

# **TIME AND ICTS**

**Dr Leslie Haddon**

Media and Communications  
London School of Economics  
Houghton Street  
London WC2A 2AE, UK  
E-mail: LesHaddon@aol.com

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This paper aims to review and reflect upon some of the ways in which role of time has been analysed in empirical studies of ICTs (Information and Communication Technologies) in daily life. Hence the exercise is one of charting the different ways in which time has been discussed in this field, including indicating why it is one the agendas of both social scientists researching and companies developing ICTs. In keeping with the venue, this paper is also exploratory, speculating about further research issues.

But first, a few caveats, mainly about what counts as a 'time' issue and what will and will not be covered in this paper. Activities, including travel, always take place in time but one has always to ask how much value there is in focusing on time or on the activity. For example, 'travel time' was discussed in a recent paper on 'mobility in everyday life' in which the author was involved (Cost 269 Mobility Workgroup, 2001). But one could equally well argue that it should be conceptualised as a time issue, and indeed parts of those discussions are reported here.

Then we have 'change over time'. This could cover longer term historical developments such as changes in society affecting the popularity of ICTs (Williams, 1975) or the changing social construction of, for example, parenthood and childhood which have also had a bearing upon the consumption of ICTs (Haddon, 2001). Alternatively change over time could cover transitions over the life course, which again structure our experience of ICTs. Hence 'change over time' has been a theme of some ICT studies (Haddon and Silverstone, 1994), but this sense of time will not be covered in this paper except in as far as the very way we organise or perceive time in everyday life has altered - as is discussed below, in relation to children and time.

Instead, the main focus will be on the following headings dealing with time in our daily lives;

1. The distribution of time
2. The structure of time
3. Perceptions of time
4. Planning and managing time

### **The distribution of time**

One commonly used measure of the usage of ICTs is the amounts of time that people consume them: the total time spent watching TV, using PC, making phone calls or being on-line.

This aggregate time has to be put in the context of more general measures of time distribution devoted to different activities, as aggregated from time use diaries over the years. Arising from this we have the literature charting changes in working hours, changes in 'leisure' time (clearly a contested term, especially when considering gender), changes in hours spent on domestic labour (by men and women- another area subject to some debate) and trends such as people spending less time regenerating themselves in terms of less sleep and less time for meals (Garhammer, 1998b).

But clearly, in principle, producers of ICTs have some interest in this measure if any such wider changes in people's time budgets might have implications for the consumption of ICTs. For example, the BBC's 5 yearly Daily Life survey measured this (as well as the timing of activities) to adjust their TV scheduling as appropriate (Haddon, 1990)

Another area where this measure of time is of interest is in relation to the question of whether the use of one ICTs displaces another – historically we might consider the effects of TV on cinema going and radio listening (although the influence of TV's arrival was not simply one of decreasing time for cinema and radio – the experience of these other media changed). More recently we might consider the effects of newly arriving TV channels on how much time people spend watch the existing ones, and the effects of cable and satellite on time spent watching terrestrial TV, or of VCRs on time watching live TV or of the PC and more recently the Internet on time for TV.

But this assumes that that there is a media, or an ICT, or a telecom time budget – that people set aside times for consuming ICTs, or sub-sets of ICTs, just as they set aside economic budgets. From the perspective, the new ICT competes mainly for the time spent on existing (and or related) ICTs<sup>1</sup>. *The extent to which this is the case can probably be checked to some extent at least by analysing existing time budget studies, especially ones collected by the media - with a methodological caveat to be discussed in a moment.*

Then we also have the question of whether, or really to what extent and in what circumstances, ICT use displaces time spent on other activities. In other words, to what extent are there not separate time-budgets for ICT consumption? For example, do mobile ICTs (mobile phone, mobile walkman, mobile computer) mean that we spend time using ICTs when travelling which in the past use to be personal time<sup>2</sup>, time to reflect, etc. – or was it time when we read in the past - or were bored<sup>3</sup>? *Once again, we can consider checking this using time budget data.*

However, there is one methodological observation to be made here. Aggregating time to see how much is spent on an activity per day, per week, etc, is a blunt instrument - for example, even the experience of 'watching TV' may be different at different times (sometimes the TV may be viewed with attention, sometimes it may be a backdrop to some other activity, at best observed from time to time). But if we take the TV example, at least it is often viewed in relatively substantial blocks (not just for 2-3 minutes at a time). To some extent this is true for (stand alone) PC use. But as regards other ICTs, especially involving communications, the actual time involved in any communication can be relatively short (e.g. short phone calls, short e-mails, SMS, consulting the 'always on' Internet). Even when aggregating these communications, the total time involved may be relatively small<sup>4</sup> and yet (a) these uses may be an

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<sup>1</sup> This picture is, of course, made more complicated by multitasking involving the consumption of several ICTs simultaneously – to be discussed later in the paper.

<sup>2</sup> Some of these issues are discussed in the report on mobility by the COST269 Mobility Workgroup, 2001.

<sup>3</sup> Or once again, do we mentally 'multitask' now so that those previous activities have not been displaced but instead the time is used for more than one purpose.

<sup>4</sup> For example, in the 9-country survey for the EURESCOM project, the respondents in this sample used the phone for an average of 3.11 hours per month, ranging from 1.95 hours (Denmark) to 4.33

important part of daily life and (b) they may well have consequences for time issues, and be shaped by time constraints, but that is less visible if we simply total the time involved in such activities<sup>5</sup>.

This whole issue is important because to the extent that we reserve time for activities this in turn imposes potential limits on the consumption of ICTs. We can demonstrate this with an example from a 5-country qualitative study for NCR of Internet adopters and non-adopters (Haddon, 1999)<sup>6</sup>. For many adults interviewed, the time slot when they went on-line was often constrained by working hours, thus occurring in the evenings or at weekends. Even some teleworkers followed this pattern. For example, one British interviewee only allowed herself time to relax and search for whatever interested her on the Internet in the time slot after she had completed her day's work and before she went out socialising in the evening. For others the time slot might fall after completing some work-related tasks at home in the early evening, or in the late evening, relaxing at the end of the day (e.g. through socialising on-line). In other words, while some (especially single person households) had unpredictable periods of free time, others had more regular time slots for going on-line.

The point is that some of those involved in the Internet industry asked how the time people actively spend on-line might increase substantially, e.g. in terms of hours. One can imagine how it might increase somewhat, and how the pattern of use might change to frequent short use with the 'always on' arrangement. But it is more difficult to see how, at least in the short term, time can increase substantially for many like those interviewees when it competes against people's commitments to and desire to be with family, with friends and to take part in other activities inside and outside the home. *One line of research would clearly be to explore examples of when and how patterns of time use changed and over what time scale, to incorporate new ICTs into daily life.*

Another reason why this question of time distribution is important is because at stake in these discussions is not just a disinterested academic or a corporate interest in time budgets. There are questions raised by social commentators and indeed in households themselves concerning how we should spend time. Perhaps the classic case concerns the role of TV's place in life (see Lodziak, 1986), when one of the more popular critics of the dangers TV posed for children focused less on the content they were exposed to than on the time spent watching TV (Winn, 1977). Moral panics about fears of 'addiction' – be to TV, computer, computer games – reflect some of this worry about upsetting some kind of 'balance in life' and fears that other areas of our daily experience (including time spent on maintaining social relationships with others) will be neglected. Current manifestations of these themes occur in relation to Internet

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hours (Italy). The distribution was skewed to very low usage: 50% of users use the mobile phone for less than 2 hours per month (Mante-Meijer and Haddon, 2001). The countries covered were the Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain and the UK.

<sup>5</sup> Of course, this figure may still be interesting for telecoms and other service providers where they tariff is related to the overall time spent on communication.

<sup>6</sup> This was a middle-class sample since at the time of the study in 1998 they were the predominant users of the Internet. The qualitative study examined 20 households in each of the following countries: Italy, Germany, the Netherlands, Norway and the UK.

– do we spend too much time either in a virtual world or interacting with distant others at the cost of interacting with those near at hand?<sup>7</sup> (Kraut et al, 1998).

Meanwhile, within households themselves there are related discussions about time. For example, in a British study of cable use (and non-adoption) by social class AB households, one of the main reasons why some resisted was because the thought that TV was too seductive and already took up too much time in their lives (and their children's lives) and therefore cable represented the threat of more TV (Silverstone and Haddon, 1996). Over the years when interviewing parents about their ICTs, the author has noted that although there has been some concern about the content their children watch, there is an equal focus on regulating the amount of TV watched and the same is currently true of the amount of time spent on-line (Haddon, 2001), even though, despite some worries, most parents see the Internet in a very positive light.

It is worth noting that it is not just the actual usage that is affected by decisions about the 'time costs' involved, or, to use a term from economics, the 'opportunity costs' – i.e. someone could be partaking in another activity instead. Anticipation of time costs can affect not only the decision to use, but the decision to adopt or to invest in the skills necessary to use an ICT. This was captured in some comments from a recent international study for EURESCOM<sup>8</sup> involving focus groups (Klamer et al, 2000), when people were expressing their reservations about the Internet

*"It takes time to develop into an experienced searcher"*

*"If one isn't selective and doesn't know what one's looking for, surfing, information search and shopping may take too long ...and consume disposable time."*

One trend that has been noted in the time literature has been a faster pace of life in general (Garhammer, 1998a). On the one hand this includes a faster pace at work, but also a faster pace in consumption as we try to fit more activities into the same, or slightly expanded, amount of leisure time (Garhammer, 1998b). One aspect of ICTs is that as tools they have the potential to facilitate this process, as observed by this Italian interviewee in the EURESCOM study.

*"New technologies allows you to practise more activities but they make you frenetic and stressed"*

To take stock of the discussion in this section, just as ICTs compete for 'disposable income' with other ICTs and with other activities and commodities, they also compete for what might be called 'disposable time' – although it may be hard to ascertain exactly what constitutes this. More generally, 'free' time is being thought of as a resource, or alternatively other time commitments can be seen as a constraint on consumption.

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<sup>7</sup> This particular American study found a decline in family communication.

<sup>8</sup> Project P-903 "Cross Cultural Attitudes to ICTs in Everyday Life". Apart from the survey, the qualitative part of the study involved 6 focus groups in each of 6 countries: the Czech Republic, Denmark, France, Italy, the Netherlands and Spain. All subsequent quotes, shown indented and in italic, come from this study.

## The structure of time

A number of ICTs, especially but not only those related to communication, are promoted not so much for saving time as much as for time-shifting activities. Examples would be VCRs, answering machines and voice mail. Or else they offer temporal flexibility in that people can use them at the timing of their choice without being constrained by fixed time schedules: e.g. Video On Demand, remote banking and shopping, and (answering) asynchronous communication media such as e-mails and SMS. Of course, by offering users more flexibility in organising their lives, this may in turn produce time savings.

That is the technological promise, and certainly participants in the EURESCOM project realised this to some extent (Klamer et al, 2000). However, our ability to shift time is also constrained by the social structures in which we operate. French analysts studying phone communication patterns note how it is still shaped by patterns of work, when shops are open and when transport and other public services operate – and to an extent this remains so even as we move to 24 hour, 7 day a week economies and opening hours. Influenced by the time of work and of school, domestic calls start to rise at 5pm peaking at 8-9pm (De Gournay and Smoreda, 2001).

Then there is the question of synchronising with others. For examples, teleworkers and retired people still make many phone calls in the evening because that is when other people who they call are at home (apart from tariff considerations). In general communications between adults and their (sometimes retired) parents are in the evening. And the qualitative part of this French study shows how calls earlier in the day are often re-directed to the evening, because sometimes people want a quite period to deal at more length with phone conversations (De Gournay and Smoreda, 2001). And of course social codes also imply that you should not phone after 10pm (Lelong and Beaudouin, 2001).

Another French study shows that even Internet users avoid going on-line in the early part of the evening both to keep the (often single) phone line free for incoming and outgoing calls and because the early evening is more often devoted to communal practices like having a meal together. Internet traffic rises after 10pm, and prior to that sessions on-line are shorter (Lelong and Beaudouin, 2001). That particular research went on to examine experiments using terminals other than the PC for accessing the Internet. As regards using a set top box to access web-TV, the TV watchers in the household would usually impose their timetable on when the TV was used for programmes and when it could be used for the Internet and webphones were only used for the Internet after 10pm when ordinary voice phone calls were no longer made.

*One general research question that emerges from the above discussion is the degree to which the time structures discussed above are flexible or inflexible. Under what circumstances, for whom, and in relation to what type of (social) constraint are people freer to change the time order of their daily lives?*

The influence of time, and timing, on ICT consumption can be further exemplified from the results of British qualitative study conducted for the cable company Telewest

whose staff were interested in how to persuade more people from social class AB to take up cable (Silverstone and Haddon, 1996)<sup>9</sup>. The study examined both cable adopters and non-adopters, and one consideration, though by no means the only one, related to time. Whatever the amount of actual interest the particular AB household members had in television, work commitments, children and lifestyle choices meant that the majority of the interviewees often had at best only a few hours to watch on the weekdays and at weekends. Many of the men, especially, worked long hours, and then expected to spend some time with their families. So parents from this social class would often not have the chance to begin viewing until 8pm or later - and then some of these would be going to bed by 10pm or 11pm. Hence many argued that cable was not justified because they did not have time to watch much TV, or enough TV.

But then it is also worth considering one of the selling points of cable – the number of films they offered. In that time slot, these managers and professionals could have had the option of watching more films. However, many of this group also liked to watch the evening news as a priority, either (at this period in the mid-1990s) at 9 or at 10pm. Which meant that the other TV programmes they watched (including ones they videoed) were of shorter duration (than a film) and watched either side of news. In other words, the timing of their commitment to the news, and wanting to see it ‘live’, blocked the film option

One further question about how people structure their time for ICT use concerns whether they can find blocks of time, and how large those blocks are, versus the degree to which time for ICT use is fragmented. This issue has been discussed in relation to gender, where women, who still have more responsibility for domestic labour, experience relatively more fragmented TV viewing than men, fitting some viewing in between other activities. But the picture is more complicated by other factors. In a qualitative study of teleworking, both male and female professionals, for whom work was a priority and a career, organised work into blocks since they needed protracted periods to carry out their tasks, and this was reflected in the timing of their use of ICTs such as the PC. Meanwhile, clerical telework was predominantly undertaken by women who were using it to earn money while at being home. Work, and hence the use of ICTs, was temporally more fragmented as these teleworkers alternated between small tasks (printing off) and domestic chores (Haddon and Silverstone, 1993).

This issue of the duration of time slots allotted to ICT use can be salient for a number of reasons. In a French study of experiments involving ADSL, the researchers argued that flat-rate tariff was one important factor which led people to devote longer blocks of time to the Internet because they did not worry about costs associated with pay-per-use. The authors argue that this contributed to more sophisticated usage<sup>10</sup> and that extension of time facilitated learning - in fact, more people in households learnt to use the Internet besides the ‘single’ expert that is normally the case<sup>11</sup> (Lelong and Beaudouin, 2001). We might speculate whether having blocks of time also allows more experimentation and a greater chance of achieving success (e.g. in terms of finding what you want on the Net). *Hence, another research issue could be about our*

<sup>9</sup> The study covered 20 households.

<sup>10</sup> Along with other factors such as the rapid response through using high-speed access.

<sup>11</sup> More women and more elderly used it.

*freedom to determine the duration of time slots devoted to ICTs and whether, or the extent to which, having blocks of time does have these beneficial effects.*

Finally, there are questions concerning attentiveness that can be raised when discussing the experience of fragmented time, but this is certainly made complex by the phenomenon of ‘multitasking’ – doing several things simultaneously. The multitasking of women because of their degree of involvement in domestic labour has been discussed, but more generally the increasing saturation of households with ICTs has led to several technologies being used at once: e.g. listening to music or TV while being on-line, children switching between doing homework on a PC and instant messaging with friends. To take one slightly older example from TV, we might consider the practice of zapping between programmes using the remote control and keeping track of several narratives simultaneously.

*Obviously fragmented time and attentiveness is an issue that might concern those commercial bodies trying to attract our attention with their offers, but it may have a bearing on learning and cognitive processes. Hence, the whole issue, perhaps together with the multitasking experience of time, might merit further study.*

### **Perceptions of time**

Subjective perceptions of time influence the strategies that people try to adopt in relation to the organisation of time. These also influence attitudes to and use of new ICTs, for example, sometimes motivating interest in ICTs as a means of saving time.

One perception mentioned both in the literature on time and in studies of ICTs is that of ‘time stress’ or the sense of ‘time pressure’. An apparent paradox noted in some of the time literature is that while those in employment have gained slightly more leisure time (or rather ‘non-work time’), surveys show that they actually feel more time pressure. On the one hand this may be due to higher expectations, trying to fit more activities into leisure time (as noted above). In fact, in one German study, three-quarters of those surveyed said that they experienced time-pressure precisely because they were trying to do too much in their leisure time (Garhammer, 1998b). On the other hand, another suggestion is that it is actually other changes in the experience of time that bring about this sense of time pressure. For example, people feel this pressure because they are increasingly required to use their time more intensely, perhaps doing several things at once, or because of the ‘*sheer number of separate activities... (leading to) a succession of short, frequently changing episodes of activity*’ (Bittman, 1998).

There are national variations in perceptions, reflecting perhaps not just different objective circumstances, but also different expectations. For example, in surveys asking working people if they felt rushed, 25% said yes in Germany compared to 11% in Spain (Garhammer, 1998b). Even within countries, there is variation. Certainly those involved in what has been called more ‘passive’ leisure activities (e.g. TV watching) have not necessarily felt ‘pressured’ nor, surveys suggest, have young workers spending time in pubs, cinemas etc., whose social life involved a large amount of social communication (Garhammer, 1998b). Even sections of the population who experience a crowded timetable might agree that they are, or outsiders might define them as being, ‘busy’ - but they need not experience this as ‘pressure’.



For example, some find it stimulating. In the EURESCOM focus group study, those participants who had both mobile phones and Internet access were more inclined to talk about the huge number of different activities which made them live an active and rather hectic life, including their leisure time. But these people liked to be busy, they did not feel stressed but saw being busy in a very positive way (Klamer et al, 2000).

One factor noted across all focus groups in the EURESCOM study was the importance of being in control of one's own activities. Being busy did not automatically lead to feeling under time pressure as long as the people wanted to take part in these activities and felt in control. As one Dutch male participant in that study noted:

*"I teach sailing one evening a week. It's a real rush to leave work on time, but it's your own choice. You don't mind if it is something you enjoy."*

One complication is that 'feeling in control' was often related to perceptions of free choice in the use of time, and that itself could be a problematic evaluation. For example, a free choice to take part in a long term project later becomes a commitment that can feel beyond one's control, as noted by the Danish scout-leader commenting on the number of scout meetings he had in a week:

*"I feel too tired to go, but I go anyway because I feel obliged"*

*Since people's evaluation of their time may well be an influence on their adoption and use of ICTs it might be worthwhile to explore further the factors structuring perceptions of time pressure and stress, perhaps refining those concepts and their bearing upon the consumption of these technologies.*

### **Planning and managing time**

As regards the degree of spontaneity in planning time, one useful starting point for considering this temporal issue is German research from the late 1980s that discusses the changing experience of childhood this century (Büchner, 1990). This study traced the decline of street culture, where interaction was to some extent spontaneous with peers who happened to live nearby. This was partly replaced by home-based leisure for children, a point also made more recently in Canadian and British research (Wellman, 1999; Livingstone and Bovill, 1999). But more free time was also spent at a distance from the home both in after-school institutions (e.g. sports, clubs) and also with friends who lived at a distance – again, a point captured in the recent EURESCOM research (Klamer et al, 2000).

Maintaining such social circles required more co-ordination and planning, and children became more dependent on being transported by adults. In this context, the phone became more and more essential not only to arrange meetings, which could be partly done at school, but also to confirm them after negotiations with adults. Children, it was argued, were experiencing a more intense time economy, often having to say they had 'no time' and finding themselves under more pressures to 'save time'. This research argues that this development acts as part of their socialisation into later adult roles as they learn to manage their time economy, schedule activities, make appointments and make commitments to others. It also

implies that the timing of meeting requires more advanced planning and is less spontaneous (e.g. than calling round to somebody's house who lives locally).

However, with the arrival of the mobile phone, Norwegian research especially noted the phenomenon whereby people use the mobile phone to make arrangements to meet when they have already arrived at a destination such as a pub, restaurant or other site – improvising a meeting rather than planning one in advance. One study has noted this behaviour is especially developed among teenagers as well as the process of only vaguely specifying where to meet at first but then progressively firming this up through subsequent calls (Ling and Yttri, 2002).

Thus in contrast to the fixed phone research, such uses of the mobile phone (as well as phoning ahead to warn that one is late and rescheduling when underway) imply the need for less planning in advance and suggest more spontaneity in organising meetings and travelling to them. Indeed, the teens in the Norwegian study explicitly acknowledged this ability to organise meetings at the last moment. So has this flexibility lead to new 'just-in-time' forms of socialising (to borrow a term from the field of production)?

Here it is worth considering a point made earlier in the discussion of timing: about the problems of synchronising time with others, including other family members (especially as people's individual time schedules become more varied). This was captured in one of the EURESCOM focus groups by this Danish male participant:

*"When we were younger, we visited each other spontaneously. We don't do that any more. Now we call in beforehand and make appointments."*

While another French male participant noted the constraints of family life:

*"With a child...we need to plan everything. We cannot go out anymore. With the new means of communication, we may organise things better but we feel like we are in a restraint."*

The point is that the greater possibility for instant communication does not necessarily lead us to change the way we plan and manage time. It is difficult to do so at short notice, more spontaneously, if we are locked into some of the time structures that have been discussed at several points in this paper. Now clearly the Norwegian youth referred to earlier would seem to have a fair amount of flexibility in this respect.

*But a more general research question would be, once again, to ask about the degree to which different people have such flexibility and the degree to which, for different groups, there have been some changes in the way they plan and manage time.*

One last example of how managing time is bound up with social codes concerns replying to e-mails and SMS. As noted above, the technological promise is that one can reply when it is convenient, offering temporal flexibility. However, in practice there are often social pressures to reply soon, as noted by the EURESCOM participants in comments such as *'I feel obliged to communicate'* and *'The sender often expects a fast reply'* (Klamer et al, 2000). This can actually lead to a sense of

losing control, and even a reaction against this, as was noted by a female participant in some British Telecom qualitative research (Haddon, 2000)

*“I’d say that 40% of the e-mail I get at work is social, I also get an incredible deluge of work related stuff. Now my social e-mail is just out of control, over the last two years there’s just been more and more of it, its so tedious. (...) my e-mail circle has increased and they’re getting more frequent... (...) it’s quite outrageous and takes up far too much of my time, it’s becoming quite annoying, I used to reply straight away, now I leave it for weeks on end without replying because I just can’t be bothered with it any more.”*

*Hence one research project might involve charting the nature and form of sanctions which put pressure on people to reply, the expected time scales of replies, how people actually respond and whether, as in the above example, various forms of text messaging have careers in that those engaged in communication respond differently over time.*

### End note

This paper has not meant to provide an exhaustive list of time issues that have emerged in ICT research. For example, it has not covered the discussions about how ‘orientation’ to time (past, present and future orientations) has a bearing upon on ICT consumption (Silverstone, 1993). It has not covered how ICTs are used to mark, or give a sense of structure to, the passing of time (Scannel, 1988) nor how for some people (including some lone parents and some elderly) ICTs help the, to ‘fill time’ (Haddon and Silverstone, 1995, 1996). Nor has it attempted to deal with ICTs and perceptions of different types of time, as captured, for instance, in terms such as ‘quality time’ (with children). Instead, the focus has been and some main and reoccurring ways of thinking about time within ICT studies, especially those in which the author has been involved, as an introduction to those discussions and results.

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