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Explaining ICT consumption: the case of the home computer

Book section

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The main aim of this chapter is to illustrate the vital group processes in the consumption of the home computer which occur outside the home, but which have a clear bearing on the experience of this 'domestic' technology.

The first part of the chapter briefly outlines the main qualitative analyses of the consumption of the micro. The second part draws upon my research on home computers in Britain. Based mainly on interviews conducted within the microcomputer industry, this study documented the (unexpected) appearance of the home micro as a consumer electronic and its dramatic popularity during the early 1980s (Haddon 1988a).

Finally, the chapter explores how insights from different approaches to consumption may be related to each other and to the issues surrounding the home computer. The last section provides some examples of the questions which might be raised within family-oriented studies that would complement the empirical material on the role of the micro within wider social networks.

RESEARCH ON THE MICRO

In the early 198Os, Sherry Turkle examined the first years of microcomputer use in the US (Turkle 1984). For Turkle, the micro was only one of a family of technologies, including larger computers and devices such as games machines, which created enticing electronic worlds. These could be peculiarly evocative, prompting reflection upon consciousness, personality and the social world. Turkle aimed to chart this process at work among different social groups, noting how metaphors (e.g. the mind as a computer program) disseminate from technical cultures to wider audiences.

Although *The Second Self* contains various brief historical outlines, the bulk of the discussion deals with psychological processes, illustrated through individual case studies. The nature of the individual's encounter with computers is framed in relation to the user's developmental process, referring to theories of cognition and of the self. Such analyses of technology may have their uses in sensitizing us to the possible consumer experiences and readings of these artefacts as texts. However, Linn points out that this artefact text is credited with too much power, too great an influence, and that Turkle is perhaps overenthusiastic about its potential (Linn 1985; McNeil 1989). Linn points to (a) the fact that other texts (e.g. advertising 'hype') influence interpretations of the computer and (b) that the micro as text can be more polysemic, including being open to more negative interpretations.[1]

In fact, Turkle's account of the nature of the micro is based on, and illustrated by, people's (usually positive) description of their experience, and hence her book is also a study of actual 'consumption'. The main criticism here from both Linn and McNeil is the lack of context in which

such readings of the artefact/text arise. Although Turkle makes some reference to the way in which a positive experience of the micro amongst some hobbyists arises from a wider sense 6f alienation at work and to Hacker culture, for the most part the social location and immediate circumstances of her case studies are only sketchily provided.

While it is desirable to study the specificity of different technological forms, the degree of uniqueness which has been claimed for the micro has also been questioned. For example, Turkle's discussion of the microcomputer's 'holding power' reflects the theme contained in a number of contemporary writings, such as Bolter's 'Grammatical Man'. These stress that the computer constitutes a qualitative leap in terms of the way it will affect our very way of thinking (Bolter 1984). This emphasis on the extraordinary nature of computers opens the way for the discourses on computer addiction'. In fact, it was these very concerns about the micro's unique addictive powers which sparked the work of Margaret Shotton on computer dependency' (Shotton 1989).[2] Also based on a psychological analysis, this research ultimately plays down claims about the exceptionality of the micro - for example, showing that people with an intense interest in computers usually had intense interests in other activities long before the micro entered their lives.

In contrast to these more psychologically oriented approaches, the recent doctoral thesis of Reva Shapiro provides an account which is firmly rooted in a symbolic interactionist/'social construction of reality' tradition (Shapiro 1988). Like Turkle, this study covers the early period of computer hobbyism in the US, but now the emphasis is on entering the *social world* of computing. That is to say, she examines the process of becoming a computer user, of learning the values, rules and perspectives of what comes close to being called a subculture.

David Skinner's current research includes work on computer clubs which notes that 'home' computing is really a much broader social activity. He also examines overarching IT discourses, and shows how these discourses were experienced by individuals and families, creating a fear of being 'left behind', and a sense of participating in social events by involvement in the computer boom.

More recent work (Haddon and Skinner 1991) has focused on the way in which the home computer was developed and marketed as an open-ended, multifunctional device. This research shows how producers and consumers constantly searched for and tried to construct the 'usefulness' of this mass market product after it had been developed and launched. This is not without precedent, although it may be more common to the new ICTs aimed at the home.[3]

Domestic consumption

Family life has been touched upon in a number of the above studies, as well as in my own research (Haddon 1990). But generally there has been little detail on the meaning added to cultural objects such as the micro specifically through family dynamics.

We are just starting to see more systematic documentation of the family context. The Mass Communications Research Centre's longitudinal study provides a more extensive time dimension following changes in family purchases and use over five years, and has already pointed to issues such as the policing of the micro's use (Murdock *et al.* 1986 and chapter 9). Jane Wheelock (chapter 6) charts the diverse patterns of use and perceptions of the 'family computer'. Meanwhile, the theoretical work at CRICT has helped to sensitise researchers to the various dimensions of family dynamics in which we can locate the home micro and other ICTs (Silverstone *et al.* 1989 and chapter 1).

In relation to accounts of the popularity of technologies and to gender issues, these studies are

important for a number of reasons. First, family interaction provides an important context at the point of entry of the micro into the home. As we shall see below, studying wider social group interaction may help to explain the popularity of the micro in terms of generating interest in end-users. But acquisition is a process in own right, where the entry of the product into the home is mediated by others.

This is especially clear when buying 'for the family', or 'for the children', where parents are trying to make sense of what is best for their offspring and anticipate how the potential purchase will affect family life and its own image of itself. But even where adults, more often male, buy machines for themselves, my interviews have indicated that the considerable expense involved still had to be justified to others. It is possible to evaluate the micro in various ways, given undercurrents of concern about addiction and the disruption of family cohesion, and the view that the computer is just a toy of no serious use. These themes may all emerge in the negotiation which takes place in families before acquiring this technology.

Second, most of the studies discussed earlier referred to the construction of an individual's identity, either via the experience of interaction with the technology or membership of the wider social world of computing. A further dimension to be welcomed is provided by accounts of this process of identity formation in relation to families, both *vis-à-vis* other family members and in terms of the family's collective identity in relation to the outside world.

Third, family studies are central to our understanding of what exactly is involved in the process of accommodation and resistance to, and regulation of, domestic ICTs over time. This significance of this issue is already clearly signalled in the current research projects - e.g. in terms like the domestication' of technology (Silverstone *et al.* 1989; Hirsch 1989).

THE BROADER RELEVANCE OF CONSUMPTION STUDIES

Several observations can already be made about the broader relevance of current research on the micro. First, some writers have already noted some of the implications for the innovation research literature. For example, Murdock points out that

> in contradistinction to the diffusion of innovations model which presents the home computer as a simple technological commodity with a stable identity defined by its applications, we view it as a site of struggle between contending discourses, notably those emanating from government and the education system on the one hand and from the entertainment industry on the other. This struggle is regularly played out in conflicts between parents and children as to the proper use of the machine.
>
> <div align="center">(Murdock 1989: 233)</div>

Shapiro also devotes some time to challenging the limited role given to users in the innovation process, even by those writers who acknowledge the role of users in 're-inventing' or modifying industry products (Shapiro 1988: 21-6). She argues that in the early days of the micro, extremely active hobbyists influenced the directions in which the micro developed and negotiated the very form of the innovation. Indeed, the degree of grassroots influence in the early formation of this industry and family of products was considerable compared to, say, compact disc innovations.

Even when the micro became more established, it is arguable that user influence extended

beyond that of merely altering given products and finding new uses - both activities being captured in notions such as that of 'social innovation' (Gershuny 1983). For example, the fact that users concentrated on games rather than employing the micro for multiple applications partially changed the micro's very identity from multipurpose computer to games machine. To use the language of cultural studies, users, albeit with the collaboration of some parts of the computer industry, 'appropriated' the micro, helping to transform the meaning of the artefact.

A second area where the various forms of research on consumption have a broader relevance is where they can feed into frameworks for thinking about future innovation. This might mean using the material to add to and go beyond current debates on what counts as 'socially useful production' (Collective Design/Projects 1985). But equally, the analyses from these studies could inform the thinking of current producers of IT products. There is ample scope for enriching producers' understanding of such areas as family dynamics (see chapter 4).4

One example of a more specific theme where production and consumption studies can work together is in relation to 'moral panics'. This notion, derived from the sociology of deviance (Cohen 1973), refers to the process by which public concerns and anxieties are constructed around a particular phenomenon such as mods and rockers, or the effects of horror comics (Barker 1984). Such panics can equally well emerge in relation to technologies, for example worries about computer addiction and about the antisocialness of becoming isolated through microcomputer use.

A few years ago the computer industry was up in arms about the BBC's QED programme which dramatized this concern once more. A flurry of letters to the trade press discussed the need to combat this image.[5] Given that similar fears have emerged in the past in relation to television destroying the quality of family life, we need to develop an analysis of how producers try to manage the way in which their products become symbolic of and embroiled in concerns about trends in everyday life.

CONSUMPTION OUTSIDE THE FAMILY

Previous research on television has provided perhaps the most important route into studying ICTs in the home (Murdock *et* al. 1985; Silverstone *et* al. 1989). One key argument raised about television in particular is that it is important to understand the family context of consumption because television is an essentially domestic medium (Morley and Silverstone 1990: 32) - we watch TV primarily in our homes. But we have to be careful of using this starting point when considering other ICTs. TV is arguably exceptional in this respect. It is not a work tool on the whole, except perhaps for on-site training. And although educational TV programmes are viewed in schools, TV's role in this context is modest. However, other ICTs, such as the micro, have a role outside the home which may play an important part in the overall experience of these products, and one which may be less visible from family-based studies.

BOYS AND HOME COMPUTERS[6]

My first focus is on the 'computer talk' which constitutes part of boys' interest in micros - a facet which is not picked up by statistical measures of usage in the home. While this talk may not occur so routinely within the family as discussion of TV programmes, it has been incorporated into the somewhat amorphous boys' 'culture' of school and leisure. This section outlines the nature of computer and games talk and charts how, for a time, discussion of computers achieved a particularly high level as a form of participation in the micro boom.

The development of computer talk

The 1983 surge in computer sales was complemented by the way in which home computers became an object of classroom discourse. This itself contributed to my interviewees' desire for a machine and their sense that micros were 'getting popular'. One boy, who had been one of the few with an earlier interest in computing, described the change:

> Well, in my class there was me and my friend in the second year [1982] we were the only ones who used to use the computers initially. And when there was the form period, occasionally we'd talk about something on the computers. After Christmas in the third year [1983] I remember a lot of people talking about computers and in the fourth year we took a survey and found that about 20 per cent of the people [in the class] had a computer. [It provided] more better conversation in a way. I mean, at that point, when the computer was pretty popular about a third of the class talked about them. That's quite a lot compared to what most people usually talk about.

That interest in, and the topicality of, computing appears to have peaked a few years ago. By the time of my interviews and observation in 1985-6 there was far less talk, which itself helped create the feeling that the boom had died down. But while computing's profile may now be lower, its presence, especially within the relationships of a smaller core group of enthusiasts, has by no means faded away. Like the sales of hard- and software, computer talk had become established and routinized - it forms a normal part of male classroom discourse.

The nature of computer talk

This talk often amounted to a perpetual, joking rivalry over computers, where boys derided the features of the micros which belonged to their peers: some said that they always 'insulted each others' computers'. But apart from this competitive banter, there were topics which were regularly discussed. The most common themes related to games, but also included evaluation of hardware and non-game software products, the next purchases to which the boys aspired, the cost of products and where to buy them. They traded news about who might be buying or selling equipment or software, or tales of how they had acquired products cheaply. In other words, computer talk was similar to talk about toys, music or other products of interest among these peers.

  The interests of some of the boys extended beyond this level. By keeping in touch with general developments in computing as well as being aware of its history, certain boys were identified as self-styled 'experts'. One interviewee, for example, even tried to re-enact the earlier role of the 'hacker' in small ways, such as programming in solitude in the evening. In this endeavour, the current equivalent of the challenge of breaking into telecommunications systems had become breaking into protected software. Such 'experts' promoted computer activities in the school. In much the same manner as some adult computer buffs, these more enthusiastic boys lamented the fact that much of classroom discussion was limited to games.

  Games talk could also be competitive, emphasizing superior skills in terms of the scores which had been achieved, the relative size of the boys' game collections, and who possessed the latest games. As games had become a 'cultural industry' like the music one, newsworthy talk also

covered items such as which games had recently been released and were in vogue, what features they possessed, and what might be in the pipeline from the arcades or as a conversion from another machine format.

A second set of knowledges mobilized in games talk related to actual playing, and was very much the type of discussion material which might be expected at the arcade. This involved tips, such as how to get onto the next screen - that is to say, the next part of the game. Peers supplied information concerning the problems which would be encountered in that next stage. There was advice concerning what players needed to acquire or achieve early on in preparation for these later sections of a game. The boys traded suggestions about tactics, and offered warnings about the manoeuvres which one could expect from electronic opponents, about the hazards which could 'hurt' the side which the player controls and about aspects which were harmless.

Murdock refers to the way in which the customizability of products has a bearing on the scope for creativity and self-presentation (Murdock 1989: 234). While the need for a level of competence in computing provided some constraints, the very programmability of the micro provides ample potential for self-expression. Most boys attempted programming at some stage, and it remained a continuing activity for a few. Furthermore, home brew products could be shown to and discussed with peers, especially the games and games' special effects. Any such initiatives were judged by a different standard from the slicker commercial products and these amateur productions offered a wider audience the chance to participate in suggesting ideas for improvements. Many of my interviewees were proud of their contemporaries' achievements and their own involvement in that process, referring back to the days when there were reports of schoolboy success stories through games-writing.[7]

Commercial products could also be amenable to intervention, which differentiated computer games from their precursor; video games. This option sparked off a certain amount of trade in information about the 'Pokes' which enabled users to affect the program's structure - for example, allowing players to work through all the stages of the game in order to see what would be encountered later and to explore all the areas in which the action took place.

Computer talk reflected the boys' experience of a new cultural industry which was geared to promoting interest in the latest releases. Various producers clearly had some bearing upon the ways in which boys experienced home computing and games playing, as exemplified by the fact that so much of classroom talk was based on reading computer magazines. But ultimately this male youth also made creative use of the raw material - they made their own culture through the way they used 'talk' about micros and about games, through developing and changing products and even more clearly through the activities to which we now turn.

Computer-related activities

The organized exchange of software within school was definitely something which software producers had not intended, and against which they have campaigned with limited success since the early 1980s. The particular form which has caught most attention is the copying of software, made easier by twin-deck cassette recorders. But this should not obscure the fact that boys have also borrowed each other's purchased software for fixed amounts of time ever since games first appeared. In effect, male youth (and many adults) are purchasing software collectively, whereas the industry would much prefer that they did so individually.

One form of visible computer 'event' in the class is the occasional games-playing competition, although for the more basic machines such occasions are inhibited by the problem of arranging

access to TVs. School clubs could sometimes be turned into games-playing locales, depending on the extent to which they were policed by the teacher in charge. But since school on the whole provided only limited opportunities for playing games in company, meeting in the homes of friends or visiting relatives was a key way to try out the latest games.

In addition to the venues of home and school, playing and exchanging games took place in a range of public locations. For a minority of boys, the computer clubs which had arisen during both the late 1970s and early 1980s constituted one such meeting place. These boys' demand for a 'space' for games purposes sometimes transformed the clubs from their original function of developing computing skills. Hence, some of the old guard in these clubs soon expressed disappointment that the motivation of the boys was not the same as that of earlier hobbyists. Occasionally the serious' clique abandoned the site altogether, switching to meeting at a member's house.

By visiting -arcades, the boys could keep in touch with the latest games available on the coin-ops. The home computer equivalents of these venues were the shops and department stores which sold micros and software. While some shop managers seemed to regard playing as beneficial to sales, others have already started to adopt tactics to prevent the conversion of their areas into alternative arcades - for example, by periodically turning off the computers. The same mixed feelings apply to the computer shows, where a number of exhibitors have expressed ambiguity about the extent to which the hordes of players monopolizing machines may be deterring other, less game-orientated, custom.

All these public settings provided an opportunity to try out products, to play in collective settings and to make contact with those who shared an interest, which could mean a chance to exchange games and other software. By appropriating space the boys, albeit perhaps relatively few boys, were very visible to the various producers of hardware, software and magazines. It is little wonder that those in the industry could easily assume that micros and games-playing were a totally male domain, and show surprise that girls demonstrated any interest a~ all. The actual situation is far more complex.

Girls and home computers

One reason for detailing the nature of boys' collective interest is because this dimension did not appear to exist for girls. Available statistics show that, although the involvement is less than that of boys, girls actually use computers - mainly for playing games. Like the boys, the girls are not simply isolated users. For instance, they play with other family members and with friends who visit their homes. However, that was mainly the limit of their interest. The currency which computer talk and games play had among some young male peers appeared to be absent in the case of girls, which means that the experience of the activity was very different.

For example, these machines were not an object of girls' classroom talk in the same way as for the boys. This is not to say that the girls are never willing to discuss games or micros and when they did so the verbal exchanges included joking about each other's competences and tastes. But other lopics of conversation had greater primacy:

People talk about what they did last night . . . video, you know. They don't talk about computers. Not unless, like, in computer studies. Yes, that's when you talk about computers. Like, sometimes we're on a computer doing our work and we say, 'Oh yeah, I've got this game', you know . . . and all this. But apart from that we don't really talk about computers. Like

someone might say to you out of the blue, 'Have you got one?'. You say, 'Yeah', and that's it.

One corollary was that there was little in the way of computer-related activities such as exchanging software - that was left to brothers. Some girls had watched TV programmes such as 'Microlive', keyed in program listings or read library books for clues about programming. A few of the girls had even read computer magazines from time to time, especially if bought by someone else in the house. More usually, the girls relied on brothers to inform them about the latest game. Mainly, the girls 'just played' the games which were available - a range of choice which was not, on the whole, within their control. Hence, the majority of games played were of the fast, arcade-style action games reflecting the general predominance of this genre.

Few girls visited or played games in the various public sites which were geared to microcomputers- and when they did, attendance was not so much with peers as with family. For instance, one girl described how she regularly played in the arcades with her brothers when the family spent weekend holidays in Kent. This resembles the pattern whereby the few wives who ever came to computer clubs had done so with husbands as part of 'family leisure'.

History of games consumption

This outline of boys' collective consumption in the 1980s needs lastly to be placed within a broader history. The home computer provides an instance where we have to be sensitive to the interrelationship of different technological forms, specifically of computing and of interactive games. These were to provide the micro with a dual heritage and identity.

The problem with a number of accounts of the home micro is that they trace its genealogy solely through the history of the computer industry (e.g. Freiberger and Swaine 1984). At least Turkle provides a brief discussion of games history before noting the similarity of games to other computer programs. But that account does not include a thorough review of the history of games consumption.[8] I believe that the general neglect of games leads to a blinkered view of the micro, since only part of the identity of the home computer actually derives from computing. In part the home micro, at least in Britain, is a games machine, and so bears the legacy of this lineage.

As documented more fully elsewhere, interactive games are intimately connected to the precursors of cu-rent microcomputers (Haddon 1988c). Games became established, especially as demonstration programs, within the computing field and were thus familiar to and reproduced by the early hobbyists in the late 1970s and early 1980s. In addition, games as a whole, as well as particular game genres, were transferred from the computers to the arcade in the form of coin-operation games machines. As a replacement for pinball, the new games machines were incorporated into the existing social activities of amusement parks, and many of the other public sites where coin-op machines were found. These were mainly young male preserves. Although games were played individually, the activity remained grounded within the social life of the peer group. The talk, rules and rituals of game play carried over both into the experience of home-based video games machines and later home computers.

Some commentators would have us believe that games became popular by default, since there were no better applications for the type of machine which appeared in Britain. This is not so. Games and games-playing have a history in their own right, and it is only by appreciating the development of consumption outside the home and family settings that we can make sense of both the popularity of micros and the different forms of male and female interest in them.

THE INTERFACE WITH FAMILY STUDIES

Like the other research in this area, the dimensions outlined here provide only a partial account of the experience of the micro, and indeed of the gender issues with which I am concerned. For example, we might also want to ask how the specific identity of the micro as a frontier technology was constructed through its own design and related texts, and how this affected male and female response to the product (Haddon 1990). And in relation to the family, it would be important to investigate how parents, as gatekeepers over the entry of the micro into the home, saw the product differently in relation to the futures of their male and female children.

But this research on the experience of the micro outside the domestic sphere does cast some light on 'home' computing. I now turn to the questions one might ask within family-based research which connect with some of the points raised in the above account of boys' collective interest in these computer products.

In her critique of the work of Paul Willis, McRobbie noted that his stress on the stance and self-image of male youth in street life, in school and on the shopfloor neglects the question of how this integrates with the lads' experiences within the home (McRobbie 1980: 41). It is possible to raise the equivalent point here for at least some of the boys who develop the role of experts in relation to their peers (or teachers), or who even see themselves as 'hackers'. How is this role supported or hindered within the family? After all, buying magazines, software, hardware, books, travelling to computer fairs, etc. may require financial support, or parents might b expected to comment on how their children spend their own savings. The there are questions concerning parental support, or lack of it, in terms a the encouragement of expertise, as well as the forms of regulation of time and space already noted above - especially if this hobby is deemed to b excessive or detrimental to other commitments.

We also have to consider family influence on what happens outside the home: in this case, on how computing or games-playing are viewed by parents as leisure activities. In contrast to the fears about isolation through computing, one mother interviewed in my pilot study talked about the positive way in which her shy son had made new contacts through this interest. So we have questions concerning the extent to which parents see the activities described above as constructive, or at least harmless, leisure. in comparison to other behaviour such as simply 'hanging around' with other boys. In this sense, is computing a relatively 'healthy' interest?

One extension of this theme concerns parental control over the movement of their children outside the home. There was certainly some concern expressed in the US during the 1970s about the corrupting influence of the arcades (Haddon 1988c). But what about the respectability of computer shows, shops and clubs which some of the boys visited? Certainly my own discussions with mothers and boys support Shotton's view that shops, at least, made ideal places for women to leave their children (and sometimes husbands) while on shopping expeditions (Shotton 1989: 2).

A final example of the type of question we might ask from family-based studies concerns parental reactions to the copying of software. When the copying of audio, video and written material is both easy and widespread, including in educational circles and the workplace (Chesterman and Lipman 1988), under what circumstances do parents see such computer copying as trivial and sanction it, and when does it raise parental concerns about children's perception of legality?

CONCLUSION

Family-oriented research on consumption is necessary, increasing our understanding of certain key issues. For example, it can highlight the negotiation surrounding the very entrance of new technologies into the home. Such research can indicate the relation of domestic consumption and identity, e.g. how perceptions of technological competences are built up through family interaction. These are significant dimensions of consumption which cannot so adequately be handled by research focusing on individuals on group processes outside the family.

   The various approaches to the consumption of ICTs, including this focus on the domestic experience, have a broader relevance for other bodies of research. In particular, they show that 'adoption' and 'use', indeed, the nature of the product, is far more complex than is often portrayed in the innovation literature. Chapter 4 examines producer conceptualisations of family consumption which could, in future research, be contrasted with the material from studies of actual domestic consumption. Certainly, there is scope for the latter material to inform the whole innovation process.

   The case of the home computer, however, indicates some of the types of limitations of family-based studies, showing how complementary research is required. The popularity, patterns of usage, the meaning and the gendered nature of the home computer arise in large part from processes outside the home. So-called 'home computing' cannot be viewed as an activity based solely in the home.

NOTES

1   However, even in this earlier work, Turkle makes a distinction between two experiences of the micro: those of 'hard' and 'soft' users. This forms a basis for discussing gender differences in usage. In her later work, Turkle starts to take into account the wider context beyond the machine, noting the masculine connotations that become attached to the technology by virtue of certain patterns of male usage - i.e. hacker culture (Turkle 1988).

2   All these claims are worthy of further deconstruction into their component strands. For example, some claim that the seductiveness of the micro lies in its interactive' quality. But now that computers are embedded in many products, we might in a few years' time see these concerns transferred to technologies such as CD-I, which we are currently examining at Sussex (cited in chapter 4).

3   The products now being examined in the Sussex project are also somewhat multifunctional and open-ended, with producers partly waiting to see what specific applications will prove popular.

4   Given the widespread acknowledgement of the wider capitalist structures in which ICT products emerge and are consumed, it may be controversial to enquire about the extent to which critical analysts should engage in some form of a dialogue with firms producing ICTs. For example, there are problems with simply acting, as an intelligence gatherer for industry and then potentially losing control over the way those insights are interpreted and utilized. According to one scenario, academic participation in production might be providing just another means for capital to manipulate consumers. This is an issue for researchers such as my colleagues and myself who are already involved in such a dialogue and more debate would be welcomed.

5   BBC's 'QED' series showed the programme 'My Best Friend's a Computer' on 17 January 1990. Letters of indignation appeared in *Computer Trade Weekly* on 29 January, 19 and 26 February, culminating in the article by J. Minson (1990), 'You've never addict so good', *Computer*

Trade Weekly, 5 March.

6   The following account is mainly based on observations in a computer club, separate interviews with boys from both that club and others, and interviews with a small sample of girls from a neighbouring school. The age range was from 11 to 16. This material was supplemented from other sources, e.g. observations in shops, discussions with retailers and mothers and interviews with members of computer clubs.

7   In a number of respects, the domestic technology most resembling the micro of the 1985 was the radio when it first appeared earlier this century. The particular parallel relating to this account is the press stories telling of the route to fame achieved by some amateur radio enthusiasts and how this affected the hobbyists' romantic perception of their activities (Douglas 1986).

8   The early PREST work on attitudes to new technologies, and the Mass Communications section of that report also refer to the importance of games history {Murdock *et al.* 1985).

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