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A 'TECHNOLOGICAL IDIOT'?

Raymond Williams and communications technology

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Abstract

Raymond Williams was a prolific cultural commentator and historian and his writing on communications technology provides a particularly relevant framework for understanding contemporary information-society innovations. Williams sought to distinguish questions of technique and technical invention from their realization in the fundamentally social organization of technologies themselves and emphasized the importance of agency and intention in structuring the uses to which technologies are put. Far from technology having an inescapable internal logic of development, innovation takes place within specific social and economic contexts. For Williams, this meant that there was no pre-determined outcome to the evolution of communications innovations but a series of complex interactions between innovations and the world into which they emerge. This article will provide an assessment of Williams' work on technological innovation, his critique of determinism and his commitment to democratic communications. Williams helps us to challenge the simplistic proposition that 'the Internet has changed our world' and enables us to understand instead the ways in which contemporary social relations set limits on the development of the Internet as a democratic medium.

Keywords

Raymond Williams, communications technology, Internet, information society, technological determinism

INTRODUCTION

Raymond Williams (1921–1988) was one of Britain's outstanding social and cultural analysts. The son of a railway signalman, he won a scholarship to study at Cambridge University and went on to teach working-class students in adult education. His books on *Culture and Society* (1958) and *The Long Revolution* (1961) opened up an anti-elitist approach to culture that emphasized the expressive contributions made by those traditionally written out of cultural history: the poor and the exploited. Together with his contemporaries, Richard Hoggart and

E. P. Thompson, his work was a key part of the development of the academic disciplines of cultural and media studies in the UK in the 1960s. Turning his back on one of the established canons of British intellectual life, he challenged the notion that culture was an elite pastime referring solely to the fine arts and insisted instead that culture was 'ordinary', that it emerged out of the soil of everyday life. The study of culture, therefore, required anthropological as much as aesthetic skills and sensitivity to the history, traditions and daily practices of working people.

As professor of drama at Cambridge in the 1970s, Williams' intellectual range was outstanding and his writings on politics, literature, philosophy, drama, television and technology earned him a reputation as one of the leading radical critics of his day. His engagement with Marxism at the time led to his articulation of 'cultural materialism', a modification of what Williams saw as the economism of the concept of a determining 'mode of production'. For Williams, culture, media and language were as *productive* as the institutions and processes typically attributed to the economic 'base' of society and as vital in securing the production and reproduction of everyday life.

This article focuses on Williams' analysis of the development of communication technologies and his critique of technological determinism contained in three pieces of writing: his short book on *Television: Technology and Cultural Form* (Williams 1974), his historical account of the evolution of media, 'Communications Technologies and Social Institutions' (Williams 1981) and the chapter on 'culture and technology' in *Towards 2000* (Williams 1985). While only a tiny part of Williams' overall work, the dangers that he identified concerning determinism and technophilia have been accentuated by the ongoing infatuation with the transformative power of the Internet and the theorizing of an 'information society'. Williams constantly stressed the indeterminacy and contingent nature of technological development, unlike the shrill prophets of today who are happy to ascribe specific consequences to the growth of computer networks. For example, Nicholas Negroponte of MIT's Media Lab confidently predicts the end of national sovereignty in an age of global flows of 'bits' as 'landlords will be far less important than webmasters. We'll be drawing our lines in cyberspace, not in the sand' (Negroponte 1998). Gilder (1995) is convinced that the 'centrifugal' force of the Internet will necessarily lead to the collapse of 'all monopolies, hierarchies, pyramids and power grids of established industrial society'. Even a more balanced commentator like Giddens, theorist of the 'Third Way', argues that the 'communications revolution has produced more active, reflexive citizenries than existed before' (Giddens, 1999: 73).

Williams, writing before the popularization of the Internet, confronts such

determined positions. He is passionate about the possibilities of technological innovation but insists that the development, take-up and use of technologies are all shaped by the social relations of the world into which they enter. There is no 'natural' course of development, no predictable shape that a technology will assume but instead a conflict between the capacities of particular innovations and the priorities of the most powerful groups. That means that there is a future to struggle over and Williams provides us with the intellectual armour both to challenge current profit-led decisions about technology and to press for an alternative, democratic vision of communications.

TECHNOLOGICAL DETERMINISM

Williams describes technological determinism as an

immensely powerful and now largely orthodox view of the nature of social change. New technologies are discovered, by an essentially internal process of research and development, which then sets the conditions for social change and progress. Progress, in particular, is the history of these inventions, which 'created the modern world'.

(Williams 1974: 13)

Technological development, therefore, is seen to be an autonomous process whereby the inner logic of a particular technology unravels in a predictable, often inevitable, fashion and changes the world into which it is born. This is the idea that the discovery of the printing press necessarily led to the Enlightenment, that telegraphy led to the Industrial Revolution and that the Internet has led to an 'information age'. While rejecting this false causality, Williams recognizes the simplicity and hegemonic power of these propositions:

The basic assumption of technological determinism is that a new technology – a printing press or a communications satellite – 'emerges' from technical study and experiment. It then changes the society or sector into which it has 'emerged'. 'We' adapt to it because it is the new modern way.

(Williams 1985: 129)

What is lacking from such accounts is any notion of social power, interaction or intention. For determinists, an efficient and sophisticated technology will ultimately impose its own discipline and its own patterns over and above the efforts of specific agents to use technology for particular purposes. Williams, on the other hand, seeks to restore social context to the process of innovation and to assess the extent to which technologies are called into being through the needs and desires of corporations, states, groups or individuals. The question then

becomes one of who has developed the technology, in whose interests, for what purposes, for which audiences, and with what consequences.

In pursuing these issues, Williams came into direct conflict with the influential arguments of Marshall McLuhan that mass media provide a sensory extension of the human body. McLuhan believed that the global, interactive and instantaneous possibilities of new communications technologies, in particular, had helped to resurrect the organic nature of speech-based communications. The sheer psychic power of technologies like satellites and television was such that

Our conventional response to all media, namely that it is how they are used that counts, is the numb stance of the technological idiot. For the 'content' of a medium is like the juicy piece of meat carried by the burglar to distract the watchdog of the mind.

(McLuhan 1998 [1964]: 18)

Williams acknowledged the appeal of McLuhan's discussion of specific media forms but accused him of a formalism that erased all social and historical context from discussions of technology. In McLuhan's writing, '[a]ll media operations are in fact desocialised; they are simply physical events in an abstracted sensorium' (Williams 1974: 127). Furthermore, if there is an inner sensory logic to communication technologies as McLuhan claimed then attempts to change the uses and to modify the effects of these technologies will be doomed, a fatalistic position with which Williams entirely disagreed.

Williams was certainly wrong to suggest that McLuhan's ideas would have only a limited shelf-life – after all, it is the latter's books that are being reprinted and restored to academic reading lists to 'make sense' of contemporary digital developments. But Williams also pointed out that McLuhan's thesis, as an example of seeing technology as the driver of history, would be constantly renewed, making it all the more important to grasp technology as 'at once an intention and an effect of a particular social order' (Williams 1974: 128). It is to this objective that we now turn.

FOUR STATEMENTS ON TECHNOLOGICAL DEVELOPMENT

**'{A} technology is always, in a full sense, social'
(Williams 1981: 227)**

Williams distinguishes between *technique* and *technical invention* as the application and development of particular skills (in laboratories, workshops or Silicon Valley basements) and the social institution of the *technology*. He describes the latter as

'first, the body of knowledge appropriate to the development of such skills and applications and, second, a body of knowledge and conditions for the practical use and application of a range of devices' (1981: 227). Williams is particularly interested in the process by which a technical invention becomes an 'available technology' (Williams 1985: 130), in other words the decisions about which inventions to develop, invest in and manufacture (if we may still use the word). Far from a technique unravelling along its own internal logic, it is the behaviour of real individuals in particular historical circumstances that shapes the transformation of an innovation into a technology.

Williams illustrates this point by discussing how advanced tribal societies developed writing systems that reflected their increasing complexity as trade expanded and tasks were specialized in order to meet these changing circumstances. Progressive development of the technology both depended on and reinforced the further expansion of trade (Williams 1981: 228). Similarly, the rise of the popular press in the nineteenth century depended on innovations in printing and paper production that Williams argues were 'specifically sought' by proprietors at the same time as it was 'closely bound up with the more general changes which were producing the conditions in which the new social and cultural form was necessary' (1981: 231). In other words, innovations were demanded by capitalist entrepreneurs, but these demands connected to the far wider social transformations implicated in the industrial revolution that created both the need and the space that the newspaper might satisfy and occupy. In each case, the development of a particular technology was bound up with profound social changes that, in turn, would be affected by the performance of that technology. For Williams, technology is a *relationship*: it is 'necessarily in complex and variable connection with other social relations and institutions' (1981: 227).

For example, Williams argues that broadcasting was not invented in a single flash of inspiration but developed during an extended process of technical experiment and innovation. What was crucial, however, and what organized these experiments into an available technology, was the desire for a medium that would complement the contradictory experience of new forms of urban life, based simultaneously on increased mobility and social atomization. Williams describes radio and television as forms of 'mobile privatization' and he argues that broadcasting 'in its applied form was a social product of this distinctive tendency' (Williams 1974: 26). It offered the possibility of extending people's horizons, of stimulating their curiosity, of providing them with news from 'outside', but it did so by focusing on the family home as the centre of this communicative process. Williams links this to shifts in the social organization of capitalism from the 1920s onwards: increased centralization of production and decision-making and

therefore a loss of control over one's daily life results in growing investment in the private domain. Broadcasting proved to be a suitable technology to link the private with the public and, in so doing, helped to change the definition of both.

Williams' model of technological development appears to suggest that innovation is contingent on periods of social change – he writes that new systems of communication like photography, cinema and broadcasting were 'incentives and responses within a phase of general social transformation' (1974: 18). Does this mean that significant changes in communication are necessarily linked to wider upheavals in society? Certainly, for Williams, the key forms of the newspaper were developed during times of crisis, for example in Britain during the Civil War, the Industrial Revolution and the two World Wars when popular 'anxiety and controversy' called for new forms of ideological transmission and therefore new social institutions (1974: 21–2). Periods of technological stability may be interrupted by fierce challenges to the existing institutional arrangements that, while they may seem to have been internally generated through the rise of new technologies, are more importantly linked to wider social forces. Williams gives the example of the paperback book, an innovation that shook up the publishing industry, as a change partly induced through developments in printing technology but also as the result of 'determinate economic institutions [that] brought market considerations to a much earlier stage in the planning and writing of books' (Williams 1981: 232). As he puts it, 'the technology never does stand alone' (1981: 232).

'The moment of any new technology is a moment of choice' (Williams 1985: 146)

By this, Williams means that there is no pre-determined form or function to communication technologies and that instead the eventual outcome of the process of innovation is related to the selections and preferences of human actors, not mechanical (or digital) systems. Consider the case of radio that was the subject of competing metaphors in its early development, either as a 'phone booth of the air' or as a 'newspaper of the air'. The eventual outcome of *broadcasting* was due less to technological factors than by the lobbying of the main US telephone company to keep the 'common carrier' network to itself (see Sawhney 1996). For Williams, this demonstrated that the decisions over which system to use 'were made on already existing political and economic dispositions in the societies concerned, since the technology, obviously, was compatible with any or all of them' (Williams 1985: 131).

The key issue here is that it is the choices of the most powerful groups in society that determine the shape of technologies, a situation that for Williams explains the gap between the potential and actual social benefits of communications technologies as they are increasingly subject to commercial considerations. Williams described this form of commodification as a 'counter-revolution, in which, under the cover of talk about choice and competition, a few para-national corporations, with their attendant states and agencies, could reach further into our lives' (Williams 1974: 151). So, for example, the democratic role of the press has been profoundly undermined by its structural reliance on advertising revenue that rendered, in several cases in the UK, working-class readerships of over one million to be economically unviable as they were the 'wrong' sort of readers, unattractive to advertisers. According to Williams, a technology 'which had promised both extension and diversity had, in these circumstances [a free market-oriented society], produced a remarkable and specific kind of extension (what came to be called the 'mass public') and, by comparison with its own earlier stages, an actually reduced diversity' (Williams 1981: 232).

The development of television provides another example of how decisions on institutional structures that prioritize state or corporate interests limit the democratic capacity of technologies. Firstly, Williams (1974: 25) argues that broadcasting systems were primarily devised as means of transmission and reception with little concern for the content that would be broadcast. The model of centralized transmission and privatized reception was adopted before there was a consensus on what kind of material should be shown. This relates to a further problem that, while television could transmit live events relatively cheaply, original content was far more expensive. According to Williams, it would have been logical to set up a 'socially financed system of production and distribution' (1974: 30) to offset the costs and ensure an adequate supply of funding for more expensive programmes. Instead, television has come to depend on advertising, sponsorship and insecure license fees, a solution that Williams argues has led to under-investment in production and a lowering of cultural expectations.

Williams predicted that this dilemma would be repeated with the new information and communication technologies he saw being developed in the 1980s. While he envisaged alternative, socialist uses of cable and satellite systems to extend diversity and citizen participation, he warned that the introduction of new technologies on the lines of 'selective profit-taking' (Williams 1985: 148) would dissipate their democratic potential.

Within existing social and economic conditions, the new systems will be installed as forms of distribution without any real thought of corresponding forms of production. New cable or

cable-and-satellite television will rely heavily on old entertainment stocks and a few cheap services. New information systems will be dominated by financial institutions, mail-order marketers, travel agencies and general advertisers. These kind of content, predictable from the lines of force of the economic system, will be seen as the whole or necessary content of advanced electronic entertainment and information. More seriously, they will come to define such entertainment and information, and to form practical and self-fulfilling expectations.

(Williams 1985: 146–7)

Narrow profit-led decisions about technological development shut down the range of possible uses for new technologies but also provide no guarantee as to the success of investment decisions. The current excess capacity in broadband systems and limited take-up in broadband services is a dramatic illustration of Williams' point that technological potentiality is not always matched by actual investment decisions and institutional forms.

'The sense of some new technology as inevitable or unstoppable is a product of the overt and covert marketing of the relevant interests'
(Williams 1985: 133)

That technological determinism is seen as 'common sense' is the result of a strategy pursued by dominant groups in order to secure an acceptance of their institutional models for particular innovations. Precisely because competing models are technically possible, corporations are forced to attempt to convince investors, regulators and the public that the opposite is true: that there are no alternative paths and that resistance is futile because technological development is pre-determined. Technological determinism, therefore, is a discursive means of highlighting novelty and paving the way for structural changes that are then seen to be necessary. For example, cable and satellite technologies, 'because they can be *represented* as socially new and therefore as creating a new political situation, are in their commonly foreseen forms essentially parational' (1985: 139, emphasis added). This provides a technical, rather than a political, justification for loosening existing national regulatory mechanisms in ways that will benefit private corporate interests above public concerns. According to this logic, governments are left with 'no option' but to liberalize and deregulate if they are to maintain any control over the deployment of new technologies. Both US and British governments are currently engaged in a re-think of their cross-media ownership restrictions as a *necessary* response to the process of convergence, as if maintaining some sort of ceiling on market share would obviously lead to the collapse of the media industries.

It is this use of determinism, as a means of closing off alternatives, that Williams found particularly disingenuous in McLuhan's argument that 'the medium is the message'. Far from providing a radical vision of communications systems, the latter's fatalism played directly into the hands of the media establishment:

It is hardly surprising that this conclusion has been welcomed by the 'media men' of the existing institutions. It gives the gloss of avant-garde theory to the crudest versions of their existing interests and practices, and assigns all their critics to pre-electronic irrelevance. Thus, what began as pure formalism, and as speculation on human essence, ends as operative social theory and practice, in the heartland of the most dominative and aggressive communications institutions in the world.

(Williams 1974: 128)

However, Williams was also contemptuous of those radical critics of new technology whose unthinking hostility towards communications innovations led them into a 'tacit alliance with the defenders of old privileged and paternalist institutions' (Williams 1985: 129). Williams may have been thinking of those in the British Labour Party who opposed the introduction of cable and satellite from a barely disguised position of anti-Americanism. The result of this was to adopt a conservative attitude towards new technology that coincided with an elitist defence of traditional broadcasting institutions, a position that blunted their justifiable criticisms of commercialization and liberalization. Williams attributed this 'cultural pessimism' to a deep-rooted 'minority culture' critique of 'mass communications' that he argued has been present in the early days of all new technologies, and a position that he himself had adopted in some of his early works. Now, however, 'as one after another of the stylish old institutions, which had supposed themselves permanently protected, is cut into by the imperatives of a harsher phase of the capitalist economy, it is no surprise that there is only a bewildered and outraged pessimism' (Williams 1985: 135). A socialist critique would have to avoid this kind of negative determinism and instead press for alternative structures for and uses of new technologies.

'Unforeseen uses and unforeseen effects' may qualify the 'original intention' of those developing the technology (Williams 1974: 129)

While Williams emphasized the importance of 'purpose' and social intervention in the development of technologies, he rejected the idea that technologies would necessarily be used in the precise ways envisaged by the developers. Just as

technological determinism was a misleading theory, so was the notion of a 'determined technology' (1974: 130). If technologies are social relationships, not static or predictable processes, they are, therefore, caught up in and shaped by social struggles. Technologies, in other words, have 'social complications' (Williams 1981: 230). For example, although political and religious authorities were keen for ordinary people to read the Bible in the nineteenth century for moral instruction, they 'overlooked the fact that there is no way of teaching a man to read the Bible which does not also enable him to read the radical press' (Williams 1981: 230). Private appropriation of the telephone and the photograph co-existed with their intended industrial uses in ways that led to 'wider and more varied personal and social contacts than had been possible within older and more settled communities' (1981: 233). Even in the case of television, a technology brought into being through corporate design; there are conscious attempts to transcend the limitations of 'mobile privatization'. Williams claims that there have been oppositional uses of television, for example the electronic town meeting and the 'multi-screen play', where experimentation and participation are 'as much an effect as the more widely publicised and predicted passivity' (Williams 1974: 133).

This conception of the use of communicative activity to moderate the alienation and atomization of industrial society flows from Williams' definition of a democratic communications system, originally sketched out in *Communications* (Williams 1967 [1962]). Here he counterposed what he sees as the essence of communicative activity, 'the sharing of human experience' (1967: 33) to its actual uses in capitalist society, as a means of either moneymaking or propaganda. Democratic communications, on the other hand, depends on the 'right to transmit and the right to receive' (1967: 128), independent of the market and the state. Calling for public ownership of all large-scale media systems, he proposed a public service-oriented system that runs on the principle that 'the active contributors have control of their own means of expression' (1967: 129). There is nothing intrinsic to the technologies that prevent these sorts of institutional forms from being realized apart from the present social organization of society that debases communication and attempts to hide alternative forms of social structure. Twenty years after *Communications*, Williams was still writing about the potential of new technologies to enhance civil society and deepen the connections between individuals and groups in opposition to corporations and the state.

Williams was by no means naïve about the possibilities of challenging corporate, military and state control of communications systems simply through articulating alternative models of media. Although technologies are not pre-ordained and immutable, neither are they 'undetermined'. Indeed, Williams

argues that technologies are socially 'determined' in the sense that 'real determining factors – the distribution of power or of capital, social and physical inheritance, relations of scale and size between groups – set limits and exert pressures, but neither wholly control nor wholly predict the outcome of complex activity within or at these limits, and under or against these pressures' (Williams 1974: 130). Cable television is a perfect example of a technology that has been shaped by a range of conflicting forces: broadcasters, regulators, government, academics, engineers, corporate bosses, individual subscribers and community activists. Cable could have been introduced as a way of establishing a new and more direct relationship between broadcaster and viewer and to represent and involve minority groups independently of the definitions of advertisers and marketing experts. In reality, this approach has been marginal as compared to cable's capacity to offer extra streams of revenue to established media and telecommunications groups. Williams' argument is that it will be the best resourced groups – which under capitalism means corporations and the state – that 'determine' the most and least likely paths of development even if this 'determination' is up for constant challenge and rebuttal. As Williams puts it, 'whether the theory and practice can be changed will depend not on the fixed properties of the medium nor on the necessary character of its institutions, but on a continually renewable social action and struggle' (1974: 134). The future development of communication technologies is not pre-ordained but subject to the outcome of wider battles over the shape and form of social life.

Williams' theory of determination as the 'setting of limits and the exertion of pressures' was designed to counter what he saw as the essentialism of the Marxist model of base and superstructure. This has its strengths but also its problems. Williams takes great care not to reduce complex technologies to the whims and desires of a few entrepreneurs or to the needs of abstract structures. He injects a sense of the importance of agency and intention into technological development but then assesses how these intentions are welcomed, modified or rejected in their eventual deployment by users. On the other hand, his notion of the *multiple* layers of determination and his emphasis on the continual interaction between different levels of social production and reproduction lead him to a certain elusiveness about which factors are determining and which are not. According to Terry Eagleton, Williams' concept of culture and communications as determining forces lacks the power of the Marxist formulation of base and superstructure that 'determinations are not symmetrical: that in the production of human society some activities are more fundamentally determining than others' (Eagleton 1989: 169). In his eagerness to demonstrate the materiality and productivity of what were often written off as being purely 'symbolic'

processes, Williams tends to elide the significance of developments in the economic and the cultural spheres.

BUT IS THE INTERNET DIFFERENT?

William's insistence on recognizing the social dimension of technology is particularly relevant today given the scale of the claims made about the Internet as a *transformative* medium. For example, how do we explain how the Internet was changed from a non-commercial instrument of mainly academic and military information exchange to a highly commercialized tool of mainly private and business transactions? For some, this is due simply to the power of the technology: 'the growth of the Net is not a fluke or a fad, but the consequence of unleashing the power of individual creativity. If it were an economy, it would be the triumph of the free market over central planning. In music, jazz over Bach. Democracy over dictatorship' (Anderson 1996: 97). This is a relatively typical view that the Internet, once 'liberated' from the restrictions of its public status, would inevitably thrive because of its innate tendencies towards competition, improvization and decentralization. However, this is not a disinterested position but a description of the Internet from a guide to digital technologies published by *The Economist*, a magazine dedicated to celebrating the dynamism of the free market. This picture of the Net was pushed by a number of theorists in the early 1990s, including Alvin Toffler, George Gilder and John Naisbitt and taken up by many Western politicians, most notably then house speaker Newt Gingrich and US vice-president Al Gore. The latter's speech at the 1994 International Telecommunications Union conference demonstrated a growing determination on the part of big business and its backers in the political field to co-opt the Net for its own purposes. Gore spoke in McLuhanesque terms of a 'global information infrastructure' (GII), promised that 'the distributed intelligence of the GII will spread participatory democracy' and predicted 'a new Athenian age of democracy forged in the fora the GII will create' (quoted in Leer 2000: 181–2).

This story of Internet technology as a natural ally of liberal democracy and the free market was used to justify the ensuing privatization and commercialization of cyberspace. It need not have followed this line of development, especially given its earlier public status. Other models or metaphors could have been adopted: an electronic public library, a public sphere independent of both state and market, a civic space leased to individuals and groups for public benefit and not private gain. Instead, the development of the Internet as a commercial space was the result of a decisive intervention by corporations and governments following neo-liberal ideas about the supposed benefits of consumerism and competition. This

required the defeat of critics of the free market; a battle launched and inspired less by technological certainties than by a firmly held belief in the values of capitalism. George Gilder tackled his critics head on in 1995:

Blinded by the robber-baron image assigned in U.S. history courses to the heroic builders of American capitalism, many critics see Bill Gates as a menacing monopolist. They mistake for greed the gargantuan tenacity of Microsoft as it struggles to assure the compatibility of its standard with tens of thousands of applications and peripherals over generations of dynamically changing technology. . . . They see the Internet as another arena likely to be dominated by Microsoft and a few giant media companies, increasing the wealth of Wall Street at the expense of the stultified masses of consumers and opening an ever greater gap between the 'information rich' and the 'information poor'.

(Gilder 1995)

While Gilder's critics have been proved right on all counts – witness the antitrust case against Microsoft, the growing concern about a 'digital divide' and the control over Internet traffic and content by a handful of corporations – the Net is still guided by free-market interests. This confirms Williams' argument that the shape technologies assume owes a great deal more to the priorities of the most powerful interests in society than it does to any internal characteristics of the technology.

Technological determinism, however, remains a very powerful discourse in the attempt to construct a 'common-sense' view of digital systems that they are innately competitive and democratizing and thus unsuitable for public ownership or traditional forms of regulation. Let the market decide and watch consumers take control while bureaucracies and dictatorships crumble, goes the argument of an influential neo-liberal theorist like Francis Fukuyama, adviser to the US state department.

The newer information technologies are profoundly democratizing, because they do not reward economies of scale. They work best in decentralized, non-controlled societies. They are anti-authoritarian, because authoritarians control societies by their ability to control access to information. Therefore, if people can get information on their own simply by dialling a computer, then we have ways of getting around hierarchies (Fukuyama 2000).

The consequence of this for Fukuyama is that the Internet must be adopted in a way that is favourable to the principles of liberal democracies and market economies. The problem is not only that Fukuyama hides the fact that there is a choice to be made about how to develop particular technologies but that he appears to be wrong in his description of the Net's democratizing tendencies. 'Far from hastening its own demise by allowing the Internet to penetrate its

borders, an authoritarian state can actually utilize the Internet to its own benefit and increase its stability by engaging with the technology', argue the authors of a new report for the Carnegie Endowment for International Peace (Kalathil and Boas 2001: 4). Furthermore, Fukuyama tends to exaggerate the decentralizing tendencies of the Net. A recent major study of traffic on the web found that a tiny minority of highly commercial websites accounted for a significant amount of traffic: the top 0.1 per cent of all sites drew one third of all user volume with the top 10 per cent of sites attracting 83 per cent of all 'hits'. The authors conclude that their evidence points to a 'signature of winner-takes-all markets' (Adamic and Huberman, 2000). The sheer visibility of America Online and Yahoo! (or of Wanadoo in France and T-Online in Germany) as gatekeepers to cyberspace points to a more complex account of new technologies than the deterministic one that Fukuyama and Gilder provide.

The point is that such determinism embodies a highly political account of the world and shrouds the real decisions about technological development in a veil of inevitability. A leading British exponent of 'new economy' determinism is Charles Leadbeater whose views on the weightless economy have been welcomed by Prime Minister Tony Blair. Leadbeater contrasts the dynamism of contemporary innovation with what he sees as the more ponderous and accidental nature of innovation in the nineteenth century and urges us to embrace the economic value of knowledge today: 'In the knowledge and service economy products are weightless. They replicate like viruses at the speed of modern computers and communications systems' (Leadbeater 2000: 234). The theorizing of the hegemony of the service economy and the reification of knowledge appears to be a disinterested, technologically informed practice but it has, of course, significant political connotations. For example, according to Giddens, the transformative power of digital technologies in a globalized world means that 'information and knowledge have now become media of production, displacing many kinds of manual work. Marx thought that the working class would bury capitalism but as it has turned out, capitalism has buried the 'working class' (quoted in Hutton and Giddens 2001: 22). For both writers, a belief in the productive and creative logic of new technologies underpins their defence of market relations in the information age and their belittling of generalized public ownership as appropriate only to a now disappearing industrial society.

The problem for such writers is that the performance of new technologies does not justify such an analysis. The production and distribution of tangible goods by groups of people who do not own or control the process stubbornly continues, despite the best efforts of neo-liberals to theorize these facts out of existence. Consider the downfall of the online grocer Webvan, described by the *Financial*

Times as ‘a symbol of the internet’s unlimited potential’ (Edgecliffe-Johnson 2001). It collapsed, not because an e-grocer was a bad idea but because its business model – of building huge warehouses, 18 times bigger than a normal supermarket, that would rely on machines to service customers’ orders – required so much capital investment that it was simply not competitive with traditional retailers. Over \$1bn was wasted before investors realized that an evolutionary ‘bricks and clicks’ strategy was more relevant to the future of supermarket shopping. The idea that there is a technologically based ‘new economy’ unaffected by either the financial disciplines or even the reliance on labour of the ‘old economy’ (who, after all, was going to drive Webvan’s delivery trucks?) appears to be a myth, painfully punctured in the recent slump in Internet-related enterprises.

Williams argued in *Towards 2000* that the practice of reading off social change from technological innovation ‘is especially misleading in descriptions and predictions of a “post-industrial” society. For in the end it is impossible to understand the industrial revolution in any of its phases, including the most recent and most imminent, by reference to the changes in the forces of production alone’ (Williams 1985: 84). Only by locating technologies inside existing social relations, thereby appreciating some of the conflicts and contradictions in technological development, can we start to grasp the possibilities and the limitations of particular innovations. Following Williams, we can argue that the Internet is neither the empowering, decentralized technology that the Negropontes and Gilders would have us believe, nor the instrument of isolation and atomization that some critics allege it to be. Williams’ theory of ‘mobile privatization’ helps us to further situate the Internet today as a technology that connects the ever-increasing flows of social mobility (of migration, commuting, capital flows and tourism) to the privatized enclave of the family home and the screen of the individual user. The Internet is neither a determined nor a determining technology and its future depends on the result of the struggles that take place over both immediate questions – such as copyright and privacy in cyberspace – and more profound ones concerning the growing market orientation and corporate control of contemporary social life.

CONCLUSION

Williams’ work is absolutely essential for anyone seeking to grasp the dynamics of technological innovation in a society in which technology is increasingly both deified and reified. Williams helps to remind us that technological development is neither a magical solution to declining productivity and growing inequality nor

an autonomous process over which humans have little or no control. His books and articles provide a refreshing account of the interests behind technological development in contrast with the neo-liberal efforts to 'market' new technologies by presenting them as both desirable and inevitable. By stressing the fundamentally social nature of technologies, he illuminates the social and economic contexts in which innovation takes place and assesses the impact of technologies on the societies into which they are introduced in a dialectical, not mechanical, fashion. He also challenges the negative determinism of those critics who *dismiss* new technologies simply on the basis that they necessarily reflect the interests of the most powerful in society. Instead, Williams points out the contingent nature of technological development. He paints a complex picture of innovation as a process marked by the priorities of dominant groups that limits the full range of technological possibilities but also as a process swayed by the social struggles that envelop all societies.

Williams' commitment to democratic communications and his recognition of the possibilities of new technologies under a different social system offer a vital challenge to the free-market consensus about the new media today. His critique of technological determinism and his emphasis on the sociality of technologies is a timely counterbalance to the voices (perhaps less shrill than they used to be) that profess digital technologies to be the embodiment of competition and liberal democracy. Finally, Williams was an intellectual and an activist who sought to ground his understanding of socialist theory in political practice, not on an international lecture circuit that is currently littered with academics selling themselves and the information revolution. While the London School of Economics' Ian Angell, described as 'Europe's leading IT guru and visionary' is yours for between \$30–50,000 (Leading Authorities 2001), a wiser investment would be a paperback copy of *Television: Technology and Cultural Form*.

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