

Technological Politics and the networked PC¹

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Introduction

According to Andrew Feenberg, we are living in an era that is increasingly defined by social conflicts centred on technology. This is so, not only in the narrow sense that individuals and groups are fighting for access to or control over technological, as distinct from natural resources. It is true in the more interesting sense that social actors contest the design and production of technology in the first place. What Feenberg calls the 'design critique' of technology has been operationalised by human beings with an interest in the form, purpose and social function of technical artefacts. This paper uses critical theory and ideas from some classical thinkers on political right to gain insight to the underlying politics of information technology design.

Traditionally, critical theory has been suspicious of technology. Reservations about the role of experts in particular and their ability to skew social development in the direction of an oppressive instrumentalism, or an overweening systems sphere, unites all the Twentieth century critical theorists. In the computer age, it seems, the problem of expertise can be tackled. We can opt for 'easy to use' technology that will subvert the hold of experts over technology by facilitating control by ordinary, non-expert individuals. Alternatively, we can change human beings so that they become more technically adept. The former has been the dominant strategy and this has seen a subtle reinsertion of power into the politics of design, with the user friendly interface as a strategy. We need to do both – make technology accessible and make people more adept at using it – if we want to create the technological basis for a more rational way of life.

1. Critical Theory and technological politics

A number of theorists have argued that, in the changed social conditions of the Twenty-first century, the political energies of critical theory need to be re-directed into conflicts that are spatially and temporally more restricted than the grand historical projects of the past. Social activism occurs around issues that are subject to a narrower definition than 'the transition to socialism', for instance. This narrowing of the political field need not mean the same thing as limiting the number of participants; the issues that motivate people and the action they take may be global in scope, but the narrative construction that most people put on them will limit their significance to

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something short of what, for Lukacs and a generation of thinkers, defined critical theory, namely, its ability to totalise. And just as actions no longer move within a horizon of world-shattering significance, so the coalitions that bring them about lack a relationship to past and future that might guarantee belief in their permanence ('the workers have always made history') and fold this into the motivational basis of subsequent action ('we will win in the end'). One of the striking things about the 'anti-capitalist movement' of the 1990's, for instance, was its lack of an organisational centre with public structures of accountability, a publicised history, or even an elaborated sense of purpose beyond the immediate goal of bringing various things – events, discussions, systems – to a standstill.

This change in the way that social actors think about their own political endeavours and the ways in which they frame their activism in their own lives has been related to the advent of 'networked society'. Computer mediated communication has transformed the ways in which we communicate and create cultural contexts of action and interaction. The sense that there is no central vantage point from which epistemically privileged agents can grasp the dynamics of the social process as a whole and locate themselves within this has a clear analogy, if not a material explanation, in the diffusion of computer networks. That people rely on the latter to mediate their relationships with others, who may be spatially distant yet emotionally close, and to explore aspects of themselves in the pseudo-anonymity of cyber-space, may well underpin the sense that relationships and inter-personal investments made today can be withdrawn with little cost tomorrow (Giddens 1992).

The changed circumstances for political engagement and their technological coordinates were theorised in advance by a number of writers. As early as 1989 Felix Guattari, for instance, considered it likely that computer technology would open up numerous possibilities for the formation of political alliances and that this would occur against a background of open-ness and contingency of the kind just alluded to. Referring to the 'phenomenal growth of a computer-aided subjectivity' (1989: 38), he writes:

In this era of the information revolution... new modalities of subjectification are continually emerging...

The information and telematic revolutions are supporting new 'stock exchanges' of value and new collective debate, providing opportunities for the most individual, most singular and most dissensual enterprises. (1989: 62; 65)

From this perspective, the widespread use of computers constitutes an opportunity for 'individual competence' to become a factor in social developments, opening up scope for opportunist interventions that effect small changes in the lives of individuals and societies.

Ulrich Beck, in his *Risk Society* (1992) also traces changes in the spatio-temporal context of political action and the new opportunities that seemed to be emerging to developments in computer technology. For him, a central precept of traditional social theory, namely, the principle that technology evolves in a separate sphere from the rest of society and determines the limiting conditions on initiatives at the level of social planning and culture, is challenged by digital technology:

...micro-electronics is introducing a stage of technological development which *refutes technically* the myth of technological determinism. ...computers and control devices are programmable, that is they are functional for the broadest variety of purposes, problems and situations. Thus, technology no longer prescribes how it is to be employed in detail; quite to the contrary, this can and must be fed into the technology.

...

One must know what type of social organisation in its horizontal and vertical dimensions one *wants*, in order to use the networking possibilities of electronic control and information technologies at all. (Beck 1992: 216)

For Guattari, Beck and other theorists of this period, the computer is a harbinger of radical possibilities. Their intimations of this reflect the hobbyist and hacker culture that was spreading across Europe in the 1980s and continued into the early 90s. From 1982 to 1986 the Commodore personal computer dominated this market, superseding the Sinclair spectrum and out-performing the early Applemacs. The Commodore was primarily bought as a gaming machine, but many gamers at this time were also keen programmers. As well as buying 'off the shelf' games for their machines hobbyists would write their own games in BASIC and exchange (or sell) them through hobbyist magazines. More than 17 million Commodores were sold between 1982 and 1993 (Edge 2003). It is probable that most were simply used for playing games, however, the point is that machines like this, which were open to experimentation and allowed users to produce their own programs, were widely available and discussed. As late as 1989, the culture around computing was dynamic and experimental; people exploited the openness of the machines to develop new creative competencies. The early 1990s saw the birth of a 'hacking' counter-culture and of the 'open source' and 'shareware' movement, which made similar, creative use of the Internet (some of these may have been the enterprises Guattari was referring to in the comment above).

The networked computer became a locus for the kind of activity that defines the new radicalism of the 1990s. Hackers and hobbyists made creative use of it to explore new ways of being and of seeing and experiencing the world. In so doing, they began to fashion what is widely thought of as a 'virtual realm' within which new kinds of social interaction became possible. This has facilitated the appearance of on-line communities and associations of people whose primary focus is not the network or the computer but who use the new possibilities to forge alliances and co-ordinate activities. The 'stop the city' protests of 1999 were, perhaps, the best illustration of this to date, in which technical knowledge, cultural experimentation and social radicalism came together to cause disruptions all over the world but no fixed movement or organisation ensued (Gere 2003; Jordan: 2002).

However, the computer has also been seized upon by more conservative social forces. In the years since 1989, the power of networked computing has been used to restructure core business processes and it plays a leading role in the economics of globalisation. Nearly every small and medium sized business now has at least a dozen PCs and most have their own intranet (Robson 1998). Using the internet, especially for advertising, is now normal practice for any capitalist firm. Obviously, for computers to have taken on the kind of mainstream presence and function that they have the tendencies just referred to – for people to use computers as experimental

playthings with radical social implications – must have been largely neutralised. This has been achieved largely through design of the user interface.

2. Interface Politics

Traditionally, the design of technical artefacts has been left outside the problematic field of critical social theory. For Marx, technology was in itself essentially neutral with respect to social questions – of justice, exploitation and freedom. To suggest that technology design was already motivated by social and political concerns of a retrogressive nature would have conflicted with Marx's belief in historical progress. Technology as implemented under capitalist conditions may have regrettable consequences but these flow from what the technology is used for and the manner of its employment. It is legitimate, then, to criticise nuclear weapons as an abuse of the science involved in their design, since they benefit no one and are likely to do great harm to many. It is also reasonable to criticise the deliberate use of technology to increase levels of exploitation in an industry and to make workers' lives less bearable. These lines of critique do not, however, target machines and other artefacts in themselves but the social uses to which they are put and the manner of their employment.

Andrew Feenberg has argued persuasively, however, that there must be a third aspect to any worthwhile critique of technology, which he calls the 'design critique'. This is the idea that, far from being 'neutral', "technology is a dependent variable in the social system, shaped to a purpose by the dominant class" (Feenberg 1991: 35). Beck's observation above suggests that this likely to be more true of computer technology than of previous kinds, because the computer is a tool that automates *social* processes. It works according to some notion of what the correct social process ought to be, which will be set down in the program. This latter idea of correctness is more obviously problematic than the notion that underpins traditional tool design, which we might summarise as 'maximise productivity and minimise expenditure of labour-time and energy'. Feenberg's critical theory of technology argues that we need criteria with which to assess technological design relative to agreed social standards.

Automating productive processes that have already been systematised and which present themselves to actors as a kind of reified 'second nature' (Habermas 1992) may lead to social unrest – if workers are made redundant, or whatever. It does not necessarily involve a reflexive reassessment of the purpose of the organisation. However, the impact of using networked computers on modern office work has involved precisely this kind of auto-reflexive shock. The move to 'flat hierarchies' in the late 1990s, for example, was precipitated by the sudden awareness that a lot of what organisations did before computers concerned an information-power nexus that no longer obtained if everyone had access to a networked computer. Since all employees can, in principle, access all relevant information, there is no need for layers of management containing individuals with organisation-specific specialist knowledge. Management Information Systems literature of the later 1990s records the demise of overpaid 'informal experts' as organisation players (Robson 1998; Dix 1993).

The progressive political implications of this levelling out of information access within organisations were to some extent contradicted by the potential use of the

networked computer as an industrial spy. As David Burnham (1984) argued, it was as a tool for management command and control of industrial processes that the computer first entered the modern workplace. This is a contradiction because if everyone could potentially know the whereabouts and performance of everyone else in an organisation and, moreover, if everyone is equally able to manipulate or destroy that information then there is no management gain. Clearly, then, continued use of the computer as a management tool was inconsistent with the development of a workplace culture of hobbyistic experimentation and play. Beck notes that with computer technology, "...employees could become transparent for the plants (management)", but also that "...the plants could become 'transparent' for the employees and the interested environment" (1992: 218). This last possibility was effectively neutralised by the development of machines with opaque interfaces.

This was not the effect of a management conspiracy but the outcome of a convergence of social factors. Aesthetically, the graphical user interface of the AppleMac and early Windows machines were much more pleasing than the command lines typed against black screens encountered even by BASIC programmers. The design principle behind these interfaces is one that promotes immediate accessibility to a range of prescribed functions, rather than inviting experimentation. The individuals who designed the graphical user interface saw themselves as wresting control of the machine away from a 'programming elite' and opening up the power of the computer to ordinary people. It is questionable whether it would have been possible, given the level of education and technological training of the population, to have introduced non-'friendly' computers on the scale that Windows has been inserted into every conceivable social location. Although the GUI interface contains built in limitations to what people can do with 'their' machines and filters the information they can access when using them, it also shields them from unwanted information that they wouldn't understand. In so doing, it facilitates communicative and other processes related to non-technical sphere of activity and work.

The factors just cited count in favour of a less challenging, more opaque interface. They also, however, introduce new and unacknowledged distributions of knowledge and power, with social import. In Beck's terms, the use of networked computing redistributes risks, imposing new risks on the ill-informed. Ignorant use of computers and computer networks exposes people to the dangers of hacking, Internet fraud and abuse by experts in authority or working for 'sharp' commercial organisations. If this is generalised to society, the decision to base an increased range of vital functions on the operation of networked computer technology is made without adequate recourse to knowing populations competent to make realistic assessments of the desirability of this. This places computing firmly within that set of risks discussed by Beck, wherein people are increasingly reliant on experts to define the real risks and to protect them from them, while these experts seem to be divided among themselves. The Millenium bug furore was, perhaps, the most high profile illustration of these processes.

Viewed in more Guattarian perspective, the user interface clearly imposes unwarranted limitations on creative activity with computers. Contemporary operating systems contain ever more elaborate means to control what 'users' will do, or even think of doing, with their own machine. The person who buys a machine loaded with 'Windows XP', for example, has (probably inadvertently) purchased a number of 'opportunities' to connect to the Microsoft Network, where, should they attempt to do

something not within the predetermined range of the software they have already paid for, they will be encouraged to buy extra software packages. Whether that software could really do the job is another matter, as is the availability of free, functionally equivalent, software for the new task elsewhere on the web. These interfaces inhibit and constrain human beings from finding out about the technical infrastructure they are using. They are accessible and attractive to use, but they are not as friendly as they seem – they offer to help us, but at a price.

The PC interface is a product of conflicting social pressures. Many of the conflicts that have shaped the interface are ongoing and the PC is, perhaps, not yet determined in its final form. This makes the elaboration of sociological criteria for good interface design all the more pressing. Feenberg suggests that technology is desirable if it enhances communication and learning processes. This applies most particularly to computers because, for the reasons just discussed, they hold out the possibility of prising technology free from its association with simple productivity maximisation:

Workers in ‘symbolically mediated environments’ have very different needs from those in mechanical ones... This sort of activity requires a redefinition of work as a developmental process engaging the worker and his or her capacities as much as the machinery of production. Learning and work merge in this new technical environment. (Feenberg 1991: 95)

Interestingly, Feenberg’s assessment of the user friendly interface is largely positive, precisely because these interfaces facilitate communication and information sharing rather than obliging people to interact with the machine. The reflections above, however, suggest that we need to revise this and add a further criterion for socially responsible interface design, namely, that it holds open the possibility that the user may improve her knowledge and use of the machinic level itself.

This criterion is, perhaps, an instance of Beck’s ‘reflexive politicisation’. People seem to use computers to communicate and to share information, but if that communication is policed by intelligent programs recording every key strike and facial expression (Garfinkel 2000; Jordan 2002: 123) and the information accessed has been filtered by biased software beforehand, then we need to take these factors into account. The only way people on the ground can get this knowledge is by mastering further, deeper levels of the machine to see how their actions have been configured by it. In this sense, the third criterion is necessary – it must have been applied at the design stage – for the other two to have any serious application. All three criteria enable us to situate and comprehend the positions of the various actors involved in the on-going social construction of computer technology. In these micro-politics of user interface design, the hegemonic design is met by two temperaments: the kynical posturing of the ‘hacker’ and the distinctively cynical play of computer ‘gamers’².

In essence, the hacker is someone who is disrespectful of the rules that are codified into the machine interface and which attempt to regulate the course of interaction with it. The hacker sees through the interface and knows it to be a cynical mask on the underlying machine. Rather than play along with the choreographed sequences that

² I have argued (Kirkpatrick 2003) that the dominant aesthetic within PC design actually obliges users to assume one of these two positions.

the interface designer would foist on him, the hacker reaches straight through the lie, into the code and protocols that make it possible. Hackers take pleasure in deriding the naivety of those who accept the metaphoric world at the interface literally. They esteem the cleverness that pulls this veil away and exposes the reality – that what we are given is merely ‘window dressing’. At the same time, this is not, for them, a self-consciously ‘political’ act, in the traditional sense of being concerned with the management of public affairs. It has more to do with a desire to make well-timed gestures that would point up the hypocrisy of those who are overtly interested in such politics and which would expose their lies. In all this, hackers and hacking temperament bear a marked affinity with the kynics, followers of the ‘dog philosopher’ Diogenes, who bared his arse to the Parthenon and mocked the ‘rational disputations’ of other philosophers as mere deceits (and conceits).

The opposed computational temperament to the cynical hacker is that of the cynically compliant game player. The ideal PC user, the reference point for interface designers, does not think about how the machine works when she is using it. She takes for granted that it is able to tell what she wants on the basis of her clicking neatly representative icons. Perhaps she feels that she really is ‘dragging’ and ‘dropping’ objects in ‘virtual’ space. Of course, there is no such thing as the ideal user. After some time at the PC interface, and especially after it has frozen on us a few times, we have started to relate to it as something machinic. We know that if we just grasp the requisite causal regularities we will be able to repeat the task we have just learned over and over. Then we can go home. This is the mind-set of the computer gamer who, having been seduced by the game interface – its characters, its scenery, its music – becomes habituated to the routines that are essential to successful play. In Sloterdijk’s history of Western civilization, cynical and rebellious consciousness is opposed by a cynicism that sees through the illusions of power but does nothing to dispel them. Instead, cynical consciousness turns illusions to its own advantage. In Sloterdijk’s memorable phrase, cynicism knows that all phenomena are mere information, but it does not act on this insight (Sloterdijk 1987). So it is with the computer game player. He is aware of the underlying algorithms that guide the game, since they drive his physical movements from moment to moment – his body is colonised by the regularities of the machine. But unlike the hacker he does not reappropriate himself through application of intellect. The game player succumbs to the meaningless disenchantment of the interface and continues to play regardless of how empty the experience has become³.

3. ‘Hacktivists’

Hackers are people who have acquired the expertise required to take control of a personal computer and make it do things that are not part of the publicised functionality of specific, pre-packaged software. Hackers understand the technical possibilities of a PC and they gain this understanding by exploring it to its limits. This involves writing their own code in programming language, or changing code in an existing system to make it do things it was not intended to do. The thrill of the hack lies in this getting a machine to do something its designer did not intend. Bruce Sterling cites the case of using a TV remote control to unlock cars fitted with

³ The cynicism of the gamer is the key to the distinctively ‘guilt-free’ nature of cheating when playing computer games. Entering cheat codes and enjoying their consequences involves a break with the illusion or ‘simulation’ at the interface, but it does not disturb the coherence of game play.

automated alarms as an example of a ‘hack’ in this, classic sense (Sterling 1992). Hacking a machine requires an experimental attitude, sometimes referred to as lateral thinking and, in the case of computers, intense thought and concentration. The computer hacker refuses the easy way through a computer or a network – the way that is mapped out by the interface – in favour of their own path. This latter course takes them closer to the zeroes and ones, the pulse of electricity that constitutes the physical basis of the virtual world at the computer screen. They have to think in terms of underlying protocols regulating the exchange of data; the programming that defines different systems, and the physical properties of chips and other hardware that affect a computer’s performance.

Early hackers were esteemed for their abilities with computers and are rightly associated with many of the innovations that have made the spread of computing possible (Weizenbaum 1976). However, the sociological significance of the hacking temperament has changed dramatically with the advent of networked personal computing. This is reflected in media portrayals of the hacker in the 1990s. The figure of the ‘hacker’ became detached from a specific group of people or even a sub-culture with its own ethical codes and the term became a label that could be applied to anyone found guilty of deviant behaviour with networked computers. The hacker label is now charged with both positive and negative connotations. Hackers have been glamorised by the mass media as subversive, counter-cultural rebels, occasionally even endowed with super-hero like powers – witness Keanu Reeve in the *Matrix* series of Hollywood blockbusters. At the same time they are portrayed as ‘inadequate’ ‘nerds’ who pose a threat to privacy, safety and at the extreme, again in the movies – see the 1989 *War Games* – as placing the future of humanity in jeopardy.

This change in the perception of hackers and hacking reflects their role in the technological politics under consideration here. International computer networks have become the locus of what Beck theorised as a redistribution of risks. Advanced societies have placed a large amount of information on these networks and many information processing tasks with profound human dependencies are carried out using the economies that networking, as distinct from working on isolated PCs, can provide. From the operation of surgical machinery (Stoll 1989), through offender management in the criminal justice system (Hanley 2003), to the oft-cited use of networked computers to keep aeroplanes flying safely, networked computers have become pivotal to the operation of numerous strategies of social control. Those who have knowledge of the workings of these systems are frequently not those who operate them from day to day. A community safety officer, for instance, may use a networked system to carry out assessments of the likelihood that a new client will re-offend. She will be led through the process by an interface that asks her to respond to a series of questions about the individual. The program then quantifies over these answers to generate a profile of the individual and the best ‘control strategy’ for that person. The principles applied recede behind the interface, so that expert management of offenders is based on knowledge held by a criminal justice professional, a networked database and a computer programmer. To be sure, the latter will have worked to specifications provided by the client organisation – in this case, the probation service – but they remain implicated in the play of risks that results.

When the interface ‘speaks’ it does so with a peculiar authority. Being connected to the official criteria and standards and flawlessly implementing them in a way that

seems 'scientific' and precise, their presence in such decision-making contexts is likely to over-ride such factors as individual judgement, or intuition about an assessed individual. This may be a desirable thing, depending on your point of view, but the sociological point is that this development opens the system up to new risks, for which society has not, as yet, come up with the requisite management systems. In this example, an individual offender and a criminal justice professional are dependent upon a programmer having got the algorithms right – neither of them are in a position to check this, except with reference to the very body of intuitive knowledge that reliance on the computer system undermines. Systems fail and glitches enter programs affecting their operation. In the networked society, a single key-strike at the wrong point in a sequence could have, and has had, catastrophic consequences for individuals⁴. Traditionally, society has had mechanisms for countering such risks and reassuring people that security can be maintained and that there are systems of redress in case of failure. Computerisation, however, has proceeded so rapidly and against a background of such dramatic economic upheaval that no one knows any more who to trust. There are no equivalents in the networked society to the traditional 'professionals', whose status alone gave us reason to believe that they would protect us.

As Giddens (1990) and Beck have both argued, the absence of professions that seem to be based upon stable bodies of knowledge and values, reflected in lifelong career paths for individual practitioners who work independently of money and power on behalf of all private citizens, is related to the endemic insecurity that economists relate to informationalisation (Kumar 1995; Castells 1996). These old professions existed at points where danger was permanent and needed to be countered. The availability of information promoted by advanced communications networks, accompanied by increased public awareness of the powerlessness of professionals in the face of a number of pathological lines of development inscribed in the modernisation process itself, has led to widespread disillusionment with them as a source of protection. Anticipating some kind of institutional response to the changed conditions of the 1990s, Beck writes:

Where danger becomes normalcy, it assumes permanent institutional form. In that respect, modernisation risks prepare the field for a partial *redistribution of power* – partially retaining the old formal responsibilities, partially expressly alienating them. (1992: 78)

In the networked society, the people most subject to risks are those who lack competence even to comprehend their exposure to them, until it is too late. The real problem here is not technological, but concerns the lack of reliable social mechanisms to accommodate the technology and protect people from the consequences of error. It has, though, had consequences for the design of technology; the user friendly interface can be seen as an attempt to block people's efforts to gain some of the power that is being redistributed over their heads. This is the social context in which computational temperaments take on their full political significance.

⁴ Garfinkel (2000) gives some striking examples of this in connection with the registration of bad debts and financial services in the United States, where some 40,000 people are denied credit every year because their data shadows have become corrupted through human error or confusion of their identity with someone else's.

In Beck's terms, hackers refuse to remain 'incompetent in matters of their own affliction' (1992: 53). Refusing the lure of the interface, they hack the system and gain access to the knowledge that they need to understand the new risks to which we are all subject in the networked society. This underscores the convergence of hacking with political radicalism in fields unrelated to technology, termed 'hacktivism' by Tim Jordan. Jordan argues that hacking has been reconfigured by 'hacktivism', a specific manifestation of the 'transgressive' politics that he terms 'activism!' (Jordan 2002: 121). According to him, hacking is transgressive because it flouts pre-established, hegemonic 'information codes' which regulate what we may legitimately do with information about and held by ourselves and others. This becomes particularly important as the Internet is increasingly used by those in authority to implement projects like 'Echelon'.

When Jordan invokes 'hacktivism', he intends to mark the association of hacking as resistance to the electronic panopticon with so-called 'real world' politics and the new radicalism, anticipated by Guattari, for which his own work is the totaliser:

Hacktivism can be caught between offering technical tools for other struggles or drifting into an isolated information-based virtual politics. The dilemma of hacktivism may be to serve politics, which hacktivists must learn to judge for themselves, or to serve themselves on the terrain of cyberspace. Perhaps hacktivism is either diverting struggle into the virtual realm, or for any politics the virtual realm is perfect. (Jordan 2002: 151)

Here, Jordan adopts the dominant understanding of hacking as essentially solitary, even self-seeking activity and opposes this, in the form of a dilemma, to hacking undertaken for political ends – in support of action being taken by counter-cultural groups with no direct interest in computing. This overlooks the role played by hacking in technological politics, however. The point is that hacking is inherently political, in the sense that it acts upon technology in ways that are socially determinate. It challenges established implementations of computer technology, opens up alternative possibilities (especially through the shareware and open-source movements) and exposes the opaque interface as a controlling and deceitful mechanism.

Hacking facilitates reflexive appropriation of the network itself. It addresses the paradox that a system for information diffusion that has demystified so many other branches of expertise itself remains deliberately opaque and shielded from public scrutiny and scepticism. The significance of hacking propaganda, which insists that networks should be open to all to roam where they please and is at the same time contemptuous of naïve 'users' who lack the wherewithal not to put private information into public places, lies in the fact that it problematises the hold of the friendly interface. The key function of the latter, in this regard, lies in its promulgation of proprietary messages, telling people they cannot access this site or view this file without a password and so on. Hackers challenge the definitional framework that legitimises this and ignore the signs. Since the network is a part of the social and political world and not some 'virtual' add-on, so action that exposes it to exploration, manipulation and possibly redefinition is political. Convergence of hacking with 'stop the city', animal rights, and other oppositional formations is marginal to an assessment of its true political significance.

This latter is inherently ambiguous. Hackers, by their very existence, oblige everyone to address some of the questions just mooted. But they do not do so by promoting public discourse and debate on the social possibilities of computer technology. It would be more accurate to say that, despite the good intentions of many hackers, they promote anxiety about networks that is probably not conducive to heightened public awareness. The ambivalence in media representations of the hacker reflects a widespread insecurity and a feeling of being menaced, not by the electronic panopticon or over-reliance on technology for safety critical functions, but by hackers themselves. The computer security industry is both a product of and in the front line of the force that articulates these concerns, some of which are legitimate in that they reflect interests that are generalisable to the population as a whole. These interests, along with those that are class and group-specific are also sedimented in interface design standards.

The hacking sub-culture is directly involved in a technological politics in which social forces contest the networked PC. Hackers represent and embody the knowledge that we all need to have if we are to understand the risks we face as a society that is dependent upon networked technology. At the same time, they symbolise and constitute some of those risks. What is needed is a sociological theorisation of the relationship between so-called 'virtual' experience and the spread of physical computers under determinate social conditions. This relationship involves the two computational temperaments (kynicism/cynicism) and the transitions that we all make as we move between them every day. The aesthetics of life and work with computers is definitive of the social mediation of computer technology and of the on-going social contest over what that technology will be used for, by whom and in what (designed) form.

Unwillingness to contribute to the culture of proliferating proprietary software, implemented through interface restrictions on the user's navigation of virtual space is cited explicitly by Richard Stallman as one of his reasons for wanting to write programs that people can use and exchange freely on the net. In his account of the rationale behind his work, for free, on the GNU operating system kernel, Stallman says:

The overall purpose, is to give the users freedom by giving them free software they can use and to extend the boundaries of what you can do with entirely free software as far as possible. Because the idea of GNU is to make it possible to do things with their computers without accepting the domination of somebody else. Without letting the owner of software say, 'I won't let you understand how this works; I'm going to keep you hopelessly dependent on me and if you share with your friends, I'll call you a pirate and put you in jail.' (Stallman, quoted in Moody 2001: 20)

However, for all that the hacker culture contributes resources for a material culture that resists colonisation and exploitation by capital, as an oppositional political force it does not hold out the promise that Jordan hopes for. Assessed in terms of principles, the 'hacktivists' possess many of the same inconsistencies as the anarchists of the nineteenth century. 'Property is theft' is the Proudhonist slogan that underpins their attitude towards proprietary software and information in general. But property relations really reside in an agreement of attitudes co-ordinated by common respect

for the law and institutions of right. The materiality or ‘virtuality’ of the thing owned has almost no bearing on this, the fundamental issue at stake in all contested property claims.

Measured in terms of its practical social results, ideologically motivated hacking has had only very trivial consequences apart from the creation of a computer security industry that is very influential and a software industry that is deeply paranoid and ‘security conscious’. At the level of product design this has resulted in less trusting software with fewer points of access, for the ordinary worker, to underlying levels of code. As an intervention in the technological politics of computing, then, hacking as a practice is a blind alley. Hacker culture contains radical strands that are committed to socially progressive ideas and there are examples of hacking technology that are funny, inspiring and emancipatory in potential. Open source software is a valuable resource for the future of computing and will, no doubt, play a key role in the struggles that define and shape the form of personal computing over the next few years. To constitute a progressive force in these technological politics, however, it is necessary to contribute to the building of social relationships around the technology and to foster the development of a critical public. Hackers have not done this, being locked instead in a constant, insularising struggle for mastery over their machines.

Moreover, as hacking has become a more self-conscious and socially diffuse activity it has spawned its own, cynical variant – ‘cracking’. Crackers make overt criminal use of their hacking skills, using them for personal material gain or for cruel destructive purposes, such as virus writing. The cynicism in such activities can include pseudo-radical posturing. In August 2003, for instance, an internet worm known as the ‘love-san’, or ‘blaster’ virus affected hundreds of thousands of ordinary Internet users. The virus was relatively mild, causing Windows machines to crash every time they logged onto the Internet after a few minutes of use. It also incorporated a denial of service attack capability – harvesting e-mail addresses and using them to mount an e-mail deluge aimed at Microsoft, with messages being sent from all affected machines at a time that was coded into the virus. In the text of the program its authors had written a ‘cheeky’ message to Bill Gates, urging him to ‘stop making money’ and ‘fix his software’. The cynicism of this posture is obvious since the authors of the virus are clearly not motivated by any desire to improve Microsoft software, except in the singular respect of making its Operating Systems more secure. It is not difficult to think of more creative, equally cheeky uses of their coding abilities. These latter would be less likely to get the virus writers well-paid jobs as computer security specialists, though. As Paul Taylor and others have shown, crackers routinely make the transition into work for the computer security industry, once they have proved their abilities through this kind of casual vandalism (Taylor 1999). With the social diffusion of the hacking temperament, it becomes less kynical and loses its oppositional significance; in a strange dialectic it turns into its opposite – the very badge of cynical conformism.

4. Gaming publics

Computer games have been related to interface design in two ways. Games are the experimental context in which new ideas about friendly interface design have been tested. Immersive, ‘virtual’ worlds in which symbol recognition and manipulation are key to successful operation and even pleasurable experience, games have been a kind

of testing ground for new ideas on how best to integrate the responsive interface into established structures of recognition and action. Games have also helped generate demand for computers. The example of the Commodore, discussed above, highlights this – the biggest selling PC ever was bought primarily for playing games. A whole range of peripherals, ever-expanding memory and processing capabilities tend to find their first market in the game playing constituency, before they make their way into the broader range of commercial and other applications. The computer game industry is, for these reasons, the most robust within the IT sector. Most importantly, from the standpoint of a design critique of the computer interface, the computer gamer is a kind of cultural testing ground for ideas that will shape the interface of the future. So what is computer game culture?

The computer game seems to be displacing TV and radio from many people's lives as the most salient leisure time pursuit – regular users watch 28% less television than their peers (Wellman & Hatythornthwaite 2002: 22). TV and radio were synonymous with the 'culture industry' that was criticised by first generation Frankfurt School theorists. Habermas (1989) summarises this critique in the following terms. TV and radio are capital intensive, so that it was impossible for ordinary people to participate. Moreover, these media were organised to manage public moods and tastes so that the demand side of the economy would constitute a favourable environment for an economy that was reliant on fixed means of production that churned out large quantities of product in a routine fashion. The 'culture industry' (Adorno & Horkheimer 1984) tailors its products to the need of an exhausted working population for relaxation. We can see that all of these things have changed in the networked society. It is cheap to use the Internet. Networked computing has enabled 'just in time' production, obviating the need for demand management. And digital technology is 'interactive' – it requires the active participation of the player (Gere 2002: 80).

Viewed from the standpoint of critical social theory, however, the computer game is an ambivalent cultural form. Within it we can find tendencies that merely extend and deepen the hold of pre-digital mass culture, but also evidence that it has the capacity to promote forms of reflection and engagement that equip people to participate in technological sub-politics. Habermas's criteria for this turn on the idea of learning as a dimension of social evolution⁵:

Serious involvement with culture produces facility, while the consumption of mass culture leaves no lasting trace; it affords a kind of experience which is not cumulative but regressive. (1989: 166)

Habermas cites Meyersohn's observation that watching lots of TV doesn't make you any better at doing it. The consumerist society induced a mass psychology of consumption rather than participation. It trained people to seek fulfilment through private pleasures of acquisition and consumption, instead of orientating them to exercise control over their society through collective action.

On the face of it, the computer game embodies the transition from literacy, which is strongly associated with reflection, to a predominantly visual and unthinking experience, akin to what Habermas disparages as 'the techniques of the cartoon'

⁵ For clarification of this point, see my 2003a.

(1989: 168). The importance of literacy was that it enabled people to participate imaginatively in action described by novels and other literary forms that raised questions of ethics relevant to life in the bourgeois world. Trashy mass culture, in contrast, does not promote this kind of thinking. TV and radio reduced people to what Sartre described as ‘seriality’, or Guattari calls ‘mechanisms of empty repetition’ (1989: 61) in which people are focused on something but have no project specific to themselves in connection with it⁶. Early computer games were certainly not tools for reflection in any obvious sense. They absorbed the player in a routine and repetitive action that alarmed some psychologists, who saw it as a form of withdrawal. These are still observable features of most contemporary games, even though the latter are more complex artefacts. Game play involves a kind of surrender to the hold of the interface and, in this sense, games interfaces are laboratories for the production of more stupefying and controlling computers.

The early games – such as *Space Invaders*, *Galaxian*, or *Joust* – trained people for life working with graphical user interfaces in the information society. Their value in terms of the first criterion established above – that of learning about the world beyond technology – is ambiguous. However, these games can be interpreted as analogous to the first periodicals, which Habermas says provided an unreflective way into the bourgeois public sphere simply by providing relevant information (Habermas 1989: 43). It was only with more developed literary forms that the bourgeois public became fully self-reflective, drawing on ideas of philosophy and great literature to inform its participation in the public sphere. There are signs that a move towards much greater sophistication, analogous to this, has occurred within the games culture. In modern games, narrative and game play sequences (which retain the rhythmic character of early games in most cases) are skilfully interwoven to produce highly provocative experiences. The finest example of this to date is almost certainly *Grand Theft Auto: Vice City*, which offers the player the opportunity to become a gangster who, through a variety of brutal techniques and a series of violent missions becomes, in the parlance of the game, the man with the ‘biggest cojones’. This is hardly a model of good citizenship and the game has attracted criticism – it makes game play out of ‘drive by’ shooting! – but it is also a splendid work of cultural politics. Cars in the game have radio stations that overtly satirise American selfishness, greed and even foreign policy. The police in *Vice City* are open to bribes and behave like the strongest gang in town, rather than objective law enforcers. Perhaps most significantly of all, game play in *Vice City* never takes on the repetitive empty character it has in other games. The narrative context, which is invariably humorous and cheeky, never quite recedes, even in the most frustrating missions. In this way, the game reverses the usual balance of kynical and cynical temperaments in game play.

Of great significance here too is the transformation, with the rise of the Playstation, of the immediate social context of gaming. With the notable exception of ‘Pong’, the first mass marketed games were single player and most people played them in arcades, where other people were a distraction. Contemporary games are played in the home, however, and ethnographic studies (Wright et al 2002) show that people playing games enjoy playing against each other and talking (and laughing) about the

⁶ “Capitalistic subjectivity seeks to gain power by controlling and neutralising the maximum number of existential refrains. It is intoxicated with and anaesthetised by a collective feeling of pseudo-eternity.” (Guattari 1989: 50)

experience. Contemporary games consoles are designed to go on-line, so that people can interact with other players from all over the world through the medium of the game. In many parts of the world, this kind of social interaction is already a common public activity, in cyber-cafes. Games culture is communicative and becoming more so. It introduces people to each other through the medium of a dynamic interface that forces disclosure of some aspects of self and concealment of others – in other words, it provides a novel circumstance for social engagement and communication⁷. On-line gaming communities have been a feature of life on the Internet for many years, with LambdaMOO being the most famous example. The idea of a community formed in and concerned primarily with the playing of a game is not without precedent and, at the very least, the on-line version must constitute a kind of civic association. Again, the value of these developments in the context of the Internet as a political medium is, as yet, unclear.

Of decisive significance would be the emergence of a critical discourse aimed at clarifying the value of games as cultural products. If it became sufficiently strong within the gaming culture, such a discourse might refract back onto games production itself and, thereafter, modify interface design. A visit to any newsagents in the UK reveals that about a third of their stands are heaving with magazines about computer games. Sometimes these are aimed at children, but this is by no means true of the majority. Few are, perhaps, as intelligent as 'Edge'⁸, which recently distinguished itself by mentioning Adorno in a discussion of the computer game as a cultural form. Criticism both institutionalises the lay opinion on a medium and at the same time educates it. The critic must secure recognition from her audience even while raising its expectations and changing its perspectives. Nevertheless, this is evidence of a critical discourse on the computer game which incorporates diverse perspectives on issues that are relevant to design and to the nature of 'usability' in the context of play.

A skeptic might respond to this by pointing to the apparently banal content of many gaming magazines. In them we do not find reflection so much as the kind of 'exchange of preferences' that Habermas identifies (1989: 173) with a thoroughly commodified cultural experience. Columns devoted to the differences between PS2 and X-BOX versions of the same game, or conversations between players on the different speeds of Sonic and Tails might fall into this category. However, a review of the games literature and the few ethnographic studies of group gaming disclose a more critical and elevated form of discourse, shaping our experience of games. Gamers exchange moves and tactics, involving experimentation and innovation that exceeds anything anticipated by games programmers. Indeed, 'Edge' journalist Steven Poole disparages the 'fight' game genre for lacking this dimension to its game play and, in so doing, he heightens other gamers' awareness of this as a critical standard (Poole 2000: 47).

There is plenty of evidence that computer games can promote reflection and are a serious medium worthy of further analysis⁹. The critical culture around gaming is, like the game medium itself, poised between extending mass culture and constituting a

⁷ This is a call for further research.

⁸ Edge magazine has a monthly circulation of 30-40,000 in the UK.

⁹ A number of digital artists have used games in their work – Treister, Bichard – and the whole question of game archiving is giving a practical significance to questions of historiography to older game players.

cultural platform, equivalent to the eighteenth century world of letters, upon which a new public sphere, appropriate to the networked society, might be constituted. However, the best illustration of the kind of positive cultural politics envisaged here concerns the culture of game modification. Games players write and exchange ‘mods’ – modifications to games programs that include new twists of storyline and environment – and have succeeded, through this activity, in obliging games producers to leave their source code open for this purpose, something hackers have not yet persuaded the manufacturers of Windows to do. This has been achieved through the market, with astute games manufacturers recognising that there was demand for games with accessible source code, but also through successful negotiation and lobbying. Where hackers confront power dramatically and parade their subversions of the interface order only to be suppressed by power, gamers compromise, negotiate and effect a gradual re-opening of the technical levels of the machine.

5. Networked politics

The technological politics under discussion here are a species of sub-politics. Their immediate sphere of influence is narrow and centres on the character of the experiences that people have with computers. There is, however, good reason to think that computer mediated communications and technologically supported environments are acting as a kind of container within which it is possible to discern the lineaments of a new public sphere. The Internet in particular has been cited as a communications medium that brings people together in a context of equal participation and open debate which mirrors the social conditions that obtained when the first, bourgeois public sphere was formed in the Eighteenth century¹⁰. From this latter context of discussion, debate and, ultimately, institutional forms of governance, sprang the doctrines of right and legitimating discourses that underpin contemporary notions of property and political practice. A number of commentators have suggested that the Internet could form the basis for structures of global governance in the future. This will give greater significance to the issues under consideration here, concerning the kind of place the global networked society will be.

For critical theory, the decisive issues here are the possibilities that will exist for learning and for free communication aimed at problem resolution through consensus. A crucial, yet largely neglected factor in this is the openness of technology to public exploration, understanding and democratically mediated change. Nicholas Garnham is right to point out that,

The problem is to construct systems of democratic accountability integrated with media systems of matching scale that occupy the same social space as that over which economic or political decisions will impact. (In Calhoun 1992: 371)

This will only be resolved when we actually have a public who recognise themselves as such in the virtual space of the web and other technologically mediated

¹⁰ Situating the first public sphere in the Eighteenth century already reveals Habermasian commitments on my part. Critics have suggested that the public sphere actually originates in the popular movements of the seventeenth century. Similarly, this formulation unacceptably idealises the Internet as a paradigm of free and open communication – a charge that is also levelled at Habermas’s account of the first public sphere.

environments. Hackers and gamers are people who are already at ease in these environments and who identify themselves as participants in them. They differ in the fundamental temperament, or computational aesthetic, they bring to the encounter with the interface. The hacker is insubordinate, intellectual and freedom-oriented. The gamer is submissive, allows himself to be conquered by the rhythm of the machine and pleasure-seeking. *Ironically, however, it is gaming culture that is likely to produce better citizens in the new public sphere.*

In his theorisation of the public sphere, Habermas observes that its first condition was the existence of a kind of ‘cultural platform’, from which suitably formed individuals could commence participation. This was the role played historically by the eighteenth century ‘world of letters’:

The psychological novel fashioned for the first time the kind of realism that allowed anyone to enter into the literary action as a substitute for his own, to use the relationships between the figures, between the author, the characters and the reader as a substitute for reality. (Habermas 1989: 50)

The rise of a popular literary culture at that time enabled people to participate in imagination in the new ‘social’ world. The computer game culture equips people in a similar way to participate in what has been theorised as a ‘new public sphere’ in the world of internet mediated communication and social relations. Surveys of Internet use show that playing games is an important part of what most people use the Web for when they first become users of the technology, although it tends to decline as a proportion of their on-line activities as they become more experienced users (Wellman & Haythornthwaite 2002: 21).

This is the sociological significance of the ‘interactivity’ distinctive to playing with a computer. Espen Aarseth provides the most searching interrogation of computer games as textual experiences and shows that what he calls ‘cybertexts’¹¹ involve user-players in an activity of reading that is neither as rigorously determined by the text as traditional reading, but also does not afford them complete freedom to construct whatever meaning they choose, as in the fantastic projections of those who ideologise the ‘virtual’ as a radically new arena. On Aarseth’s account, using these works involves players in a ‘dialectic of searching and finding’ (1997: 90), which is characteristic of all game play. Play is distinguished from fictional narrative precisely in that it does not involve the willing suspension of disbelief associated with book reading or theatre going, but instead involves us in testing the game world to find out what its real limitations and affordances are. Writing in particular of text-based adventure games, Aarseth writes:

The adventure game user cannot rely on imagination (and previous experience alone) but must deduce the non-fictional laws of the simulated world by trial and error in order to complete the game. (1997: 50)

Aarseth rejects the term ‘interactivity’ as a way of describing this to and fro that is profoundly characteristic of all computer games because of its ideological

¹¹ It is important to note that, for Aarseth, computer games are only one kind of text that can be analysed from the standpoint of ‘cybertext’, traditional poems, stories and plays can also be cybertextual if certain conditions are met.

connotations. In the mid-1990s, interactivity was a kind of buzzword, used by the computer industry to hype up the new wave of computer technology – as Aarseth correctly points out, at that time to ‘declare a system interactive [was]... to endorse it with a magic power’ (1997:48). Aarseth also claims, however, that the term lacks precision and in this I think he is mistaken, not least because his own work does more than any other to clarify exactly what ‘interactivity’ ought to denote, namely, that special experience of navigating a computer generated environment in such a way as to identify its parameters and behaviours, without breaking with the human interface level and moving to a causal or mathematical interpretation focused on machine elements – the parser, the database etc.

What distinguishes the computer game is precisely this movement between freedom, critical use of rationality to discover the truth and ultimate conformity with the demands of physical reality. This universality and the experience of freedom that is central to it ensure that the game is more than just an echo of life in industrial society. It is a testing ground for the nature of freedom under social and historical circumstances defined by networked computing. In itself, this does not constitute orientation towards a public sphere on the part of games players, but recognising oneself as a player of a game is isomorphic with self-recognition in the public sphere. The structure of the game play situation reproduces the classical problematic of politics, as defined by Kant in the eighteenth century: The public see the natural constraints on freedom and work to match the scope of individual freedom of action with the real empirical limits on this, in accordance with moral principles that regulate interpersonal conduct (Kant 1982). To do this in a public sphere mediated by the Internet requires citizens who are understand the new medium, particularly the nature of the real and its limits¹² and the norms of behaviour that are evolving there.

Self-narration as a player occurs within a medium that parallels that of the emergent structures of administration and regulation of the new society. Just as the original public sphere paralleled consolidation of the modern state as a ‘zone of continuous administration’ (Habermas 1989: 24) (pre-modern states were haphazard affairs, marked by local and transitory exercises of power), so Internet society requires a participatory culture. The ambivalence of the Internet, described above, means that it could become an electronic panopticon, in which all of our affairs are recorded and citizens are subsumed under their ‘data shadows’ (Gordon 1986; Mathieson 1997; Garfinkel 2000). The counter to this is a vibrant culture of ‘netizens’ who are culturally equipped to address such questions as the rights and wrongs of ‘virtual property’ (Taylor 1999); regulation of interpersonal conduct in cyber-society; regulation of web content; education and access to resources on the Internet; challenging the role of corporate and public authorities in shaping Internet communications, and exploiting the possibilities for imaginative restructuring of ‘cyber-space’ in line with aesthetic principles. These issues require a degree of cultivation and socialisation with reference to the emergent technologically mediated public sphere and this is what people acquire through games playing. Ironically, the computer game player comes to a non-cynical appreciation of the nature of the computer-supported environment.

¹² To take a trivial example, only someone familiar with such environments will know when to pay attention to ‘error’ messages or what significance to attach to ‘access denied’ under different circumstances. If these are perceived as natural limitations then freedom may be needlessly circumscribed.

The widespread experience of playing with computer games has played an obvious role in facilitating the development of legal frameworks that have begun to develop in this area. Most obviously, games provide robust visualisations of non-physical entities and, in so doing, naturalise the notion that we can meaningfully claim to ‘own’ a file, or ‘sign’ an agreement when we perform actions that are remote in space and time. Hackers are, perhaps, in denial about this. The computer game has helped to make computer-mediated-communications feel normal so that e-mails, for example, can now serve as legally binding contracts. The computer interfaces that people use for most commercial and other interaction come loaded with visual imagery – coloured objects, icons, applets – that was first developed for games playing and games technology continues to generate spin-offs that are folded into interface design. In this way, the computer game feeds directly into the feel and form of an emerging new environment for public interaction.

The growing culture of ‘mods’ and the constant discussion among games players of how to make games better suggests that computer game players are not merely passive recipients of these environments, but actively participate in shaping them. As Andrew MacTavish (2003) shows, game modification involves players directly in the process of re-shaping environments produced by games manufacturers. In a series of disputes with computer game publishers, modders have forced the publishers to soften their proprietary licenses to accommodate mods. In this way, game players have imposed their vision of how games should be improved and had their ideas taken up (and sold on) by games companies. This story attests to the idea that the computer game is, in significant respects at least, radically inconsistent with the hollowed out interior of the subject of mass culture. The modifications in question frequently display a cynical character – the most famous one, ‘Counter Strike’ gives the player the opportunity to assume the role of revolutionary guerrilla (‘terrorist’) in a game that originally simulated counter-terrorist operations¹³, for example. To be sure, computer game companies are acting out of, fairly cynical, self-interest since the ‘flexible’ licenses (EULAs) allow them, rather than the modders, to exploit the modified game versions for further profit. The important point, however, is that, ironically, gaming culture turns out to be the cultural launching off point and to some extent the site of a constituency of social actors who refuse to be assigned a merely passive role in the networked society. Modders are committed to learning in the standard sense (about games and through the process of interpreting game narratives) and they participate in the equivalent of civic associations within the new mediated social space. And they participate in a process of technological, or reflexive enlightenment too, which equips them for fuller participation in the new public sphere (if that is what it is).

As Aarseth writes, in this new sphere, ‘...the political relationship between participants is decided by their personal technical expertise...’ (1997: 170), as well as more traditional determinants like power and wealth. The significance of gaming culture lies in its pursuit of (often) progressive social and cultural objectives through strategies of negotiation rather than potentially destructive direct action.

¹³ It may not be a coincidence that later games in the same genre routinely include the option for such perspective shifting, including the very ideological ‘Black Hawk Down’ (King, forthcoming).

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