

SOCIAL LEISURE AND HOME IT: A PANEL TIME-DIARY APPROACH

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ABSTRACT

The impact of the Internet is put into the context of long-term, time-use trends in the United Kingdom, taking advantage of the nearly 40 years of time-diary studies that have been conducted. These trends in time use challenge several popular beliefs about how society has been changing in the wake of new technology and other social changes since WWII.

The main focus of the analysis, however, is on a unique set of panel data in which respondents in nearly 1000 households completed full-week diaries in 1999 and 2000, making it possible to distinguish changes in three groups: prior Internet users, nonusers at both time points and new Internet users. No notable changes in social life were found in any of the three groups across the span of the study, indicating little support for the hypothesis of Internet users suffering significant losses in social life.

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*Much of the evidence described here comes from the **Home-Online** study, conducted by the ISER (Lacohee and Anderson 2001). The study, both fieldwork and analysis, was financially supported by British Telecom.*

Modern developed economies are service economies, though not quite the sorts of service economies imagined in Bell's (1974) description of post-industrial society. When one speaks of economic growth, nowadays, it is growth concentrated in the provision of final services—yet for a reason to be set out below, not necessarily growth restricted to final consumer service industries. What follows is about the mechanics of this growth. It will consider, first in general, but then in some very specific ways, how the diffusion of new technologies can, under some particular circumstances, transform economic structure by changing patterns of activities in daily life

In the 1950s and 1960s Western economies were growing as fast as they ever have, faster than during the Industrial Revolution in the nineteenth century. This was a new sort of industrial revolution, a *service sector revolution*. It involved a certain shift in the paradigm of production and consumption, with three distinct elements:

- It involved the spread of certain sorts of *material infrastructures* for consumers (e.g. the electricity generating system, the paved-surface road network, the television broadcasting network).
- It involved investment in *new technology in the home*, domestic equipment, materials and furnishings, “white goods” washing machines, vacuum cleaners, gas or electric central heating, televisions, record players, and motorcars.
- It also involved (in relation to some areas of service provision) the dissemination of what is thought of as *software*—gramophone records, broadcast radio and television programs.

The way the production/consumption paradigm worked was simple: connect households to the infrastructure, then use the home equipment and software to produce final services. So, instead of going to the cinema, households bought a television and produced their entertainment in their own homes by switching on the set and receiving the broadcast software. Instead of live music performances, they acquired a gramophone player and then bought or borrowed records and played them. Instead of traveling by public transport—i.e., buying transport services—households bought cars and used their own labor to provide the final transport service. They no longer went to or sent out to the laundry, but instead bought a washing machine.

This line of argument provides a rather general description of the nature of radical innovations in consumption. Instead of buying labor-intensive, final domestic transport and entertainment services, under this new production/consumption paradigm households bought so-called “labor-saving” domestic equipment and produced the final services themselves *outside the economic nexus*.

There was, at this time, a particular bundle of new technologies (transistors, commercial derivations of cathode ray tubes, cheap fractional

horsepower electric motors, plastics and other new materials). These new component technologies were combined in various complex ways and with various sorts of infrastructures. They developed new consumer products which radically changed ways of providing for the wants of populations throughout the developed world. The mass markets for these products, in turn, meant very substantial increases in the consumption of the resulting final services. Since the costs of the products fell continuously and the skills required for their use were not high, their wide diffusion promoted a considerable democratization, or increasing egalitarianism, in specific areas of service consumption. (Extended discussions of the economic implications of this sort of self-servicing change are found in Gershuny [1978, 1984], and a specification of its meaning in terms of change in time use is set out in Gershuny [2000, pp.16–28 and 222–229]).

These innovations in the modes of provision of services from the 1950s to the 1970s in Europe and North America constituted a revolutionary change, in the same sense that the “scientific cultivation” changes on the farms of the UK on the eighteenth century or the “iron and steam” changes in the factories of the nineteenth century were revolutionary. In this paper, an analogy is drawn between today’s IT revolution and transformations in daily life that happened over the mid-twentieth century. As a result of that particular bundle of technologies and infrastructures and that transformation, the first quarter of the twenty-first century is seeing a new bundle of technologies—microprocessors and cheap reusable data storage, together with increasing flexible and broad bandwidth telecommunications network—which together constitute today’s “IT revolution”.

There is considerable skepticism—perhaps as a result of the spectacular boom and bust of various e-commerce enterprises in the opening years of the new millennium—questioning whether the effects of this new bundle of technologies and infrastructures are indeed as revolutionary as those of the mid-twentieth century cluster. What exactly is it, the skeptics ask, that the dotcom companies are providing? The model of the service sector transformation summarized here provides a source of answers to this question, suggesting that IT may change some of the activities of daily life over the next few years, in ways analogous to the impact of the 1950s technologies that led to the self-servicing revolution.

There is also a considerable pessimism attached to this new technology. New (computing) equipment is located and used in private homes. This must necessarily lead, some analysts consider, to a new technologically induced personal isolation, with the net user sequestered and alone with a glowing screen in a private space, thus reducing the extent and the intensity of social contact, and leading to a further breakdown of that recently topical macro-sociological commodity, social capital (Nie and Erbring 2000). But this did not happen previously. Those same mid-twentieth century technologies that produced the service sector revolution—the televisions, cars, and kitchen white goods—were supposed to have produced a privatized mass society, a “lonely

crowd” of isolates ever more divided by the invisible walls surrounding the nuclear family. Did this in fact happen as a result of the last wave of technological innovations? Must it necessarily happen as a result of the growth of home computing and the Internet?

WHAT THE IT REVOLUTION IS NOT

The starting point is obviously the diffusion of home computing equipment. Figure 1 data from the first nine waves of the British Household Panel Survey (Taylor *et al.* 2001) show that on an *individual* basis 45 percent of people by early 2001 (probably over half by 2002) are in households with home computers. However, the distribution of access is strongly skewed. Two-thirds of those in households above the mean income have access, but fewer than a quarter of those in below-mean income households—and there are negligible levels of ownership in households below the official half-median income poverty line. There is thus a substantial “digital divide” in the UK.

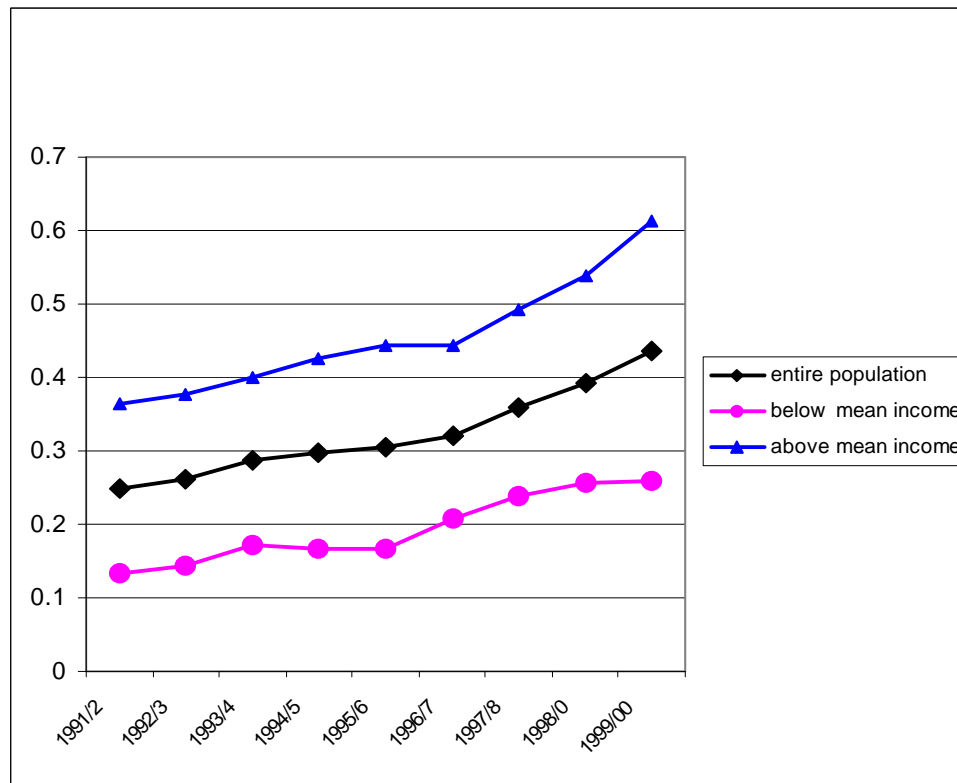
Figure 1 shows evidence of regular growth. This is a classic diffusion curve, entering the steep growth phase. But note that all the aggregate growth comes at the top end of the market. Is this an acceleration of the digital divide? Or does it reflect a change in the way low-end households get IT services, through relatively restricted approaches to online access through specialized telephone or TV-based email systems in which the local computing power is either limited or inaccessible?

However, irrespective of whether telephone or TV-based access is “restricted” access, it is clear that the traditional “diffusion curve” analysis of *computing equipment* is not the right way to think about this new technological paradigm. The IT revolution, if such it be, is plainly not merely a matter of the installation of computers in homes. Just as with the 1950s technologies, one cannot really understand the innovation process without some idea of how the technologies are being *used*. To get a proper hold on the nature of the putative IT revolution, one needs to see how the computers, software and the Internet are actually being used in the home—how they relate to ongoing changes in the pattern of daily life.

LONG-TERM UK CHANGES IN TIME USE

Daily life is mostly absent from social and economic indicators. There are plentiful statistics about what goes on in “the economy,” but very little about activity patterns outside it. Yet most of what people do goes on outside the economy; indeed about half the total work of the society is done on an unpaid basis in private households and community organizations.

Understanding daily life means accounting for the full range of activities—paid work and unpaid work *and* leisure. One needs an unusual sort of data, providing evidence on how people spend their time, “time budget”

FIGURE 1: PROPORTION OF ADULTS IN HOUSEHOLDS WITH COMPUTERS (BHPS)

statistics, evidence for which can only come from a very specialized sort of survey materials, from large random samples of the population who keep a complete diary continuously over a randomly chosen day (or preferably a week). Survey data of this sort, though vital for research into the use of technology in the home, are expensive to collect and, as a result, not very widely available. It is only in the last five years or so, for example, that the UK Office of National Statistics (ONS) has been producing any sort of regular national time-use statistics from diary surveys, and these so far give us only a rather static picture of current time-use patterns.

However, though there has been until recently a complete absence of official sources of information on time use, researchers in the UK are very fortunate in having access to previous, non-official sources of evidence of time-use patterns from other groups outside the ONS. They have been collecting diary materials for quite a long time; and surviving evidence from their studies allows us to put together some quite good representative statistics for the UK, going back to the early 1960s. The BBC Audience Research Department actually conducted time-budget surveys as far back as the 1930s; the 1961 and 1975 mean hours reported in Table 1 below come from reworked materials from this source (BBC 1964, 1977). Starting from the early 1980s, the UK Economic and

Social Research Council (ESRC) has supported a number of national-scale, time-use surveys; the 1987 data in Table 1 come from the time-diary survey element of the ESRC's "Social Change and Economic Life" research initiative (Gallie 1994). The most recent ESRC time-diary material has been collected in collaboration with the ONS, and results from this study will become available later in 2001. The 1999/2000 results below come from a BT-funded study that is described in the next section of this article.

Table 1 (covering adults aged 25 to 65) provides quite a long-term picture of change in national activity patterns stretching back from the present to the early 1960s. It shows the following key changes for men:

- Sleep time remains largely *unchanged* over the period.
- Eating meals at home is declining strongly throughout the period (food at home being more frequently consumed in a "grazing" form simultaneously with other activities) whereas eating out (and going to pubs) has been growing substantially.
- Shopping time has been increasing; this is related both to the increased distance to shops and hence travel time, as well as the spread of self-service shops over the period.
- There is a surprisingly small growth in time devoted to TV and radio over the period; in fact, the fastest rate of diffusion of television in the UK was experienced in the decade immediately preceding the starting point of the table.
- A very considerable decline in paid work time.

Overall, roughly two hours per week were devoted to home computer-related activities in 2000, more time per week than spent in church and volunteer activities.

The picture for women is pretty similar except for:

- A very substantial decline in unpaid work time, partly reflecting technological change within the household and partly reflecting men's increasing contributions to this activity, which is in turn partly due to the very fast growth of women's participation in paid work. This nevertheless led to only . . .
- . . . a small increase in paid work (since the great bulk of the increase in women's employment over this period was in part-time work).
- Women's time using personal computers is about half that of men.

Of course the really surprising feature of this table, given recent discussions in the press, is that there is no long-term evidence for the widely discussed "time congestion" phenomenon. Even for working-age adults (Table 1 focuses on the 25–65 age group, to exclude the effects from the very rapid expansion of tertiary

TABLE 1: HISTORICAL CHANGE IN TIMEUSE (HOURS PER WEEK)

	UK men aged 25-65				UK women aged 25-65			
	1961 BBC	1975 BBC	1987 ESRC	1999/00 BT	1961 BBC	1975 BBC	1987 ESRC	1999/00 BT
Necessary Time								
Paid work	47	38	34	34	15	15	21	22
Unpaid work at home	9	7	11	10	33	26	18	16
Child and adult care	0	1	2	4	3	3	3	7
Shopping	1	2	3	3	5	5	5	5
Sleep, personal care	64	65	65	63	64	66	67	65
Eating at home	10	9	8	6	12	10	8	7
Travel	3	7	9	7	2	5	8	6
Leisure Time								
Church, voluntary, etc.	1	0	1	1	1	0	2	1
Active leisure	4	7	4	4	3	5	3	4
Eating out of home	1	2	3	4	0	1	2	3
Radio, TV, etc.	16	17	17	19	14	15	14	16
Other home leisure	11	12	10	10	15	17	13	13
Other free	1	1	2	1	2	1	4	2
Home computing	0	0	0	2	0	0	0	1
Total Free Time	34	39	37	41	35	39	38	40

education over this historical period), one finds a notable and unexpected *growth* in leisure time.

What one can see instead is a phenomenon that corresponds to another related argument—about time-use *polarization* over this period. The hypothesis is that developed societies show the emergence of two distinct groups: at one extreme the work-rich and money-rich, leisure-poor, and at the other, the work-and-money-poor with lots of leisure but insufficient money to spend on it.

Table 2 shows the long-term historical change in activities, as in the previous tables, but broken down by a crude indicator of social status. Note in particular:

- The reversal of the traditional gradient between paid work time and social class: the economically dominant class works the longest hours, and the highest leisure time totals are associated with those least well provided for. This presumably reflects the changed composition of capital. Those who own financial or fixed capital can earn profits without committing their own time. By contrast, those who rely upon embodied human capital – constituting now a much larger proportion of the highest social class than previously – must spend their time in paid work to produce income.
- There is an increasingly strong class gradient in passive leisure: a lower social grade is associated with more TV viewing.

TABLE 2: HISTORICAL CHANGE IN TIME USE BY SOCIAL STATUS (IN HOURS PER WEEK)

	UK Men aged 25–65						UK Women aged 25–65					
	1961			1999/2000			1961			1999/2000		
MRS social status*	1*	2*	3*	1	2	3	1	2	3	1	2	3
Necessary Time												
Paid work	40	43	50	39	37	29	12	12	16	35	31	12
Unpaid work at home	11	10	8	8	10	11	33	34	32	10	14	19
Child and adult care	2	0	0	2	4	4	5	4	3	2	5	9
Shopping	1	2	1	3	3	3	5	5	5	4	4	6
Sleep, personal care	63	63	64	62	62	63	65	65	64	63	65	66
Eating at home	11	11	9	6	6	7	12	13	12	6	6	8
Travel	6	4	2	9	8	5	1	2	2	9	7	5
Leisure time												
Active leisure	5	4	3	4	4	4	3	4	2	3	4	3
Church, voluntary, etc	3	1	1	1	1	1	2	1	1	1	1	1
Eating out of home	1	1	1	4	3	4	0	0	0	5	3	2
Radio, TV, etc.	10	14	18	15	17	23	13	11	15	13	14	19
Other home leisure	15	12	9	10	10	11	16	16	15	13	11	14
Other free	1	1	1	2	1	1	1	1	2	1	2	2
Home computing	0	0	0	4	2	1	0	0	0	3	1	1
Total Free Time	35	33	33	40	38	45	35	33	35	39	36	42

*Social status of household head (Market Research Society categories):

1=MRS AB: Higher professional, managerial

2=MRS C1: Other white collar

3=MRS C2,D,E: Other occupations, unemployed

The author has argued elsewhere that the reversed class/leisure gradient provides a potential explanation of the absence of a marked time-congestion phenomenon in these data (Gershuny 2000). It may be that the “time bind” is, rather than a real phenomenon, a reflection of the particular circumstances of those who write about lifestyle issues in the media. Real long-term evidence about historical time use change is very difficult to find. Thus in the absence of real quantitative evidence, writers are forced to draw on their own subjective or observed experience of change in time-use patterns. In general those writing about this belong themselves to the well-off, well-educated “leisure-poor & work-rich” sub-group who indeed *have* lost out in relative terms as compared to the general population. But this group’s *current* problems over their personal time budgets do not, of course, amount to a general historical *trend*.

Notably absent in Table 1 is conclusive evidence, in this long-term picture of changing time-use patterns in Britain, for the expected “privatization” of leisure and consumption in general that was outlined in the first section. Eating and drinking outside private households shows a remarkable and sustained increase, at a rate that pretty much parallels the decline in private food consumption. Travel and shopping time both increased markedly. Other out-of-home leisure activities—sports, church and civic activities—show a

roughly constant trend over the forty-year period covered by Table 1. Despite the growth of television and other electronic home leisure, there is no concomitant decline in outward turning and potentially sociable leisure. On the contrary, much of the growth in television viewing time over this long period might be set against the similarly scaled decline in “other home leisure” (which is mostly a reduction in home-based hobbies, and, for women, sewing and similar activities). The long-term time-use evidence of an overall privatization of leisure and consumption in general, in the UK at least, is entirely lacking. On the contrary, one might speculate that the effect of television in particular was to expose a wide population to a range of information about the availability of new or previously unconsidered leisure options, which led eventually to an increase in the level of participation in these options. Thus, if the impact of television on leisure was indeed in this sense a positive one, might not the impact of the wider ranging, and more interactive, web-based leisure-related applications be similarly positive for sociable leisure pursuits? What follows provides a basis for structured speculation on this question.

For the purposes of the current paper one should particularly note the relatively low level of diary time devoted to home computing overall—hardly two hours per week for working-age men, around one hour per week for working-age women. There is a very strong social status gradient in the amount of time used: highest class women spending on average three hours per week in this activity, highest class men four hours, and lowest class men and women have on average just one hour per week. The digital divide in home computer access translates directly into a digital divide in home computer activity.

The time-use data put the questionnaire-based studies of the effects of the Internet into an appropriate perspective. Plainly if there are *any* observable effects of the Internet, these are going to be small ones: one or two hours makes only a small dent in the 168 hours of the week, and there have been much larger changes (e.g., reductions in women’s unpaid work time, overall growth in leisure time) over the period covered by the two last tables. Moreover, Internet-related activity (web-browsing plus email) is just one part of home computer use. Are there any discernible consequences of this recent emergence of this new, and small, category of time use, for the other things people spend their time on?

METHODOLOGICAL ISSUES

While the main focus of this article is the impact of IT on social life, there is a methodological problem. To get a picture of the *consequences* of IT diffusion, one cannot just compare, for example, those who have IT in their homes with those who do not.

As noted above, there are some other very important differences that go along with home IT access. For example, it is known, on the basis of the BHPS data, that those with home computers are on average considerably richer, probably rather better educated, and somewhat more likely to have jobs, than

those who do not. Thus any attempt to assess the consequences of IT through a simple comparison between the activity patterns of those with and without computers is likely to be very misleading. It will, in particular, lead to a confusion between the effects of the acquisition of home computers on, for example, leisure patterns, with the leisure effects of those external factors (themselves nothing whatsoever to do with IT), those which led to or allowed those households to buy home computers in the first place.

Suppose for example that one should find that people who use home computers use earlier mass media considerably less than those who do not. Would this mean that using home computers *leads to* less media use? One knows that members of richer and better educated households are both *more* likely to have and use home computers and to use different forms of mass media. It's quite likely, *a priori* that this association between more computer use and less media use is not a causal one.

The only way to deal with this crucial problem of research methodology is in fact to combine the time-diary studies with household panel studies. Panel studies involve repeated surveys, with the same individuals being interviewed again and again at successive points in time; household panel studies follow all household members in successive years. It is only with this sort of technique that one can appropriately control for the full range of life circumstances in order to isolate the unique consequences of particular changes—such as the impact of the acquisition of a new technology.

DATA SOURCES

The evidence comes from the first two waves of a national time diary household panel study, the Home-on-Line (HoL) study which focuses specifically on IT use in the home (Lacohee and Anderson 2001). It is believed to be the first such national study conducted anywhere in the world (although a medium-scale, locality-based panel study used for a similar purpose is reported in Kraut *et al.* 1998). All members (aged 10+) of 1000 randomly chosen British households were interviewed in 1999; *all* the adult members were asked to keep a detailed diary for 7 days and about 60 percent of the questionnaire respondents ($n=1109$) did. Some 740 of this same group of respondents subsequently completed a similar diary instrument again in year 2000.

This quantitative data collection, then, takes the form of a time use diary for completion by all individuals over age 16. The panel was initiated in summer 1998 through a research contract placed with a commercial market research agency via the Institute of Social and Economic Research (ISER) at the University of Essex, UK. This contract covered the recruitment of the panel and the first two waves of longitudinal data collection. The adult time-use diary forms (see Appendix A) divide each day into 15-minute segments and ask respondents to record which of a range of 35 pre-determined categories of activities they engage in during that time segment. The diaries are one week

long and so provide estimates of the *total* 168 hours these panelists spent on all their particular activities during that week.

Further details of the methods can be found in Anderson *et al.* (1999), but it should be noted that the sample is not necessary representative of the UK population because two sampling criteria were applied during the selection process:

- Each household has a telephone of some sort. Since some 6 percent of UK households (OfTel 1999) do not have telephones; this means that any population level statistics, such as time spent on the telephone based on the panel will be marginally larger than similar figures for the UK population which will include the “unphoned” in their statistics.
- Some 50 percent of the households have a personal computer of some sort. Thus, in effect the panel consists of two samples—a representative panel of non-PC owners and a representative panel of PC owners. For the purposes of this analysis, the data have been weighted to remove the effect of the over-sampling of PC-owning households by effectively reducing their incidence within the sample to the known late-1998 UK PC penetration rate of 33 percent. With this weighting applied, the data can be treated as one sample.

Wave 1 consisted of computer aided personal (CAPI) interviews, while wave 2 involved an initial telephone (CATI) interview. Each wave consisted of a multistage investigation, consisting of an initial household interview with a randomly selected household informant. The seven-day self-completion, time-use diary was left behind for all adults, with a request to complete this at least once per day and to then mail it back at the end of the designated week. Rules for inclusion in the subsequent waves follow those of the British Household Panel Survey; broadly, all members of Wave 1 respondent households, plus all-current co-residents, are interviewed in the subsequent waves.

The wave 1 questionnaire response rate was a barely respectable 57 percent. Only 66 percent of the wave 1 respondents completed the wave 2 questionnaire; no doubt the extremely onerous requirement to complete a full and continuous seven-day diary contributed to this poor result. Because of the high attrition rate, a fresh sample was drawn in wave 2, providing similar response rates. For this reason only pooled two-wave analyses (i.e., wave 1 to wave 2 transitions) are examined. Longitudinal weights to compensate for differential non-response and attrition have been calculated, but they are not used within the other analyses that follow here.

Since just over 62 percent of wave 1 questionnaire respondents successfully completed diaries, a major issue of concern is the possibility of systematic bias in the diary sample. Several approaches were established to determine to whether the diary sample is in fact biased. The particular hypothesis is that busy people do not keep diaries. One needs therefore to see if non-response is indeed related to how busy—or leisurely—the diary non-respondents are. The

tests used here all rely on the fact that in the initial questionnaire respondents all answered a range of questions about their activity patterns, each of which gave some clue as to their state of busyness. Three distinct sorts of questionnaire evidence are used for this purpose:

- questions about frequency of participation in particular activities
- questions about division of tasks within households
- stylized estimate time-use questions

In comparing the probability of participating in various sorts of leisure activities of the 659 non-diarists and the 1181 diarists in wave 1 and the 628 non-diarists and the 741 diarists in wave 2, three of the eight comparisons were statistically significant; but the difference is only three percentage points. The evidence on the domestic divisions of responsibility showed only seven significant differences out of 24 and these by an average of five points—with the diary panelists being more active. Finally none of the six comparisons of the stylized estimates of paid work, female stereotypical and male stereotypical unpaid work time was significant.

On the basis of the generally small, and mainly non-significant differences, the conclusion is that non-completion (or non-return) of the diary instrument is unrelated to the relative busyness of respondents. So, as against the “crowding-out” hypothesis, one might counterpoise an “inertial hypothesis” that busy people fit more in completing their diaries. This sort of result is frequently reported in relation to cross-sectional time-use studies, as in Gershuny (1990) and Robinson and Godbey (1999).

RESULTS

Table 3 shows the initial differences between respondents who used any IT during the diary week and those who did not. In terms of the more prominent initial bivariate differences, IT users report six hours more work and commute time and almost five hours less housework time. They also spend three hours less time on personal care, but three hours more time on education-related activities.

Free-time differences are divided into three categories in Table 3, the first being the social activities that are the focus of this article. In general, the differences are insignificant and offsetting. IT users go out to eat and drink slightly more, but they also report an hour less active and passive visiting. Otherwise, differences in organizational activity, going to social events and socializing by telephone were virtually non-existent. In brief, the overall differences are far from striking.

The bottom two sectors of free time in Table 3 show more prominent differences, with the 5.4 hours higher IT use of users being almost matched by

TABLE 3: COMPARISON OF IT USERS AND NONUSERS IN OVERALL TIME USE (HOURS PER WEEK): HOME-ON-LINE STUDY WAVES 1 AND 2 (UK 1999 AND 2000)

	IT nonusers (1207 weeks)	IT users (467 weeks)	Difference
Necessary Activities			
Paid work at work place	17.2	21.1	+3.9
Paid work at home (not using a computer)	0.9	0.9	0
Travel (to and from work, shops, school, cinema etc.)	5.0	7.1	+2.1
Cooking, food preparation	4.1	3.2	-0.9
Cleaning house, tidying, clothes wash/iron/sew etc	6.2	4.3	-1.9
Maintenance, odd jobs, DIY, gardening, pet care	3.5	3.3	-0.2
Care of own children or other adults in own home	4.6	3.1	-1.5
Shopping, appointments (hairdressers/doctors etc)	4.1	3.8	-0.3
Washing, dressing	5.7	5.2	-0.5
Sleeping, resting	60.2	59.0	-1.2
Eating, drinking at home	8.0	6.8	-1.2
Study at home (not using a computer)	0.5	1.6	+1.1
Courses and education outside home	0.9	2.9	+2.0
Leisure Activities			
1. Social Activities			
Voluntary work, church, help people (not own home)	1.0	0.9	-0.1
Going to concerts, theatre, cinema, sports, clubs	1.4	1.4	0
Eating out, drinking, (pubs, restaurants)	2.9	3.4	+0.5
Visiting [or meeting] friends or relatives	4.7	4.0	-0.7
Being visited by friends/relatives in own home	1.9	1.6	-0.3
Receiving telephone calls	0.5	0.5	0
Making telephone calls	0.6	0.7	+0.1
2. Media and Non-Social Activities	29.4	25.3	-4.1
3. IT Use			
Personal Comp - games/games console	0	1.4	+1.4
Personal Comp - email (write, read or send)	0	0.6	+0.6
Personal Comp - browsing the Web/ Internet	0	0.5	+0.5
Personal Comp - study at home	0	0.9	+0.9
Personal Comp - paid work done at home	0	0.8	+0.8
Personal Comp - Other	<u>0</u>	<u>1.2</u>	<u>+1.2</u>
	0	5.4	+5.4

the 4.1 hours lower time spent on mass media and other leisure. These latter media differences will be explored in more detail in the next issue of *IT&Society*.

These, then, are the initial differences. As such, they show fewer differences than might be imagined, but even the differences that are found remain ambiguous. For example, IT users report more paid work and education

offset by less housework and personal care. Could this be due to gender differences, since these are the same activity differences that could distinguish men (more work, education) from women (more housework, personal care).

Even more important, as noted above, are pre-existing life-style differences that could explain the results. This is the common problem of “unobserved homogeneity” factors on which IT users differ from nonusers before or independent of their having access to IT. For that reason, the analysis now turns to unique results available from a panel-study analysis.

PANEL ANALYSIS

Table 4 contrasts those people in the HoL study who were not users of computers at home during the week covered by the 1999 study, but who had started to use them at home by the time of the second (year 2000) wave of data collection. It contrasts their time-use pattern in 1999 before they started with their 2000 time use as “new users” of home computing.

Table 4 shows that these “new users” spend 3.4 hours/week on the computer—including 1.3 hours online, the web or email. Everyone in this world has precisely 168 hours each week, so the extra time spent home computing must come from somewhere. One sees that the “new users” in 2000 found the extra half hour by reductions in time spent in study at home, unpaid work (including shopping) and in “doing nothing” at home. In the first two of these cases there may have been some direct substitution of a computing for a non-computing activity. So, for example, their web browsing might well have involved acquisition of study materials and e-shopping.

It does not emerge—unlike the findings of previous research which used a less carefully designed study methodology—that home computing led to a loss of social life (contrast, for example, Nie and Erbring 2000). On the contrary, the “new users” actually increased both the weekly time spent “going out” (eating at restaurants, cinema, sports events, etc.) and the time devoted to “visiting and being visited by friends and family” over the same period that they started to use their home computers. Indeed it is not entirely implausible to speculate on a possible connection between these. After all, one of the main applications of the web is gaining access to current information on entertainment and cultural activities—and one useful application of email is making timely and flexible social arrangements.

Table 5 compares these “new users” with the “nonusers” (i.e., people who used the technology neither during the 1999 nor the 2000 study weeks) in Table 4. One point particularly to note is their media and other time—some two hours longer than that of the “new users.” Had these two groups simply been compared cross-sectionally, one would have quite likely drawn the entirely incorrect conclusion that computing time is inversely related to mass media use. In Table 6 the “old users,” who engaged in home computing during both the 1999 and 2000 study periods, are considered. Here one might pay specific

TABLE 4: "NEW USERS": EFFECT OF CHANGE IN IT USE ON TIME ALLOCATION

Hours/week UK	Nonusers in 1999, Users in 2000		
	1999	2000	Change
Necessary activities			
Paid work	23.7	23.2	-0.5
Study, courses	4.8	3.9	-0.9
Unpaid work (+ volunteering)	22.4	21.3	-1.1
Sleep and personal care	64.2	64.6	0.4
Eating at home	6.7	6.7	0.0
Travel	7.1	6.8	-0.3
Leisure activities			
1.Social			
Social life, going out	4.1	4.6	0.5
Visits/being visiting	6.0	6.4	0.4
Telephone calls	1.1	1.0	-0.1
2.Media and leisure	27.9	26.1	-1.8
3.IT use			
Computer games, etc.	0.0	0.8	0.8
Email, browsing Web	0.0	1.3	1.3
Work on computer	0.0	1.3	1.3
Total free time	39.1	41.5	+2.4

attention to the difference in computer use between the old and the new users. We can see that in each of the three categories of home computer use, the old users do more home computing than the new.

One can see the clearest of evidence of the development of new skills and the discovery of new applications, as the users gain in experience. Many of the old users started out with a lot of time devoted to playing computer games—but now as they find more interesting and useful things to do with their computers, the game playing declines from an hour and three-quarters to an hour and a quarter per week. Their Internet/email usage, by contrast, more than trebles from 36 minutes per week to one hour 46 minutes. Perhaps the small reduction in the “work on the computer” category represents in part a small shift to more interactive remote-working practices.

One might notice in particular the evidence of the gradual nature of the process of diffusion of IT skills. The new users and the old users both substantially increase their time on the Internet during the single year spanned by the study: this represents a really major change in the life of the nation as a whole. But plainly the old users still have a lead (1.7 hours/week of Net use) that the new (with 1.3 hours) have not yet caught up with. The old users, it may be, have more skills and knowledge that allow them to use the Internet to better effect than the new ones. (It will, however, never be possible to entirely

TABLE 5: "NONUSERS" CHANGE IN TIME ALLOCATION

Hours/week UK adults	Not IT Users		Change
	1999	2000	
Necessary activities			
Paid work	21.1	23.5	2.4
Study, courses	1.0	0.8	-0.2
Unpaid work (incl. voluntary)	27.6	25.0	-2.6
Sleep and personal care	65.6	65.0	-0.6
Eating at home	7.8	8.2	0.4
Travel	5.0	5.5	0.5
Leisure activities			
1. Social			
Social life, "going out"	4.1	4.2	0.1
Visits/being visited	6.5	6.0	-0.5
Telephone calls	1.0	1.3	0.3
2. Media and other leisure			
	28.3	28.5	0.2
3.IT use			
Computer games, etc	0.0	0.0	0.0
Email, browsing the web	0.0	0.0	0.0
Work on the computer	0.0	0.0	0.0
Total Free Time	44.9	42.3	-2.6

disentangle the extent to which this reflects micro-sociological learning processes from the macro consequences of the overall growth in use of the Internet over this same period.)

So there is the initial process of the diffusion of computing equipment to households. In the case of the television, all the domestic consumer had then to do was to locate the "on" switch. But for the home computer there are the second stage, and much more important processes of diffusion, of (at the micro level) the skills required to use of this equipment, and of (at the macro level) the development of new applications for the system as a whole, which takes place over an extended period. Given the general purpose nature of the new technological paradigm, these might well continue expanding for many years to come.

TABLE 6: "OLD USERS": IT USE AND CHANGE IN TIME ALLOCATION

Hours week: UK	Users Both Waves		
	1999	2000	Change
Necessary activities			
Paid work	24.4	26.8	2.4
Study, courses	3.5	2.7	-0.8
Unpaid work (incl. voluntary)	18.1	17.5	-0.6
Sleep and personal care	63.4	63.8	0.4
Eating at home	6.5	6.2	-0.3
Travel	7.2	8.7	1.5
Leisure activities			
1.Social			
Social life, "going out"	4.5	5.0	0.5
Visits/being visited	5.6	4.7	-0.9
Telephone calls	0.9	1.2	0.3
2.Media and other leisure	27.5	24.5	-3.0
3.IT use			
Computer games etc	1.8	1.4	-0.4
Email, browsing the web	0.6	1.7	1.1
Work on the computer	4.0	3.8	-0.2
Total Free Time	39.9	40.0	0.1

THE TWIN EFFECTS OF TECHNOLOGY ON LEISURE

One can say in general that technical change has direct and indirect effects on leisure. Indirectly, technology frees up time for leisure activities—people can do their jobs and also shop, cook, clean their houses and care for their children more productively, and this productivity growth may be in part translated into shorter work hours. Similarly, new technology may reduce the time taken up by unpaid work in ways which are utterly unrelated to the technology that freed the time. Steam engines in the factory and washing machines in the home meant more time with the family in the park. In much the same manner, teleshopping reduces the time now devoted to routine weekly marketing which means more free time can be spent instead in the gym.

Second, more complex and difficult to think about prospectively and yet ultimately more important, are the *direct* effects of technology. These relate not just to leisure experiences but also to new leisure-related industries and employment. The technology may itself *change the nature of leisure activities*, providing substantively new classes of leisure consumption. Computer games, for example, and particularly those that involve multiple players in different households, fall into this category, insofar as they constitute a wholly new sort of recreational activity, with hardly any previous parallels. Alternatively, it may

change the *accessibility* of the activities and hence alter the social distribution of their consumption.

But perhaps the larger effect of the new technology, as in the wave of consumption after post-WWII innovations, is to transform the social distribution of *access* to traditional recreational categories. Listening to records at home, for example, was of course historically related to previous home music-making activities. But in its scale, and its class and age distribution, previous music-making activities were transformed by those new service-providing technologies which diffused so vigorously after the war.

The most interesting effects of home-based computer facilities, it seems, fall into this latter category of the direct *social-distribution* effects of technical change on leisure activities. The only *really* substantial change in UK leisure patterns, over the period that one normally thinks of as the “TV era” of the 1960s to the 1990s (that is directly observable in the time-use evidence presented in Table 1), was the growth of *public* sociable activities such as eating out and going to pubs and bars. It is perhaps too fanciful to suppose that this was in part stimulated by the fact that some of the most popular of the new television programs of the 1960s and 1970s portrayed people enjoying sociable consumption of food and drink in the “Rovers Arms.”

On the other hand, it is certainly not too fanciful to suppose that the new computing and telecommunications and data storage technologies of the late twentieth century, may be used in the early twenty-first century to provide information on access to, and training in the enjoyment of a far wider range of, leisure and sporting activities than was previously enjoyed by the mass of the population. As in the case of public sociable activities, it will again involve mostly familiar and recognizable leisure pursuits—theatre, dance, sport and the like—and also by eating and drinking in sociable circumstances outside private homes. These are the major sorts of change, growth and redistribution of traditional consumption activities that are likely to constitute the major impact of home computing over the next two decades.

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