Cyberspace as American Culture

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CULTURE DIGESTS THE NET

Like many inventions before it, the Internet is disruptive. Individuals must learn how to use the Internet, of course, but in a deeper sense the culture as a whole must learn about it as well. Culture happens in the routine patterns of action and interaction by which people coordinate their activities and negotiate their lives together. As various social groups appropriate the technology and contest the various sorts of access it affords (Dutton, 1999; Kling 1996), the Internet participates in a thousand dynamics that unsettle these patterns and set the culture in search of new equilibria.

Examples are endless. Students going off to college can more easily maintain ties to their old lives back home, and this can be good or bad depending on the particulars of the case. Natural barriers that once made the uses of personal information somewhat predictable are replaced by electronic interconnections whose workings are arbitrary or counterintuitive. The local chapters of a political organization can conduct their routine logistical work by electronic mail rather than call so many

meetings; they can maintain lateral connections with other chapters, thereby changing the role of the national office, and they can more easily involve themselves in national and global issues, often to the detriment of local ones. Industrial companies that integrate their supply chains electronically can reduce their inventories by forcing their suppliers to manage the financial risk that inventories create. Job candidates preparing for interviews can do more homework, investors can pool their research efforts, complex business relationships can be managed with fewer phone calls, and fraud artists can work a gold mine of new angles.

Any one of these disruptions would be easily digestible through the ordinary processes of collective cognition by which a culture figures out anything: people would watch one another, conflicts would set precedents, comedians would make the patterns visible by telling jokes, rumours would spread, consultants would engage in intellectual arbitrage from one organization to the next, strategies would emerge, symbols would arise, rules would be written, and laws would be passed. What is striking about the Internet is how much of this is happening at once, with no end in sight.

INSTITUTIONAL ANALYSIS

To understand these phenomena it helps to speak of institutions, which for present purposes are the persistent structures of interaction through which people organize their lives (Commons, 1970; Goodin, 1996; March and Olsen, 1989; North, 1990; Powell and DiMaggio, 1991). Banking is an institution, and so are greetings on the telephone. Other examples of institutions include intellectual property law, technical standards, the English language, form contracts, the research university, the nuclear family, parliamentary procedure, holiday customs, norms of public politeness, and the rules and conventions of driving on the highway.

Institutions vary among localities and across history, but they are also relatively stable; they tend to outlive their participants. Lawyers come and go, but the social relationships of the legal system stay much the same. Speakers of English come and go, and so do individual words, but grammar is obstinately stable across millennia. The customs of Christmas and Halloween still encode the fine detail of conflicts and accommodations between Christianity and indigenous religions that were settled and forgotten centuries ago. Standardized contracts spread through an industry because they resolve a complex of practical problems and bargaining positions whose fundamentals tend to settle into long-lived patterns. The stability of institutions can be oppressive and boring, but also beneficial: a predictable framework rewards

education and other investments, and it allows everyone to focus their limited attention in one area of their lives while allowing the other areas to happen in conventional ways (Offe, 1996).

Institutions exist in large part to solve informational problems -- negotiating identity, coordinating activity, managing risk, establishing divisions of intellectual labour, and discovering uses for things -- and society is usefully understood as a tremendous sprawl of institutional arrangements, both designed and evolved, for managing the informational problems of a complicated way of life in a complicated world (Melody 1987). It stands to reason, then, that the Internet, by fundamentally reinventing the technology of information, would destabilize this entire sprawl, setting in motion a vast renegotiation of social relationships.

THE INTERNET AND CYBERSPACE

'The Internet' here is a synecdoche: a part that stands rhetorically for a larger whole. It is distributed computing in general that participates in these changes, and not just a single communications protocol. The promise of the Internet, however, really is to provide a common coin for all of these technological changes. This is the technical meaning of convergence: as the Internet architects' slogan goes, 'IP on everything, everything on IP', IP being the core of the Internet's protocol suite (Chapman, 1999; see also Abbate, 1999; Hafner and Lyon, 1996). The sociological point is that the Internet becomes deeply bound up in the specific arrangements by which people conduct their lives. In this sense and others, the Internet is embedded in a tremendous network of organized social relationships, and it is becoming more so every day.

And so it is strange that the Internet has so often been understood, particularly in the mass culture of its home in the United States, as a world unto itself, as a parallel realm called cyberspace that obeys its own laws and that, far from participating in the detailed renegotiation of institutions, instead destroys and displaces them (Barlow, 1996; Gilder, 1992; Dyson, Gilder, Keyworth, and Toffler, 1994; Johnson and Post, 1996). The contrast between cyberspace and the corporeal world has often been invidious; enthusiasts imagine face-to-face interaction and the built environment withering away, replaced by the 'virtual' sphere of nonspatial interaction [1]. The physical world has been disparaged, so that (for example) people who persist in reading paper books can be spoken of as 'addicted to the look and feel of tree flakes encased in dead cow' (Mitchell, 1995, 56). By connecting every point on earth to every other point in real time, it is said, the new technologies will bring about the

'death of distance' and eliminate all friction from the market (Cairncross 1997). Every important new technology creates an imaginative vacuum, and time and again this is the sort of thing that flows into it: tropes of transcendental escape, utopian perfection, discontinuous change, communitarian intimacy, everlasting peace, and boundless prosperity.

THE FALL OF CYBERSPACE

Enough practical experience has accumulated by now that this cultural imagination can be seen for what it is. It can be dated, roughly from 1994 through 1998 -- the era of the cyberspace pundits who wrote for Wired magazine [2]. During that five-year period it was common sense, certainly in the United States but also in much of the rest of the world, that the Internet levels hierarchies, decentralizes society, creates an idealized neoclassical market, and eliminates the role of intermediary institutions.

Such views are still widespread, but they must contend with the received view in Silicon Valley that the Internet actually does the opposite (e.g., Wysocki, 1999). A wide range of Internet businesses appear to be natural monopolies, thus rewarding otherwise extraordinary up-front investments [3]. While some markets are becoming more efficient, important new kinds of market power are emerging. An extraordinary wave of mergers is causing many industries to become more consolidated, not less. Intermediaries are expanding their geographic scope, and many if not most of the successful Internet businesses are precisely the intermediaries that result from the renegotiation of structural relationships in particular industries (Casson, 1997; Hawkins, Mansell, and Steinmueller, 1998; Sarkar, Butler, and Steinfield, 1995; Spulber, 1996). And the technology-driven globalisation of numerous policy issues is contributing to a shift of sovereignty from an institutionally diverse community of separate nations to an undemocratic and non-transparent network of global treaty organizations.

The ideology of cyberspace, in other words, is spectacularly wrong. And yet facts do not seem to refute it. We will not be able to think clearly about the Internet, or participate responsibly in the societal changes that accompany it, until the cultural forms of cyberspace are uprooted and the sources of their tenacity in the face of evidence are examined. It does not suffice to locate the ideology of cyberspace in the machinery itself; indeed, the explosion of cyber culture in the 1990s bears almost no relationship to the thinking of the American military and university people who developed ARPANET around 1970 and the Internet around 1980. Nor does it suffice to ask whose interests the cyberspace ideology serves; although it has certainly been

a conscious and successful component of an industry lobbying strategy, the idea of cyberspace has deeper roots and comes from more directions than the average campaign of corporate public relations.

The concept of a separate cyberspace did make sense of a transitional world in which the Internet really did stand apart, built on top of a highly evolved telephone system to be sure, but not yet integrated into the many institutions that are now making use of it. But even that cannot explain the fury that the concept of cyberspace inspired. After all, the very word 'cyberspace' was drawn from a dystopian science fiction novel, William Gibson's *Neuromancer* (1984) whose characters were all emotionally dead, and for whom cyberspace, in Kirby Farrell's (1998) striking analysis, was little more than an external projection of their deadened inner world. This is not a good thing to want, much less to organize a social movement around. Isn't the shattered world of *Neuromancer* an expectable consequence of the rage to destroy institutions? These strange ideas clearly require a more fundamental interpretation.

CYBERSPACE IN AMERICAN POLITICAL CULTURE

All of them make sense, I would suggest, in the context of the historical unconscious of American political culture (Healy, 1997; Sobchack, 1996). America was, from its earliest days, a powerful object of European imagination. It was, in the words of Henri Baudet, a place 'onto which all identification and interpretation, all dissatisfaction and desire, all nostalgia and idealism seeking expression could be projected' (quoted by Greene, 1993, 25). All of the European colonies in the New World began as consciously planned attempts to reinstate, by social and architectural design, an idealized European past (Greene, 1993, 28, 54-55). Most of this idealism gave way to the forces of commerce, and yet the intellectuals who imagined these projects left the country with a permanent sense of having fallen from something better (see also Marx, 1964). The ideals of these early utopias were communitarian; the notion of colonial America as a land of individualism was a post hoc myth that rested only on the philosophical writings of a small cosmopolitan elite (Shain 1996). Freedom of conscience in the early period was not the right to toleration by one's neighbours, but rather the right to move from one highly intrusive local social order to another.

The same drive to build an idealized community was prominent in the early days of cyberspace as well, and in each case the ideals of community were founded on a notion of intimacy in which mediating institutions had only the most ambiguous role (Kling and Lamb, 1998). The religious settlers of the New World believed that they

were bringing about the millennium, and so, in their own secularised way, did the self-described settlers of cyberspace. The analogy here is suggestive enough, and yet technology's association with millennialism goes back to its earliest days. The medieval conception of technology was precisely to bring about the millennium by constructing a divine perfection on Earth (Noble, 1997; White, 1978; but see Ovitt, 1987), and that same religious project was overtly associated with European and American engineering until comparatively recent times. Much about America's complex relationship to technology can be understood in these terms.

THE ENGINEERS AND ANTIMASONISM

Engineers have always been distinctive as a social group on account of their level of education, widespread social networks, and highly evolved body of esoteric knowledge. And in a religious society, these attributes took ideological and institutional form largely through Freemasonry. Although the Masons began as a medieval guild of itinerant stonemasons, speculative Masonry began as an aristocratic movement in Britain in the early eighteenth century. Noble (1997, 73-82) has pointed to the involvement of Masons in the founding of numerous scientific and technical institutions, starting with the Royal Society and the Ecole Polytechnique. Founding Fathers such as Benjamin Franklin and George Washington were Masons. With their network of lodges, the Masons established themselves as the intellectual elites of the new country (Fuller, 1995, 85; Goodman, 1988, 9-17; see generally Bullock, 1996).

But the Masons, with their spiritualised rationality and minimal commitment to Christianity, were far from representative of American society. The same millenarian communities that had escaped religious oppression in Europe and fought to maintain religious solidarity in America lived in a supernatural world, and the American tradition of paranoid conspiratorialism began with these communities' successive attempts, in Fuller's (1995) terms, to name the Antichrist. While the small circle of educated men who wrote the Constitution were inspired by the rational culture of the Enlightenment, much of the rank-and-file passion for the American Revolution was rooted in elaborate popular conspiracy theories that located the Antichrist in the Church and Crown of England (Fuller, 1995, 68-73).

The danger inherent in this unlikely coalition was readily evident; in his celebrated tenth Federalist paper, Madison described it as fortunate that a fervent religious movement that begins in one region of the country and 'degenerate[s] into a political faction' cannot then spread to other regions. He probably had in mind the wave of

revivals during the 1730s that later became known as the First Great Awakening, and he would presumably have lamented the sophisticated use of telecommunications by precisely such politicised religious movements since the 1980s.

Be this as it may, the American alliance between the rationalist and evangelical varieties of religion collapsed as soon as the good feeling of the Revolution had worn off. With the English Antichrist safely gone, evangelical ministers discovered a new Antichrist -- in the Masons. This new movement begin in 1798 with the 'discovery' of the Conspiracy of the Bavarian Illuminati (Fuller, 1995, 78, 85), and driven both by religion and economics it blew up into a mass movement alongside the next great wave of revivals, the Second Great Awakening, in the 1830s. Even though it soon collapsed as an organized political movement, Antimasonism effectively destroyed the Masons as an intellectual elite (Vaughn, 1983, 190; see also Goodman, 1988).

More importantly, the conspiratorial hunt for the Antichrist embedded in American culture an elaborate system of stereotypes that has proven capable of coming to the surface full-blown when conditions are right. Some of these stereotypes concern educated elites, whose foreign alliances and atheism are held responsible for their desire, in Fuller's words, 'to subvert the national order by condoning sexual promiscuity, condemning the principles of patriotism, seeking to eliminate all private property, and plotting to get control of all cultural agencies such as the schools, literary societies, and newspapers' (1995, 86). These accusations surfaced in the fight with modernism in the 1880s (Fuller 1995, 80), they were central to the crusade against communism in the 1950s (for example, Goodman, 1988, 8), and they are surfacing again today, in remarkable detail, in the conflict between evangelical conservatives and educated secular professionals (for example, Brown, 1998).

Another set of stereotypes concerns institutions; a movement that could locate the Antichrist in the Church and Crown of England could have no problem discovering Satanic influence in the secular political institutions that were established by a largely Deist elite in America. This movement could, and still does, uphold the basic framework of government as a largely empty nationalist symbol, while treating all of its particular institutions as redundant, alien, and evil.

TECHNOLOGY AND THE NEW ANTIMASONISM

These movements may never have represented electoral majorities, and they hardly exhaust the political unconscious of the country, but they do illuminate one persistent American conception of technology, rationality, and institutions. These cultural

forms came back to the surface as a consequence of the United States' political and military defeat in Vietnam (Gibson, 1986). The American war in Vietnam was directed according to rational principles, indeed largely by computer, by an educated elite that was dangerously detached from the day-to-day reality of war. The collapse of this project gave rise to a new cultural construction of masculinity, the angry warrior who fights both the official enemy and the decadent institution that betrayed him (Gibson, 1994). This figure originally took form in Sylvester Stallone's film portrayals of John Rambo, but he has become deeply ingrained in American culture. In his wounded isolation and total alienation from institutions, he is related to the character of Case in *Neuromancer*, and to the title character of 'Johnny Mnemonic'. The transformation is neatly summarized in the contrast between the original television version of *Mission: Impossible* (1966-1969) and the taken-for-granted demonisation of the CIA in the 1996 film version starring Tom Cruise. Whereas the Cold War hero was closely identified with institutions and their technology, the new hero is clearly located outside of institutions, and computers and rationality have become a feminine domain, for example in the relationship between the wounded Fox Mulder and the permanently confused Dana Sculley in *The X-Files*.

These effects help explain a change in the cultural meanings of computing. The computer scientists who invented the Internet located themselves inside of institutions and associated themselves with engineering and its traditional project of rationalization. Their patron, ARPA, was simultaneously central and peripheral to the military funding system; it was sufficiently authoritative in its command of the technology that it could operate with a degree of independence by supporting speculative research ventures such as artificial intelligence that expressed something like the essence of the project of rationalization (Edwards, 1996).

And yet this same research community was bewildered in the 1980s as they watched the word 'hacker', the term that they had drawn from MIT's student jargon to identify themselves, suddenly reverse its meaning. The new hackers were located outside of institutions and rebelled against them. Some of the seeds of this shift were already present in the hacker's stereotype as an asocial misfit, and in the engineer's assumption that technological innovation, rather than any institutional order, was the driving force of social progress. Nonetheless, the original hacker was a good figure whose working relations with the military in particular were personal and cordial. The new hacker, by contrast, self-consciously styled himself an outlaw, with no clear line between the security-cracking adventurism that aimed to strengthen the integrity of the systems and the outright criminal activity that aimed to subvert them [4]. Whole branches of government now posit something called 'cyberterrorism' (Thomas and Loader 2000).

AMERICAN CULTURAL RESPONSES TO THE INTERNET

To be sure, this change was partly generational: the old hackers invented the computers in their laboratories and imaginatively owned them; the new hackers encountered an already-existing world of computers that were built and owned by a much less sympathetic corporate and government establishment. But the shift in meanings of 'hacker' was nonetheless congruent with the larger cultural shift, and one of its effects was to break the association between information technology and rationality. Even though its military users continued to see it as a tool of rationalization, in public the technology took on a more complex and contradictory identity. One substantial movement, closely associated with the conservative clergy, persisted in identifying the Internet with demonised elite institutions, and as an instrument of cultural invasion. Organizations such as the Christian Coalition may operate nationally and use the Internet to coordinate their political activism, but so far as their political agenda is concerned the Internet is entirely alien. Their hopes for community are resolutely geographical, and they are indifferent to attempts to recover a nostalgic sense of community online.

Other movements, however, do not associate the Internet with decadent institutions, but quite the contrary want to use the Internet to displace or destroy them. This, finally, is the origin of the ideology of cyberspace, with its elaborate claims to overturn hierarchies, decentralize society, eliminate intermediaries, and so on. Most of these claims may be false as empirical generalizations, but it is hard to exaggerate their imaginative hold. For this movement, the Internet's power to destroy institutions is a guide to political action. Although they are insignificant in electoral terms, these libertarian believers in cyberspace do not intend to win elections. Their strategy is entrepreneurial. For example, libertarian Internet activists are trying to build an alternative global financial infrastructure based on strong cryptography that is incapable of being monitored, audited, regulated, or taxed by the government (Hirschfield, 1997). In the current financial systems, governments can supervise financial flows by regulating the cumbersome system of clearinghouses that match payment documents with the organizations that issued them. With financial cryptography and the Internet, however, it is feasible as a technical matter to disintermediate the clearinghouse system altogether (Hettinga, 1998). Whether this happens in practice depends more on the self-interest and market leverage of the banks than on technical and regulatory factors. Other libertarian entrepreneurs advocate using the Internet to support distance education; by promoting a lower-cost

mechanism for delivering college-level instruction to students in their homes, they hope to make the current establishment of 'academic elites' obsolete (Agre, 1999).

IMAGINATION AND REALITY OF THE INTERNET

While the success of these projects is hardly guaranteed, they are entirely plausible. My question, then, is this: is networked information technology separate from the world, or is it part of the world? Is the Internet replacing the vast sprawl of institutional arrangements in society, or is it increasingly embedded in those arrangements? Certain trends in American political culture make the first answer easy to imagine; I want to make the second answer easy to imagine as well. In principle this would not seem hard. American political culture, after all, is wildly distinctive in the context of comparative politics; American attitudes toward rationality and institutions have no close parallel anywhere, and certainly not in the social welfare states of the industrial world.

But perhaps for that reason, no national political culture offers a way of imagining the Internet that is nearly so elaborate as that of the United States [5]. Most societies have unpopular institutions, such as the telephone company, and the American Internet can seem like a mechanism for clearing those old institutions away. What is needed, and much harder to find, is a way of imagining a wholesale renegotiation of institutional relationships in the context of technological change. This is the terrain of democratic values, and it will be important to draw on various national democratic traditions, in the United States and elsewhere, to find the conceptual resources to understand a dynamic situation.

Technology would also seem like a natural means of determining the truth about the Internet and the institutional world. After all, technology puts its theories to the test of practice, and false theories will not work. And indeed, it is increasingly evident that the cyberspace theory does not describe technical practice. For one thing, interfaces are changing. It is easy to think of a traditional mainframe or personal computer as a parallel reality; the clumsy keyboard-and-screen interfaces to those computers can easily seem like a small window onto a different world. The main trend in computer interface design, however, is toward adapting computers to embodied activities: designing them to be portable, embedding them in cars and clothing, making, them aware of their physical location, building them into special-purpose 'information appliances', enabling them to be 'nomadically' on the Internet wherever they go, and allowing them to establish spontaneous wireless network connections with any other devices in their immediate vicinity (Norman, 1998;

Gershenfeld, 1999). This kind of 'ubiquitous' computing (Weiser, 1993) is no longer remote from the world of routine activities and relationships. Interaction with computers is now indissociable from interaction with people and things, and it no longer makes sense to speak of a boundary between the cyberspace world and the real world.

THE NEW WORLD OF COMPUTING

The nature of computer applications is also changing. The main tradition of computer system design emerged from the model of industrial automation; it presupposed that the systems analyst's task was to represent a discrete information-processing activity within the bounds of a single organization, and then to use that representation to devise a computer system to replace it (Agre, 1997). Modern computer applications, however, are much more likely to cross organizational boundaries (Friedman, 1989). As such they are embedded in, and deeply constrained by, a set of social relationships that are legal and economic in nature. The traditional designer could simply take for granted the institutional background of the work being automated, but now the complexity of the institutional environment is a primary source of system requirements. Large system development projects routinely fail because they do not take adequate account of the complex, cross-organizational politics of the work. New systems provide increasingly complex packages of services to relative strangers, and they mediate relationships among individuals and communities in increasingly intricate ways.

A design method that presupposes a cleanly defined cyberspace will be useless in such a world. Yet the traditions of system design have not adapted to this new world, and in many ways the conceptual distinction between the inside and outside of the computer is as sharp as ever. Consider, for example, what the discourse of computer system design makes of a word like 'search'. In vernacular usage, the word 'search' names a complex activity (Bates, 1996). Searching for information can involve activities in several locations, switching back and forth among several media. To the extent that it involves asking others for help, it is embedded in social networks. It is usually a skilled activity that presupposes some degree of socialization into the cognitive world and specialized artefacts of a particular professional community. Someone who uses a computer as part of a search may well be using several other resources at the same time. The path of a successful search may well pass into and out of the computer several times. Yet for computer science, 'searching' is what happens inside a computer as a result of a single 'search' command. Computer science has no way to conceptualise the machine's embedding in a larger social

process, so it truncates that process, and considers only those aspects that happen within the machine. This terminological practice, multiplied by an entire technical vocabulary, adds up to an intellectual isolation that is hard to reverse or overcome.

THE IDEOLOGY OF COMPUTING

The cyberspace ideology, then, presupposes a clearly defined boundary in space between the real world and the cyber world. But it also presupposes a boundary in time: before and after the universal advent of digital technology. On one level this is the millennialism that has long been associated with technology, and Kling and Iacono (1988) have identified this kind of millennialism as a recurring feature of social movements for computerization. The general idea is that information technology brings about a total, revolutionary change in the social world. This rhetoric of discontinuity is found most starkly in the two-column tables that describe the 'from' and 'to' of the transition to an 'information society' (for example, Dolence and Norris, 1995, 4, 29, 30, 37, 46, 58). Hierarchies, for example, are supposed to give way to networks, as if networks had never been an important form of social structure, and as if hierarchies showed any sign of disappearing (Fukuyama, 1999).

Regardless of their ideological function, these dichotomies have the great virtue of being easy to think with. They are intellectually crude, but they provide a simple rhetoric for sharpening issues and heightening the stakes in any decision about the adoption of new technology. They are stereotypes, and they make it easy to stigmatise the opponents of any technology-driven vision of institutional reform. What is much harder, but much more important, is to break open existing concepts, and to determine what should change and what should stay the same in a ubiquitously digital world. For example, in the terminology of computer science, it is entirely natural to build a database and simply call it a 'digital library'. First the concept of a library is shorn of everything outside of the computer (librarians, for example), and then a discontinuous shift is posited between the old type of library and the digital type.

When concepts are abused in this way, much is lost. A library is an institution, not just a technology; its practices of ordering information live in a professional community, not just a database format; it entails a complex array of mediating services that are not at all reducible to Web page commands (Borgman, 2000). But it would be equally wrong to insist, at the opposite extreme, that a 'library', by definition, comprises every last feature of libraries as we know them today. Thus the need for analysis: to locate the fault line that runs through the concept of a library,

separating those features that comprise its technology-independent essence from those that do not. Similar comments apply, obviously, to a tremendous variety of other institutional words, not least 'university' and 'democracy' and 'family'. In each case, an organized ensemble of relationships and roles is begin renegotiated as stakeholders of every sort explore their options in the context of new technology. The outcome of this renegotiation is not foretold, and it depends on the degree to which various social groups imagine future technological and institutional arrangements and then organize around them.

ASSESSING THE INTERNET AND AMERICAN CULTURE

Once we remove the ideology from the Internet, what is left? The Internet is still something important: a general protocol for moving digital information from point A to point B. This protocol can be implemented on top of any type of hardware, and it can be used as a platform for the construction of a boundless variety of information services in turn. Although it has several other properties that have institutional consequences, on the whole the Internet is loosely coupled to the institutional world around it. It does not inherently promote freedom or oppression, hierarchy or decentralization, privacy or social control, individualist or collectivist values, markets or socialism. Considered narrowly as a technology, it is capable of participating in any combination of social orders. Considered more broadly as a malleable architecture interacting with a complex and contested institutional environment, however, the Internet is a complicated phenomenon indeed. To understand what sort of phenomenon it is, it will be necessary to develop nontrivial ideas about institutions, technology, and the relations between them. Only then will it be possible to reason about the kinds of values that the Internet, in a broad social sense, either embodies or could embody.

And what of American culture? Despite the relative decline of cyberspace discourse, different parts of the society continue to take hold of the Internet in their own ways: the libertarian left and the libertarian right both invest hopes for decentralization in the technology, one group identifying the Internet with democracy and the other group identifying it with markets. There remains a non-libertarian left, just barely, for which the Internet is purely an instrument of capitalist domination, and a non-libertarian right, now ascendant, for which the Internet is purely a vector of moral decay. It is a strange mapping, but from the perspective of American cultural constructions of technology it makes sense: the libertarian left and non-libertarian right draw on the country's communitarian traditions, either identifying with the technology or rejecting it, while the libertarian right and non-libertarian left are

occupied largely with destroying institutions, likewise embracing the Internet as a tool or dismissing it as part of the old order.

Such is the protean nature of the Internet that all of these conceptions of the Internet's role are partially true, just as their opposites are partially true as well. The Internet is being appropriated by the participants in a thousand social projects, many of which conflict with one another. Every segment of the culture will test the reality of the medium in its own way. The constitutive mythologies of the society may retreat, but they will not disappear. The culture runs deeper than any technology, and so do its conflicts.

ENDNOTES

[1] See Mitchell (1995). Mitchell's later work is more sophisticated, especially Mitchell (2000).

[2] For critical perspectives on Wired magazine see Chapman (1995) and Huffstutter (1995).

[3] In economic discourse, an industry is a natural monopoly if a business can greatly reduce its per-unit production costs through a large up-front investment. Typical examples include electrical distribution, but many parts of the software industry are natural monopolies because the investment required to write complex software is very high and the per-unit cost of producing additional copies of the software for customers approaches zero. In addition, many Internet-related businesses appear headed for monopoly status because the benefit they deliver to a customer depends on the number of other people who use them. An example would be the eBay online auction service. On these 'network effects' see Shapiro and Varian (1998).

[4] See Pfaffenberger (1988), who captures the moment before the cultural figure of the hacker became associated with criminality.

[5] But for the case of Scandinavia, see Hakken (1999).

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