

## Cyberspace as the New Frontier?: Mapping the Shifting Boundaries of the Network Society

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References to follow. Comments appreciated. 4000 words.

In the last few years, the rhetoric of the American frontier has become one of the dominant strains in discussions of new computer technologies and their social effects. From the pages of *Wired* magazine to the halls of Congress, academics, industry leaders, politicians and journalists have metaphorically transformed the many forms of computer-mediated communication into an imaginary landscape and specifically, into an “electronic frontier.” According to William Mitchell, a Dean at MIT, for example, “Cyberspace is the new land beyond the horizon, the place that beckons the colonists,

cowboys, con artists, and would-be conquerors of the twenty-first century” (1995: 110-111). According to industry consultant Esther Dyson and futurist Alvin Toffler, “Cyberspace is the land of knowledge, and the exploration of that land can be a civilization’s truest, highest calling” (Dyson et al., 1994: 2).

In the face of such hyperbole, it is hard to remember that “cyberspace” is not a place at all, let alone a futuristic mirror of the American past. In this paper, I will ask how and why it is that so many have come to think of a series of inter-linked computers and the sorts of communications they make possible as a coherent topography and particularly, as a landscape in keeping with American myth. Several critics have argued that the rhetoric of the electronic frontier simply represents the recurrence of classic American literary themes at a new moment (Miller, 1995; Sobchack, 1996; Healy, 1997), But I believe that this rhetoric has emerged less from the mists of literary history than from the deliberate efforts of a particular community of computer manufacturers, software developers, corporate consultants and academics. Variouslly called the “virtual class” (Kroker and Weinstein, 1994) or the “digerati” (Brockman, 1996), this group has relentlessly promoted a vision of computer-mediated communication as frontier exploration. Like other critics, most notably Kroker and Weinstein (1994) and Barbrook and Cameron (1998), I will suggest that they’ve done so partly in order to gain social and economic advantages for their class. But I will also argue that this emerging elite has drawn on the rhetoric of the electronic frontier in order to identify and manage a series of anxieties brought about by broad changes in work practices and personal mobility over the last twenty-five years – changes triggered by and pervasive in the computer and software industries themselves.

As sociologist Manuel Castells and others have argued, the America of the man in the gray flannel suit – a world dominated by hierarchically organized corporations offering more-or-less stable employment – has begun to disappear. In its place there has arisen what Castells calls a “network society.” Where earlier, industrial societies organized their economies principally around the production of material goods, Castells argues that the “network society” has begun to organize itself around “the technology of knowledge generation, information processing, and symbol communication” (1996: 17). At a practical level, this means that an increasing number of workers are making their livings not only processing information, but using information processing technologies (such as computer operating systems) in order to create new information technologies (such as medical or financial software). Workers are now using information not only to manage the production of material goods but to produce information as a sort of “good” in its own right.

According to Castells, much of this new work takes place within “network enterprises.” These firms may be formally headquartered in one nation or another, but they carry out their business twenty-four hours a day, around the world, with the aid of electronic networks of information exchange. These companies are organized horizontally, in a series of decentralized units, each of which is linked to all the others and at the same time, largely self-directed. Thanks to this new form of macro-economic organization, workers find themselves both more autonomous and less powerful. On the one hand, writes Castells, “the diffusion of advanced information technology in factories and offices” has led to a “greater...need for an autonomous, educated worker able and willing to program and decide entire sequences of work” (1996: 241). On the other,

though, the need for networked organizations to remain flexible in order to respond to shifts in economic conditions -- coupled with their ability to locate their operations almost anywhere in the world -- has rendered even the most highly educated laborers extremely vulnerable. Companies can and often do downsize their firms, subcontract, use temporary labor, and automate or relocate certain tasks (1996: 239). As a result, workers at every level have had to become highly entrepreneurial.

This is especially true in the computer and software industry -- even at the highest levels of skill and income. Silicon Valley firms must cope with a variety of “disruptive forces,” including “instant success, ill-fated market debuts, compressed development schedules, sudden product obsolescence, unexpected and unrelenting competition, unforeseen ‘bugs,’ and disloyal financial sponsors” (Hayes, 1989:43-44). As a result, firms “insist on [hiring] flexible constellations of workers and managers” and thus passing on market instabilities to their workforce (Hayes, 1989: 43-44). At the bottom of this force, workers must hustle from job to job as best they can. At the top, the most highly skilled workers often move with the help of employment agencies or of a network of professional friends. In both cases though, work in the computer industry demands uncommon commitment in the short-term and great flexibility over time.

Over the years, some have come to celebrate these demands as sources of individual self-improvement and industry productivity. Douglas Coupland’s 1995 novel *Microserfs*, for example, tells the story of Dan, a twenty-six-year-old bug checker for Microsoft who leaves the firm to join a gang of friends as an equity-partner in a start-up making “virtual Lego” (1995: 71-72). For much of the book, the start-up threatens to fail,

but at the end, sufficient venture capital appears, and Dan and his friends seemed destined for wealth.

Yet, even as the book lauds the upside of Silicon Valley mobility, it reveals a fairly grim set of working conditions. As Coupland's narrator explains, "Time frames are so extreme in the tech industry. Life happens at fifty times the normal pace" (1995: 355). At the micro-level, compressed production schedules drive coders like Dan to program for up to forty-eight hours straight (a practice they call "flying to Australia") (1995: 110). This in turn causes programmers to lose touch with their bodies. "Work, sleep, work, sleep, work, sleep..." writes Dan in his diary. "I feel like my body is a station wagon in which I drive my brain around, like a suburban mother taking the kids to hockey practice" (1995: 4). Moreover, rapid product development cycles create an industry-wide demand for *young* bodies. In his diary, for instance, Dan sets out a series of maxims for multimedia hiring. They include the notions that a company can get no more than ten years of complete dedication to the job and that "the upper age limit for people with instincts for this business is about forty" (1995: 296).

At a more broadly social level, *Microserfs* chronicles the disaggregation of workers that Castells sees as typical of the network enterprise. Coupland notes, for instance, that the architecture of computer industry plants has changed over the decades. In the 1970s, firms added showers for employees who jogged. In the 1980s, they became campuses, offering food and sometimes, places to sleep. This period, writes Coupland, was marked by a corporate ethos he describes as "Give us your entire life or we won't allow you to work on cool projects" (1995: 211). In the 1990s, Coupland explains that "corporations don't even hire people anymore. People become their own corporations"

(1995: 211). In other words, even as companies have asked for a greater commitment from their workers they have forced those workers to become increasingly independent. This independence in turn has led many workers to become highly mobile. There are only so many places a computer programmer can find work and as Coupland suggests, programmers tend to move among them. As a result, these networks of employment tend to replace previous forms of social cohesion. In *Microserfs*, Dan's philosophical co-programmer and girlfriend Karla puts the problem this way:

You have to remember that most of us who've moved to Silicon Valley, we don't have the traditional identity-donating structures like other places in the world have: religion, politics, cohesive family structure, roots, a sense of history or other prescribed belief systems that take the onus off individuals having to figure out who they are. You're on your own here. It's a big task, but just *look* at the flood of ideas that emerges from the plastic! (1995: 236)

In Karla's comments, we sense the presence of some of the principles that inform the rhetoric of the electronic frontier: solitude, individualism, the need for inventiveness and even the hint of a sense of mission. But we can also see that those principles have emerged out of the destruction of other patterns of individual and social cohesion, patterns such as the rhythms of the life cycle and the demands of a social and geographical locale. Days and nights have disappeared into orgies of coding. Old age is no longer a source of authority, but a mark of unemployability. One can do computer work in a variety of locations and in fact, to stay employed one must be willing to move around. As a result, one contributes little to local social organizations and one belongs nowhere. No religion, no politics, no family, no history, no obligations to a particular place – like a contemporary version of the Nebraska Territory, the social landscape of the computer industry is a wide-open plain and its inhabitants are on their own.

In the world of Coupland's fiction, that solitude allows Dan and his friends to recreate themselves and to get rich. Yet, in her 1997 memoir of her life as computer programmer and software engineer, *Close to the Machine*, Ellen Ullman suggests that in the real world, the transience and solitude of computer industry work may corrode rather than remake the self. At the age of forty-six, Ullman has been programming computers since 1971 and currently works as a freelance software engineer. Some years ago, she worked as an employee, but her company was bought out. Nowadays, she writes, "My clients hire me to do a job, then dispose of me when I'm done. I hire the next level of contractors then dispose of them" (1997: 126). As Castells suggests is typical in the network society, the pressures of rapid technological and economic change have driven Ullman into a network enterprise model of work. She explains that her clients expect consultants like her

to assemble a group of people to do a job, get it done, then disassemble. We're not supposed to invest in any one person or set of skills – no sense in it anyway... The skill-set changes before the person possibly can, so it's always simpler just to change the person (1997: 129).

Within their task-based networks, Ullman and her colleagues enjoy a high-pressure form of emotional connection to one another, but no sooner is the project at hand completed than this now-intimate group must disperse. These disruptions are painful -- yet the distress they cause pales in comparison to Ullman's anxieties about her own obsolescence. The technologies with which she works are constantly changing and if she hopes to stay in business, she has to keep up. Since 1971, she writes

I have taught myself six higher-level programming languages, three assemblers, two data-retrieval languages, eight job-processing languages, seventeen scripting languages, ten types of macros, two object-definition languages, sixty-eight programming-library interfaces, five varieties of networks, and eight operating environments – fifteen, if you cross-multiply the distinct combinations of

operating systems and networks. I don't think this makes me particularly unusual. Given the rate of change in computing, anyone who's been around for a while could probably make a list like this (1997: 100-101).

In her youth, learning these languages was a great deal easier than it has now become.

Ullman has entered middle age, a period she thought would be "a time for consolidation" (1997: 105). At forty-six, she is tiring. "Time tells me to stop chasing after the latest new everything," she writes. "Biological life does not want to keep speeding up like a chip design, cycling ever faster year by year" (1997: 105).

Yet, given the demands of the industry in which she works, Ullman's biological life will have to wait. Like Coupland, Ullman depicts a world in which biological rhythms, as well as the social institutions that used to organize them, no longer fit the demands of industry. In place of these things, writes Ullman with more than a touch of sarcasm, workers like her must carry a handful of rules: "Just live by your wits and expect everyone else to do the same. Carry no dead wood. Live free or die. Yeah, surely, you can only rely on yourself" (1997: 127).

As Ullman suggests, the rhetoric of the electronic frontier provides a language with which to map the landscape of work at the higher end of the computer and software industries. Like imaginary settlers, Ullman and her colleagues find themselves alone in a wilderness of economic conditions, conditions unlike any their parents knew or could prepare them for. Cut off from the civilizing effects of membership in permanent corporate communities, they drift from employer to employer like hired gunmen in real-life versions of late-night spaghetti westerns. Their power derives primarily from what knowledge of technological systems they can carry with them and secondarily from their networks of professional friends. Their personal links to one another are tenuous and

briefly maintained. They are lonely. They are cut off from the worlds of those outside their industry in two ways. First, when they code, they work in a psychologically disembodied state for long periods of time. Second, because to stay employed they must move from node to node within the network of sites where computers and software are manufactured and used, and because to pick up leads for new work they must stay in touch with one another, these programmers find themselves living in a social and physical landscape populated principally by people like themselves. To succeed within that landscape, they must turn their attention away from another, parallel landscape: the landscape of local, material things, of town boards and PTA meetings, of embodied participation in civic life. They must declare and maintain an allegiance to their own professional network, to its sites and technologies; they must remain “console cowboys” devoted full-time to roaming their own professional landscape.

In this context, we can see that the rhetoric of the electronic frontier works to transform a series of personal losses – of time with family and neighbors, of connection to one’s body and one’s community – into a collective myth. In other words, it allows its subscribers to celebrate what they cannot avoid. At the same time, to the extent that metaphors of the frontier accurately capture the loneliness and transience inherent in their work, they permit some consciousness of their suffering as well. Within the computer and software industries, the rhetoric of the electronic frontier seems to offer a sort of ideological bridge between hard facts and appealing fictions. Even as it permits workers a glimpse of their predicament, it transforms that predicament into a site of potential heroism in the tradition of American myth.

This would be fine if it were strictly a private matter within the computer industry. But it's not. Since the rhetoric of the electronic frontier first emerged about a decade ago, it has served as one of the principle lenses through which industry representatives, academics, politicians and others have sought to define the use and regulation of an extraordinary public resource: the Internet. In that context, the metaphor of the electronic frontier has not only eased the anxieties of an information elite, but increased their economic power. I could offer a number of examples of this phenomenon (and I have, in another much longer paper), but given the time constraints here I'd like to focus on the ways in which two particular assumptions embedded within the electronic frontier metaphor have changed the shape of the Net.

First, consider the notion that the cyberspace, the space of the Internet, is somehow a place apart from the ordinary material world. As John Perry Barlow, one of the foremost proponents of this rhetoric, puts it, the electronic frontier is "a world that is both everywhere and nowhere, but it is not where bodies live" (Barlow, 1996: 1). To the extent that computer industry consultants like Barlow can convince us that the Internet is somehow "nowhere," they can also make it harder to see that the Internet relies on real, material networks of cables and switches, antennae and satellites, for its existence. As a number of political economists have noted, the corporations who build and distribute this equipment – including corporations from which Barlow has exacted high consulting fees – often have agendas quite at odds with those of individual Internet users (Schiller, 1998; Herman and McChesney, 1997; Branscomb, 1994). Insofar as the electronic frontier metaphor renders the power of infrastructure owners invisible, it makes it that much harder for individual internet users to challenge that power.

Second, consider the notion that like a frontier, the Internet is somehow open on equal terms to all users. Barlow and others argue that because it is a disembodied world, the frontier allows us to do away with the body-based systems of distinction that plague our material lives. Anyone, writes Barlow, can enter the electronic frontier “without privilege or prejudice accorded by race, economic power, military force, or station of birth” (1996:1). Yet, if we accept this view, then we must ignore the fact that large portions of the globe are currently off-line and likely to remain so for some time. Even in America, in 1995, for instance, some seven million American homes lacked *telephones* (Ebo, 1998: 6).; in 1998, some 30% of American homes lacked access to cable television (Seiter, 1999: 147). It seems unlikely that these Americans will soon be buying computers and signing up with America On Line. Finally, the electronic frontier ideologists’ vision of identical, self-sufficient individuals obscures all the sorts of differences that researchers have shown influence access to computers and the uses to which they are put. These include gender (Seiter, 1999; Clemente, 1998) and ethnicity (Ebo, 1998; Clemente, 1998), but also education level and place of employment. With a minimal degree of literacy and access to a machine, for instance, virtually anyone might learn how to download a piece of software or order merchandise over the Internet. But it seems unlikely that they will engage in more complex and empowering forms of computer-mediated interaction, particularly those that require extensive programming expertise and nearly constant access to high-level machines.

The question remains, then: If the electronic frontier ideology paints such an inaccurate picture of the present and future of computer-mediated communication, why has it become so popular? In part, I believe that the answer rests with the fact that those

who promote it have extraordinary access to elite terrestrial institutions, including the press, key universities, and the national government. It is hard to imagine organizations more central to contemporary debates about technology than MIT and *Wired* magazine or spokesmen on these issues more widely quoted than Esther Dyson or John Perry Barlow. Yet, as the work of Manuel Castells suggests, the rhetoric of the electronic frontier may also have a broad appeal at the moment because it addresses anxieties felt by workers in many industries. It may be the case, as Ellen Ullman writes, that

We virtual workers are everyone's future. We wander from job to job, and now it's hard for anyone to stay put anymore. Our job commitments are contractual, contingent, impermanent, and this model of insecure life is spreading outward from us. I may be wrong, but I have this idea that we programmers are the world's canaries. We spend our time alone in front of monitors....We lead machine-centered lives....We live in a contest of the fittest, where the most knowledgeable and skillful win and the rest are discarded; and this is the working life that waits for everybody. Everyone agrees: be a knowledge worker or be left behind (1997: 146).

If Ullman is right, then it may be that the electronic frontier ideology represents not only a form of symbolic self-promotion on the part of the virtual class, but a temptation for the rest of us. Confronted with forced transience, rapid job turnover, a decreased attachment to locales and their histories, and a blurring of all the old boundaries between home and work, we may well be tempted to see ourselves as pioneers on a new social and technological frontier. Like the digerati, we may rewrite our lives in terms of a national drama, re-imagining ourselves as cowboys and astronauts, and we may buy and use computers in part to sustain that fantasy. If we do however, we will lose the ability to identify and confront the social, economic and technological forces that are currently shaping not only computer-mediated communication, but our lives as a whole.

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