ways of Working

In some segments of the EU economy, especially in large companies in knowledge-intensive industries, telework is established as part of everyday HRM practice, i.e. it is offered (alongside other instruments for worker-oriented flexibility such as part-time work) mainly in order to keep employees happy, to increase attractiveness as an employer, and to tailor work practive to the changing lifestyle related needs and preferences of valued employees. It appears self-evident that workers who have strong bargaining power, e.g. because of the scarcity of their skills on the labour market or because of their company-specific expertise, are more likely to be offered such worker-oriented flexibility than those who have less valuable skills and are therefore more easily replaceable. Against this situation, efforts to encourage firms to offer telework to all of their staff may lead to benefits being more evenly shared across workers.

Liberation from the constraints of space and time has been one of the main promises of telework. There can be no doubt that the development and diffusion of consecutive rounds of ICT have played a major role in this respect, acting as powerful drivers. In general, ICTs have enabled more and more working tasks to be performed without the need to have physical access to centrally located work resources, as these can be accessed at a distance, electronically.

Today, across the EU a considerable share of employees works in organisations which are technically equipped for giving remote access to the company computer network. The most wide-spread application is e-mail access from home or during travel (Antila 2005). This means that what has been called "supplementary telework", i.e. spending some working time outside of the premises of the employer and transmitting working results while doing so, has diffused widely in Europe – especially so in the countries where home, broadband and mobile access to the Internet are most advanced. Julkunen et al. (2004) found that the disappearance of clear boundaries between working and leisure time, which is associated with such supplementary telework, is not by itself a cause of lower job satisfaction.

Ways of working which offer employees flexibility in deciding how, when and where to carry out their work have been found to be strongly associated with job satisfaction. This applies, in particular, to discretion in deciding about the times of starting and leaving work (Antila 2005). Antila also found that people differ in their appreciation of flexible working depending on their life situation. Parents of small children, especially single parents, value flexibility in working times higher than all other types of workers. Other studies have confirmed that demand for telework is not so much a function of characteristics of workers and their work, but rather of their life cycle stage (e.g. Cullen et al. 2003).

Flexible ways of working, however, also bring up questions of the relationship between job satisfaction and overall life satisfaction. Cullen et al. (2003) did in-depth interviews with 50 persons in flexible work patterns including home-based telework, mobile work and e-lancing. The research focussed on the implications of flexible, ICT-supported ways of working on family life, and on work/family balance in general. Results suggest that high job satisfaction can indeed go hand-in-hand with risks to family life and, as a consequence, stagnant or even deteriorating life satisfaction, at least in the longer term (cp. Sennett 1998; 2006). More research on this issue is clearly needed.

The issue of multi-skilling and job enrichment, both of which are mentioned in the literature as typical features of NWO, is directly related to questions of collective and lifelong learning (discussed below).

3.3 Flexible Business Practices

As the management literature is proclaiming continuously, one of the main strategies for increasing competitiveness in recent years has been to focus business processes more directly on the needs and preferences of customers. This has been reflected in changes to work organisation. One of the key ways to increase the focus on customer value is by getting the production process closer to customers, also in the literal sense of reducing the geographical distance to the locations of customers. The increasing importance of mobile teleworking, which today means ICT-enabled working across a number of locations, follows directly from this (Gareis 2003; Gareis et al. 2006). In spite of the growing potential for ICT-mediated communication to substitute for face-to-face communication, in practice the geographical (intra-job) mobility of workers has increased sharply (Julkunen et al. 2004). The World Tourist and Travel Council estimates that business travel increased worldwide by 60% between 1988 and 2000. There is not much research about impacts of geographical intra-job mobility, but the little there is indicates that negative effects on work-family-balance are to be expected (Green & Canny 2003).

Research in Finland (Antila & Ylöstalö 2005) showed that employees are also increasingly contacting customers, business partners and other work contacts during their leisure time, mainly using the mobile phone and e-mail. Work is certainly more mobile, and more ICT-enhanced, than ever before, but without being perceived as telework.

3.4 Corporate Cultures Which Focus on People and Learning

Individual and collective learning belong to the most important conditions for enhancing the innovative capacity of organisations. As such, they are vital for the competitiveness of companies as well as for the employability and workability of individual employees.

Learning takes place in a variety of ways, stretching from formalised learning courses and workshops to incidental and experiential learning processes, which are part of all human activity. In recent years, a number of authors (e.g. Tuomi 2006) have suggested that it is the latter (incidental or experiential learning) which is the most important way in which people acquire skills they actually need in daily working life. Informal encounters, learning-by-doing and learning-by-emulation are all key processed for knowledge transfer within organisations. As Huysman (2004: 191)

points out “most knowledge has a socially situated nature and cannot be uncoupled from the social community of which it is part”.

While telework researchers have been quick to point out that remote workers must have the chance to participate in all structured learning activities offered by the employer (e.g. training courses, workshops), it appears that it is lack of informal and incidental learning which poses most problems to home-based teleworkers. Indeed, permanent or near-permanent home-based eWork was found to have considerable negative effects resulting from lack of access to social resources (Eichmann et al. 2002; Cullen et al. 2003; Dimitrova 2003; Treier 2003).

Of course, knowledge management and collective learning poses challenges not only in ICT-mediated work. In the debate about the competitiveness of EU firms, much stress is being put on organisational innovation and how it can be fostered by improving vertical and horizontal flows of knowledge within organisations (Information Society Council 2005). Firms have spent considerable effort on developing ICT-based knowledge management systems for improving knowledge transfer. These would also greatly benefit teleworkers. However, the first generation of knowledge management systems did not fulfil expectations, one reason for which was that the systems being used, e.g. intranets and other groupware applications, were found to support only individual learning while being ineffective in providing the conditions for organisational, collective or group learning (Huysman 2004). They also did not take into account that knowledge needs to be socially embedded to be useful. Newer knowledge management approaches now take more account of the fact that “knowledge only has meaning if it can be related to people” (Huysman 2004: 189).

Unless knowledge management systems are made to work and implemented in a significant number of organisations, teleworkers are bound to suffer from impoverished conditions for incidental learning. Vice versa, it is likely that the success with which some larger companies have widely implemented eWork can partly be explained by the existence of an effective ICT-enhanced infrastructure for collective learning.

3.5 Innovative Performance Measurement & Reward Schemes

In spite of the fact that performance-related pay systems have been discussed within the framework of NWO for many years already, it is still unclear whether they can actually support business performance and/or perceptions of job quality. A meta-analysis conducted by Condly et al. (2003), which reviewed “all adequately designed field and laboratory research on the use of incentives to motivate performance” (45 studies altogether), found that team-directed incentives had a considerably stronger effect on performance compared to individually-directed incentives. With regard to the cognitive psychological principle which underlies the effect of incentives, empirical research by Flood et al. (2001) stresses the importance, in particular, of perceptions of meritocracy and equity: Especially for knowledge workers, meritocracy – i.e. the degree to which employees perceive that their rewards in terms of remuneration and career advancement are based on merit rather than other principles, such as nepotism or seniority – appears to be a vital condition for the psychological contract between worker and employer. Against such evidence, we can conclude that performance-related remuneration is likely to improve performance only if it is regarded by employees as being a valid reflection of merit. This means that a culture of trust is required to make these systems work.

In the context of telework arrangements, it appears likely that individually-directed reward schemes are at risk of distorting trust relationships between workers and supervisors, and between co-workers, and as such should be avoided. Team-directed incentives, however, may be appropriate for improving team cohesion, but need to be very carefully applied.

4 Conclusions

Some forms of telework and eWork give workers more say in exchange for greater responsibility, and these are likely to benefit knowledge workers as well as their employers because of their effect on motivation. However, there is no causal link between telework/eWork and job autonomy. Among workers in ICT-enabled remote work, a tendency of bifurcation of job quality can be observed just as well as on EU labour markets in general. This concerns the increasing gap between those who have high-quality jobs, benefit from pro-active work organisation, and are well integrated in the global knowledge economy on the one hand; and those in jobs of decreasing quality, often in neo-Taylorist work settings, fully exposed to competition by low-cost labour from abroad, and with problematic consequences for human capital development, job satisfaction, and health. Different types of telework feature within this picture, with certain types of low-skilled call-centre work at one end of the spectrum and high-qualified multi-locational eWorkers with complex communication and expert thinking skills at the other end.

In this sense, the traditional notion of telework can be misleading and even dangerous, as it tends to hide many important developments in working life and how these are shaped not primarily by technology, but by social and economic forces. The concept of pro-active work can be usefully applied to focus on the core human resources related elements which decide about a company's ability to achieve lasting competitiveness in the knowledge-based economy, and what these imply for extent to which workers are likely to benefit or suffer from the implementation of ICT-enabled types of (remote) work.

5 Bibliography

Antila, J. (2005) 'Veteen piirretty viiva? Työn ja yksityiselämän välisen rajapinnan tarkastelua', Työpoliittinen tutkimus, No 272, Helsinki: Ministry of Labour.

Antila, J. and Ylöstalo, P. (2002) 'The Proactive Approach. The Joint Interest of Companies and Employees?', paper presented at SASE 2002: Work and Labor in a Global Economy, Minneapolis, June 27-30.

Antila, J. and Ylöstalo, P. (2005) 'New Forms of Work Organisation, and Quality of Working Life', paper presented at SASE 2005: What County? Calculation, Representation, Association, Budapest, June 30 – July 2.

Askenazy, P. (2001) 'Innovative Workplace Practices and Occupational Injuries and Illnesses in the United States', Economic and Industrial Democracy, 22(4): 485–516.

Atkinson J. (1984) 'Flexibility, Uncertainty and Manpower Management', IMS Report 89, Brighton: Institute of Manpower Studies.

Bain, P., Watson, A., Mulvey, G., Taylor, P. and Gall, G. (2002) 'Taylorism, Targets and the Pursuit of Quantity and Quality by Call Centre Management', New Technology, Work and Employment, 17: 170-185.

Bessant, J. (2003) 'High-Involvement Innovation', Chichester: Wiley.

Boisard, P., Cartron, D., Gollac, M. Valeyre, A. and Besançon, J.-B. (2002) 'Time and work: work intensity', Report by the European Foundation for the Improvement of Living and Working Conditions, Luxembourg: Office for Official Publications of the Eurpoean Communities.

Brenner, M., D. Fairris, and J. Ruser (2004) 'Flexible Work Practices and Occupational Safety and Health: Exploring the Realtionship Between Cumulative Trauma Disorders and Workplace Transformation', Industrial Relations: A Journal of Economy and Society 43 (1): 242–266.

Brynin, M. (2004) 'The New Economy and Home/Work Boundaries: The Role of Telework', paper presented at Final eLiving conference, Essen, 20-21 January 2004.

Business Decisions Limited (2002) 'New Forms of Work Organisation: The Obstacles to Wider Diffusion', Brussels: European Commission, DG Employment and Social Affairs.

Cullen, K., Kordey, N., Schmidt, L., Gaboardi, E. (2003) 'Work and Family in the eWork Era', Amsterdam et al.: IOS Press.

Dahlmann, S. and Huws, U. (2007) 'Sunset in the West: Outsourcing Editorial Work from the UK to India – A Case Study of the Impact on Workers', Work, Organisation, Labour & Globalisation, (1)1: 59-75.

Dhondt, S., Kraan, K. and Van Sloten, G. (2002) 'Work organisation, technology and working conditions', Report by the European Foundation for the Improvement of Living and Working Conditions, Luxembourg: Office for Official Publications of the Eurpoean Communities.

Dimitrova, D. (2003) 'Controlling teleworkers: supervision and flexibility revisited', New Technology, Work and Employment, 18(3): 181-195.

Eichmann, H., Saupe, B. and Schwarz-Wölzl, M. (2002) 'Critical Issues Pertaining to the Code of Practice for Global E-work', project document, Vienna: Center for Social Innovation.

Empirica (2002) 'Work, Employment and Skills', SIBIS Topic Report No.5, Brussels: European Commission.

Flood, P.C., Turner, T., Ramamoorthy, N. and Pearson, J. (2001) 'Causes and Consequences of Psychological Contracts Among Knowledge Workers in the High Technology and Financial Services Industries', International Journal of Human Resource Management, 12(7): 1152-1165.

Gareis, K. (1999) 'Benchmarking Progress on Telework and Other New Ways of Working in Europe', Proceedings of the Fourth International Workshop on Telework, Tokio, August 31st - September 3rd 1999.

Gareis, K. (2003) 'Home-based vs. Mobile Telework. The Interrelationship between Different Types of Telework', in: Rapp, B. and Jackson, P. (eds) 'Organisation and Work Beyond 2000', Heidelberg and New York: Physica, 171-185.

Gareis, K. (2006) 'New Work Environments: An Overview over Available Evidence on Success Factors and Impacts', empirica working paper, 07/2006, Bonn: empirica.

Gareis, K., Lilischkis, S. and Mentrup, A. (2006) 'Mapping the Mobile eWorkforce in Europe', in Andriessen, J.H. and Vartiainen, M. (ed) 'Mobile Virtual Work', Berlin and Heidelberg: Springer, pp. 45-70.

Gerlmaier, A. and Latniak, E. (2005) 'Widersprüchliche Arbeitsanforderungen bei Projektarbeit – ein ressourcenorientierter Ansatz der Belastungsanalyse', in: Gesellschaft für Arbeitswissenschaften (ed) 'Personalmanagement und Arbeitsgestaltung', Dortmund, 419–422.

Gillespie, A.E. and Richardson, R. (2000) 'Teleworking and the City: Myths of Workplace Transcendence and Travel Reduction', in Wheeler, J.O., Aoyama, Y. and Warf, B. (eds) 'Cities in the Telecommunication Age – The Fracturing of Geographies', New York and London: Routledge, pp. 228-245.

Gillespie, A.E., Richardson, R. and Cornford, J. (2001) 'Regional Development and the New Economy', EIB Papers, (6)1: 109-131.

Gottschall, K. & Voß, G.G. (2005)(eds) 'Entgrenzung von Arbeit und Leben. Zum Wandel der Beziehung von Erwerbstätigkeit und Privatsphäre im Alltag', 2nd edition, München and Mering: Rainer Hampp.

Green , A.E. and Canny, A. (2003) Geographical mobility: Family impacts, Bristol: The Policy Press.

Hanhike, T. and Gareis, K. (2004) 'Modelling eWork – Towards a Better Understanding of Information Technology's Impact on Workplaces and Work Locations', paper presented at the 22nd Annual International Labour Process Conference, Amsterdam, 5-7 April.

Helminen, V., Ristimäki, M. and Oinonen, K. (2003) 'Etätyö ja työmatkat Suomessa Ympäristöministeriö', Suomen ympäristö 611, Helsinki: Edita Prima.

Houtman, I. (2005) 'Work-related stress', Report, Dublin: European Foundation for the Improvement of Living and Working Conditions.

Information Society Council (2005) 'Towards a Networked Finland', Helsinki.

Julkunen R., Nätti, J. and Anttila, T. (2004) 'Aikanyrjähdys, Keskiluokka tietotyön puristuksessa', Kirjakas Ky 2004.

Karasek, R. and Theorell, T. (1991) Healthy Work: Stress, Productivity, and the Reconstruction of Working Life, New York: Basic Books.

Lehndorff, St. and Voss-Dahm, D. (2005) 'The delegation of uncertainty: flexibility and the role of the market in service work', in: Bosch, G. and Lehndorff, S. (eds) Working in the service sector – a tale from different worlds, London and New York: Routledge.

Malone, T.W. (2004) 'The Future of Work', Boston, Massachusetts: Harvard Business School Press.

Malone; T.W., Laubacher, R. & Scott Morton, M.S. (eds)(2003) 'Inventing the Organizations of the 21st Century', Cambridge, MA & London: The MIT Press.Millard, J. (2005) 'Denmark', in Commission of the European Communities (2005)(ed) Collaboration@Work – The 2005 Report on New Working Environments and Practices, Luxembourg: Office for Official Publications of the European Communities, 30-33.

Millard, J. (2005) 'Denmark', in Commission of the European Communities (2005)(ed) 'Collaboration@Work – The 2005 Report on New Working Environments and Practices', Luxembourg: Office for Official Publications of the European Communities, 30-33.

Montreuil, S. and Lippel, K. (2003) 'Telework and occupational health: a Quebec empirical study and regulatory implications', Safety Science, 41: 339-358.

OECD (2001) 'Knowledge, Work Organisation and Economic Growth, Labour Market and Social Policy', Occasional Papers No.50, Paris: OECD.

Richter, P., Meyer, J. and Sommer, F. (2006) 'Well-being and Stress in Mobile and Virtual Work', in: Andriessen, E. and Vartiainen, M. (eds.) Mobile Virtual Work – A New Paradigm? Berlin: Springer, 231-252.

Savage, P. (2001) 'New Forms of Work Organisation – The Benefits and Impact on Performance', Thematic Paper presented to DG Employment & Social Affairs by The European Work Organisation Network (EWON).

Sennett, R. (1998) 'The Corrosion of Character: The Personal Consequences of Working in the New Capitalism', New York and London: W.W. Norton.

Sennett, R. (2006) 'The Culture of the New Capitalism', Yale University Press.

Sturesson L (2000) 'Telework: technology, rhetoric and practise', Linköping Studies in Arts and Science No 204, Doctoral Dissertation

Toffler, Alvin (1980) 'The Third Wave', New York.

Treier, M. (2003) 'Belastungs- und Beanspruchungsmomente bei der Teleheimarbeit', Zeitschrift für Arbeits- und Organisationspsychologie, 47: 24-35.

Voß, G. (1998) 'Entgrenzte Arbeit und entgrenzte Arbeitskraft. Eine subjektorientierte Interpretation des Wandels der Arbeit', Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, 31(3): 473-487.

Ylöstalo, P. (2005) 'Työn uudet organisointitavat. Käyttö ja käytön esteet yksityisellä ja julkisella sektorilla', Tykes Rapportteja 39, Helsinki: Työministeriö.

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