5

NETWORKING AND BROADCASTING IN CRISIS

Or, How Do We Own Computable Culture?

William B. Warner

OWNING MEDIA CULTURE

In recent years, a "neo-liberal" regime of deregulation has been promoted by the U.S. government as a way to clear the way for individuals to engage in productive new forms of wealth accumulation, thereby allowing increasing numbers to become part of "an ownership society" (George W. Bush, Second Inaugural Address, January 20, 2005). However, several trends suggest that the expanding size and influence of big media corporations means that increasingly they will own and control our media culture. There are two traditional factors driving this shift: a) corporate copyright owners have won a steady expansion of the breadth, depth, and length of copyright, and b) media corporations are seeking to protect themselves from risk by increasing in size, and a relaxed enforcement of the antitrust laws is allowing them to do so.[1] However, the issue of media ownership has been complicated by a third important factor besides the absolutist expansion

of copyright or a tendency toward corporate giantism. I am referring to the development, in the last decades of the 20th century, of the networked computer, and especially by its most popular form, the Internet. This chapter explores the forces and issues that have come into play around the urgent question: How should we institute the networked computer as part of our media sphere? How, for example, are we to balance a copyright holder's interest in controlling the circulation of their products on the network against the user's wish to protect computing as a remarkable new technology of inscription? At the end of this chapter, I offer a pragmatic approach to these questions.

When Napster developed a networking technology so that millions of worldwide users could share music online, the big music companies not only sued Napster for violation of their copyright in court, but the subsequent struggle between big media companies and youthful computer users exposed a divergence of views on what the networked computer is and should be. Although for many of the creators and users of the networked computer, it is the most valuable cultural technology since the invention of printing, for big media producers the networked computer has emerged as a menace, an instrument of thieves, and a destroyer of business models. So the media content industry is working—through Congress, through the courts, and through technology agreements—to change the architecture of the networked computer, away from the open source principles inscribed in the Internet protocols, so that in the future individuals will not be able to copy and distribute legally protected media. Viewed historically, the extreme positions and alarms sounded by partisans of both the traditional media companies and the partisans of "new media" are a necessary part of the struggle around the institutionalization of the network computer, a struggle that is legal, economic, and cultural, and will have important implications for all of us.

NETWORKING AND BROADCASTING

The currently unfolding legal and social struggle around institutionalizing the networked computer is the latest episode in a long American history of the rivalry and symbiosis between two modes of communication, which I term *networking* and *broadcasting*. Table 5.1 summarizes the main comparisons between networking and broadcasting, with more detailed discussion in this and the next two sections.

The early meanings of these words are a way to recover the distinctness and strangeness of each of these communication acts. Long before networks were fashioned from wires, computers, and humans, a network was the "open-laced fabric" used to fashion nets to trap fish or birds, the "lines or channels that cross and interconnect" (as in a train network); or "a complex, interconnected group or system" (as in an espionage network) (*American Heritage Dictionary* 1992)]. Long before broadcast was applied to radio, to "broad-cast" was to sow seeds widely, rather than

TABLE 5.1. *Comparing Two Modes of Communication: Networking and Broadcasting*

Networking	Broadcasting
Definitions	
• "An open-laced fabric" used to fashion nets to trap fish or birds	• To sow seeds widely, rather than placing them in the narrow grooves of a furrow
• "A complex, interconnected group or system" (as in an espionage network)	• To communicate so that one "scatter[s] widely abroad." [OED].
• "An extended group of people with similar interests or concerns who interact and remain in informal contact for purposes of mutual assistance," (American Heritage Dictionary)	• To propose "to bring [something] to public notice." Near synonyms—announcing, advertising, and publishing (American Heritage)
Modes of Communication	
• One-to-one communication	• One-to-many communication
• Topology	• Topology
◦ horizontal	◦ vertical
◦ symmetrical	◦ asymmetrical
◦ decentralized and egalitarian	◦ centralized and hierarchical
• Access is easy and "cheap"	• Access is difficult and expensive
• users control content	• Broadcaster controls content
• extemporaneous, informal style	• Generic conventions and correct usage
• less regulation	• More regulation
Media Forms	
• Correspondence by post	• Publication in print
• Telegraph	• Film
• Telephone	• Radio and tv broadcasting
• E-mail	• Spam
• Peer-to-peer file sharing	• Web pages
• Blogs	• Pod casting
Social Forms of the Long 18th century (1660-1830)	
• The club	• The public (as audience)
• The political caucus	• The author (©)
• The committee (e.g., the political committees of correspondence)	• The "work" (of art)
	• Criticism (of literature, art, culture)
• The learned societies (e.g., The Royal Society)	• Celebrity (e.g., Byron)
	• Fandom

Ethical Imperatives and Law

- The taboo on reading other people's mail
- A new vigilance about computer viruses
- Vilifying the hacker
- The law of copyright
- The taboo and laws against plagiarism

Characteristic Utopian Ideals for Communication

- If we would all link together
- The end of politics and difference = "the ideology of communication"
- Since the *whole* nation is watching, it becomes *one*
  - Hitler's Nuremberg rallies
  - Frank Capra: *Meet John Doe*
  - Cronkite: "And that's the way it is."

placing them in the narrow grooves of a furrow; and then metaphorically, it is applied to any communication that one "scatter[s] widely abroad" (OED, online). Each supports a distinct social practice, a different dream for communication: while networking brings together "an extended group of people with similar interests or concerns who interact and remain in informal contact for purposes of mutual assistance," broadcasting, like its near synonyms—announcing, advertising, and publishing—proposes "to bring [something] to public notice" (*American Heritage Dictionary*, 1992).

How does one compare these two general modes of communication? Here I use fairly conventional terms from communication studies to account for the difference between networking and broadcasting. The contrast is useful precisely because it is rather abstract and formal. As a mode of communication networking involves one-to-one communication; its topologies, or the shapes of communication flow, are horizontal, symmetrical (i.e., network users all tend to be doing the same sorts of things), decentralized (the job of making meaning is widely distributed), and thus (at least potentially) egalitarian. Crucially, access to networks is usually relatively easy and "cheap." Most crucially, networks involve user control of content. Networks promote an extemporaneous informal style, and less regulation (than broadcasting).

Broadcasting features one-to-many communication; its topology is invariably represented as vertical, asymmetrical (broadcasters are doing something very different than those receiving the broadcast), centralized, and thus, implicitly hierarchical. Several traits of broadcasting are implicated in one another: Access is difficult and expensive, the broadcaster enjoys control of content, and broadcasters tend to develop fixed generic conventions and correct usage. Historically, broadcasting has brought more regulation than networking. Sometimes, this regulation is represented as a technological necessity. The notion that networking is more egalitarian or democratic than broadcasting pivots on two terms of this contrast:

Because network users are both the receivers and senders of messages, networking puts its users in charge of content formation; and, second, access to networks, especially in the United States, has been comparatively easy and cheap.[2]

There are many examples, taken from the long history of media culture, of the dominant affiliation of various forms of communication in the modern period, broadly defined as 1700 to the present. The first networking took place through private conversation, and my first example of networking can been seen as an extension of conversation: the manuscript letter mailed between correspondents.[3] This form of networking was given vast expansion during the 18th century through the institution of a postal system that was public, regular, and national. In many ways the emergence of the modern postal system anticipates the effects later ascribed to the Internet: By enabling global flows of information, the postal network had a transformative effect on its users' sense of and relation to geography, economy, and politics. In the 19th century, networking through writing and voice is given electronically enhanced form through the telegraph and the telephone. Twentieth-century computer networks have provided powerful new modes of networking like e-mail and peer-to-peer file sharing.

The earliest broadcasting was one person addressing a group. The importance that Athenian democracy and the Roman republic accorded the training of young men in rhetoric is an early recognition of the power of broadcasting as a means to influence public opinion. The development of moveable type in the 15th century greatly expanded the broadcasting potential of writing. Martin Luther's unauthorized, vernacular translation of the Latin Bible into German could not have achieved its challenge to Papal authority without Gutenberg's invention. It is difficult to imagine the development of the most popular broadcasting forms of the 17th and 18th centuries—the broadside ballad, the newspaper, and the novel—without the expansion of print. In the 19th and 20th centuries, the new technologies of film, radio, and television gave broadcasting unprecedented cultural centrality. At the same time, because of the complex *way* in which these new broadcasting technologies became major new media institutions, broadcasting in America became associated with large, vertically integrated, and often monopolistic corporations—the movie studios and the broadcast networks. Late in the 20th century, computer networks provided a much more decentralized way to broadcast content through web pages, spam, or "webcasting."

My contrast of these media forms, as modes of networking and broadcasting, leads to one of the crucial points of this chapter. Although I have listed various media forms on one side or the other of the tables, broadcasting and networking do not align, in any simple way, with a particular medium or technology. Any given media technology has a plasticity and lack of essence, that allows it to be used for either networking or broadcasting or both. What turns out to be crucial to the way a media technology takes root in culture are the decisions made, during the early stages of a development of a new media technology, about how it is to be used. These decisions often have a highly arbitrary and contingent quality;

they depend on the collision of (a) the desires and values of users, (b) the market, (c) the law, and finally the (d) inherent potentialities of new technology.[4]

Thus, although radio appears on the broadcasting side of the comparison, histories of radio show that it did not have to turn out that way. The Marconi Company promoted radio as a system for secure, long distance, point-to-point communication, in short as wireless telephony. Radio development in America received early support from the U.S. Navy as a way to enhance ship-to-ship and ship-to-shore communication. But amateur radio enthusiasts also played an important role in early American radio: ham operators formed into clubs in which young men communicated with each other in an informal one-to-one, one-to-few style of networking. Only after World War I, when the control of radio that the U.S. Navy had wrested from private companies was transferred to the Radio trust (RCA, GE, Westinghouse, and AT&T), did the previously informal practice of broadcasting emerge as a profitable business.[5] Through the radio conferences sponsored by Secretary of Commerce Herbert Hoover (1922-1925), an early champion of the "partnership" of business and government, as well as through the Radio Act of 1927, the federal government gave decisive priority to radio broadcasting. This position was consolidated through the establishment of the Federal Communications Commission (FCC) in 1934.

Radio offers an obvious 20th century example of the rivalry between the networking and broadcasting potentials of a medium. From the point of view of the creative early adopters of radio, who fashioned a network out of a two-way technology that required technical skill, the commercialization of radio as broadcast medium was a loss; a network of early users was "captured" by and for broadcast radio. Radio thereby lost much of its earlier participatory and egalitarian character.[6] Of course, radio's early adopters could continue to use their ham radios on more remote frequencies; but the amateur was no longer central to radio. However, from the point of view of the triumphant media companies—NBC, CBS, and ABC (each of which took "broadcasting" as its middle name)—the development of the broadcasting potential of radio was a natural evolution *and* an unqualified technical and cultural triumph: It created a national media culture for all citizens to share, irrespective of their region or level of literacy. It led, for example, to new, aesthetically valuable media forms, such as the live wartime broadcasts of Edward R. Murrow, Orson Welles' ingenious parody of the radio news broadcast in *The War of the Worlds*, and to sitcoms like *I Love Lucy*, that would later migrate from radio to the other great broadcasting medium of the 20th-century, television. The rise of radio and television broadcasting also changed the cultural idea of "broadcasting" in a fashion that is consequential for this chapter: In the public mind, broadcasting came to mean "real-time broadcasting," and for government regulators, broadcasting was represented by a certain group of media companies (NBC, CBS, ABC) that had succeeded in gaining FCC licensed control of what was once said to belong to the people: the airwaves. Now they *were* the nation's "broadcasters." Any future changes in media policy would have to be negotiated with these powerful "stakeholders."

THE SOCIAL LIFE OF COMMUNICATION

Communication is not just about getting a message from Point A to Point B. Communication emerges from, and then helps to support, complex social forms. Many of the social forms associated with networking emerged in the long 18th century (1660 to 1830): political caucus, the club, the committee, and the learned society (see Table 5.4). The political caucus and the committee becomes the matrix for new highly participatory forms of political organization, and the learned society lies behind the development of the modern disciplines like science. The emergent postal service was crucial to the networking at a distance necessary for political committees and learned societies. Broadcasting, through print publication, helped to enable the emergence of the "public" (in the very modern sense that there is a collective, anonymous audience out there to receive what is published for them), the author (as the originator and owner of the work), the "work" (as a unique expression of an author), criticism (as an institution to assess and interpret works), the celebrity (the "star" whom everyone knows), and finally, fandom (fanatical fans, who experience the celebrity as the condensation of value). Most historians of print culture agree that these distinctly modern ideas and practices would not have emerged in the way they did without print-enabled broadcasting (Chartier, 1994; Eisenstein, 1980; Johns, 1998; McLuhan, 1961).

Because networking and broadcasting are complex social activities, societies have elaborated a complex group of codes, procedures, and laws to shape and sustain each. Although the ways of shaping human communication are variable and complex, they can be as rigid and public as the law or as informal as a personal vow to keep the secrets of a club or society, or the plea to be a good communication listserv citizen. Sometimes, problematic communication behavior is discouraged by a change in the communication infrastructure. Thus, the eaves dropping that was common in the early days of telephony—when live operators connected phone users and many had "party lines"—became impossible with the introduction of automated switching and private phone lines for residential customers. On the networking side, the rise of the post encouraged the development of a taboo on reading other people's mail. In the United States, this taboo was encoded into law. Telecom laws have been developed to guard against pornographic use of telephony, and the U.S. government's recent "do not call list" is a popular way to diminish intrusive commercial phone calls. In 2006, we seem to be witnessing the emergence of a new vigilance about computer viruses and a concomitant criminalization of the hacker, although these taboos are only now being encoded into law (Lessig, 1999). The early decades of the networked computer has allowed us to grasp the complexity of the process by which ethically charged communications protocols are socially negotiated. Thus, listservs and on-line environments developed communitarian ways to discourage "flaming," whereas system administrators are charged with the responsibility of warning against the inappropriate uses of corporate and university networks.

On the broadcasting side, the development of the modern market in print depended on the modern law of copyright, first enacted in England, as the law of Queen Anne, in 1710. The idea that the author was the creator and owner of the book, which was published under his or her name, helped to promote the negative characterization of copying without attribution as plagiarism. But the idea of plagiarism seems to emerge with the idea of the author as the owner of the work (Rose, 1995). Scholars have noted that medieval and renaissance writers, like Chaucer and Shakespeare, who borrowed from other writers freely and without attribution, would have had a very difficult time comprehending the modern idea of plagiarism. Newspaper broadcasting has been shaped by intra-institutional enforcement mechanisms, such as the codes that define the professional conduct of a journalist who would cover sensitive national security issues. By contrast, the FCC has developed legal sanctions to protect licensed users of the radio spectrum against unlicensed broadcasts. The music industry's effort to suppress peer-to-peer file sharing has involved an explicitly double pronged strategy: to pass laws to punish file sharing, but also to "educate" users so they accept that peer to peer "sharing" is really "theft" of their copyrighted material.

NETWORKING VERSUS BROADCASTING

This brief, historically inflected contrast of networking and broadcasting suggests that our ongoing institutionalization of the networked computer has activated the antagonism between these two modes of communication, the values they encourage, the social practices they sponsor (e.g., as user or consumer). This antagonism has a practical and an ideological aspect. As a practical matter, it is often difficult to say what the networked computer is, and therefore, what ethical norms or legal rubric should be applied to its use. When Congress passed *The Communications Decency Act* in 1996, lawmakers relied on the well-established legal precedents in telecommunications and broadcasting law to justify restrictions on indecent expression over the Internet. In overturning that law, in Reno v. ACLU, the Supreme Court interpreted the Internet as a medium for publication: "The Web is thus comparable, from the readers' viewpoint, to both a vast library.... From the publishers' point of view, it constitutes a vast platform from which to address and hear from a world-wide audience." Once the Internet was understood as a form of publication and speech, it was a logical next step to overturn the Communications Decency Act as an unconstitutional infringement on First Amendment rights to freedom of speech (Kang, 2001).

Although the online computer was understood by its inventors as a form of networking, the success of the Napster peer-to-peer file-sharing system showed the big media companies that computer-mediated networking could have enormous practical implications for their businesses. Thus, in the typology of media

forms listed in Table 5.3, notice that the four important Internet applications fall on *both* sides of the networking–broadcasting divide. E-mail and peer-to-peer file sharing can be understood as forms of networking that build on the posted letter or earlier systems for sharing data (the encyclopedia, the catalogue, the library). However, web pages and spam, because they can take one message to many at the same time, can be understood as a computer-enabled broadcasting.[7] "Web-casting" of audio and video feeds develops a still more exact simulation of radio and television broadcasting.

The divergence of opinion on how we should understand the peer-to-peer computing—as "sharing" through a network, or as *de facto* broadcasting—has profound implications for the question of ownership. Because the paradoxical form of property called "copyright" was developed so that authors could sustain property rights in an object, even as they broadcasted it to others, it seems appropriate to understand copyright and the "author" as characteristic inventions of broadcasting (Rose, 1995). But what happens when copyrighted objects are freely shared on networks? Although we sometimes have copyright in what we transmit through networking (e.g., in the personal letters we write), we are not used to thinking of what is shared on networks (phone conversations, telegraphs, e-mails, real-time chat) as owned by anyone.[8] I think this helps explain the recent social acceptability of peer-to-peer file sharing. Although peer-to-peer file sharing, when aggregated through millions of simultaneous users, can produce the effects of broadcasting, a user experiences it as having the intimacy, autonomy, and informality associated with networking. However, there are signs that this may be changing. Although free downloading of copyrighted music flourished in the years after Napster (1999), the availability and popularity of MP3s for sale by Apple (through its software and hardware pair, i-tunes and the i-pod in 2001), and legal action by copyright holders led by the Recording Industry Association of America (RIAA; 2003) may be casting free downloading of copyrighted content into disrepute.[9]

However, the recent antagonism between networking and broadcasting cannot be reduced to a merely practical struggle to define the proper uses of a new technology of communication. Nor should it be reduced to a battle between two huge sectors of the information economy—the traditional broadcast industries (music, film, radio, and television) and the relatively new networking companies (computer hardware and software, networking). Rather, the antagonism between networking and broadcasting so evident in today's courtrooms was anticipated by the claims made for the networked computer by its inventors and early promoters. In fact, the evangelical early promoters of the "network society" saw computerized networks as a media infrastructure so flexible, smart, and transformative, that it could absorb the traditional broadcasting media of print, radio and television. In his recent lectures on the early days of computer innovation, Alan Kay claimed that the print revolution offered an historical model for the sort of transformation of culture and knowledge the first computer engineers sought to advance. Only, as he put it modestly, "this time we'll do it right."[10] Or, as

Netscape's first annual report declares, the "Internet changes everything" (Netscape annual report, 1996). This grandiose, and quasi-imperial project—by which old media will be rendered obsolete by new media—was sustained by a "cyberlibertarian" ethos of hyperindividualism, bad attitude, and the widely circulated slogan, "information wants to be free." In this notorious slogan, "information" is personified as an agency with a quasi-divine trans-historical autonomy and power.[11] Sean Fanning's development of the Napster peer-to-peer file-sharing system came from this libertarian culture of hacking and open-source computing. His software offered a way to "rip" or "liberate" songs from their corporate cocoon (the CD), so that, as binary digits on the computer hard drive, they could be shared across the network, and then remixed into a medium given final form by the user.

Media scholars have contributed to this highly polarized, and sometimes tendentious, understanding of the relationship of new computerized media to "old" media. In a fashion reminiscent of Marshall McLuhan's (1967) prophecy that modern electronic communication would transform the world into "a global village," early media theorists of the networked computer proclaimed "the second media age" (Mark Poster), where there would be a fundamentally new organization of communication, knowledge, subjectivity, and community. In *Communication Theory: Media, Technology and Society*, David Holmes (2005) debunked the claims that networked computing would create a new kind of interactivity and a new kind of online community. Holmes argued that broadcasting continues to repair the social wounds of modern urban life and ground what social integration we have. He applied many of the arguments developed for computerized networking to earlier forms of electronic broadcasting, especially TV broadcasting. He insisted that "the broadcast communication environment still frames our individual lives" (p. 17); "only broadcasting has the power to be "live" (p. 106); "broadcast is the only medium that can be performative" (p. 108), and thereby attract a mass audience (p. 110). According to Holmes, broadcasting can create communities through shared spectacles (like the coronation of Queen Elizabeth II) and through "identification, recognition, interactivity" (between audience and the broadcasting medium; Holmes, 2005, p. 210). For Holmes broadcasting gets the palm as the most influential and important form of media, and by the end of the book, as that which can underwrite a desirable social integration.[12]

Looked at through the prism of the long history of media, the Internet hype of the late 20th century resembles the enthusiastic early days of the appearance of a new medium of communication, especially that associated with the telegraph (Czitrom) and the telephone (Marvin, 1990). At the center of this neo-liberal utopian fantasy is a notion of the power of the Internet to link all to all, in freedom and community. The fantasy is liberal because its transformation of culture is fueled by the agency of diverse individuals, who freely chose the form and content of their communication.

But broadcasting incites its own dream for social transformation through communication. The collectivist fantasy incited by broadcasting at first appears to

resemble that incited by networking, but is actually quite distinct. Broadcasters promise to make the nation one by linking them as viewers/listeners of one iconic object. Broadcasting's motivating political ideology may be republican or fascist. Think of the iconic function of Caesar's image on coins and statues, of Washington's portraits, or of Hitler's persona at the huge rallies at Nuremberg, where the roar of hundreds of thousands are mingled with his voice and broadcast around the world (by radio, news reels, or newspaper photographs). Frank Capra's film (1941) *Meet John Doe* offers a critique of the fascistic potential of broadcasting, while at the same time vividly formulating American's distrust of, but fascination with, the power of big media. The desire of big media to unify America around one version of reality is given an avuncular tone in Walter Cronkite's famous sign-off for the CBS evening news for most of the 1950s and 1960s: "And that's the way it is." Thus, both networking and broadcasting offer different forms of what Armand Mattelart (1996) called the "ideology of communication" that is "at the heart of representations of modernity" (p.xi)—the idea that by communicating humans can overcome distance, difference, and politics itself.

THE BIAS OF AMERICAN COMMUNICATION; OR, WHAT WE CAN LEARN FROM 18TH CENTURY AMERICA TO SHAPE MEDIA POLICY FOR THE 21ST CENTURY?

At least since Alexis de Tocqueville's *Democracy in America*, historians of communication have detected the following bias or tendency in American communication, especially when it is compared with its European antecedents: "greater openness and transparency in the public sphere; higher levels of commercialization; greater decentralization; more rapid extension and ubiquitous penetration of communication networks; and greater receptivity to new products and technologies." (Starr, 2004, p. 14). This long-standing bias in American communication expresses itself in an odd ambivalence about communication: first, Americans have evinced a relentless optimism about the positive potential of communication technologies, but, at the same time, we harbor a profound distrust of central control of public media.[13]

Where did this bias first come from? And how did it get coded into American culture and law? Elsewhere, I argue that this communications bias was consolidated in the decade before the American Revolution (Warner, 2005). Here, I offer an exceedingly condensed overview of the Anglophone media sphere as it existed just before the revolution, as well as a brief characterization of those acts of networking crucial to the organization of the Whig resistance to Britain. Most of us are familiar with the ideological, political, and military struggles that led to American independence from Britain. But too little attention has been paid to the

communications innovations that American revolutionaries developed to challenge British policy toward the colonies. To run the empire, the British administration used letters written to the Royal governors of each colonies as well as the print broadcasting system of the day—the newspaper of record, the *London Gazette*, distributed by Royal Post to 50 newspapers of Great Britain and the 42 newspapers of British America—to disseminate decisions, laws, and opinions from London, throughout Great Britain, and by fast, regularly scheduled packet ships to the colonies of British America.

When the Boston Whig revolutionaries set out to contest imperial decisions, they had recourse to networking. Samuel Adams worked through the Boston town meeting to establish a committee of correspondence to interlink the towns of Massachusetts into resistance against British administrative measures. Like the Internet, these committees become a very flexible new interface for broadening political participation. Although these pre-revolutionary acts of resistance were grounded in the networking provided by political clubs, town meetings, and a postal system open to all, to reach "the public" they also needed access to print. So, on November 20, 1772, the Boston town meeting ordered their committee of correspondence to print and deliver their letter to the 260 towns and districts of Massachusetts, requesting their opinion on recent British measures, in the form of a pamphlet called *The Votes and Proceedings of the Town of Boston* (see Fig. 5.1).

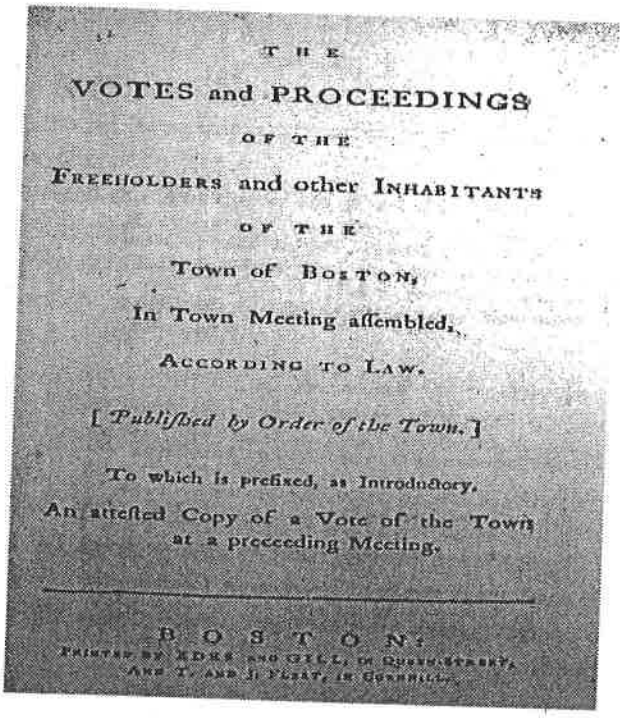
THE
VOTES and PROCEEDINGS
OF THE
FREEHOLDERS and other INHABITANTS
OF THE
Town of BOSTON,
In Town Meeting aſſembled,
ACCORDING TO LAW.
[*Publiſhed by Order of the Town.*]
To which is prefixed, as Introductory,
An atteſted Copy of a Vote of the Town
at a preceeding Meeting.
BOSTON:

FIGURE 5.1. The Boston Pamphlet, November 1772.

When the Boston committee of correspondence received supportive written responses from the other towns, the Boston Whigs published these responses in newspapers that were sympathetic to their cause, like the *Boston Gazette.* In addition, the news of the organization of the Massachusetts committees of correspondence spread through the newspapers of the colonies as well as Britain. On March 12, 1773, Whig leaders in Virginia, after reading newspaper excerpts of the writings of the Boston committee, proposed an intercolonial network of committees of correspondence, and in the year that followed, as there is an intensification of political crisis around Boston's destruction of the tea, a network of committees of correspondence emerged by 1774 to receive and articulate the political authority that was flowing away from British institutions (like the Royal Governors and councils, the courts, the post). At the end of the First Continental Congress (October 1774), the Congress formed an Association that called for the formation, throughout the colonies, of committees to enforce trade embargoes, muster the militia, and (eventually) pursue a political revolution.

It was crucial to the success of this networking operation that the committees had access to the broadcasting medium of the newspapers of British America. This access depended on an information architecture that was decentralized and resistant to government control.[14] As Table 5.2 suggests, the Boston committee's political initiatives could enter this media sphere because of the distinct features of these newspapers. The 42 papers of British America were locally owned and run by a printer-editors; several used this slogan to assert their independence and general appeal: "Open to all parties, but influenced by none." These papers were loosely connected with each other by the practice of franking free copies through the post to each other. This gave them some of the properties of the wire services (like Reuters, UPI, and AP) later developed in the 19th century. Since newspapers were regarded as ephemera and there was no copyright on a paper's content, the content was free to other newspapers in both senses of the word—it cost nothing and it was available for recopying. Finally, because of the failure of earlier prosecutions for seditious libel in both Britain an America, the colonial press was also free from political coercion, producing a media sphere that was "censorship resistant." This proved crucially important once the revolution began in earnest.

TABLE 5.2. *Traits of the Anglophone Newspapers of the British Empire*

- Locally owned and edited: "*Open to all Parties, but influenced by None*"
- Free mailing ("franking") of free copies of newspapers sent to other newspaper editors
- No effective ©: 18 newspapers develop into an information commons for free copying
- Failure of prosecutions for seditious libel in both American and Britain
- *Outcome*: the British Atlantic media sphere proves to be 'censorship resistant'

When, after 1789, the American founders set about to shape the legal underpinnings of the media policy for the new republic, they carried a memory of the pre-revolutionary practices of networking and broadcasting, and valued them as engines of popular sovereignty. So the founders developed communication protocols that privileged what was free, public, and open, and wove them into the First Amendment, the first Copyright act, and the first Postal Bill. In other words, the successful struggle against the British state encouraged the generation of the revolution to set up protections for precisely the sort of de-centralized communication, networking, and mobilization that had been essential to the revolution's challenge to British rule.

With the First Amendment, the founders developed a powerful formula for protecting freedom of speech and the press as constitutive elements of the new American political culture. I quote, preserving the three-part division observed in legal studies:

1. Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof;
2. or abridging the freedom of speech, or of the press;
3. or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.

Here freedom of the press is embedded within four other expressive rights and freedoms: to worship, to speak, to assemble, and to petition the government. These range from the most personal and private (religious worship) to the most public and political (to assemble and petition government for redress). The antithetical structure of the first clause (on religion) anticipates the double stance of the new government toward media: it desists from the "establishment" of any official government newspaper (like the London Gazette), and it refrains from preventing others from the "free exercise" of their media freedoms. Because the political critique of British policy by the press was indispensable for mobilizing pre-revolutionary opposition, here freedom of the press is linked to explicitly oppositional forms of public expression: peaceful assembly and the petition for redress of grievances. Finally, the freedom of speech and of the press is protected from legislative control with a verbal formula that gets its power from a double negative: "Congress shall make *no* law . . . *abridging* the freedom of speech, or of the press" (italics added). This double negative hollows out a theoretical space for freedom of speech and the press prior to, and immune from, the law-making powers of Congress.

The founders also took steps to guard speech and invention against undue commercial control. To encourage the unencumbered circulation of information, the first American copyright bill, passed in 1790, adapted the limited copyright and patent law that then prevailed in Britain and America (a 14-year term, renewable once). By adapting to the legal framework of the new republic British copy-

right law, as limited in the then-recent ruling of the House of Lords in *Donaldson v. Becket* (1774), the founders assured that writing and inventions would pass quickly into the public domain and become free to users. This restricted understanding of copyright was consistent with the early republic's privileging of the public good. This bias can be detected in a Benjamin Franklin declining the Pennsylvania legislature's offer of a 10-year patent to his stove: "as we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours, and this we should do freely and generously" (Morgan, 2002, p. 23).

Finally, the Postal Act of 1792 (Table 5.3) encouraged the development and circulation of American newspapers as a means to link far-flung states into one print media sphere: first, by setting postal rates so that personal and commercial letters provided a substantial subsidy to newspapers, so that heavily traveled eastern routes supported new western routes, and so that the American postal system functioned as a subsidized public service rather than a for-profit business.[15] In each of these laws, the founders chose protocols for the flow of media that favored an information culture that was public, open, and free. Why did they do this? Such a media policy would allow them to network and broadcast to fight tyranny should it emerge within the new republic.

Equally important is what the early framers of American communication policy *did not do*. They did not set up a federally financed and government sponsored newspaper (like Britain's London Gazette) or a national university. When new communication technologies emerged in the 19th and 20th centuries—the telegraph, the telephone, the radio, and television—the early American reticence about centralized control of information continued to discourage government ownership of each new communication system, even though the federal government was often an indispensable sponsor of early research. Space does not permit me to discuss the most perverse effect of this decentralized, anti-government ownership media policy: in the 20th century the federal government (through the formation of the FCC) collaborated with the largest corporations in gradually delivering de facto control and ownership of the public airwaves into the hands of a few big media corporations.[16]

TABLE 5.3. *First Postal Act: 1792*

- Heavily traveled eastern routes support new western routes
- Private letters subsidize newspapers
- The postal system is a public service rather than a private business

FREE CULTURE?

How can we carry the early American media policy into current debates around copyright, media ownership, media diversity, and freedom of expression? Lawrence Lessig, a law professor at Stanford, developed ways to insert the networked computer into the policy and legal frameworks developed for earlier media forms. In 2004, Lessig published a book entitled *Free Culture.* In that title "free" is both an adjective modifying the noun "culture" and an imperative verb: free culture and free culture! Appropriately enough, the book is available for free on the Internet: http://free-culture.org/freecontent. Lessig gives a vigorous and thoughtful discussion of the broad stakes in the copyright war unleashed by Napster (Table 5.4). What Lessig demonstrated are the powerful negative synergies between the three quite distinct developments to which I quickly referred at the beginning of this chapter: the concentration of media ownership; the steady expansion of the term and scope of copyright; and finally, the evolution of the computer into a "universal media machine," the instrument for producing, distributing, and reading/watching/listening to/consuming cultural products (Manovich, 2001). Lessig demonstrated the very problematic aggregate effects of these trends: Because big media owns more of culture for longer times, and because big media is simply bigger, big media has an incentive to enforce copyright by using the networked computer to monitor and control how we use cultural products. They can do this through legally mandated hardware and software design, continuous surveillance of the computer user, encryption that is illegal to circumvent, and restrictive licensing.[17]

Some ask, what's so bad about this? Here is one answer. If the Internet protocols were recoded to make the networked computer a copyright enforcement device, it could transform our media sphere. Within such a system of networked media distribution, you might lose the uses traditionally enjoyed with books, tapes,

TABLE 5.4. *Negative Synergies: Lawrence Lessig's Free Culture*

- Media concentration aided by
- Relaxation of FCC ownership rules
- Vertical integration of super-big media
- Steady extension of the term and scope of copyright
- The networked computer evolves into the universal media machine (replacing paper, screens, radio, TV, . . . etc.) [Lev Manovich]
- Possible result: not "free" culture, with unregulated zones, but a seamless media sphere of regulation, "permissions," and control: *The Matrix*

videos, and CDs: These include (a) repeat cost-free reading/listening, (b) sharing with friends, (c) annotating and marking up, (d) excerpting for use in writing, (e) archival copying, and, (f) right of "first sale." In short, what is at risk is what Lessig call free culture: not culture that is "for free"—after all, you've often paid for it—but culture that is "free" to use in most of the ways you wish, because your use has never before been regulated by license or controlled by technology. In place of our old free culture, we might have a seamless culture of regulation and "permissions," with precious left outside. Such a future for culture has certain uncanny resemblance to life in 1999 film *The Matrix*: in that film, culture, as well as reality itself, is not something each person has; it is a system of domination devised to control humans.

While the stark moral polarities of Lessig's argument, between "free culture" on the one hand, and a "regulated" or "permission" culture on the other, are valuable for mobilizing sentiment against the expansion of copyright, Lessig's recourse to the most loaded terms of our political culture—"free" and "freedom"—obscures rather than clarifies the fault lines exposed by the copyright wars. I argue that we are witnessing the collision of two distinct communication cultures, one associated with broadcasting and the other with networking. Over the course of the 20th century, the scope and power of broadcasting was expanded by film, radio, and television, that of networking through telephony and the networked computer. But, as suggested, this is not just a clash of technologies. It is also a contest of social and aesthetic values.

The copyright wars should not force us to choose between networking and broadcasting, or to subordinate one to the other. Instead, we need a media policy that will allow both to flourish. The broadcaster's commitment to the integrity of copyright is grounded in more than economic interest; it is also part of affirming the value of the author(s) as the responsible creator(s) of a well-made work. Full technical control of a broadcast helps ensure the temporal and formal coherence of the broadcast, assuring that it reaches the public in one form, which is crucial if it is to become part of a shared culture. From Milton's *Paradise Lost* to Lang's *Metropolis*, the products of this cultural system have flowed to, and enriched the culture of, the public.

But networking has much to contribute to creative innovation. While for the broadcaster, networking computing threatens to dim the aura of the work and obscure the creator's design, from the vantage-point of network user, even peer-to-peer file sharing can be the pathway to advanced practices of inscription. Now the user can break out of the temporal constraints of real time broadcasting and the black boxes of analog media, and lift an image from the film, record the voice of the actor, and take a video clip, and this user-fabricator can then remix them to their own liking (Manovich, 2001). In the last 40 years, artists and scholars have shown how the mobility and intelligence of computer-enhanced networking can be used to advance knowledge and art.[18]

TWO PRINCIPLES THAT SHOULD GUIDE THE INSTITUTIONALIZATION OF THE NETWORKED COMPUTER

Media Ecology

Media and legal scholars have suggested the usefulness of applying an ecological analogy to the debates around copyright and the networked computer: Just as unbridled human development of forests, wetlands, and waterways threatens the species diversity necessary to planetary life, so unbridled media concentration and copyright expansion threatens the cultural diversity on which human culture depends.[19] Media concentration of the sort pursued by the ten great world media conglomerates not only hastens the day of a world media mono-culture; it also extends the power of what might be called a regime of unconscious censorship: What gets censored out of the media system are all of those creative projects and new technologies that big media never thought to support, because one's business model made it appear to be unprofitable, or a direct threat to profits. Thus, the film and television companies did not invent the VCR and the music companies did not develop the i-pod/i-tunes system for the distribution of music over computer networks.

Table 5.5 suggests the components for a media policy that will enable the networked computer to figure as part of a diverse and sustainable media ecology. Such a media policy begins by recognizing that both broadcasting and networking are necessary and valuable modes of communication. It is therefore crucial that we don't let one mode of communication co-opt or disable the other. So networks should not be able to turn all broadcasting into freeware. If this were to happen, creators would no longer be able to make a living wage off of book or song writing, and movie makers could not afford to produce something as ambitious and expensive as the modern feature film. Conversely, we should not let entrenched broadcasting industries lock-down networks. The Digital Millennium Copyright

TABLE 5.5. *Toward a Policy Promoting a Rich and Diverse Media Ecology*

- Both broadcasting and networking are necessary and valuable for culture
- Do not let one disable or co-opt the other
- Broadcasting is not equal to freeware, and
- No lockdown of networks (DMCA, DRM)
- Broadcasting benefits from open networks
- Networking is nourished by broadcasting (e.g., Trek fanzines and conventions)

Act's anti-circumvention provisions criminalize what Ed Felten has dubbed the "freedom to tinker," understood as the "freedom to understand, discuss, repair, and modify the technological devices you own."[20] Various "digital rights management" schemes disable the user agency associated with traditional literacy—copying, excerpting, marking up, and so on[21]—as I described them earlier.

Open networks, which enable copying and sharing, are essential to media production. This was true as early as the Renaissance, when literate gentlemen and ladies kept commonplace books, in which readers copied passages from books, so they could consult them for edification, and in composing their own texts or speeches.[22] But copying is no less essential for our own time. For example, special effects labs that work for the movie studios need access to old content to make new content. Finally, networking is nourished by broadcasting. Film scholar Constance Penley (1997) has demonstrated the way broadcasting (of the Star Trek television show) incited the development of fan networks, trek conventions, and "fanzines," which build on the original television show in ingenious (and sometimes outrageous ways), and this distributed (copyright infringing) production, in turn nourished the production and success of the Star Trek films.[23]

A Technology of Inscription

Although the networked computer has profound implications for earlier forms of broadcasting (from print to film, radio, and TV) and earlier forms of networking (most crucially, postal mail and telephony), a policy that will nurture the full cultural potential of the networked computer will attend to the computer's provenance. The networked computer emerged from the university and defense department labs—that is, sites for research and knowledge production. This helps explain the design goals of the open-source protocols that were developed for the Internet and the World Wide Web: In this setting, listening and spectatorship (of the sort sponsored by radio and television broadcasting) are less important than writing, ownership is less important than innovation, and sharing is crucial to collaboration (Abbate, 2000; Berners-Lee, 2000). Above all, early researchers developed the network computer as a technology for writing (and quickly sharing) code, natural language, and anything (like algorithms or images) that could be constructed of either or both.[24]

Understanding the networked computer as a technology of inscription is important for understanding the popularity of computer technologies like peer-to-peer file sharing. From my informal questioning of avid Napster users, I have concluded that the appeal of Napster, and its successors, Morpheus and Kazaa, did not simply consist in the music being free. Radio has always provided an abundance of free music. In order to make MP3 files an object for storage and manipulation the user must incur the costs of a computer, a network connection, and (often) a CD burner as well. What was most attractive to Napster adepts is the way this new technology changes the music listener into a user who can both "read"

and "write" music as code. Napster mobilizes the speed, flexibility, and agile immateriality of digital code, to give users a new power to appropriate music and make it their own.[25] Peer-to-peer file sharing is one in a long line of technologies of inscription central to the development of the Internet. Thus, if one surveys the history of the Internet, one repeatedly finds that the surprise breakthrough successes have been those that enabled users to win agency through technologies of inscription: email on the Arpanet; listservs on the Internet; web page composition on the WWW; real-time chat on AOL; and most recently, "instant messaging" (IM) on both computer and digital cell phone.[26]

The recent history of the networked computer can help guide us in shaping media policy (Table 5.6). Because the networked computer has emerged as one of the main ways we read and write, anything we do to modify the networked computer needs to pass this litmus test: "*Does this change protect and extend the full powers of reading and writing as they have operated within culture?*"

America's long experience suggests that a robust media ecology requires the following elements. First, we should strive to sustain broad media ownership and protections for decentralized artisan producers, so they can continue to exercise substantial control of the production process. This will require sustaining a copyright that is limited in its breadth, depth, and term length, perhaps by rolling back the recent extensions of copyright, introducing a renewal term, or redefining what constitutes a "derivative," a "copy," "publication," and "fair use"(Lessig, 2004; Rose, this volume). Only with a limited copyright will cultural products return to the public domain out of which they were created, and only by curbing those who demand an absolutist interpretation of copyright can we sustain a decentralized and innovative "culture of the remix" (Manovich, 2001). Because copyright enforcement has evolved into our most active censorship regime, we need to limit it in order to sustain robust protections for freedom of expression.[27]

Finally, the infrastructure necessary for networked computing should be managed, to the extent that it is feasible, as a public resource rather than private preserve. Universal postal service, the public library, and the Internet protocols

Table 5.6. *Media Policy for the Networked Computer*

Litmus Test Question:
Does this policy protect and extend the full powers of reading and writing as they have operated in culture?

- Broad ownership and protections for decentralized artisan producers
- Limited copyright (so that cultural products can return to the public domain)
- Robust protections for freedom of expression
- Media infrastructure managed as a public resource rather than private preserve: e.g., postal service; public library; Internet protocols (TCP/IP)

(TCP/IP) are American wonders: they are instances when this country chose to expand media infrastructure as a public resource: the post office helped knit the early republic together; the public library gave broad information access to literate American citizens (including many new citizens); and the Internet (TCP/IP) and web (http, html) protocols and markup languages are relatively simple software programs that computers use to connect to the Internet and the web. Although the Internet protocols were developed with US government funding, in an act of startling generosity and wisdom, these protocols were released to the world as "open source software"—code published without copyright, without charge, and thus open to use by all. In doing so, our own epoch countersigned the values used to fashion the media policy of the early republic, where the circulation of information and knowledge was supposed to serve a public good (rather than private gain), circulate freely (so it costs as little as it can, and is protected from censorship of various sorts), and, where access for both readers and writers is as open as possible. Will these values guide our institution of the networked computer?

NOTES

1. On the extension of copyright, see Lessig (2004) and Rose (this volume). From the rather vast literature on the increase on media concentration, see, for example, Chomsky and Hermann (1988), McChesney (2004), and Miller (2002).
2. Note that such a contrast, in order to be broadly useful, excludes a set of middle possibilities—one-to-few communication (the office memo, the end-of-the-year "what's our family been doing" letter), as well as few-to-few communication (e.g., CB radio, listservs, etc.). In each case, one can fairly ask whether these are forms of augmented networking, or narrow-band broadcasting. The coming of computer-mediated communication has incited study of the different media attributes of new and old media. See, for example, Rice (1987), who showed that that attributes of different media are variable and context specific.
3. For most of history, postal systems served empires and states (from the Persian court to the Roman Empire to the Holy Roman Empire to the Courts of Louis the XI). But in 1600, the viceroy of the Netherlands finally authorized the Taxis mail carriers to charge for carrying private letters (Siegert, 1999).
4. Lawrence Lessig (1999) offered the most influential discussion of the way current negotiations around the future of the networked computer are inflected by architecture, as defined by software code and hardware design, by the market, as it dictates what capital will fund and consumers will buy, by the law, through decisions by Congress, the courts, and regulative agencies like the FCC, and finally, by ethical norms, as they inflect the actual practice of media users.
5. For an authoritative history of early radio, see Douglas (1987).
6. For a history that argues the crucial early role of the ham radio operator, see Czitrom (1982).

7. However, even this topology is open to debate. The big music companies that sued Napster see peer-to-peer file sharing not as a kind of networking between individuals, but as a system of "darknet" broadcasting. "The idea of the darknet is based upon three assumptions: 1: Any widely distributed object will be available to a fraction of users in a form that permits copying. 2: Users will copy objects if it is possible and interesting to do so. 3: Users are connected by high-bandwidth channels. The *darknet* is the distribution network that emerges from the injection of objects according to assumption 1 and the distribution of those objects according to assumptions 2 and 3" (Biddle, 2002, p. 2; see also Lasica, 2005).
8. For a discussion of the case that established the author's owner over a private letter (*Pope v. Curll*) see Rose (1995).
9. Although the Pew Internet and American Life surveys report that the percent of Internet users who say they download music files in general has increased from 19% in February 2004 to 22% in January 2005, it is still 10% lower than reported in October 2002. File downloaders are more likely to say they use online music services than say they use p2p services. A PIP and comScore Media Metrix report noted by the Pew site reports that 14% of Internet users say they no longer download music files, and 20% of those who continue to do so say they do so less often because of the RIAA lawsuits. Music and Video Downloading Moves Beyond P2P (2005); http://www.pewinternet.org/PPF/r/153/report_display.asp; 14% of Internet users say they no longer download music files: Data memo from PIP and comScore Media Metrix (2005); http://www.pewinternet.org/PPF/r/124/report_display.asp; Sharp decline in music file swappers: Data memo from PIP and comScore Media Metrix (2005). http://www.pewinternet.org/PPF/r/109/report_display.asp
10. The computer revolution hasn't happened yet. Lecture given on March 8, 2002 at the UC/Santa Barbara conference, *Interfacing Knowledge*. See http://dc-mrg.english.ucsb.edu/conference.asp
11. In a rather devastating and systematic critique of the structuring myths of cyberlibertarian ideology, Liu (2004) showed how a series of partly contradictory programmatic positions—free speech and strong privacy, strong encryption and free access to public information, pro-consumption yet anti-production, pro-entrepreneur but anticopyright and antiregulation—founder through a refusal of the central negotiation of modern society: the political negotiations between the claims of the individual and the community. Liu argued that the political postures of cyberlibertarians do not arise from the traditional locus of sovereignty—the people—"but in fact they arise *ex* nihilo in the process of the restructuring the People's authority as follows: Information → People → Network. In place of God, let the transcendental sanction of freedom be a free-floating, abstract yet also strangely personified Information (as in the expression, 'information wants to be free'" [p. 245]).
12. From the vantage point of this article, there are several fundamental problems with David Holmes' analysis. First, he does not understand networking and broadcasting as "modes" of communication, but as "mediums" [*sic*] (Holmes, 2005, p. 14), a term and concept he never explained. This terminological gap in his history means that the broader possibilities of these two modes of communicating, sometimes implicitly glimpsed in his reference to Raymond Williams' work of television, resolves into a more simplistic opposition between the television (as the chief modern representative of broadcasting) and the Internet (as the most influential popular form of networking).

But even within the terms of this argument, there are problems with Holmes' subordination of networking to broadcasting. First, Holmes' pervasively modernist bias—he is concerned almost exclusively with 20th century media and theorists—doesn't allow him to understand the long history of both networking and broadcasting as I have sketched it here. Second, Holmes's analysis of the Internet is framed and evaluated by the values—visibility, real-time "live-ness," mass communication, influence, and identification—commonly associated with television, rather than values—like agency, compositional control, equality, affiliation and friendship, trust, and mobilization—more commonly associated with networking. Finally, Holmes' restrictive understanding of networking (as computer networking), and the special privilege he accords the socially binding, ritual function of television, means that Holmes grossly underestimates the idea I have developed here: the cultural centrality of networking as a strong and valuable complementary "other" of broadcasting.

13. Sometimes both of these attitudes can be found in one media text. La Capra's *Meet John Doe* develops a sustained critique of the fascistic dangers to American democracy of big media. The capitalist villain, E.B. Norton, makes clever use of newspapers and radio to build the "John Doe Clubs" into a movement that could win him the White House. However, although this film warns of the dangers of two forms of broadcasting, it also makes use of film to allow its viewers to achieve an empathic identification with "humanity" through the celebrity icon as ordinary man, Gary Cooper/John Doe.
14. I discuss the early American newspaper as an information architecture at much greater length in Warner (2005).
15. Thus, newspapers provide only 3% of the revenue but provide 70% of the weight. See John (1995, especially chapter 2, The Communications Revolution); also McChesney (2004, chapter 1).
16. For an indispensable overview of the way policy debates have unfolded over the long history of American media policy, and of how an early public spirited media policy gave way to one rules by the imperatives of large commercial enterprises, see McChesney (2004).
17. The Digital Millenium Copyright Act (1998), "digital rights management" schemes, and obligatory licensing, by arming content producers with the power to prevent all copying, circumvents the traditional balance built into copyright law between the claims of copyright holders and the public interest in the circulation of cultural objects in the public domain (Rose, this volume).
18. For an overview of 40 years of computer art, see Paul (2003) and Wardrip-Fruin and Monfort (2003).
19. The problem of media diversity was implicitly addressed in Newton Minnow's famous May 9, 1961 speech: He challenged assembled television executives to spend one entire day watching television: "I can assure you that you will observe a vast wasteland" (Minnow, 1961). Historians of television have documented the factors that turned television into something barren and monotonous. With three dominant networks chasing the same large, general audience and responding to the same commercial imperatives, programming quickly gets channeled into a narrow set of genres and popular formulas. Within this market-based entertainment system, one of the few ways to expand television is by increasing the number and diversity of channels. This only happened with the rise of cable television brought a vast increase in the number of channels, as well as a much more liberal regulatory environment. Does anyone who

remembers the heyday of NBC, CBS, and ABC, think that these channels could have invented MTV, CNN, or the programming of cable channels like HBO (*Sopranos, Sex in the City*, etc.)?

20. See Professor Ed Felten's Freedom to Tinker website: http://www.freedom-to-tinker.com/.
21. For a full overview of "digital rights management" see the Berkeley Law School Conference: *The law & technology of DRM.* http://www.law.berkeley.edu/institutes/bolt/drm/
22. Rhetorical study during the Renaissance was, "inculcated by means of commonplace notebooks, . . . Students compiled these notebooks in the course of their readings in order to create a stock of ideas for their own speeches and compositions" (Hobart & Schiffman, 1998, p. 99).
23. The UCSB scholar Constance Penley (1997) showed, in her studies of the *Star Trek* fanzines and conventions, how networking and content sharing help to seed the creation of new science fiction.
24. The provenance of the Internet in acts of inscription is being recovered by such recent university-based research initiatives as the University of California's Transliteracies project, which focuses on the adaptation of textual and reading practices to digital, networked multimedia, and vice versa (http://transliteracies.english.ucsb.edu/category/research-project/).
25. For a long time, British cultural studies has argued that individuals and groups are not passively programmed into a mass by the culture industry; instead they have developed cunning ways to appropriate cultural products to their own subcultures (Hall, 1996). Napster offered its users active powers of appropriation only dreamed of by British cultural studies.
26. As noted earlier, this shift of the media user from listener/spectator/reader to writer has been oversold as an unprecedented "liberation" of the consumer. But, one does not need to subscribe to that narrative to grasp the expanded possibilities for writing brought by the networked computer through hypertext writing, web editing, Flash composition, and so on.
27. Freedom of expression in the classroom often requires unending citation and discussion of copyrighted material. In the pre-digital, pre-networked classroom this was easy to do, and was widely accepted as part of fair use doctrine. But, when content is digitized for placement on-line, it can quickly be construed as an instance of copyright infringement.

REFERENCES

Abbate, J. (2000). *Inventing the Internet.* Cambridge, MA: MIT Press.

American Heritage dictionary of the English language. (1992). Third edition. Boston: Houghton Mifflin.

Berners-Lee, T. (2000). *The origin, design and ultimate destiny of the World Wide Web.* New York: Collins Press.

Biddle, P., England, P., Peinado, M., & Willman, B. (2002). *The darknet and the future of content distribution.* http://crypto.stanford.edu/DRM2002/darknet5.doc

Boyle, J. (2003) The second enclosure movement and the construction of the public domain. *Law and Contemporary Problems, 66*(1&2), 33-74.

Chartier, R. (1994). *The order of the book.* Stanford, CA: Stanford University Press.

Chomsky, N., & Herman, E. (1988). *Manufacturing consent.* New York: Pantheon Books.

Czitrom, D. (1982). *Media and the American mind: From Morse to McLuhan* (pp. 60-90). Chapel Hill: University of North Carolina Press.

Douglas, S. (1987). *Inventing American broadcasting, 1899-1922.* Baltimore, MD: Johns Hopkins University Press.

Eisenstein, E. (1980). *The printing press as an agent of change.* Cambridge, UK: Cambridge University of Press.

Hall, S. (1996). *Stuart Hall: Critical dialogues in cultural studies.* London, UK: Routledge.

Hobart, M., & Schiffman, Z. (1998). *Information ages: Literacy, numeracy, and the computer revolution.* Baltimore, MD: the Johns Hopkins University.

Holmes, D. (2005). *Communication theory: Media, technology, society.* London: Sage.

John, R. (1995). *Spreading the news: The American postal system from Franklin to Morse.* Cambridge, MA: Harvard University Press.

Johns, A. (1998). *The nature of the book: Print and knowledge in the making.* Chicago, IL: University of Chicago Press.

Kang, J. (2001). *Communications law and policy: Cases and materials.* Gaithersburg, MD: Aspen Law & Business.

Lasica, J. (2005). *Darknet: Hollywood's war again the digital generation.* Hoboken, NJ: Wiley.

Lessig, L. (1999). *Code and other laws of cyberspace.* New York: Basic Books.

Lessig, L. (2004). *Free culture: How big media uses technology and the law to lock down culture and control creativity.* New York: Penguin Press.

Liu, A. (2004). *The laws of cool.* Chicago, IL: University of Chicago Press.

Manovich, L. (2001). *The language of new media.* Cambridge, MA: MIT Press.

Marvin, C. (1990). *When old technologies were new: Thinking about electric communication in the late nineteenth century.* Oxford, UK: Oxford University Press.

Mattelart, A. (1996). *The invention of communication* (S. Emanuel, Trans.). Minneapolis: University of Minnesota Press.

McChesney, R. (2004). *The problem of the media: U.S. communication politics in the 21st century.* New York: Monthly Review Press.

McLuhan, M. (1962). *The Gutenberg Galaxy: The making of typographical man.* Toronto: University of Toronto Press.

McLuhan, M. (1967). *The medium is the massage: An inventory of effects.* New York: Bantam Books.

Miller, M. C. (2002, January 7). What's wrong with this picture? *The Nation.* Chart of "The Big Ten" media conglomerates at http://www.thenation.com/special/bigten.html.

Minnow, N. (1961). (http://www.janda.org/b20/News%20articles/vastwastland.htm)

Morgan, E. (2002). *Benjamin Franklin.* New Haven, CT: Yale University Press.

Netscape Annual Report. (1966). Netscape Corporation.

Oxford English dictionary online. http://www.oed.com

Paul, C. (2003). *Digital art.* London: Thames & Hudson.

Penley, C. (1997). *Nasa/Trek: Popular science and sex in America.* New York: Versa.

Rice, R. (1987). Computer-mediated communication and organizational innovation. *Journal of Communication, 37*(4), 65-94.

Rose, M. (1995). *Authors and owners: The invention of copyright.* Cambridge, MA: Harvard University Press. http://dc-mrg.english.ucsb.edu/conference.asp

Siegert, B. (1999). *Relays: Literature as an epoch of the postal system.* (K Repp, Trans.). Stanford: Stanford University Press.

Starr, P. (2004). *The creation of the media.* New York: Basic Books.

Wardrip-Fruin, N., & Monfort, N. (2003). *The new media reader.* Cambridge, MA: MIT Press.

Warner, W. (2005) Communicating liberty: The newspaper of the British Empire as a matrix for the American Revolution. *ELH,* 72(2), 339-361.