

# E-topia as Cosmopolis or Citadel

## On the Democratizing and De-democratizing Logics of the Internet, or, Toward a Critique of the New Technological Fetishism

*Martin Hand and Barry Sandywell*

*Cosmopolis/Cosmopolitan*: Greek, *kosmo-polites*, *kosmos*, the world, *polites*, a citizen: common to the entire world; at home in any part of the world; free from national prejudices and limitations (global in sympathy or experience).

*Internet*: Satellite-based communications technology facilitating the exchange of electronic information on a global scale.

*Citadel*: A castle or fortified place in a city; a stronghold; a final retreat.

*Globalization*: 'The deepest meaning conveyed by the idea of globalisation is that of the indeterminate, unruly and self-propelled character of world affairs; the absence of a centre, of a controlling desk, of a board of directors, of a managerial office.' (Zygmunt Bauman, 1998: 59)

**W**E LIVE – as the rhetoric of cyber-utopianism has it – in the age of the *information superhighway*; founded upon electronic-based communication networks, facilitating radical transformations of local time-space frameworks, traditional social boundaries, and geopolitical relations. The 'information revolution' (Lyon, 1988), 'second modernity' (Beck, 1992; Lash, 1999; Poster, 1995), 'network society' (Castells, 1997), 'society of communication' (Vattimo, 1992) and 'liquid modernity' of the modern/postmodern constellation' (Bauman, 2000) have also been presented as involving fusions of political values and ideals with new techniques of information production and dissemination, creating both increasingly

- 
- *Theory, Culture & Society* 2002 (SAGE, London, Thousand Oaks and New Delhi), Vol. 19(1–2): 197–225  
[0263-2764(200204)19:1–2;197–225;023254]

fragmented, pluralized, aleatory futures, and novel forms of citizenship, democratic internationalism and planetary governance (see Albrow, 1996; Axford, 1995; Castells, 1997; Featherstone, 1990; Featherstone et al., 1995; Giddens, 1990, 1992, 1998; Leadbeater, 1999; Ravetz, 1996; Sklair, 1993, 1995; Vattimo, 1992; Willett, 1998).

In recent globalization theory, the Internet is the motor of the new 'post-industrial' global economy. As in previous periods of rapid technological change, the machine – now the digital information machine – has been elevated as a central agent of history. Computing and computer-mediated technology – particularly the Net and the worldwide web – join a long list of 'forces of production' taken as causally determining the conditions of human existence. One of the prominent rhetorics of the new digital complex, the cosmopolitan paradigm (see Held, 1996; Soja, 2000; Toulmin, 1990) combines Anglo-American models of democratic reform and governance with laudatory accounts of the libertarian possibilities of the new communication technologies (see Becker, 1998; Dyson, 1998; Leadbeater, 1999; Rheingold, 1994). These popular treatments of digital technology promote images of a remorseless shaping of the future by the dynamism of technical innovation. They also function as a suasive resource for a causal theory of the benign and progressive impact of the technical upon 'the social'.

In this scenario, if the intended effects of the Internet promise greater and faster flows of information, its unintended consequences will create an expansionary web of voluntary associations, interest groups and social movements that prefigure the emergence of a global technological citizenry. *Citizenship* – hitherto confined to well-bounded physical and geographical sites such as city-states, communes and the territorial limits of the nation-state – will irresistibly expand to embrace communities and societies hitherto 'undemocratized'. It is as though the logic of the deregulated market has found its perfect instrument in the Web. The new technoscape makes the speculative idea of an all-encompassing political economy – and unitary world civilization – a realizable goal (Ohmae, 1994). The dot.com future of a borderless world is, perhaps, the new world order, the 'end of history' which speculators like Francis Fukuyama (1992) and George Soros (1998) see emerging with the planetary triumph of the liberal West. In sum, digitalized capitalism promises a reconstruction of the polity as an electronic global village, inaugurating processes of civic renewal, raising us into the era of *global citizenship* (see Borja and Castells, 1996; Melucci, 1999; Sklair, 1995).

Where information technologies have been singled out as key causes of progressive change and democratic enlightenment, we not only have an instance of ideological simplification but also an advanced form of technological *fetishism*. The architecture of electronic machinery is thought to prescribe necessary futures for human communities and the body politic (or 'e-topia'). It is arguable that the diffusion of these globalization problematics within the international academic community is one of the most striking effects of the digital discourse formation. If the future is one of rapid

economic, cultural and political globalization, it follows that we require a truly global critique and something like a global sociology of the Net (see Axford, 1995; Robertson, 1992; Sklair, 1995; Waters, 1995; Wallerstein, 1974). Given the limited remit of this article, however, we have selected only one aspect of this complex constellation of themes and problems for analysis: how accounts of Internet technology and the coming cybersociety have been polarized into mutually exclusive democratization and de-democratization e-topias. These images of the coming global polity can be called the *cosmopolitan* and the *citadellian* paradigms.

### **Net Discourse: On the Rhetorics of the Information Revolution**

The conceptions of *world citizenship* and *global civil society* in recent social and political theory have been most commonly associated with the emergence of transnational governmental organizations such as the UN, IMF, and World Bank, NATO, the EU, G7, UNESCO and a spate of non-governmental organizations including Oxfam, Greenpeace and Amnesty International. Both developments are thought to herald new forms of democratic participation and experience articulated outside the dominant nation-state systems of societal management. Extra-governmental developments are typically seen as direct responses to the failure of governments to address problems such as Third World poverty, ecological crises, war and migration, and the internal erosion of civility and legitimation crises (Beck, 1992, 1999; Habermas, 1973; Offe, 1972) within western-style representative democracies driven by capitalist market systems.

While 'global citizenship' has primarily been debated within this internationalist context, the image of the Internet as an instrument for de-territorial community building and democratization has been appropriated by both nation-state governmental departments (particularly in the UK and USA) and various 'sub-political' organizations (Beck, 1999). Government agencies and corporate bodies were quick to grasp that the control and policing of digital information systems represent a new form of political influence and power in the modern world. Whoever controls the screens controls public opinion: control the means of information production and you manipulate the new knowledge economy; control the political spectacle and you shape the face of modern political communication; control the purse strings of 'civil society programmes' and international aid projects and you control the landscape of investment in the new 'digital frontier'. For the power brokers of the information economy – what some have identified as the transnational capitalist class – digitalized knowledge and its electronic media are indeed synonymous with power (see Leadbeater, 1999; Melucci, 1999; Sklair, 1995).

In general terms, the responses of transnational organizations and 'grassroots' social movements can be seen as reflections of the intense interest in the democratic potential of cybernetic media that obliterate the constraints associated with traditional democratic forms and participatory

practices. The call from both camps is for a concerted attack on the mechanisms of social exclusion informed by a political vision of a genuinely inclusive, participatory democracy. Moreover, as might be predicted, the corporate economy of the United States leads the way in colonizing the new digital frontier. Responding to the same forces that are transforming global capital into Internet capital, societal and political governance in domestic politics and ‘democracy assistance’ in foreign policy increasingly play a prominent role in US geopolitical strategy. However, given their short-term policy horizons, governments have tended to take a practical and instrumental attitude toward the new information technologies, typically visualizing ‘frictionless’ extensions of the representative process, where citizens are to be technologically empowered to enter the coming information age. The web of mutual obligations that hold together the new ‘stakeholding society’ (the ‘Third Way’ of Blair and Giddens, Etzioni’s ‘communitarian polity’ and the ‘deliberative democracy’ of American neo-liberals) will be embedded in and reproduced through new forms of computer-mediated civil interaction. Alternatively, Third World aid organizations, feminist, environmental, anti-capitalist and peace movements, aim to appropriate the Net as a strategic instrument for information dissemination, coordination and organization, outside of nation-state governance (Walch, 1999).

### **Computer-Mediated Cosmopolitanism**

Technophilic accounts of ‘electronic’, ‘cyber’, ‘tele’ and ‘digital’ democracy see new digital technologies, and particularly computer-based networking, as *the* single most important technical fix for the limitations and failings of western democracies (Hague and Loader, 1999). Where the older analogue communication networks of the nation-state system were few-to-many, space-bound, essentially hierarchical and unidirectional, the digital systems made possible by the Net promise many-to-many, de-territorial, horizontal and interactional patterns of information flow and communication. A corresponding transformation of the public sphere is thought to follow from this technical revolution. Where the traditional state dominated its satellite regions through centralized taxation and fiscal controls, controlling peripheries through bureaucratic policing, the new democratic state will be networked and transactional in form. The future is one of an *ecumene* of expanding virtual communities increasingly reshaping ‘actual’ communities to create a cyber-republic of voluntary associations, lobbies and interest groups.

Where critics once spoke of the manipulation of mass desire by the ‘culture industry’, from the e-topian perspective these earlier media systems are seen as merely the first wave of a truly global information economy and society. Corporate power grasps the apparent paradox that *virtual* capital leads to real wealth and power, that the control of information codes will result in the industrial colonization of ‘digital space’ – and the idea is current that the new digital frontier of virtual communities will be infinite

in its exploitative possibilities. The self-expanding cycles of capital have finally discovered an inexhaustible frontier of online profit-making opportunities. The creative fusion of the digital technologies of computerization, electronic communication and mass media will create both mediascapes and audiences on a scale that was unimaginable in the framework of the analogue technologies of the first and second industrial revolutions.

The general claim is that, as the Net takes root as a normal instrument of political debate and communication, *all* traditional political roles and communitarian values will be reconfigured, making a radical democratization of existing power relations a realizable goal. With a computer screen in every home and every household wired up to the worldwide web, the possibilities of interactive civil communication – networked real-time interaction – are thought to be unbounded. In this technocratic vision of generalized *connectivity* we can imagine future scenarios of electronic democracy where cyber-citizens routinely monitor the processes of legislation and legal consultation at each stage of the law-making process – actively registering preferences through screens wired-up to ‘participatory centres’ in Whitehall or Washington. Cyber-citizens will recover the means to draft directly the laws by which they are governed. Beyond the politics of inequality and class conflict, the democratic polity of the future is projected as a continuous ‘town meeting’ where active citizens devote most of their time and energy to debating the public good to create a genuinely communitarian culture of self-reflexive civic subjects (Doheny-Farina, 1996; Dyson, 1998; Levine, 2000; Negroponete, 1995; Rheingold, 1994).

In accounts of digital culture that are more guardedly optimistic, there is significant delineation between the belief that network technologies will facilitate an *improvement* in existing democratic institutions from the idea that they will involve a systematic *rethinking* and/or *bypassing* of the role of those institutions altogether (extra-parliamentary action mediated by cyber-communications and the appearance of ‘cyber-anarchism’ is a case in point). However, a common premise underlying this literature is the notion that some version of participatory democracy is a necessary way forward in any future social and economic collaboration between nation-states.<sup>1</sup> The techno-romantic simplistically foregrounds the technical obstacles to a future cyber-democracy, alleviated by constructing cheaper and more accessible Internet technologies, precipitating authentically cosmopolitan democratic communities.<sup>2</sup> The result is an e-topian fusion of an imaginary, pre-modern *polis* with the *global* technologies of the 21st century. It is certainly possible that these global contexts have created positive senses of identity and community, perhaps justifying the positive ‘cosmopolitan’ label in specific localities. However, local fragmentation may contribute to a nostalgic sense of identity and a reactionary community politics. Our experience already suggests that the effects of globalization are much more complex, ambiguous, and dialectical in nature (see Featherstone, 1990, 1995; Featherstone et al., 1995; Robins, 1994).

## Dystopian Digital Futures

By contrast to digital cosmopolitanism, the dystopian narrative foregrounds the darker side of rapid globalization. Many see digital communications as one of the main causes of an irreversible destruction of the 'commons', disembedding and dissolving local autonomies, disenfranchising and atomizing those excluded from the live zones of postmodern technoscience (Rochlin, 1997). This suggests that behind the utopian promises of the worldwide web lie the old structural inequalities and social divisions, with the Net as a new *instrument* of global capitalism. Modern communications technologies simply enhance the power and control of ruling elites and dominant classes (now concentrated in the interlocking post-industrial blocs of Japan, North America and the European Union). The Web is no more than a new culture industry elevated by corporate market powers into a position of global hegemony. As the problem lies in the technology itself, its inner logic will inevitably encourage 'dumbing down' on a planetary scale and the efficient bypassing of national laws governing intellectual property, racism, libel, pornography, public decency and ethical conduct. The disadvantaged will now add information poverty and cyber-exclusion to their list of grievances (Stefik, 1999).

From this perspective, the critical questions about the new digital capitalism remain: who *controls* the global media infrastructures of the information age? Who decides the form and content of the new media industries? Who will police the Net? Who, in short, will benefit in material terms from the information revolution?

For purposes of presentation, we will briefly distinguish three variants of the dystopian discourse, appreciating that these three 'moments' frequently appear as mutually reinforcing (for example, the essential reliance of new forms of surveillance upon digital technology). We call these variations *cyber-exclusion*, *global citadel theory* and the *global panopticon*.

### *Cyber-exclusion*

Late modern societies extend existing social divisions and patterns of social exclusion to include 'information exclusion'. Cyber-technology is indeed transforming the core of the contemporary system of social production, but the objective of transnational production remains the same – profit and capital accumulation in the economic sphere, hegemony in the political sphere and ideological domination in the cultural sphere (see Herman and Chomsky, 1988; Sklair, 1993, 1995; Tuchman, 1978). *Cyberculture* – the cultural dominant of cyber-imperialism – simply builds upon and further deepens the chronic social inequalities of class, gender and race created by the course of modern capitalism. The information age turns out to be an era of cyber-imperialism dominated by a cluster of powerful transnational corporations. For 'globalization' read 'homogenization'. From this perspective, the utopian vision of cyber-republicanism is simply an ideological illusion masking the actual power and influence of the Fortune 500 corporations.

Others, attentive to the dimension of gender, speak of gendered cyber-exclusion layered upon the long-standing oppression of subordinate classes, ethnic minorities and age groups. Cyberculture simply provides patriarchal oppression and domination with more efficient tools. Alienation from the new electronic frontier produces unexpected ironies and dialectical reversals. For example, some feminist theorists see these digital instruments in a positive light as ways of escaping the control of patriarchy, weapons that can be turned against women's traditional oppressors (Haraway, 1985, 1996; Harcourt, 1999; Squires, 1996; Turkle, 1984).

### *Global Citadel Theory*

There are numerous dystopian variations of the future information society as a fragmented universe of high-tech citadels (Postman's *Technopoly* [1993], Melucci's ghettoization of society [1999], Davis's belligerent, de-industrialized *City of Quartz*, Umberto Eco's *neofeudalism* and so on). However, all of these visions concur in decrying the decline of civility and ethical life consequent upon the growth of big government and the de-territorialization of public spheres. The future is one of 'gated communities' in a belligerent ecology of excluded others (Blakely and Snyder, 1997; Staples, 1997). For the dystopians, structural deregulation, de-industrialization and alienating de-democratization are irresistible forces that flow from the processes of world capitalist development. Moreover, once again, the engine of these planetary changes lies in the causality of information technology.

A society on the verge of planetary hegemony is also one which escalates the risks that such a project creates. For advocates of the 'citadellian' narrative the future promises an imminent destruction of public space and the dehumanization, privatization and de-democratizing consequences of cyberculture. The Net will disempower its users, encouraging increasingly 'private' solutions to public problems, elevating the phenomenon of *privatization* into one of the most important characteristics of modern global consumer capitalism as a 'risk society' (Beck, 1999). If this is the language of ecological crisis and environmentalism, it is also the scenario advanced by Jean Baudrillard with his idea of the 'end of the social' and thereby the end of politics. What remains of the citizen-subject is an atomized anti-society of privatized consumers remorselessly pursuing lifestyles in an ecologically devastated world. With the conjoint destruction of the ecosystem and the decline of the public sphere the cities of the future can only appear as topographies of fear and loathing.

Milder scepticism about the technological threat to civil community produces a qualified image of the future in terms of a further loss of control and autonomy before encroaching private and public corporate bureaucracies. It is primarily the content rather than the form of civil and political 'conversation' that will be eroded by e-topia. But here again the future is one of digital disempowerment. Some, like Daniel Bell (1973), see commercialism and consumerism as the basis of a new hedonistic

'post-industrial' culture. Others see civil society swamped by digital ghettos populated by alienated underclasses. Yet others see virtual voluntary communities as a further fragmentation of the political order, involving the denial of a public 'voice', necessary forms of civic authority, and the collapse of mutual obligation (Galston, 1999; see also Hamelink, 1996; Herman and Chomsky, 1988; Hirschman, 1981).

*The Electronic Panopticon of Cybernetic Capitalism*

The intricate web of new information technology has also been presented in terms of a continued, more penetrative 'embedding' of technocratic control and surveillance within previously 'public spheres' (Lyon, 1994; Robins and Webster, 1999). Adorno's conception of the administered society and Foucault's panopticon have been given digital wings, where societal regulation is seen as operating through the capillaries of information exchange. We shift from industrial to post-industrial forms of regulation. Where the original panopticon secured compliant bodies for the industrial process, the cybernetic panopticon of digital capitalism produces docile minds locked into their screens (Davies, 1996; Schiller, 1999).

Although many commentators might support developments toward 'direct' or participatory democracy, the claim that the Internet is delivering this scenario is seen as an ideological illusion. What is actually occurring is a further penetration of surveillance techniques (Davies, 1996; Lyon, 1994), corporate marketing strategies (McChesney, 1997) and new exclusionary practices in everyday life (Robins and Webster, 1999). The difference the Internet makes here is the probability that new strategies of cyber-exclusion and control will extend surveillance to a truly global scale and thereby extend market logics into hitherto 'unconquered' spaces (Sardar, 1996; Virilio, 1997). The process of 'McDonaldization' spreads to the production and consumption of images, visual culture and lifestyles (Ritzer, 1993).

The dystopian image is essentially the model of modern society informing recent anti-globalization movements. This should serve to remind us that the anxieties about collective surveillance and cyber-governance are not simply academic concerns. The function of the Net in actively promoting or obstructing democratic reform has become central to large areas of modern politics (and especially to the control of cyber-crime, cyber-terrorism and cyber-anarchism). Today, there are few areas of public and private life and associated 'social problems' which have not been debated in terms of the 'impact' of the Internet upon them.<sup>3</sup>

Unfortunately, arguments concerning the impact of the Internet upon civic life still seem to consist in an unproductive dialogue between two polarized perspectives upon the new electronic frontier, structuring much of the research and popular discussion about the possibilities of the Internet. While the positions we have briefly sketched are not the only discourses of the Net, they appear to be the most dominant in terms of both



governmental and corporate thinking and of popular representations of the Net within the popular media.<sup>4</sup>

### **New Technologies – Old Questions**

Many of these debates about the moral, social and political ‘effects’ of the Internet (and IT in general) display a well-known feature that we might call theoretical lag. We have seen that both celebrants and defamers of the Internet appeal to older images of self, identity and community in constructing their cases. Both the cosmopolitan and the citadellian models present networked information technologies as qualitatively different from pre-digital media – reconstituting time-space frameworks, ‘de-traditionalizing’ *all* social relations and traditions, institutionalizing interactivity and many-to-many communication, creating collective memory banks (so-called data banks), and transforming their ‘users’ into new subjects. Above all, digital information is infinitely reconfigurable and detachable from its concrete vehicles and media. Yet, while recognizing this, many accounts continue to work within received metaphors, methodologies and rhetorics whose conceptual architecture was shaped in response to pre-modern forms of life and technology. The machine imagery we have noted is informed by past imaginary relations that have congealed into self-evident ways of thinking about technology, subjectivity and community (see Coyne, 1999).

In what follows, we will isolate only one set of presuppositions, which we designate generically as technological essentialism. We believe that this underwrites a false image of objectivity, which implicitly asserts that information technology possesses ‘innate attributes’ that make it either an *intrinsically* democratizing force or an *intrinsically* de-democratizing force in society. We suggest that essentialist models of the Internet as an *instrument* of internationalism or a *tool* of the coming citadel society fail to address complex issues raised by both empirical studies of the new technologies and by theoretical arguments that problematize the human/machine and social/technological dualism. The underlying models of information technology can be summarized in simplified form as follows.

#### *The Cosmopolitan Model of Internet Democratization*

- Information technologies based on electronic computation possess *intrinsically* democratizing properties (the Internet and/or worldwide web is an autonomous formation with ‘in-built’ democratic properties or dispositions).
- Information technologies are *intrinsically neutral*, but *inevitably* lend themselves to democratizing global forces of information creation, transfer and dissemination.
- Cyber-politics is essentially a pragmatic or instrumental task of maximizing *public access* to the hardware and software thought to exhaustively define the technology in question.

*The Exclusionary Model of Internet De-democratization*

- Information technologies possess *intrinsically* de-democratizing properties (the Internet and/or worldwide web is an autonomous formation with 'in-built' anti-democratic properties or dispositions).
- Information technologies are *intrinsically neutral*, but *inevitably* lend themselves to control by de-democratizing forces (hardware and software 'ownership' equals anti-democratic control).
- Cyber-politics is essentially one of *resisting* and *perverting* the anti-democratic effects of the technology in question.

A number of initial points need to be made about these models. First, there seems to be a shared assumption that there is some invariant 'essence' that is definitive of 'the Internet'. Second, the related claim is that this essential core constitutes the formal architecture of the technology in question. Finally, that the paradigm of a secure structure or autonomous system renders irrelevant further ethical, political, historical and social analysis. Where essentialism and hardware images of technological autonomy are questioned the remedy tends to be some combinatory approach, which grafts the 'social' or 'historical' dimension onto the technology. However, this kind of social constructionism often results in a kind of 'balance sheet' perspective in which 'technical' factors are counter-balanced by 'social factors' (see MacKenzie and Wajcman, 1999). Against these variations of essentialism we suggest that we require a more radical sociocultural perspective that can reorder our basic ways of thinking about technologies and their complex functions in everyday life (see Grint and Woolgar, 1991, 1997; Shields, 1996). Here we sketch contexts for such a critique by examining the contested history of the Internet, the interplay of technical and non-technical agency, and the dialectics of policing and user appropriation.

**Contested Histories of the Internet**

For those awaiting the imminent arrival of digitally mediated cosmopolitanism, the actual history of the Internet contains a salutary lesson. Where we might expect a story of the linear impact of technology 'on' society, we actually discover a dramatically convoluted story of the usurping of establishment programmes and institutions by a diverse army of grassroots activists, hackers, cyber-terrorists and citizen-centric community builders. From the perspective of the cyber-activist, the Internet is not a fixed and finished artefact, but a frontier of constructive paths and possibilities. The Internet is an an-archival habitus embodying 'free-flowing' information which escapes state control and monolithic corporate governance (Dyson, 1998; Rheingold, 1994). From this perspective, 'local governance' in a decentralized polity holds open an image of a necessarily democratic cyber-sphere, founded upon well-informed, technologically empowered citizens. In the new electronic polity, 'the Net will foster activity

instead of passivity' (Dyson, 1998: 49). In the terms of this story, as the 'virtual' architecture of the Net operates beyond the reach of traditional power elites, all that will be required to ensure the creation of cosmopolitan values is universal access and a 'will to strong democracy' (see Sclove, 1995).

For commentators with a more critical view of the Internet's historical development and possible futures, the technology is part of a much longer historical trajectory involving the erosion of democratic values by rationalized, militaristic, command and control agencies, where the contemporary villains are the new power elites, the corporate directors and transnational commercial and financial classes (Dawson and Foster, 1998).

However polarized these historical accounts appear, they are premised upon a singular or unitary 'Internet', an autonomous technological artefact figured as a causal condition for a sequence of necessary effects. We suggest that the result of this kind of historicism is to abstract machine apparatuses and technologies from their contexts in specific social struggles and historical configurations and thereby to occlude the concrete dialectics of human-machine interaction.

It is well known that the origin of Internet technology can be traced to defence-related research activities within ARPA and related US 'war-planning' agencies, motivated by the objective of building fail-safe information architectures able to span the globe. Yet, under a more searching historical analysis, the key feature of this history proves to be the *instability* of the technology of networking and its chronic dependence upon earlier socio-technical systems (the first commercial computers, small-scale networks, theoretical HCI [Human-Computer Interaction] projects, DIY personal computing and so on). We can trace a meandering trajectory through many detours and attempted appropriations (Usenet, BBSs, ARPAnet) and counter-appropriations by different military, academic and commercial interests, where the technology changes from being a Cold War defence 'system' to devices whose *raison d'être* is to produce an infinity of sites and markets to exploit. The history of the Net resembles a non-synchronic configuration of contingent processes rather than a linear development (Abbate, 1999; Ceruzzi, 1998; Naughton, 1999). These contingencies, however, are laundered out of the picture by the historicism within oppositional accounts of (de)democratic digital futures. There are two key points to emphasize in this context, which derive from the failure of this specific literature to address fundamental issues raised by critical socio-cultural studies of technological histories.

First, rather than thinking of electronic technology as situated cultural artefacts, the orthodox accounts are premised upon historicist models of individuals, agencies and institutions, intentionally constructing 'communication networks' for either communitarian or militaristic/commercial ends. In both interpretations the Internet is viewed as a finalized outcome of clearly defined developmental stages, each 'advanced' by a specific technical innovation (packet-switching, TCP/IP, micro-chips, PCs, HTML)

within a broadly consensual culture.<sup>5</sup> This teleological approach pre-empts further inquiry into the multiplicity of open relations between past, present and future constellations. From a constructionist perspective, Abbate (1999) has argued that this reconstruction is wholly inadequate as an empirical account of Internet history, where the ‘boundaries’ enveloping these stages were themselves socially constructed to launder out alternative pathways, local constraints and appropriations. This is particularly evident with respect to the social construction of the Net, which has been conflictually configured and reconfigured through a variety of geographically dispersed agencies, political discourses, scientific institutions, and ‘users’ each with their own complex ‘histories’.<sup>6</sup>

Second, essentialist narratives tend to be fixated upon putatively stable and transcontextual hardware characteristics of the Internet as *pre-determining* possible future contexts of use and appropriation. In both democratic and de-democratic scenarios, the technology has an invariant technical form with correlative social, political and economic ‘effects’ or ‘meanings’ (which of course *require, prevent* or *enable* specific ‘actions’). Transposed to the political sphere, the affinity between this kind of linear history and the pursuit of short-term, ends-driven domestic policy initiatives becomes a pervasive feature of contemporary cyber-politics; for example the unmediated demand for ‘access’ to this technical form in order to end ‘information exclusion’ provides a powerful rhetoric of policy formation on the part of contemporary governments.<sup>7</sup>

We can view this outcome as a consequence of the *essentialist image system* at work in the (de)democratization literature: technical images of the Internet are reified into a teleological historiography and necessary (de)democratic future through a rhetorical occlusion of agency, experience, and spatial and temporal complexity. To counter this we commend a more serious engagement with the contingent, non-synchronic and discontinuous dimensions of technologies as power-mediated processes. This raises serious doubts about the creation of particular democratic or de-democratic ‘Internet futures’ as the inevitable outcome of specific technical programmes. The shift toward a configurational paradigm also suggests a more critical account of material historicity, which would allow us to investigate the interlacing of material, ethico-political and reflexive dimensions of artefacts and machines rather than simply positing the ‘social construction’ of the technical realm (see Benjamin, 1968, 1999; Foucault, 1984, 1997).

### **Technical and Non-technical Agency**

Although the constructionist approach to technological history highlights the empirical inadequacy of both ‘whiggish’ and dystopian rhetorics, it tends to elide the complex of problems concerning the ‘agents’ and ‘recipients’ of technological innovation. For essentialism, the very possibility of assigning (de)democratic ‘properties’ to particular technologies follows from a strong ontological commitment to the causal efficacy and agency of the artefact in question. Expressed most simply, to assume that information technologies

*in themselves* embody future democratic polities, or prefigure further ‘mechanizations’ of societal subjects, is to abstract technical artefacts and knowledge from the historical praxis of socio-technical life (identified here as the realm of *technopoiesis* – the totality of practices and processes of ‘self-making’ available to a community and embodied in the artefacts, techniques and technologies available to a culture).

Within the cosmopolitan paradigm, the ‘many-to-many’ technical Internet protocol *forces* communication to be democratized, as it conveys information in a circumventory loop that undermines traditional one-to-many institutional decision-making formats. Correspondingly, the exclusionary paradigm views the practico-technical image of the Internet as innately disempowering, creating power-discourses within which individuals are ‘positioned’ as subjects of corporate and governmental codes of bureaucratic accountability, regulation and control. The practical effects of this *fetishism* can be seen in recent governmental models of technological democratization and participatory citizenship, exemplified in the UK by New Labour’s ‘access for all’ initiatives in which the ‘neutral’ Internet is (re)presented as an efficient ‘tool’ that can dramatically improve both societal ‘inclusion’ and the very image of representative government, through carefully targeted programmes and strategies.<sup>8</sup>

We can illustrate this techno-fixation by means of two theoretical issues that are at the very centre of the debate between the technical and the non-technical within the modern sociology of technology. First, both dominant paradigms of Internet democratization/de-democratization are premised upon a dualist separation of the technical and the social (or, in a broader framework, of the machine and the human). This is most graphically visible where the Internet is conceived of purely as external instrumental hardware, which can ‘impact’ upon, ‘affect’ or ‘be affected’ by the social and political world in a predetermined manner. To sustain this dualist language, causal agency and creativity are assigned *either* only to ‘subjects’ (citizens, governments, corporations, the military, communities), *or* only to ‘objects’ (machines, networks, computers).<sup>9</sup> By ignoring the *relational* character of the socio-technical realm, such models *fetishize* one element of a configuration or ‘information ecology’, and elevate this as a causal agent that determines the whole (see Feenberg, 1999; Ihde, 1990).

This ‘laundering’ process can be seen as a rhetorical manoeuvre, which has the real effect of valorizing specific courses of instrumental action toward the ‘world of things’. The actual history of socio-technical practices reveals a more complex picture of the interaction between ‘subjects’ (society) and ‘objects’ (technology). Subjectivity and objectivity are dialectical moments of more mediated constellations. To briefly illustrate with the example of cyber-identification: ‘online’ subjectivity, thought to be constitutive of contemporary technological citizenship, emerges through an open constellation of human agency, keyboard, monitor, fibre-optics, micro-processor, electronic text, network infrastructure, intelligent recipients and so on. Clearly, the emergent ‘identity’ is not reducible to any singular

context, and each of these ‘contexts’ is dependent upon contingent constellations of further ‘contexts’, which blur the demarcation between the social and the technical. In other words, the emergence of digital information culture has systematically deconstructed the traditional dualisms of epistemology – a deconstruction that requires us radically to rethink the dialectic of the technical and the non-technical.<sup>10</sup> In this context, the ‘interlacing’ of the social and the technical creates a configuration more akin to a text or performative praxis (poiesis) than a neutral juxtaposition of ‘humans’ and ‘things’.

Second, this problem of sourcing and representing *agency* is not fully explored within established social studies of technology. In recent constructionist investigations of Internet history, while technologies are still thought to ‘possess’ technical ‘hard-cores’, these are viewed as discursive constructions subject to deconstruction and sociocultural analysis. What was previously reified as ‘the technical’ is disclosed as a realm of social constitution, subject to the work of agencies and situated discourses which ‘shape’ its development (Abbate, 1999; MacKenzie and Wajcman, 1999; Thomas and Wyatt, 1999). The interest now shifts to the social construction of technical objects by agential subjects through design protocol. From this perspective, Internet machineries would need to be ‘democratically’ designed in order to function as agencies of democratic change (see Feenberg, 1999; Hague and Loader, 1999).

However, constructionist accounts themselves are not beyond criticism. To see this we need to re-open the question of the ‘social shaping’ of objects by subjects; whether it is possible to distinguish between ‘technology’, ‘society’ and ‘nature’ in this mechanical way. Does constructionism still not occlude the historicity and social life of artefacts? Although ‘technology’ has been recognized as a cultural phenomenon, first-generation constructionism still tends to reserve the dynamics of meaning constitution to autonomous subjects or ‘society’.<sup>11</sup> The lingering commitment to a dualist ontology with its corresponding models of a superstructural and non-technical ethics, politics and sociality, however, is becoming increasingly difficult to maintain even as an analytical heuristic. The image of the Net as a complex web of socially shaped, yet unreflexive artefacts, still provides us with an ‘undersocialized’ model of machines and equally reductive ‘machinic’ models of ‘the social’, ‘global technological citizenship’ and political agency.<sup>12</sup> This model still perpetuates the materialist prejudice that we might call *machinism*, a metaphysical view of artefacts which is not sufficiently self-critical to grasp information technologies in their inscriptive, discursive and reflexive dimensions.<sup>13</sup>

The basic image of the Net itself suggests alternative ways of thinking that avoid essentialism. By moving away from root metaphors of causal determinism, structure and system we can frame human–machine configurations as *decentred processes* borrowing from semiotic metaphors of difference, inscription and (inter)textuality (analogous to Derrida’s ‘general text’), or, as in many variants of ecopolitics, we can approach social

arrangements and ecologies as multi-layered webs of interaction. Cyber-feminism and actor-network theory may also be viewed as strategic efforts to deconstruct the technocratic dualism of human/machine discourse (see Capra, 1997; Haraway, 1996; Latour, 1991, 1999; Law, 1991; Law and Hassard, 1999). Taken more radically, these new stories of the imbrications of the human *in* the artefactual suggest more reflexive ways of approaching Internet communication as a particular form of *discourse* and *technopoiesis* (Sandywell, 1996). As an alternative metaphor for individual and collective world-making, this perspective requires a more detailed analysis of the situated dynamics of different 'cultures of technology' in their particular ecological settings. Acknowledging the *dialectic* of the natural and the social in 'technopoieic' ensembles leads us directly to the theme of active agency and sociocultural appropriation.

### **The Dialectic of Policing and the Contingencies of Use and Appropriation**

The dominant image of Internet technology presents us with a stable technical artefact whose developmental history necessitates specific ethico-political directives made possible by the particular ways in which the technical 'controls', or can be 'controlled' by 'the socio-political'. Foregrounding the indeterminacy and multiplicity of Internet history understood as the outcome of contingent sociocultural processes of configured agencies in specific ecosystems, however, questions the notion that new information technologies can be manipulated by or manipulate pre-given agents or actors (see Slevin, 2000). This leads to further scepticism about the dominant rhetorics of cyber-citizenship in terms of their limited conceptions of use and appropriation.<sup>14</sup>

In response to these theoretical weaknesses, the concepts of multiple forms of 'user-appropriation' and the politics of 'information policing' have become particularly prominent within recent debates concerning, amongst other themes, freedom of speech, the protection of privacy, copyright law and the security of digitized networked processes within globalized liberal democracies. We thus need to underscore the desire to control and police the Internet and related digital technologies as a central concern of nation-state governments, inter-governmental or transnational alliances, corporate bodies and non-profit research organizations.<sup>15</sup> The issue of how to police Internet users raises fundamental questions concerning the ways in which (global) societal institutions are managed, governed and regulated.<sup>16</sup>

For advocates of a democratically 'wired society' the fact that digital technology appears to transcend the control apparatuses of nation-state governance holds out the promise of grassroots radical democratization, typically expressed in the form of local and regionally autonomous forms of community-building. We have noted that this position relies upon a contradictory account of the Internet, which is thought on the one hand to evade institutional control, while on the other hand can still be immediately 'appropriated' and 'used' by advocates of local democratic reform. At the

opposite end of the spectrum, particularly among those critical theorists following a Heideggerian conception of 'technology' as fate (Heidegger, 1977), we are taught that there is no way of 'controlling' the Internet, indeed that it is modern technology itself as the 'essence of metaphysics' which fosters the illusion of 'humanist' control.

We have noted that popular versions of Internet governance are premised upon the claims that 'the Internet' constitutes a stable technical formation that remains 'invariant' across disparate use-contexts. The political correlate of this is the either/or option that Internet technology can be used exclusively for democratic or non-democratic ends. An awareness of this frozen dialectic presents another way of revealing the fetishism at play within the dominant discourses of information technology. This narrow conception of use and appropriation raises important issues which again suggest the need for more detailed empirical investigations into the multiple and disparate contexts of emerging democratic processes. As Miller and Slater (2000) argue in their recent ethnographic work, to begin with the premise that there is 'the Internet' on the one hand and 'culture' on the other is to fundamentally misunderstand some of the qualitative transformations of 'the social' flowing from the modern information revolution. To avoid this we have suggested approaching Internet technologies as a series of 'operative contexts' or 'textual ensembles' constrained with respect to their historical context but with a much wider range of situationally variable appropriations. It follows that received images of societal regulation and policing should be approached as much more contingent forms of interested, interpretive praxis. Recognizing the singular consequences of Internet (inter)textuality may also help in reformulating the received images of governance, policing and societal regulation that inform our understanding of modern society, politics and culture.

In effect, the rhetorics of Internet (de)democratization remain tied to a narrow image of agency (citizens, institutions, agencies and so on) as stable 'users'. Online users are seen either as performing inherently democratic appropriations or as passively consuming hegemonic meanings. Accepting these alternatives effectively precludes engagement with a whole range of issues and questions regarding the contingent and reflexive possibilities of emergent agency and interaction facilitated by the new technologies. To avoid this, we suggest conceptualizing 'the Internet' as a series of 'hybrid' configurations facilitating the construction of heterogeneous scenarios and cultural fields by disparate agents.

### **Toward a Reflexive Social Theory of the Net**

We have presented a brief overview of how rhetorics of the Net's linear-developmental history, technical architecture and pre-determined functions have been used to advance mutually exclusive global democratic or authoritarian images of the future. Although these e-topian images may range from celebration to despair, they all rely upon mono-causal and linear models of history, asocial conceptions of technology, and unreflexive images of users



and contexts of appropriation. In a polemical vein, we have argued that these assumptions can be questioned on both empirical and theoretical grounds. We have claimed that e-topian models of Internet (de)democratization have become vehicles of *technological fetishism*. This mindset appears, first, in the reduction of the Internet's complex *histories* into a singular developmental narrative. Second, fetishism is disseminated through the pervasive dualist assumption that the Net is essentially a disembodied *technical* phenomenon. Finally, fetishism assumes a political form when modes of control and appropriation are conceptualized as immediate transactions between an integrated and stable global system and its derivative local recipients, the latter perceived as passive and unreflexive users of communication technology. The ethico-political equivalents of these rhetorics can be expressed in three claims: first, that a future cyber-polity will necessarily consist of *either* democratic, technically mediated local governance *or* the mass-manipulated consumption of mediated image environments. Second, that (de)democratization is a predictable outcome of *causal* relations between the technical and social spheres. Finally, that issues of citizenship can be resolved into merely *pragmatic* questions of providing access to the new technologies.

There are, of course, many ways of deconstructing essentialism and technological fetishism. Here we have been predominately concerned to uncover the unspoken or unconscious dualisms that structure our image of 'digital technology' (of the 'and' of 'technology *and* society' relations). We have suggested that these metaphysical positions result from a failure to treat 'the technical' as (*con*)*textual* and *cultural* in two fundamental senses: first, as the material embodiments of cultural poesis located *within* operative social practices; and, second, as the contingent articulations of non-synchronic elements that make possible distinctive operations (actions, meanings, metaphors, tropes) which extend the possible range of cultural praxis.<sup>17</sup>

Modern life does indeed begin with the expansion of human/technical interactivity and, in the context of global capitalism, the technological does appear to be 'everywhere'. However, from a reflexive perspective the dense materiality of specific technologies resides in the operations they facilitate and their functions in diverse social practices. We have suggested that it makes no sense to conceive of 'globalization' and 'democracy' independently (as 'effects') of their socio-technical, information infrastructures. This infrastructure needs to be conceptualized as a constellation of artefacts and virtual relations. The metaphor of *technopoesis* acts as shorthand for the social imaginary relations created by a given technology: the world-making characteristics of technologies-in-practice. The interplay of 'techne' and 'poesis' – of informed craft and making – also underlines the contingency of specific technoscientific articulations and their diverse embodiment in different contexts and practices. Instead of thinking of 'culture' as a fixed code, system of meaning or received 'tradition', we then conceptualize social life as a heterogeneous field of world-making practices creating diverse

realms of the 'social imaginary' (see Bakhtin, 1986; Bourdieu, 1991; Castoriadis, 1987). The deconstruction of technological essentialism is only the first step in liberating us from the traditional dualisms that bedevil the sociological analysis of sociotechnical systems (see Sandywell, 1996, 1998). Once liberated from the hold of these binary schemata, we see that cultural apparatuses not only condition and regulate human action but also shape and reconfigure the forms of subjectivity recognized and operative in and by society, processes which in turn exert a dialectical influence upon the uses and appropriations of existing machineries.

We suggest that the restoration of these critical and reflexive relationships requires something like a configurational model (or models) of 'information technology' as a force field of situated praxes, a model which includes ethical and political values and practices as being central to the social life of machines. Our guess is that the future of technology studies will only be secured by a great deal of experimentation with alternative paradigms of the complex relationships which intersect the social, technical and material networks of social life. Given space limitations, we may conclude by flagging some of the more promising perspectives that might contribute to this kind of configurational dialogue:

- *Deconstruction*: work inspired by recent approaches to the complex displacements of textuality and intertextuality, stressing the unstable dualisms and polarities of our received models of culture/nature, the technical/social, human/object relations; if digital networking provides a practical example of 'undecidability' between the technical and the social, then hypertextuality might be canvassed as a general model of cultural 'inscription' (Bolter, 1991; Derrida, 1976; Featherstone, 1995; Haraway, 1985, 1996; Harcourt, 1999; Landow, 1997; Latour and Woolgar, 1986; Squires, 1996).
- *The Latourization of technology studies*: the application of radical social constructionist perspectives to the strategic contexts of digital technologies (extending the constructionist perspective in science studies to technoscience [Grint and Woolgar, 1991, 1997]); we might include here recent network theories of technoscientific innovation, actor-network perspectives, autopoiesis and processes of self-organization in contemporary complexity theory (Latour, 1991, 1993, 1999; Latour and Woolgar, 1986; Law and Hassard, 1999; MacKenzie and Wajcman, 1999; Virilio, 1991, 1997).
- *The new historicity*: stressing the empirical under-determination of sociotechnical forms, re-specifying technologies as historical variables linked to contexts of use and praxis; the socio-technological constellation is viewed as a complex of contingent and open contexts in which the processes through which a technology is formed and 'stabilized' are subject to a range of economic, political, military and cultural constellations (Abbate, 1999; Kittler, 1990, 1994; Stone, 1996).
- *Critical theory of technological cultures*: emphasizing the social interests

and the politico-ethical content of the new technological practices, particularly as these are mediated through hegemonic cultural values and institutions (Feenberg, 1999; Landow, 1997; Lash, 1999; Lunenfeld, 1999; Poster, 1990, 1995; Robins, 1996; Stone, 1996).

- *Technology as rhetoric and social text*: approaching technologies as one instance of the ‘machinery’ of sense-making practices; emphasizing the interplay between dominant social rhetorics and the function of technologies as powerful cultural metaphors across other domains of social action. The task here is not merely to see technology ‘in’ culture, but to view technology *as* culture, investigating the reconfiguration ‘work’ of different types of agents and users, the role of digital metaphors in different cultural spheres, and the role of science and technology as social metaphors which redefine received ideas of self, body and society (Featherstone and Burrows, 1995; Ihde, 1979; 1990; Jones, 1997; Lakoff and Johnson, 1980; Masten et al., 1997).
- *The new ethnography of everyday performativity*: the focus here is upon the everyday uses and appropriations of artefacts and technical knowledge, viewing technologies as emergent outcomes of particular social traditions and contexts and, more actively, as the situated resources and interpretive repertoires of disparate agents (Hine, 2000; Jones, 1997; Miller and Slater, 2000; Nardi and O’Day, 1999; Porter, 1996; Shields, 1996; Star, 1995; Turkle, 1984).
- *Reflexive social theory* emphasizing that the phenomena designated by the terms ‘technology’, ‘politics’, ‘local’, ‘global’ and so forth, should be contextualized as a constellation of complex reflexive systems and self-organizing transactions linked with wider systems of power and influence (e.g. Lash, 1999; Poster, 1990, 1995, 1999; Sandywell, 1996). This would also include the gendering of technological studies by contributions from feminist research (Haraway, 1996; Squires, 1996; Taylor et al., 1993; Wajcman, 1991).

Despite their manifest differences, all these positions concur that what is missing from the existing models of technological determination is a ‘detailed phenomenology of specific technologies’ in their strategic and praxical contexts (Heim, 1999: 45). We require specific ethnographic studies of discourses and technologies as the outcome of the interaction of many diverse and heterogeneous factors. We need to think in aleatory terms of non-linear dynamics, self-organizing complexity and reflexive processes. Yet abandoning reductionism and essentialist terminology appears to leave us with the paradoxical claim that if there is no ‘essence of technology’ there is also no self-subsisting realm of hardware referenced by the term ‘technology’. By deconstructing the human/non-human opposition, we face a range of problems as to how we should construct the object of ‘technoculture’ in a society dominated by technically mediated systems. However, the prospects for such a radical theory of technoculture do not look promising. Indeed, there have been very few successful attempts to marry the insights

gained through the new 'ethnographic' methodologies of the Sociology of Scientific Knowledge (SSK), Science and Technology Studies (STS), and theories of actor-networks, with earlier 'critical theories' of the socio-technical systems associated with modernity.<sup>18</sup> We propose that the alternative metaphor of *technopoiesis* (from *poiesis*, 'making' or 'self'-production) might lead to a more fruitful conception of cultural self-making and imaginative (re)figuration as material processes of meaning-creation mediated by the apparatuses a culture employs in its diverse forms of self-production. The metaphor of *poiesis* gives pre-eminence to problems of situated appropriation and the cultural specification of technical knowledge in specific organizational settings. On a wider stage, configurational theory suggests an approach to cultural fields as an open totality of signifying machines, an 'ecological' perspective which necessarily interweaves the socio-historical, technical and ethico-political life of machines in cultural life (see Featherstone and Burrows, 1995; Porter, 1996; Shields, 1996; Stone, 1996). Culture is re-specified as a general term for the congealed but reactivatable traces of earlier forms of technopoiesis and sociocultural figuration. Any viable configurational sociology of the Internet needs to be sufficiently reflexive to foreground the ethico-political configurations of technological knowledge, underwrite the local embodiments of technical systems and acknowledge the undecideability of socio-technical applications as both consequences of and constraints upon the variable interpretive repertoires of diverse appropriating agents.

### Notes

1. For example David Held's discussion of 'cosmopolitan democracy' and the internationalization of law and civil society since the Second World War (1993, 1996). Alternative models include the 'strong democracy' of Barber (1984) and Sclove (1995), and the 'deep democratization' of Feenberg (1999). See also Dahrendorf (1990: ch. 8). These critical models of democratic citizenship and cosmopolitanism should be distinguished from the more 'panglossian' accounts of information technology as a *causal precondition* and necessary *medium* of democratic reform. Evaluating the relative merits of these models is, unfortunately, beyond the scope of this article, but see Held (1993, 1996), Kamarck and Nye (1999) and Turner and Hamilton (1989).
2. See Barlow (1996), Benedikt (1992) and Rheingold (1994). Future research requires a critical and comparative study of the practices, institutions and apparatuses of 'cyber-democracy'; the cyber-café, public computer access points, library facilities and so on, that are arguably creating part of the electronic infrastructure of the 'wired society'. We also need to examine the balance between 'private' and 'public' investment in these technologies and 'sites' – particularly with the emergence of new alignments of wealth and power linked to the rapid globalization of the information economy. The links between these developments and the discourse of 'cybersociety' are already exercising the minds of governments and the academic community (see the recent ESRC-sponsored conference on this topic in London, 2000).
3. For example, the theme of cyber-crime and its implications for global civil

society is central to any discussion of modern governmentality and to the governance and 'policing' of the Internet (see Barrett, 1997; Thomas and Loader, 2000).

4. For example, in terms of ICT policy, the UK Labour government (Blair's 'New Labour') has developed a series of policies aimed at providing universal public 'access' to the new technologies, 'empowering' local communities through decentralized online decision making. The reconstruction of the *image* of national government as a system that facilitates decentralized 'open' systems and 'citizen-centric' e-governance reveals the immediate impact of the dominant rhetorics of the 'information revolution' upon political agendas. See, for example, government involvement at the highest level in the recent ESRC-sponsored conference on Virtual Society? (London, June 2000).

5. This developmental rhetoric is evident within autobiographical accounts of ARPAnet/Internet 'design' (see Cerf, 1997; Gates, 1996) and often uncritically incorporated into academic research in this field (see Castells, 1997; Jordan, 1999; Slevin, 2000).

6. Social constructionist analyses of technological history have stressed the indeterminacy of outcomes (see MacKenzie and Wajcman, 1999). However, this framework has rarely been applied to Internet histories. Notable exceptions are Abbate (1999) and Thomas and Wyatt (1999).

7. It is in this context that the burgeoning programmes of research, legislation, and policy initiatives associated with EU member states and the 'coming information society' should be placed (see Hubert and Caremier, 2000).

8. The image of government itself is re-articulated with 'information access' a key element within a broader programme of 'modernization' and 'open government'. From a reflexive standpoint, such processes of governmental refiguration are a central topic of any critical account of the 'network society'.

9. In the dominant epistemological history of the past two or three centuries, 'nature' itself was reified as a discrete 'object' subject to the manipulation of subject-centred action. For more detailed discussions of these themes, particularly alterity, temporality and the visual rhetorics associated with models of nature and culture within modernity, see Heywood and Sandywell (1999a, 1999b) and Sandywell (1998, 1999).

10. For example, the 'invasion' of the body and 'exteriorization' of the sensorium through virtual technologies (Virilio, 1991, 1997), the 'indifference' of the travelling objects of global technological culture (Lash, 1999), the 'cyborgs' which deconstruct the classifying logics of modernity (Haraway, 1996), the global extensions of 'actor-networks' (Latour, 1999).

11. Within constructionist scholarship the traditional epistemological divide between 'technology' and 'society' has been the focus of intensive research (see Bijker and Law, 1992; Bijker et al., 1987; Grint and Woolgar, 1991; Law, 1991). However, constructionism has itself been accused of reproducing this dualism with its theory of the passive nature of the object (see Latour, 1999; and also Elam, 1999; Lash, 1999).

12. For example, Latour entertains the hypothesis that objects have agent-like properties. The 'sociology of translation' can be seen as an attempt to develop a more interactive ontology of these relations (see Law and Hassard, 1999).

13. From a reflexive perspective, our individual and collective experiences of the world are always-already interpreted and the process and products of interpretation

are shaped by available *inscriptions, symbolic resources, technologies and traditions of understanding*. Applied to technology, this entails that the 'hardware' of artefacts and material systems are themselves open to appropriation and interpretive specification through the interpretive actions of situated selves. Technologies are 'stored up' social interpretations of experience that are subject to continuous cycles of reevaluation and interpretive re-specification.

14. See the research within the ESRC's Virtual Society? programme, highlighting the contingent, underdetermined and often transgressive uses of the Net.

15. See for example recent UK governmental initiatives on this, within the Central IT Unit (Cabinet Office), Department of Trade and Industry, the Office of the E-Envoy and UKOnline. Also, note the emergence of NGOs such as the Centre for Democracy and Technology, Cyber Rights and Cyber Liberties (UK) which define control and regulation issues as fundamental to the future prospects of cyber-politics.

16. A central problem of 'Internet governance' has been one of identifying the boundaries of jurisdiction of the new cyber-politics. For many observers, the Internet 'poses a considerable threat to traditional forms of governance and [creates] a challenge to traditional understandings of order' (Wall, 1997: 209). For example, digital crime effects a deconstruction of commonsense conceptions of crime by creating new forms of 'placeless' criminality (Barrett, 1997).

17. This is similar to what Christine Hine (2000) has in mind when conceptualizing the Internet as both 'culture' and 'cultural artefact'. Its theorization can be found in Hayes (1999), where 'virtuality' is defined as 'the cultural perception that material objects are interpenetrated by information patterns' (in Lunenfeld, 1999: 69).

18. Mark Poster's work remains an important resource for such a critical theory of technology (1984, 1990, 1995). Another exception is Feenberg (1999), who synthesizes the critical theory of Habermas, Heideggerian ontology, and the sociology of science and technology (see also the papers in Aronowitz et al., 1996). A related attempt at a dialectical theory of cyberspace can be found in Heim (1997). See also Hard and Jamison (1998), Ihde (1990), Jones (1997), Kittler (1990, 1994) and Landow (1997).

### References

- Abbate, J. (1999) *Inventing the Internet*. Cambridge, MA: MIT Press.
- Albrow, M. (1996) *The Global Age: State and Society beyond Modernity*. Cambridge: Polity Press.
- Aronowitz, S., B. Martinsons, M. Menser and B. Rich (eds) (1996) *Technoscience and Cyberculture*. New York and London: Routledge.
- Axford, P. (1995) *The Global System*. London: Pluto Press.
- Bakhtin, M.M. (1986) *Speech Genres and Other Late Essays*. Austin: University of Texas Press.
- Barber, B. (1984) *Strong Democracy: Participatory Politics for a New Age*. Berkeley: University of California Press.
- Barlow, J.P. (1996) 'Declaration of Independence of Cyberspace', *Cyberrights Electronic List*, 8 February.
- Barrett, N. (1997) *Digital Crime: Policing the Cybernation*. London: Kogan Page.

- Bauman, Z. (1998) *Globalisation: The Human Consequences*. Cambridge: Polity Press.
- Bauman, Z. (2000) *Liquid Modernity*. Cambridge: Polity Press.
- Beck, U. (1992) *Risk Society: Towards Another Modernity*. London: Sage.
- Beck, U. (1999) *World Risk Society*. Cambridge: Polity Press.
- Beck, U., A. Giddens and S. Lash (1994) *Reflexive Modernization*. Cambridge: Polity Press.
- Becker, T. (1998) 'Governance and Electronic Innovation: A Clash of Paradigms', *Information, Communication & Society* 1(3): 339–43.
- Bell, D. (1973) *The Coming of Postindustrial Society*. Harmondsworth: Penguin.
- Benedikt, M. (ed.) (1992) *Cyberspace: First Steps*. Cambridge, MA: MIT Press.
- Benjamin, W. (1968) 'Paris – Capital of the Nineteenth Century', *New Left Review* 48, March–April: 77–88.
- Benjamin, W. (1999) *The Arcades Project*, trans. H. Eiland and K. McLaughlin. Cambridge, MA: Harvard University Press.
- Bijker, W.E. and J. Law (eds) (1992) *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press.
- Bijker, W.E., T.P. Hughes and T.J. Pinch (eds) (1987) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, MA: MIT Press.
- Blakely, E.J. and M.G. Snyder (1997) *Fortress America: Gated Communities in the United States*. Washington, DC: Brookings Institution Press.
- Bolter, J.D. (1991) *Writing Space: The Computer, Hypertext and the History of Writing*. Hillsdale, NJ: Lawrence Erlbaum.
- Borja, J. and M. Castells (with M. Belil and C. Benner) (1996) *Local and Global: The Management of Cities in the Information Age*. London: Earthscan.
- Bourdieu, P. (1991) *Language and Symbolic Power*. Cambridge: Polity Press.
- Cadava, E. (1997) *Words of Light: Theses on the Photography of History*. Princeton, NJ: Princeton University Press.
- Capra, F. (1997) *The Web of Life*. London: HarperCollins.
- Castells, M. (1997) *The Rise of the Network Society*. Oxford: Basil Blackwell.
- Castoriadis, C. (1987) *The Imaginary Institution of Society*. Cambridge: Polity Press.
- Cerf, V. (1997) *All about the Internet: History*. Available at [www.isoc.org](http://www.isoc.org)
- Ceruzzi, P.E. (1998) *A History of Modern Computing*. Cambridge, MA: MIT Press.
- Coyne, R. (1999) *Technoromanticism: Digital Narrative, Holism, and the Romance of the Real*. Cambridge, MA: MIT Press.
- Dahrendorf, R. (1990) *The Modern Social Conflict: An Essay on the Politics of Liberty*. Berkeley and Los Angeles: University of California Press.
- Davies, S. (1996) *Big Brother: Britain's Web of Surveillance and the New Technological Order*. London: Pan Books.
- Dawson, M. and J.B. Foster (1998) 'Virtual Capitalism: Monopoly Capital, Marketing, and the Information Highway', in R. McChesney, E. Meiksens Wood and J.B. Foster (eds) *Capitalism and the Information Age: The Political Economy of the Global Communication Revolution*. New York: Monthly Review Press.

- Dean, M. (1999) *Governmentality: Power and Rule in Modern Society*. London: Sage.
- Derrida, J. (1976) *Of Grammatology*. Baltimore, MD: Johns Hopkins University Press.
- Doheny-Farina, S. (1996) *The Wired Neighborhood*. New Haven, CT: Yale University Press.
- Dyson, E. (1998) *Release 2.1: A Design for Living in the Digital Age*. London: Penguin.
- Elam, M. (1999) 'Living Dangerously with Bruno Latour in a Hybrid World', *Theory, Culture & Society* 16(4): 1–24.
- Featherstone, M. (ed.) (1990) *Global Culture: Nationalism, Globalisation and Modernity*. London: Sage.
- Featherstone, M. (1995) *Undoing Culture: Globalisation, Postmodernism and Identity*. London: Sage.
- Featherstone, M. and R. Burrows (eds) (1995) *Cyberspace/Cyberbodies/Cyberpunk*. London: Sage.
- Featherstone, M., S. Lash and R. Robertson (eds) (1995) *Global Modernities*. London: Sage.
- Feenberg, A. (1999) *Questioning Technology*. London: Routledge.
- Foucault, M. (1984) *The Foucault Reader*, edited by P. Rabinow. New York: Pantheon.
- Foucault, M. (1997) *Ethics: The Essential Works 1*. London: Penguin.
- Fukuyama, F. (1992) *The End of History and the Last Man*. New York: The Free Press.
- Galston, W.A. (1999) 'Does the Internet Strengthen Community?', *Report from the Institute for Philosophy and Public Policy, University of Maryland* 19(4): 1–8.
- Gates, B. (1996) *The Road Ahead*, 2nd edn. Harmondsworth: Penguin.
- Giddens, A. (1990) *The Consequences of Modernity*. Cambridge: Polity Press.
- Giddens, A. (1992) *The Transformation of Intimacy*. Cambridge: Polity Press.
- Giddens, A. (1998) *Conversations with Anthony Giddens: Making Sense of Modernity (Anthony Giddens and Christopher Pierson)*. Cambridge: Polity Press.
- Gilloch, G. (1996) *Myth and Metropolis: Walter Benjamin and the City*. Cambridge: Polity Press.
- Grint, K. and S. Woolgar (1991) 'Computers and the Transformation of Social Analysis', *Science, Technology and Human Values* 16(3): 20–50.
- Grint, K. and S. Woolgar (1997) *The Machine at Work*. Cambridge: Polity Press.
- Habermas, J. (1973) *Legitimationsprobleme im Spätkapitalismus*. Frankfurt: Suhrkamp.
- Hague, B.N. and B.D. Loader (eds) (1999) *Digital Democracy: Discourse and Decision Making in the Information Age*. London: Routledge.
- Hamelink, C. (1996) *World Communication: Disempowerment and Self-Empowerment*. London: Zed Books.
- Haraway, D. (1985) 'A Manifesto for Cyborgs: Science, Technology and Social Feminism in the 1980's', *Socialist Review* 80: 65–107.
- Haraway, D.J. (1996) *Modest Witness @ Second Millennium: Female Man Meets Oncomouse – Feminism and Technoscience*. London: Routledge.



- Harcourt, W. (ed.) (1999) *Women@Internet: Creating New Cultures in Cyberspace*. London: Zed Books.
- Hard, M. and A. Jamison (1998) *The Intellectual Appropriation of Technology: Discourses on Modernity, 1900–1939*. Cambridge, MA: MIT Press.
- Harvey, D. (1989) *The Condition of Postmodernity*. Oxford: Basil Blackwell.
- Heidegger, M. (1977) *The Question Concerning Technology and Other Essays*. New York: Harper and Row.
- Heim, M. (1997) *Virtual Realism*. New York: Oxford University Press.
- Heim, M. (1999) 'The Cyberspace Dialectic', in P. Lunenfeld (ed.) *The Digital Dialectic: New Essays on New Media*. Cambridge, MA: MIT Press.
- Held, D. (1993) 'Democracy: From City States to a Cosmopolitan Order', in D. Held (ed.) *Prospects for Democracy*. Cambridge: Polity Press.
- Held, D. (1996) *Models of Democracy*. Cambridge: Polity Press.
- Herman, E.S. and N. Chomsky (1988) *Manufacturing Consent: The Political Economy of the Mass Media*. New York: Pantheon Books.
- Heywood, I. and B. Sandywell (1999a) 'The Original Project', in I. Heywood and B. Sandywell (eds) *Interpreting Visual Culture: Explorations in the Hermeneutics of the Visual*. London: Routledge.
- Heywood, I. and B. Sandywell (eds) (1999b) *Interpreting Visual Culture: Explorations in the Hermeneutics of the Visual*. London: Routledge.
- Hine, C. (2000) *Virtual Ethnography*. London: Sage.
- Hirschman, A.O. (1981) *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*. Cambridge, MA: Harvard University Press.
- Hirst, P. and G. Thompson (1996) *Globalisation in Question*. Cambridge: Polity Press.
- Hubert, A. and B. Caremier (2000) *Democracy and the Information Society in Europe*. London: Kogan Page.
- Ihde, D. (1979) *Technics and Praxis*. Dordrecht: Reidel.
- Ihde, D. (1990) *Technology and the Lifeworld: From Garden to Earth*. Bloomington: Indiana University Press.
- Jameson, F. (1991) *Postmodernism, or, the Cultural Logic of Late Capitalism*. London: Verso.
- Jones, S.G. (ed.) (1997) *Virtual Culture: Identity and Communication in Cyber-society*. London: Sage.
- Kamarck, E.C. and J.S. Nye Jr (eds) (1999) *democracy.com? Governance in a Networked World*. Hollis, NH: Hollis.
- Kittler, F.A. (1990) *Discourse Networks 1800–1900*, trans. M. Metteer. Stanford, CA: Stanford University Press.
- Kittler, F.A. (1994) *Materialities of Communication*, trans. W. Whobrey. Stanford, CA: Stanford University Press.
- Lakoff, G. and G. Johnson (1980) *Metaphors We Live By*. Chicago, IL: University of Chicago Press.
- Landow, G.P. (1997) *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*, 2nd edn. Baltimore, MD: Johns Hopkins University Press.
- Lash, S. (1999) *Another Modernity: A Different Rationality*. Oxford: Blackwell.

- Latour, B. (1991) 'Technology is Society Made Durable', in J. Law (ed.) *A Sociology of Monsters*. London: Routledge.
- Latour, B. (1993) *We Have Never Been Modern*. Hemel Hempstead: Harvester Wheatsheaf.
- Latour, B. (1999) *Pandora's Hope: Essays on the Reality of Science Studies*. London: Harvard University Press.
- Latour, B. and S. Woolgar (1986) *Laboratory Life: The Social Construction of Scientific Facts*. Princeton, NJ: Princeton University Press.
- Law, J. (1991) 'Monsters, Machines, and Sociotechnical Relations', in J. Law (ed.) *A Sociology of Monsters*. London: Routledge.
- Law, J. and J. Hassard (eds) (1999) *Actor Network Theory and After*. Oxford: Basil Blackwell.
- Leadbeater, C. (1999) *Living on Thin Air: The New Economy*. London: Viking.
- Levine, P. (2000) 'Getting Practical About Deliberative Democracy', *Report from the Institute for Philosophy and Public Policy, University of Maryland* 19(4): 9–15.
- Lunenburg, P. (ed.) (1999) *The Digital Dialectic: New Essays on New Media*. Cambridge, MA: MIT Press.
- Lyon, D. (1988) *The Information Society*. Cambridge: Polity Press.
- Lyon, D. (1994) *The Electronic Eye: The Rise of Surveillance Society*. Cambridge: Polity Press.
- McChesney, R. (1997) *Corporate Media and the Threat to Democracy*. New York: Seven Stories Press.
- MacKenzie, D. and J. Wajcman (eds) (1999) *The Social Shaping of Technology*, 2nd edn. Philadelphia, PA: Oxford University Press.
- Masten, J., P. Stallybrass and N. Vickers (eds) (1997) *Language Machines: Technologies of Literary and Cultural Production*. New York: Routledge.
- Melucci, A. (1999) 'Difference and Otherness in a Global Society', pp. 412–25 in M. Bulmer and J. Solomos (eds) *Racism*. Oxford: Oxford University Press.
- Miller, D. and D. Slater (2000) *The Internet: An Ethnographic Approach*. Oxford: Berg.
- Nardi, B.A. and V. O'Day (1999) *Information Ecologies*. Cambridge, MA: MIT Press.
- Naughton, J. (1999) *A Brief History of the Future*. London: Weidenfeld and Nicolson.
- Negroponte, N. (1995) *Being Digital*. New York: Knopf.
- Offe, C. (1972) *Strukturprobleme des kapitalistischen Staates*. Frankfurt: Suhrkamp.
- Ohmae, K. (1994) *The Borderless World*. London: HarperCollins.
- Porter, D. (ed.) (1996) *Internet Culture*. London: Routledge.
- Poster, M. (1984) *Foucault, Marxism and History: Mode of Production Versus Mode of Information*. Cambridge: Blackwell.
- Poster, M. (1990) *The Mode of Information: Poststructuralism and Social Context*. Cambridge: Polity Press.
- Poster, M. (1995) *The Second Media Age*. Cambridge: Polity Press.
- Poster, M. (1999) 'Undetermination', *New Media and Society* 1(1): 12–17.
- Postman, N. (1993) *Technopoly: The Surrender of Culture to Technology*. New York: Vintage.

- Ravetz, J. (ed.) (1996) *Cyberfutures: Culture and Politics on the Information Superhighway*. London: Pluto Press.
- Rheingold, H. (1994) *The Virtual Community*. London: Minerva.
- Ritzer, G. (1993) *The McDonaldization of Society*. London: Sage.
- Robertson, R. (1992) *Globalisation: Social Theory and Global Culture*. London: Sage.
- Robins, K. (1994) 'Global Local Times', pp. 204–13 in J. Anderson and M. Ricci (eds) *Society and Social Science: A Reader*, 2nd edn. Milton Keynes: Open University Press.
- Robins, K. (1996) *Into the Image: Culture and Politics in the Field of Vision*. London and New York: Routledge.
- Robins, K. and F. Webster (1999) *Times of the Technoculture*. London: Routledge.
- Rochlin, G.I. (1997) *Trapped in the Net*. Princeton, NJ: Princeton University Press.
- Rostow, W.W. (1978) *The World Economy: History and Prospect*. Austin: University of Texas Press.
- Sandywell, B. (1996) *Reflexivity and the Crisis of Western Reason: Logological Investigations, Vol. 1*. London: Routledge.
- Sandywell, B. (1998) 'The Shock of the Old: Mikhail Bakhtin's Contributions to the Theory of Time and Alterity', in M.M. Bell and M. Gardiner (eds) *Bakhtin and the Human Sciences*. London: Sage.
- Sandywell, B. (1999) 'Specular Grammar: The Visual Rhetoric of Modernity', in I. Heywood and B. Sandywell (eds) *Interpreting Visual Culture: Explorations in the Hermeneutics of the Visual*. London: Routledge.
- Sardar, Z. (1996) 'alt.civilisation.faq: Cyberspace as the Darker Side of the West', in Z. Sardar and J. Ravetz (eds) *Cyberfutures: Culture and Politics on the Information Superhighway*. London: Pluto Press.
- Schiller, D. (1999) *Digital Capitalism: Networking the Global Market System*. Cambridge, MA: MIT Press.
- Sclove, R.E. (1995) *Democracy and Technology*. New York: Guilford Press.
- Shields, R. (ed.) (1996) *Cultures of Internet: Virtual Spaces, Real Histories, Living Bodies*. London: Sage.
- Sklair, L. (1993) 'Going Global: Competing Models of Globalisation', *Sociology Review* November.
- Sklair, L. (1995) *Sociology of the Global System*, 2nd edn. Hemel Hempstead: Harvester Wheatsheaf/Prentice Hall.
- Slevin, J. (2000) *The Internet and Society*. Cambridge: Polity Press.
- Soja, E. (2000) *Postmetropolis*. Oxford: Blackwell.
- Soros, G. (1998) *The Crisis of Global Capitalism*. New York: Little Brown.
- Squires, J. (1996) 'Fabulous Feminist Futures and the Lure of Cyberculture', in J. Dovey (ed.) *Fractal Dreams: New Media in Social Context*. London: Lawrence and Wishart.
- Staples, W.G. (1997) *The Culture of Surveillance: Discipline and Social Control in the United States*. New York: St Martin's Press.
- Star, S.L. (ed.) (1995) *The Cultures of Computing*. Oxford: Blackwell.
- Stefik, M. (1999) *The Internet Edge: Social, Technical, and Legal Challenges for a Networked World*. Cambridge, MA: MIT Press.

- Stone, A.R. (1996) *The War of Desire and Technology at the Close of the Mechanical Age*. Cambridge, MA: Harvard University Press.
- Taylor, H.J., C. Kramarac and M. Ebben (1993) *Women, Information Technology and Scholarship*. Urbana, IL: Center for Advanced Study.
- Thomas, D. and B. Loader (eds) (2000) *Cybercrime: Law Enforcement, Security and Surveillance in the Information Age*. London: Macmillan.
- Thomas, G. and S. Wyatt (1999) 'Shaping Cyberspace – Interpreting and Transforming the Internet', *Research Policy* 28 (6): 681–98.
- Toulmin, S. (1990) *Cosmopolis: The Hidden Agenda of Modernity*. New York: Free Press.
- Tuchman, G. (1978) *Making News: A Study in the Construction of Reality*. New York: Free Press.
- Turkle, S. (1984) *The Second Self: Computers and the Human Spirit*. New York: Simon and Schuster.
- Turner, B.S. and P. Hamilton (eds) (1989) *Citizenship: Critical Concepts*, 2 vols. London: Routledge.
- Vattimo, G. (1992) *The Transparent Society*. Cambridge: Polity Press.
- Vattimo, G. (1998) *The End of Modernity*. Cambridge: Polity Press.
- Virilio, P. (1991) *Lost Dimension*. New York: Semiotext(e).
- Virilio, P. (1997) *Open Sky*. London: Verso.
- Wajcman, J. (1991) *Feminism Confronts Technology*. Cambridge: Polity Press.
- Walch, J. (1999) *In the Net: A Guide for Activists*. London: Zed Books.
- Wall, D.S. (1997) 'Policing the Virtual Community: The Internet, Cyberspace, and Cybercrime', in P. Francis, P. Davis and V. Jupp (eds) *Policing Futures: The Police, Law Enforcement and the Twenty-First Century*. Basingstoke: Macmillan.
- Wallerstein, I. (1974) *The Modern World System, Volume 1, Capitalist Agriculture and the Origins of the European World Economy*. New York: Academic Press.
- Waters, M. (1995) *Globalisation*. London: Routledge.
- Willett, C. (ed.) (1998) *Theorizing Multiculturalism: A Guide to the Current Debate*. Oxford: Basil Blackwell.

**Martin Hand** is a doctoral student in the Department of Sociology at the University of York, UK. He is currently completing research on issues of Internet governance, governmentality, and self-transformation in contemporary society.

**Dr Barry Sandywell** is Senior Lecturer in Sociology in the Department of Sociology at York, UK. He is the author of 'Logological Investigations' (Routledge, 1996), a multi-volume work on the history of reflexivity, alterity, and ethics in philosophy and the human sciences: 'Reflexivity and the Crisis of Western Reason' (volume 1), 'The Beginnings of European Theorizing: Reflexivity in the Archaic Age' (volume 2), and 'Presocratic Reflexivity: The

Construction of Philosophical Discourse' (volume 3). He is also the co-editor of 'Interpreting Visual Culture: Studies in the Hermeneutics of Vision' (Routledge, 1999) and essays on Baudrillard, Bakhtin, and Benjamin and others published in various journals and collections.