

## **EMERGING IMPACTS OF ON-LINE OVER-CONNECTIVITY**

**Nada Korac-Kakabadse**

Cranfield School of Management, Cranfield, Bedford, MK43 OAL, United Kingdom  
Tel.: (44 1234) 751 122, Fax: (44 1234) 752 641  
N.Korac-kakabadse@cranfield.ac.uk

**Alexander Kouzmin**

Cranfield School of Management, Cranfield, Bedford, MK43 OAL, United Kingdom  
Tel.: (44 1234) 754 345, Fax: (44 1234) 751 806  
alexander.kouzmin@cranfield.ac.uk

**Andrew Korac-Kakabadse**

Cranfield School of Management, Cranfield, Bedford, MK43 OAL, United Kingdom  
Tel.: (44 1234) 754 400, Fax: (44 1234) 751 806  
A.Korac-kakabadse@cranfield.ac.uk

### **ABSTRACT**

*The discourse about the inevitability/ubiquity of information technology (IT) transforming the globalizing workforce is developmentally and managerially one sided. Much of the rhetoric involved infers, on the one hand, libertarian, putatively democratic and innovative communicative capacities. On the other hand, managerial imperatives continue to invoke control and re-engineering impulses that flow from the deliberate (ab)use of IT in effecting "least cost" strategies.*

*Little is said about what technology can do to one! This paper outlines major work-related challenges that management will be forced to contend with and what the one-sided published literature on the impact of IT on actors in coercive workplaces will have to acknowledge.*

### **1. INTRODUCTION**

Parallel with the introduction of modern information technology in the workplace, is an ever-increasing management move to create "leaner" and more "efficient" organizations. Corporations expect productivity and efficiency increases as they introduce new and more sophisticated forms of IT systems, equipment and aids in "de-layering" their structures and reducing the number of employees. The transition to an economy where value adding is through information, ideas and intelligence, the "Three-I- Economy", is based on IT. To some, IT is forging a productivity revolution as it enables flexibility in working arrangements previously unavailable (Fritz *et al*, 1994). The most often quoted benefits from IT are timeliness and connectivity, as IT breaks down barriers of geography and time (Toffler, 1980). Furthermore, IT has also flattened organizational structure and eliminated a vast number of jobs, whilst making others more demanding and

effective (Rockart and Short, 1989; Powell and Dente-Micallef, 1997). Research carried out by a KPMG consultancy found that apparent productivity gains from computers in the US are explained by the longer hours Americans are spending at work (Houlder, 1998).

Research in the area of changing models of work shows that, in the last 10 to 15 years, IT has improved existing processes, increased efficiency and has enabled innovation but, at the same time, warns that 40 per cent of UK professionals will be facing *high levels of stress* at work as IT changes thinking about how society works (Millard, 1999). A complete re-assessment of what work is, how people value work and how people spend their time is taking place as lines between work and other aspects of life are increasingly blurring (Hardill *et al*, 1997; Millard, 1999).

The literature reveals that there are two majority streams dealing with IT in organizations; the IT-enabling and the IT-consequences streams. The IT-enabling stream of thought encompasses the majority of the literature and addresses Gutek's (1983: 163) question: 'What can technology do *for* you?'. A smaller, but steadily increasing, literature is trying to answer Gutek's (1983: 163) second question: 'What can technology do *to* you?'. This paper examines the *negative* impacts of IT on ways of working which result in techno-stress and burnout, with a particular focus on the work of specialists and managers.

## 2. TECHNO-STRESS

Although the term "techno-stress" (Brod, 1984) has been variously defined, it generally refers to the state of mental and physiological arousal, and consequent pressure, observed in some employees who are heavily dependent on technology in their work (Arnetz and Wihlom, 1997). Some have suggested that different aspects of technology produce greater stress for different kinds of "psychological types" of people (Moreland, 1993). Organizational behaviour research has shown that the characteristics of the organization which structure jobs, by placing limits on what one can do, such as technology, affect attitudes and behaviour (Brass, 1985).

Techno-stress manifests itself in two distinct and related ways; in the struggle to accept computer technology (technophobia), and in the new form of over-identification with computer technology (techo-philia) (Brod, 1984). Stress related to techno-philia occurs with the dissolution of human-technology boundaries and the increased dependency on technological aids, wherein humans begin thinking they should act and perform as quickly as their machines (Weil and Rosen, 1998). For example, when humans start to believe that technology, such as the telephone or e-mail, should always be available and that these aids are the only means to getting something done or, more extremely, cases of technosis occur when actors actually begin defining their personas based on what brand or power of computer they actually, or aspire, to own. Hence, from technosis to addictive IT Phillia, is a critical issue for inter-disciplinary research.

The over-identification with computer technology is visible when individuals experience microcomputer mania, with symptoms including: social withdrawal in favour of terminal time, high states of anxiety when separated from their IT gadgets, sleep disturbance, lack of exercise, spousal problems resulting from excessive terminal time, overspending on computers, cruising computer stores and using computer terms in non-computer conversations. The cost of stress-related ailments, including those stemming from burnout, in the US, is estimated by some to be as much as US\$300 billion a year (McGee, 1996) and, lately, between 5 and 10 per cent of Gross National Product (Vernon, 1998).

Research in a large high-tech company, in the US, found that 20 per cent of the Information Systems Department employees showed signs of clinical depression. At Xerox Corp, for example, numerous IT employees have taken disability leave because of depression (Hancock, 1998). Portable PCs, pagers, cellular phones and wireless E-mail ensure that one can stay out of the office for a long time. Demand from increasingly "tech-savvy" users and executives who want more results from IT; unrealistic demands; expectation of IS employees to keep other departments wired around the clock; hype surrounding the Internet; less time to support increasing IT users; being on call 24-hours a day, seven-days a week and insufficient time to distance oneself from the job, are attributing factors in higher burnout among IS/IT professionals (McGee, 1996).

Although depression is no more common in information technology than in other fields, some argue that it is hardest to recognize within IT professionals as much of IT involves working with computers, not people (Hancock, 1998; Fawn, 1998). IT work also tends to attract a large percentage of introverts who prefer to work alone and are attracted to jobs that allow them do so.

Emergent from the Cranfield School of Management research project, namely "IT Roles and Work Practices", "diversity" and "learning", based on interviews with 160 professionals, managers and executives in Motorola, GlaxoWelcome, NCR and Thames Valley Police (Korac-Kakabadse and Korac-Kakabadse, 1998), it becomes apparent that a majority of interviewees identified information overload (E-mail, corporate web sites), responding in near-real time, extended working hours through technology, encroachment of work into discretionary time and multi-tasking as the main sources of pressure and major challenge. Guided by the results of these interview outcomes, the remaining focus of this paper is on techno-stress due to individual over-identification with, or dependency on, technology, as exemplified by information overload; the need to respond to the demands in near-real time; multi-tasking; encroachment of work on discretionary time; loss of privacy; extended working hours and teleworking.

### **3. INFORMATION OVERLOAD**

Information overload usually describes a situation when an employee finds 20 Voice-mail and 60 E-mail messages waiting and a stack of paper in the facsimile machine (Ganzel, 1998). E-mail makes it technically feasible for employees to skip levels in the chain of command, providing senior managers with direct feedback on performance problems and rising organizational issues (Barner, 1996; Berghal, 1997; Ljungberg and Sorensen, 2000; Mackay, 2000). Although some find ways to counter the flood of E-mails by using "bozo filters", software programmes that automatically screen-out the messages of certain E-mail senders, individuals cannot filter all work-related messages. E-mail can be time-saving but it can just as easy take over one's life, rendering employees less productive (Carey, 1996; Whittaker and Sidner, 1996).

Research carried out by the Institute For the Future and Gallup Studies suggests that the average employee sends and receives 178 Voice-mail, E-mail and fax messages each day (Heine, 1997). The onslaught of correspondence has 71 per cent of respondents feeling overwhelmed (Carey, 1996), whilst 84 per cent reported being interrupted three or more times per hour as a result of "layering" - such as receiving the initial letter, followed by an E-mail and, then, even, a fax (Heine, 1997). Increased reliance on IT has produced an increased torrent of data and information or information "push". Some argue that instead of an information age we have entered an age of information glut (Ganzel, 1998). In changing environments, the endless problem is not that 'we have less information than we need, but more information than we can use' (Clark and Kalin, 1996: 33).

Pushing professionals into overload conditions are video- and tele-conferencing sessions; focus group transcripts; clipping services; government studies; trading magazines; electronic monitors of market surveys and a mountain of archived research reports (externally commissioned and generated in-house) on the corporate, electronic knowledge base. Executives, for example, are called on to assimilate ever-growing amounts of information, from an ever-mounting number of sources. Those who are unable to create strategies to cope with information intake are vulnerable to Information Fatigue Syndrome (IFS), a malady that senior executives often recognize privately, but one that is still officially "invisible" in most organizations (Young, 1998). Unfortunately, scholars continually assert that with regard to information, addiction must be the goal without any address to any negative implications of addiction (Shenk, 1997; 1999).

### **4. RESPONDING TO DEMANDS IN NEAR-REAL TIME**

Some argue that new organizations capture value in shifting from the traditional "make and sell" to the new, IT-enabled, paradigm of "sense and respond". The new, interactive communication networks enable organizations to sense, in real time, customers' needs and enable them to respond swiftly and effectively but,

at the same time, create an expectation that the recipient of the message will respond immediately (Bowman, 1997). IT networks, or virtual organizations, require responses and decision making in real time. IT has eliminated a safety buffer, or a "float", in finances and decision-making (Barner, 1996). For example, the gap between the time an individual writes a cheque and the bank actually cashing it has disappeared. Equally, E-mail and Voice-mail, around the clock, have replaced responding to written requests during designated working hours, eliminating decision "float". Paradoxically, saving time can cost a company more by making every situation an "emergency" (Bowman, 1997). For example, IT enabled communication can facilitate working on reports right to the last minute of the deadline, eliminating traditional three days of transport/postage time and, thus, giving more time to get things right. However, the down side is that it leaves less time before the next deadline is set (Ganzel, 1998). The ever-increasing speed of IT increases the speed of workflow and heightens people's expectations for productivity (Clark and Kalin, 1996).

Many organizations, such as in insurance and banking, use IT - supported workflow systems that set the speed of response time. The anytime/anyplace worker is more likely to work a longer day, but not in the usual segments - rather, in spurts of activity throughout the day and night (Devoito, 1996). Many employees tote their laptops on vacation whilst their bosses expect them to carry sky pagers (Weil and Rosen, 1998). Some feel invaded by technology on all fronts; by the beeps of their pagers, cell phones, incoming faxes and by those of others around them.

A poll conducted by the *Wall Street Journal*, found that 80 per cent of US respondents describe their lives as busy to the point of discomfort, as the info-age produces a society in "real time" response, composed of people that are 'economically pressed, politically depressed and socially stressed' (Beeman, 1996: 3).

Technology has produced *perpetual urgency* (Mankin *et al*, 1982; Marshall, 1995). Because it is easier to generate data, the expectation is that people need the data faster (Hind, 1998). Very few people pause to assess what they need to respond to as, often, no one qualifies for their "time" investment.

## 5. MULTI-TASKING

Clark and Kalin (1996) argue that people have set themselves work rhythms to correspond to the steady, quick pace of the computer. The faster the machines, the faster the work flows and the higher the expectation of productivity. They argue that although IT provides the capacity to multi-task, or performing several things at one time, humans are capable of focusing on only one thing and that humans become quantitatively and qualitatively overloaded. A variety of studies have suggested that machine-paced work processes are at an elevated risk of being a stress-related disease (Jenner, *et al*, 1980; Lacroix, 1984). Machine-paced technological systems create conditions of heavy job demands and work pressure, little control over the work processes and both physical and psychological job conditions which lead to socially-isolating work environments (Johansson, 1979; Wilkes, *et al* 1981).

Juggling six open applications on a computer screen, subscribing to too many list-servers and sending and receiving an increased number of E-mails - more than one can handle - all add to increased stress levels (Clark and Kalin, 1996). Even those who choose to work at home, find themselves multi-tasking, cooking dinner in the microwave oven, talking on a cellular phone, sending an E-mail and printing a document, all at the same time. Given the time pressure and deluge of data, the only way an executive can get through a day is by multi-tasking (Young, 1998). But the knack of doing several things at once, using electronic gadgets, can be taken to outrageous extremes, exemplified by use of lap-tops for clearing E-mails during meetings.

## 6. ENCROACHMENT OF WORK ON DISCRETIONARY TIME

Every IT innovation, from cell phone to E-mail, from facsimiles to Web-sites, demands new skills, speedier reaction times and creativity on call 24-hours a day (Weil and Rosen, 1998). In addition to career pressures to work past 5:00 pm, the very speed with which technology develops means people have to put in the extra hours in order to cope with innovation and work (Vernon, 1998). For example, the US workforce is moving

steadily towards a 24-hour-a-day, 7-days-a-week economy with only 55 per cent of workers employed full-time during the day (Presser, quoted in Kleiman, 1996:7).

In the UK, like in the US, a high proportion of interviewed executives stated that there was no point in the day when they are not reachable or accessible (Vernon, 1998). For many executives, this is ultimate irony - as the E-mail, faxes and Voice-mail, created to make working lives easier, have, instead, made things more difficult. With new technology, there are more avenues to be reached and with that comes higher expectations and, consequently, the pressure for higher performance. The question of how one escapes from the tentacles of IT-facilitated accessibility and reclaims one's own life again is unanswered. Furthermore, as many corporations are moving towards the virtual organization, it will become even more difficult to delineate the dividing line between work and home; to determine when an employee's rights of privacy have been violated (Barner, 1996: 15). Traditionally, organizations with a genuine 24-hour, seven-day work ethic, such as the military, the medical profession and the police, were also very rigid in exercising work and leisure discipline (Boyd, 1997) which new entrants to the 24-hour, seven-day work ethic do not have. This need for instant response, with no buffer or cover to hide behind, is acknowledged, even by one of the inventors of personal computer, Steven Jobs, who admits that technology has invaded his personal life as it follows him everywhere (McKenna, 1997).

Living in electronic "real time" causes "time poverty" in both spheres. Information technology facilitates work encroachment into personal life. Increasingly, more people are working longer hours, seemingly by choice, but, in actuality, with little recourse (Vernon, 1998:30). Lives are harried and, increasingly, self-focused. Turkle (1984; 1997:34) questions whether it is sensible 'to sit alone in our rooms, typing at our networked computers and filling our lives with "virtual" friends'?

## **7. LOSS OF PRIVACY**

A 1998 survey of 1085 corporations, conducted by the American Management Association, shows that more than 40 per cent engaged in some kind of intrusive employee monitoring. Such monitoring includes checking of E-mail, Voice-mail and telephone conversations; recording of computer keystrokes; video recording of job performance; video monitoring in the locker rooms and bathrooms; and secret monitoring of employees (Doyle, 1999). Random drug testing was carried out by 61 per cent of those surveyed. Psychological testing, which often attempts to probe intimate thoughts and attitudes, is carried out by 15 per cent of surveyed corporations (Doyle, 1999). Furthermore, genetic testing, which creates the potential for discrimination, is practised by one per cent of surveyed corporations. A survey, carried out by the University of Illinois, reveals that one quarter of 84 surveyed corporations, from *Fortune 500*, released confidential employee information to government agencies without a *subpoena* and that 70 per cent gave information to credit guarantors (Doyle, 1999).

Professionals, working in global corporate communication, need to conduct sensitive communications regarding new products, services or mergers and acquisitions, within safe channels of communication - which usually means face-to-face meetings, excessive amounts of flying time and working on the plane on their laptops. Although information technology facilitates global communication, it is often used for trivia or public information, whilst important and quality information is still exchanged by word of mouth.

## **8. IT-EXTENDED WORKING HOURS**

Those employees who survive re-organizations suffer from survival syndrome and are working longer hours (Korac-Kakabadse and Korac-Kakabadse, 1998). In US, for example, employees believe that working harder and longer is necessary to keep a job (Sharp, 1996). In self-imposed, down-sized, "lean" and, in some cases, "anorexic" organizations, top management assumes that remaining employees will devote 50, 60 or 70 hours a week to get the job done (Clark, 1997).

Research shows that IT users face heavier workloads as the initial higher speed of output provided by IT-aids is quickly matched by management's higher expectations in terms of productivity, creating qualitative and quantitative overload (Karuppan, 1997).

Research also shows that the pressure and complexity of work are higher among those working with new technologies (Agervold, 1987). Thus, the increased workload is often seen as a consequence of these changes in organizational work (Agervold, 1987). Whilst an increase in the pressure of work is now associated with feelings of stress (Buchanan and Boddy, 1982; Agervold and Kristensen, 1986; Agervold, 1987), research shows that, where new technology affects working conditions in such a way that the quality of work deteriorates and pressure of work increases, there is a higher incidence of stress (Agervold, 1987).

Although the demographics of work have changed drastically in the last 30 years, work remains a place built on "face time" or long hours in the office for any recognition, reward and advancement (McKenna, 1997). In today's organizations, 80 per cent of managers work in an office and only 4 per cent work from home (Vernon, 1998). Thus, although companies do make provisions for flexible working hours and working from home, they often marginalize those who use those provisions, such as women and disabled (McKenna, 1997).

## **9. TELEWORKING AND THE WEB "CHAT ROOM": THE NEW "WATER COOLER" OF THE VIRTUAL OFFICE**

The concept of "telework", "remote-work" or "telecommuting" refers to the use of computers and telecommunication aids to do office work away from a central, conventional office during regular office hours (Kraut, 1987). Most people need a sense of being connected to others and belonging to a social group. Although the trend towards a workforce linked by technology and not by common place provides a sense of connectiveness, it falls short of belonging. On-line contact can remove people from a proper understanding of reality and of the proper test for trust, as it is difficult to verify people's identity and to connect, on-line, with "real" life. It is persuasive, far-reaching and clandestine (Lacayo, 1993). Building a common work culture without a common workplace and face-to-face interaction is a challenge to information age. The isolation created in a telecommuting environment can lead to stress. Savings in eliminating lost time at the water cooler may not be real as the need to be connected can take a 15-minute phone call which often stretches to 45 minutes (Devoito, 1996). Furthermore, frustration awaits the worker who attempts to telephone a colleague, only to reach Voice-mail time after time.

Working from home, for example, which is equipped with two phone lines (one for voice one for data); facsimiles; E-mail; file transfer capabilities; and delivery services can be a lonely experience, as well as overwhelming, as there is no place to go to after work. Furthermore, it poses difficulties for personal and others' development and mentoring (Graham, 1998). According to a fax poll of 247 members of the American Management Association, the most frequently felt emotions in the office are enthusiasm (62.8 per cent), frustration (51.0 per cent) and stress (49.4 per cent) (Romano, 1995). Considering that frustration in the workplace is also often dealt with in the workplace, it is difficult to ascertain whether company Web pages, with electronic bulletin boards or "chat rooms", can provide opportunities for frequent exchange of knowledge and venting of frustration.

## **10. CONCLUSION: FROM IT "HYPE" TO LESS SANGUINE ASSESSMENT**

Having a Web page or Intranet does not mean that an organization has effective communication systems; rather, the organization has an electronic system for merely accessing information. Furthermore, the access to Internet also requires skill for *finding* required information. Creating information librarian position(s) within large teams, for example, may reduce information overload and increase effectiveness of team members. Information librarians can add value by being involved in selecting and implementing the company-wide crawler and search engines, indexing and cataloguing major content sites and overseeing the

process for authenticating Web sites. The value of library expertise in information retrieval, in cataloguing and indexing is increasingly more important in the Web context.

Similarly, carrying an audit of current work practices and making them congruent with current demands can eliminate many historical tasks being carried out, devoid of any value adding to the role of the organization. Certain working methods do not match existing technologies and require different prioritizing and ways of working. Weil and Rosen (1998) argue that people allow themselves to be sucked into this technological abyss and, in doing so, they become more machine-oriented and less sensitive to their own needs and the needs of others. Some people become so immersed in technology that they risk losing their own identity (Weil and Rosen, 1998; Sinha, 1999). Others challenge the notion that being on-line, all the time, is equal to being "on the ball"; rather, it can be counter-productive (Hind, 1998).

Most issues are not technological but human and organizational. Thus, those who are in management roles need to look for ways to mitigate the effects of IT change by effectively responding to IT and adopting new ways of working. They are also being required to attend to the needs of staff members and user communities while responding to pressures to continually adopt and develop new technologies (Clark and Kalin, 1996). Managers will need to strategically use the "human moment", through face-to-face communication, in order to add colour to employees' lives, help build confidence and develop trust at work (Hallowell, 1999). This skill is currently ignored - at the peril of organizational fragmentation and dys-functionality. While managers will not be expected to be therapists, they will be expected to identify warning signs of impending employee burnout and to help employees deal with high-stress situations (Barner, 1996). When correctly designed and implemented, with proper organizational adaptation and change management programmes, IT technology *may* significantly enhance business effectiveness.

The challenging question of what technology can do to you goes, largely, unanswered in its more multi-dimensional vein. Business models and IT-driven re-engineering exercises, in both public and private sectors, either refuse to acknowledge the legitimacy of the question or, if, acknowledged, are embarrassed by the question. This "silence" on the behavioural sustainability of IT and, increasingly, ICT innovation and R and D criticality raises issues of complicity and ignorance – the latter, at least, being amenable to persuasion from lines of argument presented above.

IT innovation/instability is "big business", to say the least. Whether it is sustainable in Human Resource Management terms is *the* emerging organizational policy issue of our time. Having spent much of the twentieth-century seeking to understand the "socio-technical" ramifications of machine technology on the shop floor, the calculated disregard of the emerging imperative to understand the "socio-technics" of a digital/virtual/real time-age, runs perilous risk - perhaps with "Techno-Stress", the onus of proof will, at last, need to rest with proposers of IT innovation, rather than with victims of managerially-induced IT abuse. Perhaps, individual litigation, certainly class action, will tell - after all!

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