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Life in the fast lane? Towards a sociology of technology and time

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Abstract

Assumptions about the pace of life speeding up abound in contemporary social theory. While many factors are contributing to this phenomenon, information and communication technologies are seen as the main drivers. This article considers the way social theorists analyse the concepts of time and speed and then examines how these claims might be assessed in the light of empirical research. Such research shows that time compression has multiple dimensions, and that the effect of digital devices like the mobile phone is not simply one of acceleration. In particular, I suggest that the social studies of technology offers a richer analysis of the reciprocal relationship between technological innovation and changing time practices. My argument is that while the hitherto neglected temporal dimension in sociological theory is now being addressed, there is an urgent need for increased dialogue to connect social theory with detailed empirical studies. Without this, we will continue to have difficulty distinguishing social science from science fiction.

Keywords: Time scarcity; speed; mobile communication technologies

Introduction

It should come as no surprise to learn that 'time' is the most commonly used noun in the English language (Oxford English Dictionary 2006). The widespread preoccupation with the speeding up of everyday life in modern societies is neatly reflected in the title of Gleick's book, *Faster: The Acceleration of Just About Everything* (1999). Time–space compression is a constant theme in mainstream sociological accounts of post-modern society, as it is among geographers like Harvey (1989) and Thrift (1996). While an earlier literature about 'industrial society' predicted a 'leisure revolution' driven by automation in industry and the home, contemporary debates are concerned with time

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poverty and the paucity of leisure. For writers such as Giddens (1990) and Beck (2000), for example, the pace of social and cultural change is much more rapid than in any previous era. In the information age, not only are the rhythms of life faster, but the rate of change has itself accelerated. As Nowotny (1994) summed it up in her classic book on time, the challenge for modern citizens, who are liable to feel increasingly harried, is to 'find time for themselves'.

Social theorists have responded in a number of ways to these processes of acceleration. Despite their divergent perspectives, their responses can be divided into two broad camps. Gane (2006) divides the main responses according to whether they call for social theory to speed-up or for it to slow down. It is worth briefly summarizing some of the arguments here to illustrate the way that the idea of acceleration has become central to conceptions of modernity.

A prime example of someone in the first camp is Lash (2002), who argues that today's world is governed less by a principle of society than by a principle of information. By this he means that fixed social bonds are giving way to transient communication bonds that are immediate yet at the same time distanciated. Social bonds have become stretched across space but compressed in time, giving way to accelerated forms of sociality. The compression of time and space in the information age, and the increased mediation of social relations and even bodily functions through machines, mean that life itself is being technological. For Lash, the intervention of digital technologies means that culture and life more generally is speeding up to an unprecedented degree, leaving little time for creative action. As a result of this accelerated pace of the contemporary world, theory has no choice but to speed up by technologizing itself. Social theory then should become 'informationcritique', a practice of 'short-duration presentation' rather than an extended discursive exercise.

Gane's second camp, the slow-down theorists, is equally concerned with the tempo of everyday life. Although Paul Virilio (1995, 2000) is known as the 'high priest of speed' (Redhead 2004), he argues that speeding up is not unique to the digital age. Rather, he suggests that we can read the history of modernity as a series of innovations in ever increasing time compression. His analysis of speed encompasses nineteenth-century *transport* (trains, cars and aeroplanes) that dramatically shortened travelling time; twentieth-century *transmission*, (the telegraph, telephone, radio and computer and satellite communications) that have replaced succession and duration with simultaneity and instanteity; and *transplantation* that compresses time by providing xenotransplantation and nanotechnology. Each of these technological innovations enhances the independence of the social relations of time from space and the body.

Human history, then, can be understood in terms of a race with time, of ever-increasing speeds that transcend humans' biological capacity. According to Virilio, the forces of technoscience are speeding up the world to such a degree that things, even reality, are starting to disappear. The intensive (electronic) present is no longer part of chronological time: we have to

conceptualize it instead as 'chronoscopic' time. Real space is making room for decontextualized 'real-time' processes and intensity takes over from extensity. As humans cannot absorb this overload of parallel information sources, Virilio calls for a cultural slow-down to protect against the further invasion of technology into lived human experience. Such sentiments are now commonly expressed, for example, by Agger in *Speeding Up Fast Capitalism* (2004: 157) recommending that we 'periodically shut down the electronic prostheses dictating our worlds and lives . . . Shut off the cell phone; ignore e-mail; disable the answering machine and caller ID'.

Reflecting on these speed-up and slow down theorists, Gane (2006) makes a number of interesting points. He suggests that sociology has neglected the speed of its own enterprise, along with the speed of the world it seeks to explain. He approvingly quotes Scheuerman (2004: 1) that: 'Any attempt to make sense of the human condition at the start of the new century must begin with the analysis of the social experience of speed'. While his general argument is appealing, the second part of this statement, that sociology has failed to address the speeding up of everyday life, is more contentious. In my view, if Gane has found sociology lacking in this area, it is partly because he is looking in the wrong places.

I will argue that, in fact, time pressure and time poverty are major preoccupations of contemporary sociology and of social science more generally. There is a lively debate about the mechanisms that generate time scarcity and whether people's experience of time pressure is as pervasive as popular discourse suggests. The problem here is more one of a lack of connection between abstract social theory and other, empirically oriented, branches of sociological work. In addition, I will take issue with the rather deterministic view of the role of technology in social change that these theories adopt. Theories of the information, knowledge and network society all assign ICTs the pivotal role in processes of acceleration. I will argue that their failure to engage with the burgeoning literature in the social studies of science and technology (STS) represents a missed opportunity for a richer analysis of the relationship between technology and time.

Acceleration society

One major source of confusion in discussions about time compression and speed is that the concept of *acceleration* still lacks a clear and workable definition. According to Rosa (2003), while individualization, rationalization, differentiation and domestication (of nature) have all been extensively analysed, theories of modernity have overlooked the omnipresent processes of acceleration that run across these four dimensions of society. For him, social acceleration is an irreducible and constitutive trait of modernization and

therefore changes in the temporal structure of modern societies transform the very essence of our culture, social structure, and personal identity. Quantitative changes in the realm of speed amount to a 'sweeping qualitative social revolution' (Rosa 2003: 28). In sum, the much-disputed distinction between modernity and post- or late modernity is best captured with reference to social acceleration.

Most usefully, Rosa examines in detail what it means to say that Western societies are acceleration societies. He separates out three analytically and empirically distinct categories of acceleration. The first and most measurable form of acceleration is the speeding up of transport, communication and production that can be defined as *technological acceleration*. The second is the *acceleration of social change*, meaning that the rate of societal change is itself accelerating. The central idea here is that institutional stability (in the realms of the family and occupations, for example) is generally on the decline in late-modern societies. The third process is the *acceleration of the pace of life*. It is the focus of much discussion about cultural acceleration and the alleged need for deceleration. The pace of (social) life refers to the speed and compression of actions and experiences in everyday life.

Now the most intriguing question is how these three types of acceleration relate to each other. As Rosa points out, there is clearly a paradox between the first and third process. If technological acceleration means that less time is needed (for production, transport, etc), this should entail an increase in free time, which in turn would slow down the pace of life. Rather than time becoming abundant, however, time seems to be increasingly scarce. Accordingly, it only makes sense to apply the term 'acceleration society' to a society if 'technological acceleration and the growing scarcity of time (i.e., an acceleration of the "pace of life") occur simultaneously' (Rosa 2003: 10). We will examine various explanations of this apparent paradox in a moment.

But first, how can we measure the pace of life? On the subjective side, an acceleration of the speed of life will affect people's experience of time: it will cause individuals to consider time scarce, feel harried and pressed for time. In other words, people will feel that they can no longer find time to complete the tasks and activities most important to them. That time pressure is now a common experience is evidenced by the fact that an increasing proportion of the population report feeling short of time. Starting in 1965, the USA time use researcher John Robinson and his collaborators have been asking respondents: 'Would you say you always feel rushed, even to do things you have to do, only sometimes feel rushed, or almost never feel rushed?' The proportion of 18–64 year olds who report always feeling rushed rose from 24 per cent in 1965 to 38 per cent in 1992, then declines slightly in 1995 (Robinson and Godbey 1997: 231). According to most evidence, people feel leisure time has become scarcer and more harried (Frederick 1995; Gershuny 2000; Linder 1970; Robinson and Godbey 1997).

Since the publication of Schor's *The Overworked American* (1991), the politics of working time has become a central issue in the sociology of work and the family, as well as in economics and industrial relations. In practice, these contemporary debates are, in large measure, about time – time for work, time for families and time for leisure. Schor's argument echoed by many others (Hochschild 1997; Galinsky 1999), that American workers are logging more time at the workplace than their parents and grandparents, touched a chord in the popular imagination. Whereas economic progress and increased prosperity was supposed to deliver more leisure time, time scarcity and the paucity of leisure time seem to be the result. As a result, time has become a major theme in mainstream sociology, but it has largely taken the form of a discussion about work–family balance and the quality of contemporary life (Epstein and Kalleberg 2004; Gershuny 2000; Hochschild 1997; Jacobs and Gerson 2004).

Most sociological explanations of acceleration begin with the character of the capitalist economy, entailing the commodification of (clock) time. Following Marx, they argue that the regulation and exploitation of labour time means that saving time is equivalent to making profit: 'when time is money, then faster is better' (Adam 2004: 39). According to the classic Marxist account, the two basic ways of extracting more profit from labour are either to lengthen the working day or to work labour more intensively. In advanced capitalist economies, attempts to derive maximum productivity from workers by 'time compression' have taken a number of forms: by increasing activity within the same unit of time (introduction of machines and the intensification of labour, re-organizing the sequence and ordering of activities (Taylorism and Fordism), using peaks and troughs more effectively (flexibilization), and by eliminating all unproductive times from the process (just-in-time production) (Harvey 1989).

There is strong evidence of widespread effort intensification, with people working harder in advanced industrial nations. For example, throughout the 1980s and 1990s, the intensity or pace of work intensified in British workplaces: 'Comparing 2001 with 1992, an increasing proportion of workers are experiencing work at high speeds, report that they are "working under a great deal of tension", and agree strongly that "my job requires me to work very hard", (Green 2003: 143; see also Green 2005). However, the picture in relation to working hours is more complex (Edwards and Wajcman 2005). While there have been major changes in working time regimes, the overall trend is one of an increasing polarization of working time, between those who work very long hours or overwork, and others who work few or no hours. However, there is surprisingly little empirical evidence supporting Schor's claim that the average length of the workweek has changed appreciably in recent decades. Indeed, Robinson and Godbey (1997) argue that between 1965 and 1995, when Americans felt more 'rushed', their leisure time had actually increased (see also Gershuny 2000).

The quality of time

So how do we account for this mismatch with people's experience of a rising deficit of time? For the 'acceleration theorists' discussed above, the subject experiencing the acceleration of the pace of life is the individual. As a result, they fail to see that what happens to individuals' average hours of work is not the same as what happens to households. As Jacobs and Gerson (2004) have pointed out, discussions about average working hours masks a dramatic redistribution of paid work between the sexes. While the contribution of prime-age men has significantly declined, the hours that prime-age women (especially mothers) contribute to the labour market have significantly increased. It is as if much of the paid work has been transferred from men to women. The resulting dual-earner *households* are supplying more working hours to the labour market than ever before. Time pressure is especially strong in families with dependants, where both husband and wife are in full-time employment (Bittman 2004; Mattingly and Bianchi 2003; Sullivan and Gershuny 2001). The perception that life has become more rushed is due to the real increases in the combined work commitments of family members, rather than changes in the working time of individual workers. This transformation in family composition and gender relations over the last few decades is the key to explaining the time deficit.

The phenomenon of acceleration, then, cannot simply be understood as a uniform experience of a shortage of time. In order to understand our experience of living in an 'acceleration society', we need to consider how households are organizing their working and non-working lives and be attuned to gender differences in time pressure. Feminist literature has long argued that the squeeze placed on women's time is due to the 'double burden' of juggling paid employment with their continued responsibility for the household's operation (Davies 1990; Glucksmann 1998; Sullivan 1997). Time use data does indeed show that time poverty is a particularly widespread experience among working mothers, who juggle work, family and leisure. The presence of children absorbs an enormous amount of parental time, particularly from mothers (Craig 2007). However, does it follow, as is commonly claimed, that women have comparatively less leisure time than men?

Surprisingly, when taking paid and unpaid work together, there is little difference in the number of minutes men and women spend in 'work' (Bittman and Wajcman 2000). As we have demonstrated elsewhere (using time use data in OECD countries), the crucial issue is not simply the duration or volume of time. In order to objectively measure the acceleration of the pace of life, we also need to consider whether there is a social tendency to perform more tasks simultaneously within a given period of time or multi-task. This will affect how people experience the 'quality' of time. In other words, to understand perceptions of being harried, we need to consider the character of time as well as the

quantity of time available. While there is no significant gender difference in the aggregate time men and women spend in leisure, we argue that the *quality* of leisure differs in two important respects. Distinguishing between 'pure' and 'interrupted' leisure, we show that men enjoy more leisure time that is uninterrupted (that is, unaccompanied by a second activity). Women's leisure, by contrast, tends to be conducted more in the presence of children and subject to punctuation by activities of unpaid work. In addition, the average maximum duration of episodes (blocks of time) of pure leisure is longer for men (that is, that women's leisure is more fragmented into periods of shorter duration than men's). It seems reasonable to assume then that women's leisure time may be less restorative than men's. Such research demonstrates how the socio-economic organization of time, particularly in terms of the domestic division of labour, can produce qualitatively different experiences of time.

This argument is particularly important as a corrective to the focus on the intensification of paid work that has preoccupied industrial relations and sociology of work scholars. Housework is unpaid and never done, resulting in highly gendered temporalities that do not coincide with the temporalities of paid labour. Caring labour does not straightforwardly operate according to clock time and cannot be accelerated. 'Clearly, the direct activities parents engage in with children consume far less time than the responsibility for overseeing them' (Budig and Folbre 2004: 63). While some aspects of care can be commodified and outsourced, the character of intimate personal relationships and emotional labour demand 'quality time'. Indeed, time use data suggests that working parents who make use of non-parental childcare do not reduce their parental childcare time on an hour for hour basis (Bianchi 2000). Instead, parents, mainly mothers, compress their domestic labour time, squeeze their personal care time and reschedule the times when they are together with their children so as to preserve their time with children (Craig 2007). Perhaps we should be giving as much attention to the intensification of parenting as to the intensification of work.

The temporal patterns and rhythms of daily life, then, are complex and difficult to measure. On the basis of several studies, Southerton and Tomlinson (2005: 232–3; Southerton 2006) usefully distinguish between three mechanisms that generate different senses of feeling pressed for time. First, the *volume* of time required to complete sets of work and consumption tasks is the basis for the *substantive* sense of being harried; second, *temporal dis-organization* is the outcome of the difficulties of co-ordinating social practices with others; and third, *temporal density* accounts for experiences of time that can be described as 'juggling' and 'multi-tasking', that is, the allocation of certain practices within temporal rhythms that create a sense of intensity in the conduct of those practices. This captures well that harriedness is a multi-dimensional experience. However, a notable omission in their extensive analysis of the time squeeze is the role of ICTs. The concept of the 'acceleration society' outlined

above presumes a direct link between technological acceleration and the growing scarcity of time. It is to this theme that I now turn for the remainder of this article.

Technological acceleration

What role then does technology play in shaping people's experience of time? Does technological acceleration inexorably hasten the pace of everyday life? To attempt answers to these questions, let us look more generally at how the relationship between technology and time has been conceptualized. In the past, research has presumed a direct relationship between technology, productivity and working-time, according to which the spread of automation should reduce both paid and unpaid working-time. The result should have been an increase in free time, which in turn would slow down the pace of life.

However, recent analyses of technological innovation have shown that the impact of technology is far from straightforward (Bijker and Law 1992; Hackett et al. 2008; MacKenzie and Wajcman 1999; Wajcman 2004; Woolgar 2002). Rather than simply saving time, technologies change the nature and meaning of tasks and work activities, as well as creating new material and cultural practices. Standard sociological readings of ICTs tend to give primacy to social relations, treating them as existing prior to and outside the intervention of technology. According to this paradigm, technological acceleration results in people basically doing the same things, but at a faster pace. By contrast, approaches more in tune with the social studies of science and technology (STS) conceive of the technical as part of the constitution of the 'social'. In other words, the 'social' and the 'technical' are not separate spheres, but one and the same. New technologies reconfigure relationships between people and the spaces they occupy, altering the basis of social interaction. The emergence of new media technologies, such as the mobile phone and the Internet, creates new kinds of social relationships and a host of new activities and practices. Such conceptions of the sociotechnical can help us understand the relationship between technology and time as one of mutual shaping.

In some ways, Urry's (2000) view of the relationship between technology and time does adopt an STS perspective, but it remains rather abstract. Rather like Castells' (1996) concept of *timeless time*, Urry argues that new technologies generate new kinds of time characterized by unpredictable change and quantum simultaneity. The result is *instantaneous time* – a time characterized by new ICTs based upon inconceivably brief instants that are wholly beyond human consciousness, and the simultaneous character of social and technical relationships that replace the linear logic of clock time. Finally, it is also a metaphor for the widespread significance of exceptionally short-term and fragmented time (Urry 2000: 126).

While such conceptions of time capture how the speed of ICTs is transforming the economy, financial markets, politics, and patterns of production and consumption, it is less clear what this speeding up means for the experience of lived time. Urry (2000: 129) does include in his specification of *instantaneous time* 'the sense that the "pace of life" throughout the world has got too fast and is in contradiction with other aspects of human experience'. The tenor of his discussion of instantaneous time is that it is socially destructive, yet he does not provide systematic empirical research to support this claim. One is left wondering what time 'organised at a speed that is beyond the feasible realm of human consciousness' (Urry 2000: 126) might mean to people and how it concretely relates to the actual use of ICTs in everyday life.

Moreover, while Urry explicitly endorses an STS approach, at times his reading of the impact of ICTs betrays an undercurrent of determinism. Both he and Castells have a tendency to discuss the impact of electronic information systems as having major 'irreversible' effects, ushering in disruptive social revolutions. However, if ICTs themselves are conceived of as culturally and socially situated artefacts and systems, then there is nothing inevitable about the way they evolve and are used. While the technical character of ICTs matters, STS emphasizes that human-machine interaction crucially depends on the locally-contingent meanings that people attribute to them. Concepts such as *interpretative flexibility* and *domestication* underscore the interpretive agency of users, highlighting their role as agents of technological change in which innovative user practices trigger material transformations of artefacts (Haddon 2004; Oudshoorn and Pinch 2003). For instance, the heavy use of mobile phones by adolescents exchanging SMS text as well as audio messages was unanticipated by its designers (Agar 2003). Rather than adopting a negative, deterministic stance towards the relation between new technologies and time, we need to ask whether there is evidence that people are collectively finding ways to appropriate, adapt and actively shape the use of digital technologies to take more control of time rather than being victims of uncontrollable instantaneous time.

The emerging literature on the social impact of mobile phones is an ideal site to look for such evidence. Certainly it is hard to think of any other technologies for which the claims of making location irrelevant and the pace of events instantaneous and simultaneous can be made with such force. For example, in their recent book on mobile communication, Castells et al. (2007: 171) state that: 'The diffusion of mobile communication technology greatly contributes to the spread of the space of flows and timeless time as the structures of our everyday life'. Wireless mobile devices are a prime example of new technologies that are co-evolving with emerging social practices that may, in turn, be reconfiguring (rather than simply speeding up) the lived experience of time. Therefore, for the remainder of this article, I will demonstrate these ideas by considering emerging mobile phone practices.

Mobile telephony

It is notable that the diffusion of the mobile phone, arguably the most rapidly diffused technological artefact in history, has coincided with the major public debate about time poverty and the speeding up of life. Before the emergence of wireless telephony, the boundary between work and home life was reflected in the separation of business and home phone lines (with separate numbers). This was one of the principal ways that many people controlled their time. The most widely noted feature of the mobile phone is that it affords the possibility of 'perpetual contact' (Katz and Aakhus 2002; Ling 2004), thereby disturbing the divisions between private and public realms. This capacity for communication 'anytime, anywhere', around the clock and regardless of location, is widely seen as fostering harriedness and temporal fragmentation. Are mobile communication technologies, then, increasing the pace of people's lives?

A common view, fully compatible with the theories of the acceleration society, is that constant availability is potentially an oppressive feature of wireless devices. Ubiquitous and persistent connectivity or the 'always on' capacity of mobiles means that previously 'dead time' is now saturated with communication. People can make 'productive' use of time spent in third spaces such as airports, cars, subways and cafes by phoning, sending text messages, and increasingly accessing their e-mail and information services. Mobile media foster a 'mobile privatization' or 'networked individualism' that is not tied to workplaces or home time–space boundaries (Williams 1990; Wellman 2001). Indeed, as Green argues (2002: 288), individuals organize their activities around flexible compartments of time, rather than compartments of time associated with particular geographic space. It is this time-based (rather than space-based) organization of activities that defines 'accessibility', leading to a redefinition of 'public time' and 'private time' into 'on time' and 'off time'.

There has been much discussion of the colonization of time through the increased permeability of work and home or leisure activities adding to time pressure. Most of the empirical evidence of work spilling over into family time comes from surveys of managers and professionals. For example, Fligstein and Shin (2004) report that more than one-third of all workers (38 per cent) use a cell phone or pager on the job. Most notably, 88 per cent of managers who had a cell phone or pager reported that these devices were used to keep them in touch after hours. The authors conclude that telecommunications devices are being extensively used to keep workers connected to their offices not only during working hours but after hours as well.

Another study of Canadian knowledge workers begins by defining cell phones, laptops, home computers, BlackBerry devices and PDAs (Personal Digital Assistants) as *Work Extending Technology* (WET) – meaning the act of engaging in work-related activities outside of regular offices hours in locations

other than the business office (Duxbury et al. 2006). While documenting the dramatic increase in the percent of managers, professional and technical workers using these technologies, the authors are careful to note that it is not possible to determine the direction of causality, that is, whether WET increases workloads or whether increased workloads lead people to adopt WET as a means of coping with these demands. Their most interesting finding is that the *same* features of WET that increase perceived control and facilitate communication also appear to be the source of many of their disadvantages. Respondents identified the disadvantages of WET as the feeling of being 'on call' all the time (and they felt this pressure from both work and family) and the lack of a clear boundary between work and home, resulting in a sense of having less time available for spending with the family. The perceived advantages were greater control over when and where they worked, increased availability to communicate easily and asynchronously with others, and greater work–life balance. The authors regard their research as inconclusive with respect to work-life balance, surmizing that the potential of these devices to help control work-life balance is not being realized.

Recent US research on the impact of the cell phone and computer on the blurring of role boundaries between work and family life significantly links it to increased distress and decreased family satisfaction. Based on a longitudinal study of professional and managerial career couples, Chesley (2005) found that persistent use of the mobile phone, in particular, led to an increase in work spilling over into family time for both men and women in ways that were felt to be negative. However, it was only women who reported that family-related calls spilled over into work in ways they found stressful. In this way, the author argues that communications technology may be reinforcing gendered work/family boundaries, as family worries and responsibilities appear to be more likely to influence women's outcomes.

By way of conclusion, however, Chesley questions whether 'boundary permeability' is the best way to frame the issues associated with a shifting work/family interface. Perhaps, she opines, the impact of these devices on people's experience of time is more to do with the control that individuals might have over what passes through these boundaries. Here she is pinpointing a major limitation of the studies discussed above. While providing a valuable overview of patterns of technology use by knowledge workers, such survey data does not provide a rich textured sense of how people's expectations and resources might structure the consequences associated with use. As people further adopt and incorporate ICTs into their everyday lives, it may be that the spatial, organizational and even psychological border between time at home and time at work will lose its salience.

Moreover, some of the research such as the Canadian study cited above borders on tautological in the way that it defines ICTs primarily as work extension technologies and then proceeds to measure this. It treats these

technologies primarily as instrumental work tools and cannot capture the complex ways in which people may be using these devices to change or reorganize their practices and how this might impact on their experience of the quality and not simply the volume of time. There is a presumption that time is one-dimensional and that some practices 'take up' increasingly more time to the detriment of others. Gershuny (2003; see also Wellman 2001) makes a parallel point in relation to 'time displacement' theories about the Internet: that using the Internet will necessarily reduce the time people devote to sociability with non-household members. On the basis of the UK time diary panel study, he concludes that there is no such association and, if anything, using the Internet is positively associated with sociability. He speculates that the explanation may lie in the way that the technology is a means of organizing and promoting social life, but stresses that we need qualitative, observational work to interpret these findings.

Technology and temporal practices

New technologies, then, do not simply use time and displace existing activities. If we have learnt anything from the history and social studies of technology, it is that technological innovations generate unintended consequences and unanticipated (and often contradictory) effects. As socio-material configurations, they usher in a whole range of changes in social practices, communications structures, and corresponding forms of life. The same technologies can mean very different things to different groups of people, collectively producing new patterns of social interaction, new relationships, new identities. Rather than simply reading them as adding to time pressure and accelerating the pace of life, mobile modalities may be creating novel time practices and transforming the quality of communication.

While the mobile phone, like the fixed landline, was originally designed for the business market, its predominant use is being redirected towards incessant contact with family and friends. Focusing on the impact of telephony on strong ties, Licoppe's (2004) research vividly shows how new communication devices do not simply take up time or spend time, but transform relationships. Noting the frequency and short duration of mobile phone calls and text messages, as well as the trend towards shorter domestic telephone calls (in France), he argues that ICTs provide a continuous pattern of mediated interactions that combine into 'connected relationships', blurring the boundaries between absence and presence. This 'connected' mode does not substitute or compensate for face-to-face interaction, but rather coexists with previous ways of managing mediated relationships. For Licoppe, this represents the emergence of a new repertoire for managing social relationships in a changing communication technoscape. In other words, mobile phones become domesticated in

relation to the wider communication techno-system, triggering innovative patterns of interpersonal sociability.

Recognition of the creative possibilities of constant availability provided by the mobile phone contrasts sharply with the emphasis in much of the writing discussed earlier. For example, Southerton and Tomlinson's (2005) notion of *temporal density* implies that the intense temporal rhythms produced by 'multi-tasking' add to the experience of being harried. One interesting line of empirical enquiry would be to explore whether wireless technologies have the potential to increase control over timing. Rather than fragmenting time, the ability to communicate more frequently and asynchronously could be harnessed to save time. Mobile technologies enable tasks and parts of task sequences to be delayed, consolidated, programmed in advance, and performed from a remote location. This *time-shifting* property of mobiles also expands the possibilities for multi-tasking (*time-deepening*) – completing a task in the background while concentrating one's direct attention on another activity (Robinson and Godbey 1997: 38). Moreover, by facilitating the micro-coordination of the disparate demands of domestic and work schedules, these artefacts also promise to alter the experience of time scarcity associated with the *temporal dis-organization* of daily life.

Such enhanced coordination between the multiple demands of work and home is particularly important given the rising incidence of dual-earner families, increasingly flexible work patterns, and the mismatch between work, school, transport and shopping hours. The greater difficulty of getting people together, of synchronizing disparate time–space paths, is a major source of busyness. Studies of mobile telephony reveal that its major use is for the micro-coordination of everyday life, allowing for tighter and more efficient 'real time' planning of activities, thus 'softening' precise schedules (Ling 2004). According to Pan-European surveys, most people agree that the mobile phone helps coordinate family and social activities. Preliminary results of an Australian survey on mobile phone usage indicate that there is a pronounced peak in calls to partners and other family members in the afternoon around the time school ends (Wajcman et al. 2007). Surveys also show that most users of the Internet think that it helps them to save time (Dutton, di Gennaro and Hargrave 2005: 38). If household co-ordination is key to the time squeeze, as I have argued, then mobile devices afford unique techniques for managing time that could affect feelings of time pressure. They may offer positive forms of temporal control, enabling more people to have not only more time but time of their choice.

To date, however, there is limited research on the detailed practices of time planning and on different temporal strategies afforded to us by the use of ICTs. An exception is Hörning, Ahrens and Gerhard's (1999) qualitative study of how people's time practices evolve with the use of the personal computer, the video-set and the answering machine. From their data, the authors posit three

divergent temporal applications of these technologies in order to demonstrate how individuals use the same artefacts to relate to time in very different ways. The 'surfer' figure embraces ICTs in a purpose-oriented and functional approach in order to save time; the 'sceptic' views technologies as causing time pressure and thus limits technology usage; and the 'gambler' operates the new technologies to increase time flexibility and juggle different time frames. All three time strategies are shown to be problematic, as the extensive and widespread application of technology changes the conditions under which its use promised to be successful. Users actively appropriate the capabilities of technologies in order to pursue different time practices and these in turn affect their experience of time.

Adopting an STS approach, the authors argue that the impact of a specific technology on the experience of time can only be understood in its concrete and practical application in daily life. There is no temporal logic inherent in an artefact that determines time practices. Technologies in themselves do not lead to either velocity or slowdown, but rather provoke multidimensional practices of time and new meanings of temporality. Although predating the ubiquity of mobile phones, this study suggests directions for future empirical research on the potentialities of mobile devices to increase control over timing through time-deepening and time-shifting.

A dimension in need of further research is whether the same capacity of mobiles to foster connected presence among strong ties is, in the context of employment relations, a source of constant interruption that increases the experience of fragmented, pressured time. Just as e-mail interruptions both save and consume time, so mobile devices are clearly resources for managing the logistics of work processes. Yet there is a paucity of research describing how people's work activities are being reworked around their use of new technological artefacts. Some preliminary research by cognitive psychologists suggests that while multi-tasking and instant e-mail messaging disrupts attention and arguably lower efficiency, they are frequently beneficial and aid well-being (Czerwinski, Cutrell and Horvitz 2000). The cognitive costs inherent in the development of spontaneous mobile phone communication have yet to be explored. Clearly, the nature, and not just the quantity and frequency of interruptions, needs to be investigated. Again this highlights how the concept of work intensification cannot fully capture this dynamic co-construction of technology and working time.

Conclusion

I began this article by suggesting that the idea of acceleration, as a distinctive, perhaps defining feature of contemporary society, is now central to social theory. Concepts such as time–space compression, instantaneous time and

timeless time abound to capture the consequences of digital technologies for the speeding up of everyday life. While there is much abstract discussion of the multi-dimensional phenomenon of acceleration, it is still poorly understood. I have argued that this is, at least in part, the result of insufficient engagement between the claims of social theory and more empirically inclined debates in the sociology of the family and work about time pressure and time poverty. Here I am advocating for a less theoretically driven approach to sociological thinking about speed, time and technology, and opening up empirical inquiry around the topic.

The experience of time pressure and feeling harried is more complex than it first appears. While there is ample evidence that people feel short of time, objective measures of time use suggest that the experience of time pressure is not uniform. I discussed some research about the mechanisms that generate time scarcity, demonstrating that household composition and gender relations need to be considered. That is, I have argued that the key to unlocking the paradox of the 'acceleration society' is to locate the phenomenon as one of households rather than individuals, and to consider time compression as having multiple dimensions. The fact that employed mothers report most time pressure is not the result of their having less free time, but is because when faced with a finite 24 hours in the day, mothers intensify the use of time by multi-tasking and juggling short spells of caring activities with equally short spells of leisure and self care.

While modern patterns of time can scarcely be conceived of without the use of ICTs, they do not autonomously generate processes of acceleration. Here I have taken issue with the rather determinist role ascribed to technology often found in general theories of the information, knowledge and network society. I argue that STS perspectives provide the possibility for a richer analysis of the relationship between temporality and technological innovations. Mobile phones are presented as an exemplary case of a new technology that is claimed to compress time and space with their 'anytime anywhere' property. While mobile devices both consume and save time, emerging research indicates that they are profoundly implicated in the changing character of time and quality of relationships. Mobiles are part of an evolving technoscape in which people are creatively finding ways to incorporate these tools into their lives as well as giving them new meanings. STS analyses highlight this mutual shaping relationship between time practices and ICT innovations that is transforming communication patterns and social networks.

Temporality is now a central issue in sociology and much has been written about the increasing lack of control over time experienced in post-modern societies, but in my view there is still a dearth of empirical research informing these debates (Adam 2004). In many ways, studying the role of ICTs in reshaping time is like trying to capture a moving target as new technologies and new

cultural practices are rapidly evolving. For example, what were until a few years ago distinct technologies, such as computing, media and telecommunications, are already converging. In Japan, almost 40 per cent of all Internet users access the Internet via both the mobile phone and the personal computer (MIAC 2006). It may be that, with 'seamless connectivity', the separation of home and work that we take for granted in modern societies is in the process of reformulation. As co-ordination is now a major issue for households, the unique time–shifting properties of mobile devices might allow work schedules to be spontaneously renegotiated, creating opportunities for more time spent with family and friends.

Future research could explore whether time-pressured households are making extensive use of ICTs to overcome the inflexibility of schedules and reduce time pressure. We also need more studies of how wireless devices affect the labour process through micro-coordination, time-shifting and multitasking, creating a reordered temporal context for work. The ways in which people might be adapting digital technologies to create possibilities for the denser use of time is an area ripe for investigation. Rather than ICTs pushing us inexorably into a life in the fast lane, perhaps they can be harnessed and reconfigured as an ally in our quest for time control.

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