Saving the Information Commons

A New Public Interest Agenda in Digital Media
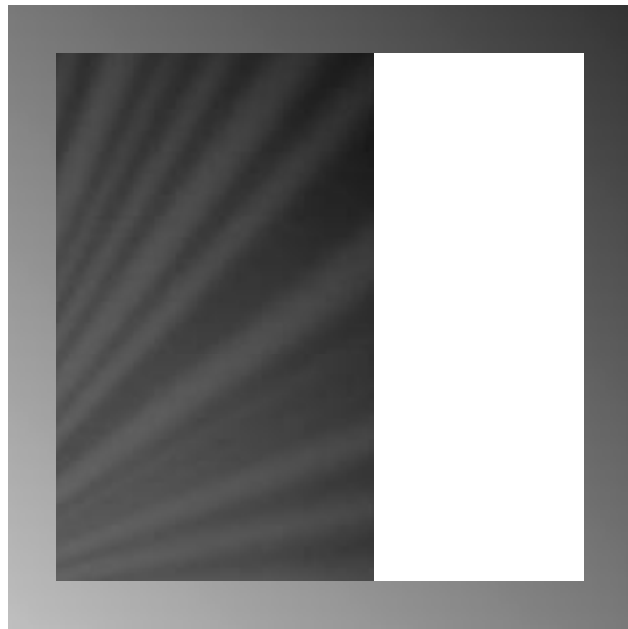
By David Bollier and Tim Watts

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Introduction

Sweeping changes in our nation's communications infrastructure and markets over the past twenty years have radically changed the topography of the public sphere and democratic culture. But the mental maps which many people use to conceive "the public interest" in communications hark back to circa 1975, a time when the traditional broadcast model dominated and there were only three commercial television networks, cable TV consisted of "community antennae" to reach rural areas and even the VCR had not yet been unleashed. In the 1970s, the public interest in broadcasting was about the Fairness Doctrine, general content guidelines and public television subsidies.

Times have changed. Over the past generation, the Internet, the World Wide Web, cable television, wireless and many other electronic technologies have dramatically changed market structures and people's use of communications media. By any absolute measure, the new technologies have yielded huge increases in the quantities of information and programming available to Americans. They have also given individual citizens a much greater ability to create and control content. The flows of information and entertainment, and people's access to and control over it, are changing rapidly.

Amidst the boom in telecommunications, the Internet and new television outlets that dominated press attention over the past decade, relatively little attention has been paid to the fate of the public interest. Among the "old media"—broadcasting and cable television—the entrepreneurial zeal that gave birth to country music networks, science fiction networks and infomercial channels has not been noticeably directed towards the nation's many civic, political, cultural, artistic,

nonprofit and community needs. Notwithstanding innovations such as C-SPAN and new niche commercial networks, entire genres of public interest programming have virtually disappeared from television. It is difficult to find thoughtful news and commentary, timely public affairs documentaries, high-quality educational programming for children, original local programming and daring arts and cultural programming. Public television, for its part, has become far more commercial in orientation, eschewing the controversial, innovative and offbeat while quietly introducing more advertisements and crypto-marketing.

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As two major communications media—television and the Internet—have collided, we are faced with a difficult question: *How are we to conceptualize the public interest in this brave new world?*

If even a robust, highly diversified media marketplace cannot meet certain societal needs, what new public policies need to be adopted? Can certain technologies, innovations in private law and voluntary social norms do a better job than public policy alone?

This report is an attempt to help answer these questions while developing some new concepts and language for advancing the public interest in the digital age. We argue that the Internet has given rise to an entirely new sort of public and democratic cultural space—the information commons—that now coexists alongside the mass media, which is chiefly broadcast and cable television.

The result is a strangely bifurcated media universe. On the one hand, there is television, which is doing far less to serve the public interest than a generation ago despite the proliferation of channels. Broadcast news programs may be far more plentiful than twenty years ago, for example, but even veteran journalists question whether the market-driven flood of tabloid fare and sensationalism is serving the public or its own profession well.[1] The broadcast media, now more consolidated than ever, considers it too expensive to give more than passing coverage to state election campaigns.

On the other hand, the Internet has greatly expanded the spaces and modalities available for serving important non-market, public interest needs. Thanks to the low-cost, flexible capabilities of the Internet, individuals with highly specific interests can now locate each other and organize themselves as robust communities. Affinity groups and communities of all varieties—largely exiled from the broadcast media since 1934—are now able to develop their own distinctive voices in cyberspace.

Instead of seller-sponsored entertainment and information moving from centralized sources to great masses of citizens in a one-way flow (after first being vetted by corporate advertisers), the Internet has ushered in a cultural and political *perestroika* of enormous proportions. Individuals now have the means to bypass traditional publishers and become creators and global publishers in their own right. New publics can come together with astonishing ease and speed. Elite, centralized authority and expertise must now compete with self-organized networks of Internet users who

assert their own authority and novel genres of distributed intelligence.

While the corporate mass media will surely persist in the years ahead, the rise of the Internet commons may be the most significant public interest media phenomenon of our times. Since the World Wide Web hit popular culture in 1995, more than three billion public webpages have been created on about 20 million websites. Companies have built only about 30 percent of public webpages for commercial purposes; the rest are the creations of "we the people."

The problem is that we do not conceptualize and celebrate this remarkable effusion of non-commercial content as a preeminent public interest achievement. Focused on the high-profile commercial sites, we do not see the Internet as a massive commons. This has troubling but largely unplumbed implications for our democratic culture.

Despite its size and vitality, the Internet commons is vulnerable. As we will see in the following pages, many commercial interests would like to transform the open architecture of the Internet into a more closed and controlled system. Cable broadband systems are seeking to erect proprietary "walled gardens" and would like to introduce different tiers of Internet service. Certain software companies see big private gains to be made by subverting open Internet standards and neutralizing the open source software movement. Many content industries are seeking to use copyright law to ban the traditional rights of individuals to share and reuse the content they buy. If such trends continue without challenge, the Internet will soon morph into a pay-per-use vending machine and a privatized public square.

At a time when practical definitions of the public interest in communications remain unclear, this report has three primary goals:

1. To identify the commons as a new concept for understanding the public interest in digital media;
2. To showcase the rich variety of communications commons that are now invigorating our economy and culture; and
3. To identify innovative strategies that can fortify the commons and/or protect them from privatization and commercialization.

This report does not aspire to propose a comprehensive blueprint. It aims to outline a general framework for understanding the commons in public communications. It seeks to document the rise of the information commons, identify key threats to its future and commend a variety of creative initiatives that can save and sustain it.

Why talk about the commons? We believe that a language of the commons helps focus attention on certain values that market players largely ignore. Media enterprises and economists tend to focus on efficiency, productivity and profitability. A commons analysis gives us a way to speak coherently about another matrix of concerns that are not given sufficient attention: democratic participation, openness, social equity and diversity. The commons deals with non-commercial dimensions of American life that are not key priorities for market-driven enterprises, but which nonetheless are vital to our society. These aspects of communications in American society have little coherent articulation in policy deliberations today.

It bears noting that the commons is not hostile to market forces; it merely insists upon a proper balance between those sorts of

expression and entertainment that the marketplace provides, and those modes of civic, cultural and social communication that are nourished in a commons. Markets that are excessively concentrated and powerful tend to "enclose" the information commons and its distinctive types of communication.

In a time when market categories have virtually eclipsed consideration of other values—especially those values important to our democratic polity—a language of the commons helps us reassert the values of civil society. The commons not only helps explain the many new modes of online social organization and communications. It helps us talk more cogently about constitutional and democratic norms that are threatened in the new digital environment.

As for the public interest obligations of broadcasters—the "old media"—it is best to openly concede that the public trustee notion of broadcasting has been largely eviscerated through deregulation and, for complex reasons, is not likely to be resuscitated. That does not mean that this field of struggle should be abandoned as a lost cause. But it does suggest that we should explore more politically feasible and practical alternatives to the (failed) policies of using regulation to make broadcasters serve as enthusiastic trustees of the public good. Especially as the TV marketplace has grown more competitive, the notion of broadcasters discharging their public obligations as conscientious trustees of the airwaves has proven to be a legal morass and expedient fiction. The actual public benefits have been exceedingly modest. Why not liquidate the public interest obligations of broadcasters through cash payments, as Henry Geller has proposed, and use those monies to serve public needs in communications directly? Alternatives must be explored.

The Plan of This Report

Although discussions about the public interest in the media have historically focused on broadcasting, this report aims to expand that discussion to the Internet and other digital communications technologies. Currently, issues of public interest here are seen as eclectic, novel and sometimes confusing. This report is an attempt to synthesize a diverse array of issues by contextualizing them in a new and unitary framework: the framework of the commons. While much more could be said about all of the topics covered, each section is necessarily succinct so that we can traverse a great expanse of material.

Part I describes some representative commons in the new public interest space of the Internet. Like markets, commons vary. The Internet commons include open source software communities, Internet libraries and archives, user-managed websites and peer-to-peer file sharing.

What unites these different commons is their facilitation of online collaboration, especially for non-commercial purposes. Birdwatchers can track the migration of rare species and so generate new environmental knowledge; little-known Vietnamese folk songs can be gathered and preserved on a Web archive; physicists in Africa can share cutting-edge research papers with their peers in Europe and North America; and so on. Part I illustrates in some detail how the cyber-commons serve important public interest values.

But can we keep the commons open, robust and secure? The next three sections outline a variety of policies and initiatives that are needed to protect the information commons.

Perhaps most critical is an open, nondiscriminatory Internet architecture. Part II describes four particular aspects of the Internet

infrastructure that must be addressed: open Internet standards, software protocols and open source software; specific realms of Internet standards setting; open, nondiscriminatory user access to the Internet; and limits on media concentration.

But an open Internet architecture is not enough. We must also have a commons of public knowledge. Part III describes how we must protect the information commons against over-propertization. This is a growing danger as various content industries—publishers, studios, record labels and data vendors—intensify pressures on Congress and the courts to expand property rights in creativity and information at the expense of free expression and a vital public domain.

The public domain is the legal term that has historically been used to describe material open for all to use. Creative work or information can be "free" in the sense of not having to pay money (two examples include the fair use doctrine in copyright law and the right to link to websites as one sees fit). Or it can be "free" in the sense that, while it costs money, anyone may have access to it without first getting permission from someone claiming proprietary ownership. (Laws mandating nondiscriminatory (or compulsory) licensing of music to broadcasters is an example of this.)

In his recent book, *The Future of Ideas* Professor Lawrence Lessig explains how a rich and vibrant public domain is critical to the future of innovation and to an open, democratic society. Yet in recent years, the public domain has been under siege. The length of copyright terms has been extended by twenty years, the eleventh extension in forty years; the public's customary fair use rights in digital works are under aggressive attack; digital rights management systems are giving sellers new

powers to control how people may use ebooks and CDs; and copyright and trademark laws are being used to diminish free speech rights.

Part III looks at some of the proposals that have been made to confront this tide of over-propertization and protect the information commons. Among the proposals: to shorten copyright terms; to allow the easy placement of creative works into the public domain; to roll back the draconian provisions of the Digital Millennium Copyright Act; and to reform the governance of the Internet Corporation for Assigned Names and Numbers (ICANN), the quasi-private body that administers the Internet's domain names so that the public's interests and speech are not subordinated to commercial interests.

The government has an important, proactive role to play in assuring that the commons flourishes. Part IV outlines several imaginative policy initiatives that would give citizens greater access to information and more diverse, non-commercial sources of content in television, on the Internet and through government itself.

Under one intriguing proposal, broadcasters and other commercial users of the public airwaves would pay a spectrum usage fee that would be used to finance new content for diverse public interest constituencies. Part IV examines proposals to create a government-chartered trust fund for public interest content; a venture capital fund for innovative Internet content; and the Open Spectrum Project, a proposal to change FCC spectrum management policies to provide everyone with commons-like access to the airwaves (nondiscriminatory access similar to the Internet) rather than relying primarily on exclusive long-term licenses to private companies. A healthy democracy requires plentiful, reliable informa-

tion, which is why government must also take new steps to manage its vast stores of government information as if citizens mattered.

"We inherited freedom," said Adlai E. Stevenson many years ago. "We seem unaware that freedom has to be remade and re-earned in each generation of man." In a similar spirit, this report calls for a return to first principles—and a reinterpretation of those principles in the context of our new digital media environment. These principles include:

1. Preserve significant slices of the communications infrastructure for non-commercial varieties of communication, and provide sufficient legal and financial support for creativity in these spaces.
2. Assure that markets are truly open, competitive and diverse, and not closed and concentrated.
3. Allow new technologies to evolve and innovate without being quashed or subverted by existing media industries.
4. Ensure that First Amendment freedoms are fully applied to individual citizens—the primary constituent of our democratic polity—and only secondarily to media corporations.
5. Revisit the cultural bargain of copyright and trademark law to assure that the public gets a fair return for the monopoly rights it gives.
6. Devise innovative policy structures that can affirmatively protect the information commons against proprietary free riders, as the General Public License has done for open source software and as the spectrum commons proposes to do for wireless communications.
7. Assure that the public reaps a fair return on the private uses of public assets, such as the electromagnetic spectrum.

I. The Rise of the Information Commons

The shifting nature of "the public interest" in our media landscape may be best explained by two stories. Call them *Then* and *Now.*

Then: *In 1982, the Syracuse Peace Council complained to the Federal Communications Commission that a local television station had sold 182 minutes of advertising promoting a nuclear power plant in its community while ignoring countervailing perspectives. The FCC agreed with the complaint and, relying on Fairness Doctrine regulations, ordered the station to correct its unbalanced coverage. The FCC order affirmed that citizens have a legal right of access to the airwaves that they collectively own, and that broadcasters cannot assert exclusive free speech rights in the medium. The TV station responded with a lawsuit, arguing that under the First Amendment, the government cannot compel a broadcaster to air opposing viewpoints. Within a few years the Fairness Doctrine had been essentially rescinded.*

Now: *In 2001, thousands of citizens in upstate New York were angry at General Electric for its role in polluting the Hudson River with tons of PCBs over decades. When GE resisted a government proposal to dredge the river bottom, protesters launched their own website, www.CleanUpGE.org, to argue their case with detailed documents, links to other websites and streaming video interviews with GE critics. By erecting their own media platform in cyberspace, protesting citizens were able to influence public opinion and prod the Environmental Protection Agency to enforce the law. Meanwhile, citizens of other political persuasions—from journalist Matt Drudge to the conservative Free Republic website to anti-globalization activists—routinely use the Internet to speak to and organize their fellow citizens.*

When compared with "Then," the second vignette, "Now," speaks volumes about the new sorts of empowerment that ordinary citizens are achieving through the Internet. It represents a remarkable advance over the very limited kinds of access and influence that citizens previously had through broadcasting. Although broadcasters continue to assert exclusive control over the public's airwaves—thanks to the sweeping deregulation of the 1990s—millions of individuals and niche constituencies have built their own public platforms on the Internet.

From a public interest perspective, this is a significant development. The Internet has enabled the creation and maintenance of new publics without the intermediation of markets. Throughout the history of radio and television, audiences were aggregated in order to serve the needs of advertisers. Communications flowed in one direction: one-to-many. Now "audiences" both large and small—in dispersed locations and in asynchronous ways—can come together to share information, develop ideas, solve problems and collaborate on new types of creative projects. The communications flow is many-to-many, enabling entirely new kinds of mass cooperation, creativity and authoritative knowledge to arise.

Particularly since the advent of the World Wide Web in 1995, millions of Internet users have learned that they need not be passive consumers, surrendering their eyeballs to broadcast networks and advertisers. They can take charge of their culture and become active creators and citizens. By constructing their own online commons, the boundaries that once separated broadcasters from viewers, publishers from readers and sellers from buyers are blurring. Participants in Internet commons assume *both* roles. What has resulted is an unprecedented range of non-commercial expression, civic engagement and cultural ferment.

This has occurred, moreover, on an Internet without the capacity to deliver interactive or even high-definition streaming video. Internet2, the "next generation" fiber pipeline that already connects 180 leading research universities, allows communication at 100 megabits per second (mbps), roughly 100 times faster than today's digital service lines (DSL) and cable broadband connections. When Internet2 is extended to residential and small business users, individuals will be able to move beyond self-publishing to self-broadcasting, and entirely new realms of personal and civic expression will be feasible, as long as the infrastructure remains an open commons.

This section looks at some of the most notable Internet commons: user-managed archives and libraries, collaborative websites and listservs, open source software communities and peer-to-peer file sharing. While differing in important ways, these cyber-commons share an important feature: *they are interactive, non-commercial media platforms directly controlled by users.* The public interest has never been so

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richly served. Never before has the average citizen had such powerful, direct capabilities for communicating with the public in his or her own voice. Never before have civic, cultural, educational, local, amateur and other non-commercial concerns had such rich, versatile platforms for advancing their interests.

Significantly, many of these forms of creative output have almost nothing to do with copyright law, patent law or the market, which economists usually claim are necessary to induce people to create useful information. *"Why else would anyone create valuable works except for money?" economists argue.* But the Internet has shown that value-creation can occur through a very different, non-market dynamic. In a "gift economy," people freely give something of value—information, creativity, time—to an online community. Without any money changing hands or any guaranteed payback, the online community nonetheless returns valuable benefits to its participating members. This mode of exchange is rooted in social, personal and moral norms, not in the impersonal monetary exchanges of the marketplace. Online communities devoted to genealogical research are a prime example; tens of thousands of Americans voluntarily create databases and freely share information on a scale that cannot be replicated on a commercial or proprietary basis. The commons is actually a more efficient and productive alternative to the market.

Gift cultures are terribly disorienting, if not threatening, to conventional economists immersed in the narrative of rational, utility-maximizing individuals making "free" choices in the marketplace. In the Internet commons, where the focus is on the community, market theory is a *non sequitur.* By focusing so exclusively on individuals, market theory tends to overlook the power of social norms such as loyalty, trust, teamwork and moral commitment.

But as the Internet has shown, these norms, as well as openness, collaboration and sharing, have been central to the Internet's tremendous growth. Non-market social exchange via the Internet, it turns out, can be a highly efficient and productive vehicle for generating certain types of valuable information, while building new connections of civil society. Expression that is amateur and non-commercial in origin is also likely to be more diverse, because, as Professor Yochai Benkler has noted, such expression is "undisciplined by the need to aggregate tastes," whereas that is the first priority of commercial information production.[2]

This heartening fact is verified by a recent study on the civic and social benefits of online communities. The report, by the Pew Internet & American Life Project, found that "online communities have become *virtual third places* for people because they are different places from home and work. These places allow people either to hang out with others or more actively engage with professional associations, hobby groups, religious organizations or sports leagues."[3] The report found that 90 million Americans have participated in online groups and 28 million have used the Internet to deepen ties to their local communities. Some 23 million Americans are "very active in online communities," according to the Pew study, meaning they email their principal online group several times a week.

It is revealing that the American people enjoy the Internet primarily for facilitating non-commercial purposes—chat, archives, collaboration, email—rather than for making shopping easier. According to a major study sponsored by the Markle Foundation: "By far, the leading metaphor for the Internet, in the

public's mind, is not 'a shopping mall' or 'banking and investment office,' but rather a 'library.' Despite the popular depiction of the Internet as a channel for commerce, the public mostly views it as a source of information, and these uses appear to explain its popularity much more than its utility as a way to shop, bank or invest."[4]

Unfortunately, the Internet as library, commons or virtual third place, has received exceedingly little attention in the councils of public policy and law. Congress and the courts spend far more time trying to make the world safe for electronic commerce than for preserving the Internet commons. When policymakers do address the civic and cultural role of the Internet, they tend to adopt the categories of another media age, such as universal access and program subsidies. They don't focus on the structural factors that have enabled the Internet to flourish as a commons, such as open Internet and software standards, and minimal copyright protection. As a result, commercial interests have a freer hand to try to redesign the technical and legal architecture of the Internet to facilitate selling. The broader concerns of public interest constituencies, meanwhile, receive scant attention.[5]

To understand why the commons is a useful model for conceptualizing the public interest in the digital age, it is important to know about some of the specific innovations now occurring. The following sections do not purport to be a grand survey of the Internet, but they do constitute a compelling snapshot of why the Internet commons is so vital to our democratic culture. This knowledge, in turn, helps clarify why certain policies and new initiatives (discussed in Parts II, III and IV) deserve much greater attention among policymakers, foundations, the press and the public interest community itself.

A Place of Our Own: Online Libraries and Archives

The Internet's design is perfectly suited to connecting vast numbers of people to repositories of articles, books, photographs, charts and art in cheap and easy ways. Not surprisingly, the Internet is rapidly expanding the scope of material that can be stored, searched and used by individuals.

Online libraries and archives are a public interest achievement of enormous significance. As freely accessible, methodically organized storehouses of knowledge, they are novel cyber-versions of conventional public libraries, which have long been the bedrock of national literary, education, science, culture and democracy. Public libraries have been "a vital instrument of democracy and opportunity in the United States," as historian Arthur Schlesinger has pointed out. "Our history has been greatly shaped by people who read their way to opportunity and achievements in public libraries."

It is obviously impossible to give a thorough picture of the myriad of online libraries and archives. This section has the more modest goal of showing, through a few noteworthy examples, how these new media platforms are indispensable tools for a free society. They allow citizens to acquire almost any information they may desire. They foster learning and innovation. They protect our cultural heritage. And because they are freely accessible, they represent a fantastic contribution to the public domain.

The earliest online library was **Project Gutenberg**, a private initiative started in 1971 to digitally republish out-of-copyright articles and books of general interest. The project, which has accumulated more than 3,700 public domain books and made them available for downloading, has now been incorporated into

a bigger, more ambitious online library called **ibiblio**. A generalist's paradise, the ibiblio website, run from the servers of the University of North Carolina at Chapel Hill, has the simple goal of collecting and making accessible as much interesting material as possible.

The result is a resource of profound diversity, with content that runs from the mainstream to the obscure. Available collections include open source software documentation, the culture of the American South, Vietnamese folk songs and botanical medicine. Each day ibiblio webservers respond to an average of 1.5 million information requests. The site welcomes new contributions of text, image, audio and video, and so the collection continues to grow.

The library describes its operating philosophy as "open source," meaning it operates in a transparent manner with the help of volunteers. Many of ibiblio's collections are managed by contributors from across the globe with special knowledge or interest in the subject matter they are cataloging. The Hygiene Library, for example, is maintained by a group from Tasmania, Australia. This inclusive, volunteer-centered approach to content-building means that some collections are brief and clearly "works in progress" that will need to gather more material over time. Though unconventional, this approach gives ibiblio the flexibility to collect material in knowledge areas that are timely and rapidly growing. For example, the open source software documentation section of ibiblio is at present one of the most actively updated on the site and is regularly cited as the world's best source for this category of material. ibiblio's capacity for archiving burgeoning new genres of literature or collections of music or images on virtually any subject sets it apart from traditional libraries.

Other online library initiatives have taken a narrower focus, serving particular academic disciplines or as repositories of specialist material. **Perseus Digital Library**, a project run by Tufts University near Boston, has carved out a niche as the leading online venue for classical Greek and Roman material. Perseus's small team of full-time staff works to catalog and develop new ways to electronically present a constantly growing collection of architectural drawings and photographs, images of pottery and sculpture, original documents, papyri, articles, monographs and maps. Project staff draw upon advice from experts in classics departments from universities in Boston and elsewhere in the U.S. to orient their efforts. The site features a number of tools for those new to the classics field, such as Greek and Latin vocabulary finders.

Some of the most useful electronic archives deal with vital civic issues. As its name suggests, **Project Vote Smart** was established as a "one-stop" information resource for citizens heading to the ballot box. The Web archive offers voters nonpartisan information on more than 30,000 candidates for public office in the U.S. at the federal, state and local levels. Teams of volunteers and employees meticulously update prodigious databases on voting records of incumbent legislators and candidates' platforms. It features campaign finance data, interest group ratings of officeholders and ballot initiatives. The contents of this archive change from week to week as elections are held and the cycles of politics and government turn. During the 2000 presidential election campaign, the site received an average of 100,000 different visitors daily.

Project Vote Smart's digital collection has been leveraged so that it is accessible to voters not connected to the Internet. Citizens can

call a toll-free Voter's Research Hotline to reach volunteer-staffed phone banks equipped with access to the Project Vote Smart databases. In the weeks leading up to major elections, Project Vote Smart has teamed up with more than 2,000 public libraries across the country to provide walk-up visitors with dedicated Project Vote Smart information booths in their cities and towns.

Education has been tremendously enhanced by the availability of online libraries and archives. One of the more interesting initiatives in this regard is the development of **OpenCourseWare** (OCW), which makes the course materials used in virtually all of the Massachusetts Institute of Technology's classes available on the Internet, without charge, to users anywhere in the world. Lecture notes, course outlines, reading lists and assignments are archived.

Supporters of the OCW project have emphasized its potential for encouraging long-distance learning and teacher-to-teacher collaboration on course planning. A good example is a small website archiving project for K-12 lesson plans known as the **Collaborative Lesson Archive.** The website, at the University of Illinois, now boasts 10,000 visits a week from educators who use its discussion boards to post lesson plans and exchange comments and resources. Such evidence suggests that even a small electronic library can attract a very active constituency, and cross-fertilize innovation and community vitality.

Perhaps the most prominent and influential of the electronic archives developed to date is the **Los Alamos e-Print Archive**. Primarily a resource for physics researchers, the site has revolutionized physics research by serving as an open and respected global resource. The archive is frequently cited as the most effective online resource yet developed for serious scientists. There are more than 170,000 papers in the archive and they are divided into subfields such as quantum physics, astrophysics and nuclear theory.

The archive is distinctive in the way it facilitates the process of drafting and sharing scholarly articles. Unlike other electronic libraries for academic material such as Perseus, the classics collection discussed previously, the Los Alamos site is structured so that scholars can post successive drafts of papers on which they are working. A visitor to the site does not encounter a permanent, fixed collection of material, but rather an evolving array of articles that change as their authors incorporate online comments from other scholars. The archive offers an early, insiders' view on the newest, cutting-edge research in the discipline, even though many of the online articles are eventually published in peer-reviewed print journals.

The caliber of participating scientists is extremely high and for many scholars, checking the site for new postings is a daily routine. The Los Alamos e-Print Archive has two million weekly visits, two-thirds of them coming from outside the United States. Researchers from more than 100 countries submit articles to the archive. The project's $300,000 annual budget comes from the National Science Foundation, the Department of Energy, Cornell University and the Los Alamos National Laboratory.

Cornell particle theorist Dr. Paul Ginsparg founded the project ten years ago when he was based at Los Alamos. In recent years, he has begun accepting paper submissions in two new fields: mathematics and computer science.

The Los Alamos e-Print Archive seems to have attracted so many world-class researchers because it overcomes two of the biggest com-

plaints about academic journals: expensive subscriptions and publication delays. Some journals cost thousands of dollars a year, a particular burden for researchers in poor countries; the time delay from article submission to publication can run six months or more. The Los Alamos archive, by contrast, offers immediate scholarly attention for very little cost.

Researchers in other disciplines seeking to emulate the success of Dr. Ginsparg's physics archive have run into copyright obstacles. The for-profit publishers of academic journals do not want to make journal articles cheaply available to all. This provoked some 26,000 biomedical researchers, led by Nobel prize-winning researcher Harold E. Varmus, to sign a petition calling for the creation of a **Public Library of Science**. This electronic archive would act as a free central repository for all biomedical journal articles, which would be posted only six months after their original publication in print journals. All signatories to the petition have agreed not to write, review or edit for publishers that have not committed to the Public Library of Science.

The Public Library of Science claims that journal publishers have been unreasonably increasing subscription prices and limiting the distribution of articles in a manner that impedes the development of science. According to the Washington-based Association of Research Libraries, the average cost of an annual subscription to an academic journal rose by 207 percent between 1986 and 1999. Annual revenues in the scientific journal publishing industry are estimated to be $10 billion, so the stakes for the companies concerned are substantial.

The Public Library of Science proposal throws into stark relief an increasingly common conflict. Businesses tend to want to strengthen and extend copyright protection of information, but the public interest is often better served by establishing freely accessible and comprehensive electronic archives of information as expensive proprietary middlemen are frequently gratuitous in a networked environment. The groundswell of support for the Public Library of Science proposal suggests that in the future, as other academic disciplines and knowledge genres confront the issue of digital archiving, conflicts between commercial and public interests are likely to intensify.

Varmus and his fellow petitioners have sparked thoughtful but heated debates in the popular science publications *Nature* and *Science* about the role of journal publishers in science and the most appropriate way to electronically archive biomedical literature. Some letters to the editor have questioned whether six months is a long enough period of copyright protection for journal publishers to recoup their costs. Others have expressed alarm at the idea of a government-operated archive being the exclusive source for biomedical articles (the Public Library of Science would be hosted at PubMed Central, an online initiative of the U.S. Government's National Library of Medicine).

In any case, the idea of scientists and scholars taking charge of their own intellectual property, bypassing the copyright and market control of publishers, seems to be catching. In February 2002, the **Budapest Open Access Initiative**, sponsored by the Open Society Institute, released a manifesto calling for the self-archiving of peer-reviewed journal literature and the creation of a new generation of open access alternative journals. The project hopes to provide leadership, appropriate software and technical standards, and fund support to foster new sorts of commons in scholarly literature.

Finally, any review of the Internet's many thousands of archives must mention the **Internet Archive**, a project launched by digital librarian Brewster Kahle to amass an online archive of the entire Internet. The point of the effort is to have a complete, detailed, accessible and searchable record of our cultural artifacts, which increasingly reside online and are distressingly ephemeral. Without a common archive of the Web, important swaths of our history are likely to be lost forever.

In October 2001, the Internet Archive launched the Wayback Machine, a Web service that allows people to browse webpages from the past. Users can prowl over ten billion webpages archived from 1996 to the present. The service, the first of its kind, uses a database containing more than 100 terabytes of information, the largest database in the world. The owners of some websites have blocked the Internet Archive from including their sites; other sites have deleted graphics and links. But even with such holes in the record, the archive is exceedingly comprehensive.

The Internet Archive explains that its database helps preserve the citizen's "right to know" what our government is doing in our name. Online government records are often "taken down," such as when political control over state or federal executive agencies changes after an election. Some official records may not even exist in paper form. The Internet Archive also gives us the "right to remember" so that we need not depend on irregular or unreliable sources for an accurate record of history, politics and culture. Scholars—or anyone—can trace how our language changes, see how the Web has evolved over time and investigate countless other historical questions.

The Internet Commons as Online Collaboration

Amazon, Priceline, Travelocity and dozens of other ecommerce sites may garner most of the attention, but look behind the marketing façade and you will find a flourishing new sector of public interest media: collaborative websites and listservs. They are devoted to countless non-commercial endeavors, they are accessible to anyone and they are free.

While these Internet venues do not have the power and visibility of commercial television or major corporations, they have something those entities do not enjoy—enormous "viral power" and grassroots moral authority. To be sure, there are amateurs and crackpots on the Internet. Yet there are also scores upon scores of sites that command great respect and influence. Indeed, within their particular sphere of expertise, some are seen as more reliable, timely and authoritative than the mainstream press. Upon reflection, this should not be surprising. After all, these sites "belong" to the on-the-ground experts and communities whom journalists are otherwise likely to quote. The Internet simply bypasses such intermediaries and gives us direct, unfiltered access.

The breadth of this important media sector was recently documented in "**The Dot-Commons: A Virtual Tour of the Online Civic Sector,**" a survey of more than 100 websites devoted to public interest programming in a variety of fields. Released by the Center for Digital Democracy, the collection of sites includes voter education websites, community networks, discussion forums and distance learning services. The sites are "not simply an aggregation of meritorious URLs," said Gary O. Larson, director of the Dot-Commons Project, but evidence of a distinctive online civic sector.

Another useful point of access to the dot-commons is **DemocracyGroups** (www.democracygroups.org), an online directory of U.S.-based electronic mail discussions and enewsletters related to social change and democratic participation. Using open source software and a network of volunteers, DemocracyGroups facilitates the self-organization of civic communities. It is not simply a portal to help gain access to specific groups, but a "movement-driven" location in cyberspace to foster civic networking. The site currently has 40 volunteer-editors, and 408 listservs and email newsletters categorized by issue, constituency and geographic location.

"The civic sector content that we take for granted today—the scattered, noble experiments in public interest programming that happen to catch our eye—is not guaranteed to be so readily available in the broadband future," writes Larson. "Nor is it too early to begin planning for that future now, ensuring our opportunity to reach non-commercial sites through open access regulations, demanding public interest obligations of commercial programmers…and in general building a public commitment to the 'dot-commons' concept."

The idea of the dot-commons—a robust online civic sector—is important if democratic norms are going to have meaningful embodiment in the digital age. It is where all sorts of new civic learning, creative expression, dialogue and collaboration occur.

We cannot begin to sketch, here, the full scope of this explosion of knowledge and creativity. Instead we mention a few highly suggestive examples. Our point is to call attention to the exciting new civic, creative and scientific functions of these new Internet commons. They typically flourish through open, collaborative interactions, not through one-on-one market transactions. For precisely this reason, these venues require special sorts of support if they are to flourish; in particular, an open Internet architecture and strict limits on intellectual property controls.

Distributed Computing & the Dot-Commons

In essence, the dot-commons is a product of distributed computing, in which many computers are interconnected via electronic networks (especially the Internet) to generate more efficient results than could otherwise be obtained. Distributed computing takes a large problem and breaks it down into many small, modular problems that can be solved by thousands of individuals and/or their personal computers. This approach is highly effective for problems that are too large for any single individual or institution to solve in a reasonable period of time.

Distributed computing is now being used in dozens of fields to facilitate cooperation among machines and individuals. Projects include the search for extraterrestrial radio signals that might be evidence of alien civilizations; calculations to find prime numbers with more than a million digits; and the search for better drugs to fight HIV/AIDS. An excellent review of Internet-based distributed computing projects can be found at www.aspenleaf.com/distributed.

> **The idea of the dot-commons—a robust online civic sector—is important if democratic norms are going to have meaningful embodiment in the digital age. It is where all sorts of new civic learning, creative expression, dialogue and collaboration occur.**

One of the most ambitious online collaborations is the **Open Directory Project** (ODP), the largest, most comprehensive, highest-quality human-edited directory of the Web (www.dmoz.org). With tens of thousands of volunteer editors from around the world, the project is a constantly evolving community that is always adding new information, cleaning up bad weblinks and adding new topics to the directory. The ODP is not a search engine, but an extensive, well-edited list and categorization of websites.

What is notable about the ODP is that, even though it is hosted and administered by Netscape, which pays for server space and a handful of employees, a huge army of volunteers contribute substantial work for free, as a kind of civic pleasure and knowledge philanthropy. For its part, Netscape's commercial search engine and portal presumably benefit from the directory's work and its association with such a well-regarded project. The ODP represents a dynamic sometimes known as the "cornucopia of the commons," in which an online collaboration yields so much surplus value that it is a rich resource, not just for the participating community or commons, but for many commercial enterprises as well (in this case, commercial search engines).

The "cornucopia of the commons" dynamic is also the hallmark of **Slashdot** (www.slashdot.org), the website that bills itself as "News for Nerds." Slashdot may be the pre-eminent news and commentary website for computer hackers, technophiles and open source software aficionados. When a newsworthy event happens in this subculture, Slashdot hosts a sophisticated *vox populi* commentary process that passes judgment on the significance of the event (or book or essay). At *The New York Times*, judgments about what goes on the front page the next morning are made by a small group of editors; at Slashdot, a massive peer-review process involving tens of thousands of users determines what sorts of tech news commentary are relevant, credible and insightful.

Here's how the process works: An automated system recognizes certain users as "moderators," based on their length of affiliation with the site, evaluation ratings ("karma") given to them by other volunteer moderators, and other credibility factors. Users whose postings consistently receive high ratings from moderators increase their "karma" ratings, eventually empowering them to become moderators and influential tastemakers in the Slashdot community. Users who are deemed by moderators to have poor judgment are given low karma ratings. "Troll filters" prevent users from gaming the system with repeat comments or other sabotage.

The system is deliberately structured to limit the power of any single moderator, producing instead a reliable *aggregate* judgment of the community. Slashdot, writes Professor Yochai Benkler, is "very self-consciously organized as a means of facilitating peer production of accreditation…[Its content is] a cross between academic peer review of journal submissions and a peer-produced substitute for television's 'talking heads.'"[6] What is significant about Slashdot is the efficiency and credibility with which a community can pass judgment on news items that enter into its field of vision.

Consider a similar application of this principle as embodied in the **Great Backyard Bird Count** (birdsource.cornell.edu/gbbc/toc_page.html). This once-a-year nationwide bird survey is run by BirdSource, a nonprofit group based at Cornell University. Since 1998,

the group has solicited bird counts from volunteers across the country over the course of four days in February. The volunteers then post their results at the group's website, which are then combined with other bird tracking websites that use Doppler radar technology and teams of specialist volunteers who record the migrations of specific species. In 2001, more than 50,000 reports were submitted to BirdSource, documenting 4.5 million birds from 442 species.

More than a novelty, the Bird Count is beginning to serve as a valuable new indicator of environmental stress. It is believed that fluctuations in bird species numbers over a wide range of areas over time are indicators of macro-level shifts in weather, air quality, snow melt and other environmental factors that are otherwise difficult to monitor. In isolation, each individual bird tracking report submitted to the Bird Count is not especially significant. But aggregated via the BirdSource website, the reports provide an important new perspective on the state of the natural world.

The leaders of the project report that their data are increasingly being used to justify stricter environmental protection policies and the creation of natural refuges for birds. For example, organizations such as International Paper Company, the largest private landowner in the United States, and the Department of Defense, have recently altered land management practices in order to accommodate endangered bird species in South Carolina and Hawaii.

"I think we're seeing history in the making," John W. Fitzpatrick, director of the Laboratory of Ornithology at Cornell, told *The Washington Post* "People are now noticing change, searching for bio-indicators and then fixing the problem. What we're just beginning

to realize is that humans represent the internal control mechanism the earth has long sought. They're bringing feedback into the system, changing the management of the system."[7] Since birdwatching is the fastest growing outdoor activity in the nation—more than 71 million Americans report that they watch birds, according to the National Survey on Recreation and the Environment—organizers of the Great Backyard Bird Count expect that their grassroots database will only grow in size and reliability in the future.

It is blindingly obvious that the Internet commons has many, many faces. If bird-tracking sites can aggregate thousands of bits of trivial knowledge to allow the creation of new types of knowledge and meaning, thousands of other Internet commons are producing entirely new sorts of platforms for creativity and collaboration.

▋ **Distributed Proofreading** is a website (promo.net/pg) that allows volunteers to proofread an etext by comparing it to the scanned images of the original book. Thousands of pages of text are proofed every month through this process, which is administered by one person.

▋ **The Great Internet Mersenne Prime Search** enlisted the help of 130,000 volunteer participants and more than 210,000 personal computers to discover the largest known prime number, expressed as 2 to the 13,466,917th power minus 1. The Mersenne prime, which contains 4,053,946 digits, was found through a distributed computing technology that allows the research project to use the spare CPU (computer processing unit) cycles on the personal computers of its vast global network of volunteers (www.mersenne.org/prime.htm). More

than a curiosity, Mersenne primes, as they are called, are significant in number theory and have practical value in software encryption and computational benchmarking.

∎ **NASA Clickworkers** (clickworkers.arc. nasa.gov/top), an experimental website, invites Internet users to identify and classify craters on Mars based on satellite images of the planet surface. This work, normally conducted by graduate students or scientists over the course of months, is now done for free, by thousands of Internet volunteers. One part-time software engineer oversees their work. In its first six months, 85,000 people visited the website, with a significant number of them contributing more than 1.9 million entries to the crater identification project. The work quality "is virtually indistinguishable from the inputs of a geologist with years of experience in identifying Mars craters," according to one analysis.[8]

∎ **Theme Park Insider** (themeparkinsider.com) has won an Online Journalism Award for its pioneering work in tracking theme park accidents nationwide. There is no government agency or public body that collects this information. In the classic manner of an online commons, Theme Park Insider aggregates accident data from its 3,000 registered users, creating a public body of knowledge that would not otherwise exist.

New Types of Collaborative Creativity

The benefits of mass participation online are also starting to show up in collaborative creative work. While some experiments may turn out to be flash-in-the-pan novelties, others point the way to new types of joint creativity and public expression.

One example is an **open source novel** instigated by New York-based columnist and author Douglas Rushkoff, who invited Internet users to contribute to *Exit Strategy*, a novel set in the 23rd century where a book about early 21st century Internet culture is discovered hidden online (www.yil.com/exitstrategy). The manuscript's footnotes explain concepts like "venture capital" and "self-help" to 23rd century readers. On his website, Rushkoff requested lengthy contributions to these footnotes from all interested parties and received thousands of pages of ideas. Readers' contributions will not only inform his text, they will be presented alongside Rushkoff's work as annotations that elaborate, modify or challenge the claims in his prose. He sees the experiment as a way of assembling a collective commentary on contemporary times. "These footnotes are a way for us to conceptualize a future that has moved beyond our current obsessions," writes Rushkoff. "Instead of describing that future explicitly, though, we will suggest what it will be like by showing what facts and ideas future readers won't understand." He plans to incorporate many of the contributions into the final hardcover print edition of the text.

A similar experiment in collaborative creativity has occurred in playwriting. The Soho Theatre + Writers' Centre in London hosted an online project in creating a script for *London Vanishes* a one-act play that was performed in November 2001. More than 200 theatergoers made contributions to the script and more than 1,200 people voted on plot twists (input that was refracted through playwright Sara Clifford). Said the Soho literary manager Paul Sirett: "The input ranges from astute to bizarre; from imaginative to didactic. There are plenty of writers who could learn a thing or two from the theatergoers who shaped this play."

Musicians are also seeking to extend the relationships between themselves and their

audiences by inviting fans to use the Internet to remix their songs. Remixing can involve altering the speed and tone of songs, incorporating new sound elements and generally improvising on top of the basic melody of songs. The rap group Public Enemy has solicited contributions of remixes at their website by running a competition; the winning submission will be included on the group's next album (www.slamjamz.com/slamnews. php?article=7). Other high-profile musicians, including the Icelandic singer Björk, unofficially endorse websites that archive remixes of their songs. In each case, the result is a whole new raft of publicly available musical content that has been produced via Internet-mediated collaboration between fans and professional musicians.

Perhaps the most remarkable example of collaborative creativity is a bootleg editing of George Lucas's Star Wars film, *The Phantom Menace* Disappointed by the film as released, the "Phantom Editor" (as the fan/editor called herself) skillfully cut 20 minutes from the original 133-minute film, producing a tighter, more enjoyable film. The bootleg version begins with the famous yellow-lettered scroll set against a starry backdrop: "Being someone of the 'George Lucas Generation' I have re-edited a standard VHS version of 'The Phantom Menace' into what I believe is a much stronger film by relieving the viewer of as much story redundancy, Anakin action and dialog and Jar Jar Binks [an annoying character lambasted by critics] as possible."

The fan-edited version of the *Phantom Menace* became a hugely popular underground hit, inspiring another fan to open up a website to discuss and analyze the film (which had received more than 139,000 hits within a few weeks). Salon.com, the online magazine,

found that the film was "improved in pace and structure," and itself represents "another way in which the proliferation of digital technology could change the movie industry for the better."

While copyright industries argue that the kinds of collaborative creativity described here are illegal, pure and simple, many artists persuasively argue that the reuse, excerpting and modification of existing creative works are essential to creativity itself. By the standards of the recording or film industries, much of Shakespeare's work would be considered unauthorized, derivative work. Whether new sorts of creative genres will be allowed to emerge and develop—or whether threatened copyright interests will suffocate them in the cradle—is a great unresolved issue of our time.

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The Open Source Software Revolution

Software development has been one of the most fertile fields for mass online collaborations. In what has become known as open source programming, teams of volunteer programmers from around the globe cooperate online to create new software programs and improve existing ones. These loosely organized, non-hierarchical communities welcome contributions from anyone with the skills and enthusiasm to devote. This has proven to be a key strength. It turns out that mobilizing a

large and diverse corps of participants to develop and review a software program, as it is being created, is a highly effective way to improve it.

Over the past five years, the open source, mass-participation approach has developed a reputation for producing remarkably good software, in many cases superior to the traditionally made software of proprietary rivals. The **GNU/Linux operating system,** for example—perhaps the most celebrated open source project in existence—is considered by many to be a superior alternative to Microsoft's NT server software. Without any corporate infrastructure or ownership, GNU/Linux has captured more than 27 percent of the server marketplace.

Linux is but one of hundreds of open source communities whose programs are in constant use by individuals and organizations across the globe. Many open source programs are critical operating components of the Internet. Sendmail routes comprise more than 80 percent of all email on the Internet; PERL allows dynamic features on websites; Apache is the most popular webserver software; and BIND is the *de facto*DNS (domain name system) server for the Internet. While computer professionals are the most common users of these programs, millions of ordinary folks download free software from websites.

The online collaborative process is central to the success of open source software. One of the most thoughtful commentators on the movement, Eric S. Raymond, calls the open source creative process the "bazaar" because it is a pluralistic, open and inclusive process that occurs in a messy, ad hoc style. By contrast, the customary approach to software development among commercial vendors, says Raymond, is "cathedral" style. This entails the use of select

teams of experts who do their work behind closed doors, in a planned, orderly environment. While we normally associate high-quality scientific research and technology design with the "cathedral" style of development, the surprising success of open source software development has led many companies to see the distinct advantages of "bazaar"-style innovation.

Apart from its high-quality results, open source software is widely seen as more consumer-friendly than most off-the-shelf proprietary software. This is chiefly because of the openness of the software's "source code," which means that users have the freedom to use and distribute the software in whatever ways they desire. Anyone with the expertise can "look under the hood" of the software and make changes, eliminate bugs and add customized improvements.

Open source software also has an obvious price advantage: it is usually free (unless packaged with service and support for modest prices). By contrast, proprietary software makers often coerce users into buying "bloatware" (overblown, inefficient packages with unnecessary features) and gratuitous upgrades made necessary by planned obsolescence. While monopoly vendors like Microsoft can charge higher prices for its products, open source software allows users to avoid seller-contrived traps and overcharges. Open source is also considered far more secure than proprietary software because many more eyes have scrutinized its vulnerabilities in a far more intense way than can be achieved through "cathedral"-style programming.

At a higher, philosophical level, open source software is considered more compatible with the democratic values of an open society. Both open source communities and democracies honor "transparent" decision-making, in

which everyone can scrutinize all procedures and outcomes. Openness is the best way to identify and correct errors, and to embrace and incorporate innovation in rapid ways. Any innovations, furthermore, can be used within the commons to benefit everyone. They are not siphoned away as profit for company shareholders alone. Openness helps root out the kinds of abuses that often occur in closed, proprietary environments; in this sense, open source communities have a strong system of accountability built into their system.

Open source software plays several important roles in the public interest agenda, as we will see later. As a form of technical standards, open source software helps preserve the open Internet infrastructure (Part II). It helps maintain an open commons of information in the public knowledge that fuels education, science, government and culture (Part III). And it helps assure free public access to software applications and content that might otherwise be withheld as private and proprietary (Part III, section F).

The Peer-to-Peer Revolution

Another important form of online collaboration is a class of computer architecture called "peer-to-peer." The rise of Napster, the controversial and hugely popular music file-swapping service, heralded the potential of peer-to-peer networking (P2P). Although Napster may be best known for giving millions of users access to music without paying copyright holders, it has also attracted great excitement from programmers, businesses and others because of its distinctive architecture and functionality. It creates new ways for people to collaborate online.

Napster software enabled dispersed users to establish separate mini-networks with each other for the purpose of exchanging digital music files. But Napster was not a pure form of P2P because anyone seeking access to a file on someone else's computer first had to go through a central server containing an index of music files and their locations on individual PCs. Since Napster was shut down by a court order responding to the recording industry's litigation, a variety of alternative forms of peer-to-peer networking software have emerged. This new generation of programs—**Gnutella, MusicCity, Audiogalaxy, Fast Track** and **Aimster,** among dozens of others—does away with Napster's central indexing server and allows users to directly access music files on other people's computers.

The great advantage of peer-to-peer architecture is that it allows dispersed members of an online group to quickly and directly exchange data without relying on a central server. Far-flung participants from different institutions can thus be immersed in the same virtual working environment and collaborate much more effectively than they can in the more traditional networking structure of centralized computer servers and clients.

It bears emphasizing that peer-to-peer file sharing is not just a new strategy for trading music files in the post-Napster computing environment. P2P has many serious scientific and business applications. Its advantages are the speed, security and reliability of linking computers together from diverse locations. As one *New York Times* account put it:

Employees can gather for online meetings or for short-term projects regardless of their locations, while bypassing a bottleneck of corporate file servers. Freelance workers and contractors can join a group online without compromising a company's security. In business-to-business commerce, companies can use peer-to-peer

computing to order from suppliers and serve customers. And Napster-like file sharing allows quick downloads of software and essential documents.[9]

Already dozens of major corporations are actively exploring how P2P can accelerate the locating and sharing of documents, facilitate online collaboration within work teams and bring together computer data networks that are incompatible. These experiments are being conducted by the likes of drug companies such as GlaxoSmithKline, law firms such as Baker & McKenzie and the accounting firm Ernst & Young. Marketing consultants Frost & Sullivan believe that enterprise use of P2P will grow 100-fold over the next six years. The first major conference on P2P, hosted by open source software champion Tim O'Reilly in February 2001, drew a large and enthusiastic crowd.

One of the more advanced public initiatives in applying peer-to-peer computer architecture is **The Open Lab at University of Massachusetts, Lowell.** This project is dedicated to providing decentralized networking tools to researchers so they can work together in solving information problems in the life sciences, a new field known as "bioinformatics."

The Open Lab's website acts as an entry point for interested researchers, who can then join separate peer-to-peer networks in the specific area in which they want to collaborate. New members acquire the relevant data archives and software tools in development from existing members of the peer-to-peer network. Open Lab is currently sponsoring some 39 separate projects involving more than 1,000 scientists. Two examples include: the Sequence Manipulation Suite, an effort to develop software for analyzing and formatting DNA and protein sequences, and the E-CELL Simulation Environment, a software package for cellular and biochemical modeling and simulation.

Another initiative seeking to harness the power of P2P is the **Martus Project**. Based in California, this nonprofit initiative is developing software that will allow human rights activists across the globe to cheaply and anonymously report kidnapping, torture and other abuses in their regions. Too often, prompt and accurate documentation of such human rights abuses has been stymied by the lack of standardized reporting criteria. In addition, the possession of files (vulnerable to loss or destruction) can jeopardize the safety of human rights workers.

The Martus Project software aims to transform the dispersed and irregular fraternity of grassroots human rights organizations into a reliable, globally integrated monitoring resource. By establishing a secure, prompt and durable reporting mechanism, it is hoped that the Martus Project's encrypted electronic files will become a means of tracking flare-ups of violence and abuse in any given location of the world. It will also provide hard statistical evidence for researchers and the media, and bolster such groups as Human Rights Watch and Amnesty International in their efforts.

Peer-to-peer technology is also playing a central role in empowering Internet users to self-publish on the web. P2P is driving the burgeoning **weblog or "blog"** phenomenon instigated by a series of websites offering free, easy, push-button publishing tools. Blogs are a new genre of Web publishing that features idiosyncratic collections of easily updated personal news, commentary, favorite weblinks and photos. Many blogs are densely packed with annotated links to other parts of the Web and

other blogs. One blog portal, www. livejournal.com, claims to have 140,000 "bloggers" who update their pages at least once a month. Some blogs have few visitors, others have thousands; word of mouth rules.

Weblogs are significant in how they harness P2P to overcome the complexity and cost of uploading material to the Web. In the process they help thousands of people bring their ideas, quirks, treatises and quotidian reflections to a widely accessible public stage. Weblogs are also significant in how they help individuals overcome the growing technical and financial barriers to publishing on the Web. The simplicity and openness of the weblog form helps people remain active users of the Internet commons and invigorate the Web as a genuinely participatory two-way mass media.

II. Save the Internet Commons:
Require an Open, Accessible Infrastructure

T he many remarkable online commons described in Part I owe countless direct and indirect debts to the open architecture of the Internet. Without certain structural features—open technical protocols for Internet data transmissions, open software standards for interconnections, competition from diverse Internet service providers and content sources, the limited application of copyright—the Internet commons could not have emerged, let alone become the most vibrant communications medium in history.

This fact needs to be roundly emphasized because so much flows from it. If the past trajectory of Internet innovation and cultural freedom is to continue into the future, we must understand that the cyber-commons is not a natural and permanent state of affairs. It was deliberately created and it needs to be vigilantly protected. Indeed, unless the open character of the Internet is consciously safeguarded as a matter of public policy (which indeed, was also critical to its early growth), it will almost certainly become balkanized and more proprietary.

Stanford Professor Lawrence Lessig has explored this theme in his two influential books, *Code and Other Laws of Cyberspace* and *The Future of Ideas*. In *Code*, Lessig argues that the design of software code is itself a kind of politics and law. It regulates what sorts of freedoms computer users may have and controls individuals' behavior in ways that the law cannot. Software design can enable private companies to assert powers traditionally exercised by government, for example, in defining the prevailing norms of privacy, free speech and commercial transactions.

In *The Future of Ideas*, Lessig sounds a dire warning about the future of the Internet commons. He explains how the explosion of innovation spurred by the

Internet stems from its open, neutral architecture. Because the Internet is a commons—a free space in which ideas, information and culture can flow freely—it has spurred unprecedented creativity. But gradually a new "architecture of control" based on proprietary software standards, law and market power, is emerging. Rather than allow an open-ended freedom and self-determination among Internet users, this new architecture seeks to empower private corporations and the government to regulate what may be read, bought and communicated on the Internet, and under what terms (sale, rental or for free).

What must we do to secure the integrity of the Internet commons? Part II argues that an open infrastructure is a critical requirement. We focus on three areas of special importance: the future of open standards, the ability of consumers to enjoy open and nondiscriminatory access to the Internet and the dangers that media concentration holds for the public interest.

The Future of Open Standards

When significant new technological breakthroughs occur, they are very often followed by a struggle between businesses competing to ensure that *their* proprietary version of the technology becomes the universal standard. Technical standards and protocols provide the compatibility necessary to attract the critical mass of users needed to sustain the growth of a technology and a market. While standards may constitute an obscure technological backwater, they are potent forces in shaping market structures, fostering (or thwarting) competition and empowering (or disenfranchising) citizens and consumers.

A standard or protocol need not be private property; it can be cooperatively generated and operate as a public good or commons, accessible to all. However, extraordinary profits flow to any company that can establish its proprietary standard as the universal standard. That is because a privately owned standard functions as a kind of monopoly power in the marketplace. The history of technology is replete with battles over standards: in electricity, *Edison vs. Westinghouse*, in VCRs, *Sony vs. Matsushita*, in color TV, CBS vs. NBC.[10]

So far, no company has been able to establish proprietary technical standards for the Internet. Originally an initiative of the U.S. military, the Internet was designed by technologists in academia and government whose primary interest was to create a cheap, efficient, transparent and decentralized means of exchanging information. Contributors with non-commercial motivations cooperatively created the protocols and software tools that enable the free flow of communication via the Internet. Any user can attach any computing device to the local telephone network and use it as a common carrier to access the Internet either directly or, more typically, through competing intermediaries.

To date, no profit-seeking corporation has been allowed to seize control of critical Internet protocols; they have functioned as a common resource, accessible to and modifiable by all users. In addition, government regulators acted to ensure that technical standards in the copper wire telephone system did not vest power in the telephone carriers or computer companies, the two major industry participants in Internet standards disputes. Instead, the designers of the Internet sought to create an open, non-proprietary architecture that would empower individual end users: a radical concept then and now.

Much of the Internet's enormous success stems from this innovation. By allowing the "intelligence" of the network to be placed at the user level—in applications rather than in the network itself—the Internet has enabled individual creativity to emerge and flourish in unprecedented ways. Millions upon millions of decentralized users can interact in an open and stable public space, which itself has the structural capacity to grow and accommodate innovations that were once unimagined, such as the World Wide Web, streaming audio and video and wireless appliances and applications. This architectural principle—known as "end-to-end"—has facilitated the Internet's vibrant culture of innovation and bottom-up participation.

The pool of open protocols—a commons—that has made the development of the Internet possible is not permanent or fixed, however. It is entirely possible for the software code to be rearranged and new, proprietary standards to be imposed. This, in fact, is a compelling ambition for many high-tech companies. Following the historical pattern described above, a number of hardware and software companies are developing sophisticated new Internet services that seek to integrate proprietary technical standards into the very architecture of the Internet. If widely adopted, the standards would generate huge, stable revenues for a company's shareholders while also imposing a kind of invisible tax on all users of the Internet.

From a commercial perspective, the "end-to-end" architecture of the Internet is distressingly unpredictable and hospitable to new competition. For individual businesses, it is far more profitable and strategic to try to use proprietary standards to shield themselves from competition and channel Internet users into controlled, proprietary spaces.

But from the perspective of the public, such strategies erode or destroy the Internet as a commons. Subtly and over the long term, they enervate the infrastructure design that has enabled so much innovation, competition, user freedom and cultural expression to flourish. Proprietary standards threaten to undermine the very features that we celebrate as the proudest achievement of the medium.

The Internet Standards Setting Process

Can the Internet's founding architecture be protected? There is no simple answer to this question because establishing technical standards for the Internet is a multilayered, unstructured process. There are many different participants and no single governing authority. The non-commercial, bottom-up, consensus-driven approach that built the core protocols and standards of the Internet in its early stages continues today, but its influence is diminishing. This work is pursued through technical bodies such as the World Wide Web Consortium (W3C) at The Massachusetts Institute of Technology (M.I.T.) and the Internet Engineering Task Force (IETF).

These groups coordinate voluntary working groups of technologists from academia, government and businesses, who spend a great deal of time debating, refining and endorsing consensus standards in specific areas. The W3C and IETF are open to all interested participants and work in an informal, deliberative manner that favors technical efficiency and open, non-proprietary Internet architecture. Their recommendations are not binding, however. They rely on the cooperative spirit of the companies and individuals involved in promulgating standards.

As billions of dollars of investments have been plowed into Internet-related businesses,

the strength of the cooperative spirit in setting standards has dimmed. The financial stakes are just too high. Rather than seeking to negotiate common standards of interoperability that all can use, many companies use every tactic available to try to outmaneuver competitors and impose their own proprietary technical protocols.[11] For such companies, privately owned, revenue-generating standards are the ideal outcome rather than the open and technically optimal standards that have traditionally emerged from the cooperative approach. Not surprisingly, large technology companies have the greatest leverage in imposing their preferred standards and protocols.

> **Rather than seeking to negotiate common standards of interoperability that all can use, many companies use every tactic available to try to outmaneuver competitors and impose their own proprietary technical protocols.**

Frustrated at the pace of W3C's standard-setting for Web services—a rapidly moving technical architecture that has enormous market potential—a group of the largest technology players, including Microsoft, IBM, Intel and BEA systems announced in February 2002, the formation of their own consortium, the Web Services Interoperability Organization (WS-I), which seeks to promote Web services. While the WS-I claims it is not a standards organization, but a complement to the W3C, its formation has been interpreted as a signal that the future may see a splintering of standards for Web services technologies.[12]

In the face of such pressures by the largest companies, various government agencies, courts, user groups and nonprofit standards organizations are struggling to combat pressures to scuttle open standards. The inevitable tension between an open Web architecture and the realities of patents and licensing cannot be entirely avoided, of course, as the W3C realizes.[13]

But as new technologies appear and different companies seek to institutionalize a competitive advantage through standards, it is inevitable that the battles over standards will intensify. As we see later, several arenas are particularly contentious.

Hot Zones for Internet Standard Setting
Instant Messaging (IM)

It is possible to pick up the phone and call anyone in the world regardless of his or her telephone service carrier. This is not the case with instant messaging (IM), a software application offered by service providers that allows individual computer users to identify other users who are online at the same moment and to communicate with them in text and in real time. One hitch is that two users cannot communicate with each other unless both have the same IM service provider.

Despite this barrier, there has been a rapid escalation in personal and business use of IM, making it a large and significant commercial platform. More than 50 million Americans sent an instant message last year, for example, and UBS Warburg, an investment bank, trades about $1 billion in stocks and bonds daily with IM. Meanwhile, growth in wireless Internet use worldwide is creating more opportunities for instant messaging, prompting some industry observers to predict that IM could eventually displace email as the primary means of person-to-person online communication.

Despite the size of this new platform, infighting among competing service providers has prevented the adoption of a universal standard. A number of IM service providers have accused AOL Time Warner, the dominant provider with more than 100 million registered users, of actively blocking them from linking with its system, despite a Federal Communications Commission (FCC) order in 2000 to do just that as a condition of the merger of AOL with Time Warner. Similar tactics have been attributed to Microsoft, the number two-ranked IM provider.

The Internet Engineering Task Force (IETF), a nonprofit standards organization, has been attempting to bring the parties together and reach a universal IM standard for the last three years. So far, no consensus has been reached. An agreement—"IMUnified"—sought to support the IETF's efforts to forge open universal IM standards among the major rivals of AOL Time Warner, including AT&T, Microsoft and Yahoo!, but so far this agreement has not yielded any concrete results.

All the major companies involved are clearly jockeying for an opportunity to impose their proprietary protocols as the IM universal standard. It is an open question whether the IETF can successfully resolve this conflict. After all, it has no formal legal or political authority in setting standards, just the goodwill and acquiescence of participants. For these reasons, policymakers must continue to be vigilant in ensuring that no single company or group of companies be allowed to impose a closed IM architecture that would thwart competition, freeze innovation and disenfranchise consumers. The benefits of open standards in promoting freedom, decentralized control of information and the synergies of networking are too great.

The Windows XP/.NET Threat

Despite the U.S. Government's antitrust victory over Microsoft, consumers may not enjoy greater choice, convenience and innovation in operating systems. By failing to win significant remedies, the Government has essentially sanctioned a new round of anti-consumer behavior. The newest offense comes in the form of Windows XP and .NET (hereafter referred to as "Windows XP/.NET"), a bundle of products that combine an operating system, multimedia applications, Internet service and ecommerce services.

Until recently, all these separate functionalities were offered by competing companies and in open source software forms. Microsoft's "innovation" was to bundle them all into a comprehensive package. The company claims that this bundling helps it serve its customers better. This might be true if consumers could still choose rival software applications easily and those applications were as fully compatible with Windows XP as Microsoft's are. But this is simply not the case, critics claim. Worse, many critics note that Windows XP/.NET "takes private" many of the open architecture features that are fundamental to the Internet. (It would also introduce alarming new threats to consumer privacy.)[14]

Microsoft's Windows operating system is overwhelmingly dominant on desktop personal and business computers and this ubiquity means that the company has an exaggerated influence in the standard setting process for personal computing software. Windows is now the almost universal platform from which individuals do their everyday computing; it is the space where they do word processing, spreadsheets, email and so on. Competing software providers have had to design their products according to the terms of Microsoft's

proprietary platform. Microsoft's abuse of this market power was the core of the government's antitrust case against the company. With the introduction of Windows XP/.NET, Microsoft is now embarking on this troubling path once again.

Windows XP/.NET is widely seen as an attempt by Microsoft to extend its proprietary desktop platform onto the Internet. Individuals using the Internet would do so through Windows XP/.NET and therefore competing Internet services would have to design their products according to technical standards set by Microsoft. For the average user, the Internet would cease to be a neutral platform. Instead it would become a medium that is filtered and moderated by the *de facto* design standards that Microsoft has imposed through Windows XP/.NET. The company would gain enormous and unprecedented influence over what can be said and done on the Internet.

Microsoft has already shown its intentions to use this power. It initially designed Windows XP/.NET with an Internet browser feature called "Smart Tags," which automatically highlighted words on the Web and hyperlinked them to Microsoft's advertisers' websites. Cast as a user convenience, Smart Tags would have given Microsoft and Microsoft-designated websites a powerful, privileged status on the Internet at the expense of everyone else. A public outcry over this feature forced Microsoft to eliminate it from the final, publicly released version of the software.

Remedies are available. The company could be forced to alter the design of its platform to make it more open to and compatible with rival products. It could be compelled to make public certain parts of its software code to allow users to modify it. But a prerequisite is for courts and regulators to recognize the fun-

damental importance of open standards and protocols. They are a critical tool for assuring competition and preserving diverse and innovative communications.

The Standards Impasse for eBooks
Dozens of different ebook reader devices are now in stores and a confusing array of incompatible ebook formats is emerging. Will universal technical standards for publishing, distributing and cataloging digital ebooks emerge, and will they allow readers the same rights that they currently enjoy with paper books? Or will the publishing industry and technology companies remain at loggerheads, each pursuing its own parochial strategic goals?

A universal ebook standard would apply to the presentation of an ebook's text, the cataloging information or "metadata" that identifies the book's author, publisher, subject matter etc., and the copyright protections that the digital work would enjoy. To date, the industry's approach has been to work towards a separate standard for each of these functions. There are wide expectations that the three most effective and widely accepted formats will be combined at some point in the future. The disparate array of standards has obvious implications for the ability of consumers to download and display text from a wide variety of publishing sources.

The history of the Internet suggests that an open, neutral set of standards would have the most powerful, positive effects on this budding marketplace. One need only look at how the commercial online services, each based on its own proprietary standards, were swamped by the open standards of the Internet. Notwithstanding this history, there are important reasons why consensus standards for ebooks are not being readily developed and accepted.

Publishers fear that electronic publishing, especially on the Internet, will undermine their capacity to control the distribution of copyrighted works. If readers can make quick and perfect copies of electronic texts, it would obviously harm publisher's revenues. But preliminary evidence suggests that even when digital versions of a book are available for free via the Internet, most people still prefer to buy a physical copy of the book. In any case, publishers are determined to institute "digital rights management" systems to allow them to strictly control how ebooks can be accessed, used and reused.

Technology companies such as Adobe, Palm and Microsoft have their own concerns. They have invested heavily in creating proprietary ebook formats and compatible reader devices. Naturally, they do not want to abandon their formats for a universal, common standard. So for the foreseeable future, the competing technologies will fight it out in the marketplace until one becomes the dominant standard. The public, for its part, has a keen interest in establishing open standards in order to allow the cheap and easy publication of ebooks by ordinary users.

An industry consortium called the **Open eBook Forum** comprised of the largest ebook technology companies and publishing houses is hosting a series of working groups on ebook standards. Its first achievement has been the creation and public release of the Open eBook Publication Structure (OEBPS). This is the group's nominated standard for the first presentation of the text of ebooks. It is an open standard that anyone can use to electronically publish their fiction or nonfiction work; most brands of ebook reading devices can display the format.

Other working groups at the Open eBook Forum and elsewhere are in the process of creating standards for ebook cataloging data and copyright protection. The Digital Object Identifier Foundation's DOI standard is emerging as the most widely accepted set of standards for cataloging ebook data.

Little progress is apparent in the effort to create a copyright security standard for ebooks. This is proving to be a major barrier to the growth of the technology. No large publishers are adopting the OEBPS. They are continuing to use proprietary formats to release new ebooks and the various owners of these standards are aggressively protecting them. One such enforcement action incited public protests. In July 2001, the federal government jailed Russian software programmer Dmitry Sklyarov in California for writing a program that circumvents the encryption on an ebook format owned by software maker Adobe Systems. Although the government later released Sklyarov, it has continued to prosecute his employer, Elcomsoft, for violating the Digital Millennium Copyright Act of 1998 (DMCA). (For more, see Part III, Section D.) Elcomsoft argues that the criminal aspects of the DMCA are vague and overly broad, and that the law violates the First Amendment rights of computer programmers.

Clearly, there is a conflict of interest here for ebook companies in the search for common standards. For example, although Adobe is a funder and active participant in the Open eBook Forum, it continues to push its closed, proprietary standards. Other key ebook format owners like Palm and Microsoft are employing the same strategy. The balkanization of standards means that individual readers can read only those ebook titles that are compatible with their particular brand of reader device. They cannot swap titles amongst friends and colleagues with different devices,

in the way they can with traditional books.

Just how long these restrictions continue will depend on how the impasse over standards is resolved. One thing is certain: The lack of universal ebook standards is inhibiting the growth of a vigorous ebook culture and Internet distribution and sales.

If closed, proprietary standards prevail in these new areas, the Internet is likely to evolve into a more predictable, commercial and centralized medium. This would not serve the values of an open, free, democratic society.

A Future of Openness or Control?

The importance of open standards and protocols in preserving the decentralized, participatory quality of the Internet means that the continuing battles over standards summarized earlier have major implications for the nature of the public domain into the future.

Many crucial, permanent technical standards for Internet media will be set in the coming decade. In addition to instant messaging, the Internet platform and ebooks, standard-setting disputes are unfolding in a broad range of Internet services, including music, video and wireless connections. If closed, proprietary standards prevail in these new areas, the Internet is likely to evolve into a more predictable, commercial and centralized medium. This would not serve the values of an open, free, democratic society. Open standards are key to the goals of competition, innovation, cultural diversity and the First Amendment.

This is one reason why, historically, the owners of infrastructure in telecommunica-tions and broadcasting have been closely regulated. Proprietary technical standards have a unique power to influence marketplace competition, technological innovation, democratic culture and citizen rights. In the Internet era, ownership of core technical standards confers a similar degree of influence, and therefore warrants equally intense levels of monitoring.

But such monitoring of Internet standards is complicated. That innovators can design new Internet applications without seeking permission of any network or standards owner is an undeniable advantage. It can spur competition, promote innovation and enhance freedom of speech and culture. Yet that very same standard-setting power can quickly become an anti-competitive and anti-democratic tool.

Nonprofit, cooperative standards setting bodies such as the Internet Engineering Taskforce and the World Wide Web Consortium have proven to be the best means to date for setting standards. They have insisted upon dialogues that prize the most meritorious, open technical standards. In the face of new industry pressures, these bodies must be supported in every way possible. At the same time, Congress, the Federal Communications Commission, the Department of Justice and other industry regulators must maintain a steadfast commitment to the end-to-end architecture of the Internet. This is not merely a matter of good economic or technology policy, but a matter of protecting the heart of our democratic culture in the digital age.

Protecting Open Access to the Internet

It is the open quality of the Internet architecture that has made it such a fertile zone for technical innovation and public communications. As we saw in the previous section, this open character is partly a product of the non-

proprietary technical standards that govern information flow around the Net. But it is also a result of specific U.S. Government decisions that determined the terms on which people could *access* or physically connect to the Internet.

In 1984, as part of the break up of AT&T, the U.S. Government imposed a nondiscrimination rule on the nation's telecommunications system. From that point on, owners of telephone networks could not decide which appliances or applications could connect to their networks, nor bar new services from them. So, when people began to discover the Internet in the 1990s, they were able to dial-up from home using their telephone line and they could choose from among many different Internet service providers (ISPs). Telephone carriers by law could not discriminate; *open access* was the rule.

The terms of Internet access are rapidly changing, however. The fertile open architecture of the Internet could be an unfortunate casualty. As the sophistication of websites and websurfers grows, simple dial-up access to the Internet is proving inadequate. More and more people are accessing the Internet using faster, always-on connections known as "broadband."

Cable television companies have been at the forefront of this trend. They own networks of wires into homes that are perfect for broadband access. But unlike telephone carriers, they do not operate under government policies mandating open access. In March 2002, the FCC formally classified Internet access via cable broadband systems as an "information service" under the Telecommunications Act, rather than as a "telecommunications service" subject to the common carrier regulations that apply to Internet access over telephone lines. Cable companies are therefore legally permitted to discrimi-

nate among Internet service providers (ISPs) and grant access only to competing ISPs (if any) that agree to certain conditions compatible with the cable company's competitive interests. Cable companies have every incentive to attach restrictive commercial conditions to their broadband services and to shape the way people access the Internet in ways never permitted to telephone carriers. Instead of an open Internet with no filtering or blocking of content or applications flowing from one end user to the next, the Internet could be modified to have the architecture of cable television: a closed, completely controlled content marketplace. In such a scenario, cable companies would act as permanently entrenched "gatekeepers" by virtue of their control over millions of users' first point of access.

Although cable companies strongly deny that they pose any threat to the openness of the Internet, the commercial advantages of the gatekeeping strategy are proving irresistible. For example, many cable broadband providers block users' access to streaming video, which is television-like content delivered over the Internet. Video streaming undercuts the cable television industry's largest source of revenue, its monthly subscriber fees. As Daniel Somers, an AT&T executive put it, "We didn't spend $56 billion on a cable network to have the blood sucked from our vein."[15]

Some cable companies have imposed other restrictions on Internet users. They have prohibited home networking, running a website from a home computer and file sharing activity. Cisco Systems now offers a product to cable companies that allows them to introduce selective quality-of-service filters on to their networks.[16] This technology would privilege certain websites (i.e. ones that generate revenues for the cable company) for fast down-

loading, leaving content from the rest of the Internet to trickle through more slowly. All these measures compromise the Internet as an open, impartial platform for many-to-many communication.

Now that cable companies are a significant new force in the design and functioning of the Internet, it means that any newcomer with innovative content or technical applications must first secure the approval of cable executives. This is potentially a very dangerous development, explains Professor Lessig: "You get less innovation and a different kind of innovation when the platform is not neutral, when the platform owner can, down the line, simply change its mind and block the innovator's content or application."[17] This shift undermines the level playing field for new Internet-based business ideas; by dint of their gatekeeper powers, cable companies gain a distinct advantage over competitors by gaining the ability to impose a "tax" on the communication and innovation of creators and consumers alike.

Perhaps even more troubling, the shift from an Internet architecture based on open access to a closed, controlled architecture poses serious threats to freedom of expression in the medium. The flourishing of civic, cultural and political communication on the Internet—its unprecedented ability to give new voices a public platform and to allow communities to self-organize their own commons—was not an accident. It occurred to a large extent because of the unconditional, unmediated terms on which people could access and use the Internet. Altering the shape of Internet architecture in a way that centralizes control over access and use threatens the very basis of its popularity. It threatens innovation, competition and democratic cultural freedoms.

If current trends continue, cable broadband access to the Internet could eventually be the norm for a large percentage of the population. Using telephone lines for access—either via traditional dial-up services or broadband DSL technology—will likely be common alternatives for the near future. But cable broadband will likely be the dominant form of Internet access for the long term. It is more ubiquitous than DSL, at least in the residential market, and in general it has a superior record of technical performance and customer service than DSL.

The FCC signaled its disinclination to assure open access for cable broadband service when it ruled in March 2002 that cable broadband did not constitute a "telecommunications service" that ought to be subject to common carriage regulation. This ruling was especially unfortunate because it gives DSL providers a new reason to argue for the same regulatory status for itself. The means that both cable broadband and DSL companies may eventually be able to exclude competitors from using their infrastructure, and consumers may have few competitive options for gaining access to the Internet.

Looking further ahead, the advanced Internet2 already connects research universities at data transfer rates up to 100 times faster than today's commercial broadband—speeds not even physically possible over copper telephone wires. A new "last mile" infrastructure based on fiber optic and wireless technologies

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will be necessary to deliver the true potential of the Internet to most homes and businesses. The policy direction established now on access could well determine whether all future networks are essentially open or closed.

The fairest, healthiest regulatory policy would be for *both* telecommunications systems and cable operators to be subject to federal open access requirements. As a condition of approval of the merger of AOL and Time Warner, the Federal Trade Commission and Federal Communications Commission explicitly required the giant new company to maintain open access to no fewer than three competing ISPs on its cable systems. A number of city governments, as part of their local franchise agreements with cable operators, have also sought to impose open access policies. But no formal federal policy of open access for the nation's cable systems has yet been established.

The operators of some cable systems have raised doubts about the technical feasibility of making cable broadband open access. But AOL Time Warner's actual behavior following its merger has demonstrated that such doubts are groundless. Open access is feasible, and compliance with FCC mandates is possible. The sooner the FCC mandates open access for all cable operators, the better.

Open access to the nation's telecommunications network has been critical to the Internet growth as a great, decentralized public communication resource. It has fostered enormous business innovation and prosperity-building competition. It has also enabled some core democratic values: free expression, cultural openness and robust public dialogue. FCC inaction on open access could sanction the evolution of an entirely different Internet architecture and with it, a host of very worrisome, entirely predictable consequences.

The Dangers of Media Concentration

For more than half a century, the U.S. system of television and radio has been based on a simple principle: Diversity of ownership and competition will best serve the diverse interests of the American people, particularly local communities and minority audiences. The Supreme Court put it succinctly in a 1945 ruling, *Associated Press v. United States*: "The widest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public."[18]

Nowadays, this principle is gravely threatened. Consolidation of the nation's various media—both within each media industry and among them—has greatly intensified, and threatens to grow much worse if the FCC continues on its current course.

It was once a truism that the First Amendment belongs to the public, and that media companies should affirmatively serve the public's need to hear diverse viewpoints and to have access to speak in their own voice. Now the First Amendment is being redefined as a new form of corporate protectionism against market regulation. It is the corporation, not the individual citizen, whose rights are being threatened, as FCC Chairman Michael Powell sees it. Powell recently declared that long-standing FCC rules limiting media ownership are "offensive to First Amendment values."

But the idea that blind deregulation will necessarily serve the public interest should have been discredited by the aftermath of the 1996 Telecommunications Act. That landmark legislation was touted by Speaker Newt Gingrich and President Bill Clinton as a bracing mandate for competition, lower prices and programming diversity.

Seven years later, few of these goals have been met. Quite the opposite: the most strik-

ing result of the Act has been relentless consolidation. A detailed 2001 analysis by Consumers Union, "Mapping Media Market Structure at the Millennium," shows that the telephone and cable industries do not compete, but instead focus on their respective markets. Long-distance telephone carriers cannot compete with local telephone companies because the latter have succeeded in thwarting long-distance entry into local markets. Satellite TV is not a serious competitor with cable television, which is an oligopoly at the national level and a monopoly at the local level. Radio and newspaper chains have grown larger, and national television networks are growing bigger as they buy up more local broadcast stations.

"The fundamental failure of media and communications policies to develop competitive transmission/distribution systems have left consumers at the mercy of powerful content and transmission companies whose most antagonistic 'competitive' behavior consists of fighting with each other over who gets the larger share of monopoly profits from consumers, and who often control content delivered to consumers," writes Gene Kimmelman, co-director of Consumer Union's Washington office.[19] Consumers are most often used as hostages by "Big Media" in their inter-industry squabbles, as exemplified by the nasty public spat in 2000 between ABC, owned by the Walt Disney Company, and Time Warner, over the terms of cable carriage of Disney programming on Time Warner systems. Protecting market turf is a more salient goal than meaningful diversity, innovation or public service.

Further concentration within the media industry is likely following a federal appeals court ruling in February 2002 declaring several of the FCC's ownership rules—which have assured a modicum of diversity in our nation's media—as "arbitrary and capricious." These rules prevented any single company from owning local stations that reach more than 35 percent of the national audience, and prohibited common ownership of a cable system and a broadcast station in the same community.

Similar rules prevented any single cable company from owning systems that reach more than 30 percent of all cable households nationwide. But another recent federal court decision will ensure that this ownership cap on cable systems will be relaxed, perhaps dramatically. Jeff Chester, executive director of the Center for Digital Democracy, predicts that a single cable company could end up controlling access to more than half of all U.S. households.

Finally, as part of the Commission's "biennial" review of all of its ownership regulations required by the 1996 Act, the Commission is currently considering the fate of rules that prohibit common ownership of a broadcast station and a newspaper in the same community. If its September 2001 *Notice of Proposed Rulemaking* in this matter is any indication, this rule is also likely to be relaxed absent an airtight empirical case urging retention.

The consolidation unleashed by the Telecommunications Act has weakened local broadcasting and vested greater power in a handful of companies to dictate the nation's programming. This has already had a significant impact on the nation's journalism and therefore on the quality of government and democratic dialogue. Leaders of the journalism profession have long considered their work as independent watchdogs to be a public trust, not a profit center. But the corporatization of broadcast and newspaper journalism has ushered in stiff economic criteria for revamping the character of the news.

This mentality prompted the Disney Company to consider replacing the acclaimed *Nightline* news program with David Letterman's *Late Show* because comedy/talk was seen as reaping higher ratings than news. Many observers believe that the evening news programs may be the next victims. It would be a logical culmination to the distressing surge of low-cost punditry at the expense of serious reportage, tabloid-style "news" shows and the shameless use of news to cross-promote entertainment fare (such as plugs for *Survivor* on local and national news programs). At many news operations, media mergers have led to virtual blackouts of issues that might prove embarrassing to the parent company (such as ABC News' reticence to broadcast stories that reflect poorly on the Walt Disney Company and NBC News' uncritical coverage of issues, such as nuclear power, that directly affect General Electric).[20]

This tendency is industry-wide. The news media's self-serving editorial bias can be seen in its failure to cover policy issues that affect their own bottom lines. The 50 largest media companies spent more than $111 million in lobbying between 1996 and mid-2000, and media executive and employees gave $75 million in campaign contributions to candidates for federal office and the two major political parties between 1993 and mid-2000, according to the Center for Public Integrity. [21] Such political spending helps account for the scant broadcast coverage of the congressional giveaway of "digital spectrum" to broadcasters (estimated value, $70 billion); the recommendations made by a federal advisory panel about new public interest obligations for broadcasters; and the current court ruling relaxing media ownership rules.

Further concentration of the nation's media outlets will likely only exacerbate the abuses that inevitably occur when power is exercised out of public view. As media companies begin to amass cable, television, radio and newspaper outlets in the same city, we are likely to see a concentration of control and less competition in news reporting and advertising rates. This trend could have particularly distressing consequences in small- and medium-sized markets. At the national level, we could see even more incestuous forms of vertical integration among media industries than we have seen to date.

Robert McChesney has persuasively argued in his book, *Rich Media, Poor Democracy*, that these sorts of media concentration foster the proliferation of tabloid fare and sound-bite punditry, and cutbacks in serious journalism and thoughtful commentary. The lust for new economic and marketing "synergies" in media conglomerates tends to produce the paradoxical result of greater absolute quantities of content but less diversity and daring among what is produced.

The inexorable bias is for programming and news that serves commercial goals, especially higher ratings. Programs that might be thoughtful, offbeat, experimental, controversial or anti-commercial are the distinct exception. All this stands to reason in a broadcast licensing system that subsidizes commercial content over all else. As McChesney and John Nichols put it, "When the government grants free monopoly rights to TV spectrum, it is not setting the terms of competition; it is picking the winner of the competition. Such policies amount to an annual grant of corporate welfare that economist Dean Baker values in the tens of billions of dollars. These decisions have been made in the public's name, but without the public's informed consent."[22]

Increasing media concentration is not just an economic issue, it should be stressed, but

also a political and democratic issue. When a handful of media giants can more or less determine what news shall be gathered and how our society will conduct its public conversations, there are serious implications for democratic self-determination. It matters if minorities and women, for example, are not represented among the ownership of media outlets, which tends to have effects on diversity of programming.[23] Serious news and political commentary also suffers when the leading news media are guided more by ratings than journalistic values. The consequences can be seen in the sensationalism surrounding the missing intern Chandra Levy when, during the summer of 2001, very few news programs covered a government report on the threats of terrorism to American society.

There are a number of structural solutions—some set forth by Professor McChesney in a recent article[24]—that would help rein in the media giants and diversify the range of voices that could be heard in our media system:

❚ Retain and strengthen the existing rules limiting ownership within a given media industry and between industries;

❚ Apply existing anti-monopoly laws to the media and, where necessary, expand the reach of those laws to restrict ownership of radio stations to one or two per owner;

❚ Establish a full tier of lower-power, non-commercial radio and television stations across the nation;

❚ Revamp and invest in public broadcasting to eliminate commercial pressures, reduce immediate political pressures and serve communities without significant disposable incomes; and

❚ Reduce or eliminate TV advertising directed at children under 12.

Forging a new public interest initiative to combat media concentration is a daunting long-term project, to be sure. But it is equally certain that few other media reforms will make much headway if the economic, political and cultural power of top media companies continues to become even more concentrated.

III. Protect the Public Domain:
Limit the Copyright Monopoly

There is a delicate balance at the heart of intellectual property law. As a society, we wish to ensure that creative people are motivated to produce creative, literary and scientific works that everyone can use and enjoy. So we grant copyrights that give creators exclusive rights to control the copying, distribution and making of derivative works. The goal is to ensure that creators have the opportunity to be adequately compensated.

If we give creators and content industries too much legal control over their works, however, there is the danger that it will stifle the free exchange of ideas and impoverish public dialogue. Imagine if cartoonist Thomas Nast (who died in 1902) could still control every rendering of Santa Claus that he popularized. Imagine if Jane Austin's heirs could stop the making of films such as *Clueless* which was directly inspired by an Austin novel or if newspapers could prevent others from repeating newsworthy facts. In a free, democratic society, an open, non-proprietary "public domain" is indispensable.

That is why, historically, Congress and the courts have placed limits on the scope and term of control of creative work. Fair use principles allow teachers and students to use material for educational purposes without copyright holders' permission. Fixed copyright terms restrict the length of copyright holders' monopoly rights. These limits eventually allow works to enter the public domain and be used by anyone without permission or payment.

If the information commons requires an open Internet infrastructure, as described in Part II, it also requires an open and vibrant public domain in content. Citizens

and consumers, scholars and commentators, authors and artists all need ready access to and use of prior creative work and information. If property rights in information and creative work are too broad and absolute, they constrict the public domain much as the overdevelopment of land destroys open spaces.

> Activities that were once taken for granted and protected by law—libraries sharing materials with patrons, teenagers making copies of CDs for their personal use, artists using snippets of imagery or sound for new creations—are summarily redefined as "piracy."

In the past, copyright law has not expressly recognized that our culture requires large, non-propertized "open spaces" of information, scientific knowledge and creativity. In recent years, however, as the new copyright laws have begun to take effect, it has become evident that we urgently need bodies of material that are open to everyone, as in a commons. The public domain is absolutely critical.

If owners of the copyright monopoly claim every last iota of control over their works, then a significant amount of freedom is lost. The activities that were once taken for granted and protected by law—libraries sharing materials with patrons, teenagers making copies of CDs for their personal use, artists using snippets of imagery or sound for new creations—are summarily redefined as "piracy." The democratic freedom to use and share a work as one sees fit is lost—or more accurately, control is shifted to a handful of corporate "content owners" to exploit for maximum market gains. These companies, not the general public or creators, determine whether it shall be legal for a work to be read, privately performed, resold or used for learning or commentary. In this manner, overly broad copyright protections interfere with important civic, cultural, scientific, educational and artistic needs.

This trend has been accelerating since the 1990s when, at the behest of various media and content industries, Congress enacted a series of laws that greatly expanded the rights of copyright, patent and trademark owners. Congress lengthened the term of copyright by 20 years, for example, giving copyright holders (primarily major media companies) a sheer windfall at the public's expense. Mickey Mouse and thousands of novels, poems, musicals and songs that were scheduled to enter the public domain in 2003 were locked up as private property for another 20 years. This will force the American people to pay billions of dollars for works that, but for the 1998 law, actually belong to them.

In 1998, Congress also empowered copyright holders to assert new forms of control over their works long after they have been sold. The Digital Millennium Copyright Act (DMCA) makes it a crime for anyone to circumvent software encryption or other schemes that restrict user access to digital materials, even if the access (and subsequent use) would normally be considered legal under current copyright law.

These technologies essentially override copyright law by locking up content in perpetuity. By allowing private companies to unilaterally dictate not just who may access a work, but how it may be used, the public's right to the fair use of a digital work is effectively undermined. Through aggressive "shrink-wrap" licenses for software, "click-through" licenses on websites, and digital rights management technologies for

digital content, copyright owners are asserting much more control over creative works and information than ever before.

The result of these various laws and technological systems is an endangered public domain. There is now growing alarm that the dramatic expansion of copyright law is simply a new form of government protectionism for outdated business models. It is subverting new technologies and innovative businesses, and interfering with the free flow of ideas on which our society and economy depend.

What, then, might be done? Part III surveys several attractive proposals for asserting the public's stake in copyright law.

Make It Easy to Put Works into the Public Domain

Until 1976, when Congress enacted a major revision of the nation's copyright laws, copyright holders were required to register their works with the U.S. Copyright Office. The elimination of this seemingly gratuitous formality in 1976 meant that *all* works automatically enjoyed copyright protection from the instant of their creation. There was no need for an author to register a work or place a formal © notice on a book or article. *Everything* was copyrighted, and renewal of that copyright became unnecessary.

What may seem like a sign of administrative progress and efficiency, argues Professor Jessica Litman of Wayne State University Law School, was in fact a defeat for the public domain. The formal registration and renewal procedures were a principal method for assuring that works entered the public domain.

Before the 1976 Act, Litman explains, the default rule in copyright law was that you were entitled to assume that a work was in the public domain absent a copyright notice. And if you

wanted to use a copyrighted work, the copyright notice disclosed whom you needed to ask for permission. These procedures meant that great quantities of works belonged to the public domain from their inception because only a fraction of copyright holders ever registered their works, notes Litman. Furthermore, only 15 percent of them, on average, renewed their copyrights after the initial term of copyright protection, so most works entered the public domain automatically.

The elimination of the registration and renewal requirements—combined with the 11 extensions that have been granted to copyright terms since 1960—means that a citizen can no longer assume that anything is in the public domain and therefore freely usable and shareable. To make matters worse, the various rights assured by copyright—to control reproduction, public performances and public displays, for example—have been made separate and distinct, and may therefore belong to different owners. Yet there is no central registry for identifying the owners of works, which can make it well-nigh impossible for even a conscientious user of a work to figure out who to contact for permission or payment.

A reasonable question to ask, says Professor Lawrence Lessig, is, "Why should copyright owners be relieved of any effort to register their copyrights? Why should this government-granted monopoly be automatically conferred without the most minimal 'technical' requirements of registration and renewal?"[25]

U.S. ratification of international copyright treaties abolished the principal means for assuring that most works could enter the public domain. Unfortunately, no substitute statutory mechanism has yet been devised. Reinstituting the registration and renewal requirements for copyright protection would

be one step toward reclaiming the public domain. But since such a move could require amending or abrogating several international treaties, another approach might be a new statute that explicitly sets out procedures for placing a work in the public domain.[26] Currently there is no legally recognized form for doing so and no way to distinguish public domain works from others. A voluntary, contractual system for putting works in the public domain is being attempted by the Creative Commons, to be discussed in Section G.

A simple federal law outlining steps for legally placing a work in the public domain needs to be drafted and enacted. It would be an important step—symbolically and substantively—for invigorating the cultural commons. It would recognize that the public domain matters. Such legislation has the added fillip that it would not likely encounter much political opposition; no one's ox is gored by offering this additional choice to those who, for whatever reason, want their works available to anyone without legal impediment.

Shorten the Term of Copyright

The initial term of copyright law at the beginning of the American republic was 14 years with a renewal term of another 14 years. Now, for all practical purposes, the term of copyright might as well be perpetual. This report, for example, will be protected by copyright until approximately 2100 (the lifetime of the author plus 70 years). Over the past 40 years, the term of copyright law has been extended on 11 different occasions. Each time it was a retroactive extension to works already created and protected by copyright law.

Such lengthy copyright terms run counter to the historical and constitutional purposes of copyright protection. After all, copyright is intended as an inducement to creators, to encourage them to create new products. But no film studio, book publisher or software maker seriously expects to recoup profits from a work beyond a five- or ten-year horizon, at most. The length of protection is utterly gratuitous to the creator—and a deadweight loss to the public.

Even more absurd are extensions of the copyright term to very old works created by authors who are now dead. What possible incentive effect could copyright have on deceased creators? Yet that is precisely what happened when Congress enacted the Sonny Bono Copyright Extension Act of 1998. In the name of "rewarding" creators, tens of thousands of works created 60 to 70 years ago—the film *The Jazz Singer*, *The Great Gatsby*, the musical *Show Boat* and works by Robert Frost and Sherwood Anderson, among others—will not enter the public domain until after 2019. In actuality, of course, the benefits of the copyright extension will accrue primarily to the corporate owners of copyrights like Disney and the authors' estates.

To some people, this controversy may sound rather academic or trivial. But in fact it not only affects the payments that the public must make for works that belong to them, it also impedes future creativity. Consider how the Copyright Term Extension Act allowed the estate of Margaret Mitchell to retain copyright control of her classic novel, *Gone With the Wind*, which was due to expire and enter the public domain in the 1990s. In the meantime, novelist Alice Randall decided to write a fictional work, *The Wind Done Gone*, that gave the slave's perspective of the antebellum South as portrayed by the plotlines and characters of *Gone With the Wind*. Because the copyright of *Gone With the Wind* had been extended, the

grandchildren of Margaret Mitchell were able to obtain a preliminary injunction against Randall preventing her from publishing her "unauthorized" novel. While Randall's novel was eventually permitted to be published (though an appeal of the case is still pending), the court ruling set a troubling precedent of using copyright law to stifle new creative works of obvious cultural and political value.

A better idea is to radically shorten the length of copyright terms while making them renewable for a specified number of times. Professor Lessig has proposed a term of five years once a work is registered, with the opportunity to renew it 15 times. A failure to renew means that the work falls into the public domain.[27]

The virtue of such a system is that it would adequately protect creators who have a valuable work while giving the public the access that it needs and to which it is entitled. "The benefit for creativity from more works falling into the commons would be large," writes Lessig. "If a copyright isn't worth it to an author to renew for a modest fee, then it isn't worth it to society to support—through an array of criminal and civil statutes—the monopoly protected. But the same work that the original author might not value could well be used by other creators in society."[28]

The appropriate limits for copyright protection may be determined by the U.S. Supreme Court in the near future. In February 2002, the Court agreed to hear the case of *Eldred v. Ashcroft* and decide whether Congress had exceeded its constitutional authority by enacting the Copyright Extension Act. Plaintiffs argue that the law "has rendered meaningless…the plain and express intent [of the Constitution] to restrict the duration of monopolies over speech."[29] The Court is expected to rule in early 2003 whether copyright law will function as a time-limited incentive to creators, as the U.S. Constitution plainly intends, or as a virtually permanent entitlement.

Affirm Broad Fair Use Rights for the Public

As new digital technologies and Internet usage proliferate, the cry of "piracy" is more frequently heard, especially among content owners who claim their "property" is being stolen. While illegal uses of copyrighted works certainly occur, this rhetoric has a calculated strategic purpose as well: to disguise a sweeping invasion of the public's basic rights to access and use copyrighted works. Recall that copyright represents a cultural bargain between the public and authors. Through Congress, the public gives authors exclusive property rights in their work, but in return the public is entitled to its own benefits. Historically, this has been embodied primarily in fair use rights and limited copyright terms.

Over the past twenty years, however, various media industries have prevailed in reducing or eliminating the public's end of the copyright bargain. It has done so through outright changes in the law, new technological systems that allow companies to control the access and use of works and new contract provisions (such as software shrink-wrap and Web click-through licenses) that strictly limit what consumers may do with software, music, video and digital text. In their defense, the various content industries tend to argue that fair use exists only as a type of market failure (i.e., in circumstances where copyright owners cannot exercise sufficient control over a work to earn revenues from it). Thus, in a series of limited, highly specific circumstances, the law has historically recognized uses of a work that are personal, educational, non-commercial,

limited in scope and essential to parody. But content owners have resisted arguments that fair use is a broad principle reflecting the larger, prior interests of our democratic polity and thus superseding copyright.

The full scope of these assaults on the public's fair use rights cannot be reviewed here. (They are explored at length in *Why the Public Domain Matters,* a recent report by the New America Foundation.) Suffice it to say that in small, incremental ways and large, wholesale ways, the public's legal ability to quote, excerpt, modify, criticize, satirize and reuse existing creative works is being dramatically diminished.

To combat this steady erosion of the public's rights, we need a clearer, broader affirmation of what constitutes fair use in a copyrighted work. The canard peddled by copyright industries is that books, films, music and data are "property" in the same sense as one's house or car. Unlike tangible, real property, copyrighted works cannot be owned absolutely; the public has its own legitimate claims to such intellectual property. If copyright owners were allowed to assert perfect control over their works, now and forever, in whatever markets or downstream circumstances they unilaterally assert, serious elements of future scholarship, creativity, scientific research, democratic debate, journalism and cultural criticism would grind to a halt.

A central problem is the highly complex, legalistic and intellectually unsettled dimensions of the fair use doctrine. Only a mandarin class of expensive attorneys and powerful corporations has the resources to interpret (or misinterpret) the meaning of fair use. The public can more easily be denied its legitimate rights. For example, corporate owners of copyrights and trademarks have used legal

threats to intimidate children who have made *Harry Potter* fan websites and an artist who uses Barbie dolls in photographic commentaries about American beauty ideals. The chilling effects on free speech and creativity are significant.

The need for a clearer, more accessible definition of fair use rights—one that is readily understood by the public and secure against legal intimidation—is becoming more urgent. There are at least three reasons for this, argue Professor David Lange and Jennifer Lange Anderson. First, the collisions between copyright law and the First Amendment is intensifying, a conflict that can only be decided in favor of the First Amendment. A clear, affirmative fair use right could help strike a reasonable compromise between these two bodies of law.

A broad, easily understood standard for fair use is also needed to take account of contemporary creative practices, note Lange and Anderson. Artists increasingly rely upon direct appropriation and transformation of preceding works, due in no small part to the capabilities of new digital technologies. It is common practice for Internet users to excerpt and modify works, creating interesting and socially useful new works. Musicians commonly use riffs or samples from other music. Contemporary painters such as Damian Loeb, Jeff Koons and Richard Prince have used copyrighted or trademarked images in their works. Shakespeare borrowed from ancient myths; Disney appropriated beloved classics and folk tales; The Troggs drew upon Richard Berry's *Louie, Louie* in writing *Wild Thing.* Dadaists shamelessly reused famous images; Andy Warhol brazenly used a can design owned by Campbell's Soup; and Elvis Presley stole from the black rhythm and blues tradition. It is utterly commonplace

and often necessary for new creations to appropriate and transform the work of others.

If creativity is so intimately connected with appropriation, especially in the Internet era, why shouldn't this fact be reflected in contemporary copyright law, rather than trying to suppress a central reality of creative expression in our time?

Finally, copyright law is intruding into the private realm of life with greater frequency and depth, contorting everyday habits with nonsensical legalisms and interfering with the creative process itself. The American Society of Composers, Authors, and Publishers, the music licensing agency, once sought to prevent the Girl Scouts from singing songs around the campfire without a license. The ostensible owner of the Dewey Decimal system has demanded licensing payments for using "its" library classification system. MGM, the producers of James Bond movies, have claimed that the latest Austin Powers spoof movie is a copyright infringement. Disney even prohibits elementary schools from using its stories, characters or music for school plays.

These are natural outcomes when copyright holders are able to assert "perfect control" over all uses of their works. When copyright protection is so expansive, wide swaths of creative endeavor start to become illegal. In this sense, they resemble the cultural works denounced by the Nazis as "degenerate art"; they are works of the illegal imagination. A new interpretation of fair use would help resolve the ongoing conflicts between property rights and public need in a more straightforward, fair-minded way than now occurs.

In a working paper presented (and still being refined for final publication), Lange and Anderson argue for a clear and comprehensive statu-tory definition of fair use that would protect "transformative critical appropriation."[30] They contend that fair use should not be a set of byzantine legal rules but a legal recognition of everyday creative and communication practices. As Lange and Anderson write: "Fair use is not merely (or even primarily) about the marketplace for copyrighted works; it is about what [Lloyd] Weinreb calls 'a community's established practices and understandings.'"

A broad recognition of fair use would make clear that fair use rights are not subordinate to the property rights of copyright holders. It would clarify that fair use is not simply a usage indulged by copyright holders at their own sufferance, for public relations reasons or as a result of their inability to charge revenues for smaller-scale uses (the "market failure" theory). Fair use to quote, criticize, satirize and modify are, rather, part of the basic rights of a free people; it is the public's inalienable benefit from the copyright bargain.

Seen from this vantage point, many works that industry regards as "unauthorized" and "derivative" (and thus presumptively illegal) would be legally protected under an affirmative recognition of fair use. And why shouldn't this be so? The robustness of a society's science, economy, art, politics and culture depends upon the ability of people to make

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"transformative appropriations" of existing works. A great society recognizes this. If artists, scientists, citizens, scholars, software programmers, journalists and musicians are prohibited from using prior works—if every work is subject to the perfect market control of copyright holders, accessible only on their terms—then our society will have begun a great downward spiral into creative entropy and civic torpor. Indeed, as copyright law is invoked with greater regularity to suppress speech and creativity deemed to be hostile to strict market control, the chilling effects of an unfettered, one-sided copyright regime are already evident.

Roll Back the Digital Millennium Copyright Act

A vital instrument for the crusade by copyright industries to secure perfect control over their works is the Digital Millennium Copyright Act of 1998 (DMCA). A large and complicated piece of legislation, the DMCA criminalizes the circumvention of any technical measure controlling access to a copyrighted work. The law not only prohibits making or distributing software (or other technologies) that can bypass technical protection measures, but also prohibits the mere *sharing* of information about the software encryption, digital watermarking or other protection measures.

By allowing content owners to "lock up" digital content and control how it may be used, now and forever, the Digital Millennium Copyright Act allows companies to in effect eliminate the public's fair use rights in digital materials. Such actions as making a personal backup copy of a copy-protected CD are considered illegal, for example. The DMCA also trumps the term limit that has always been part of the copyright bargain because unlike copyright law, copy-protected works are protected in perpetuity.

In addition, the law effectively overrides the first-sale doctrine, the legal rule that allows people to share or sell their own purchased copies of books, videotapes and other copyrighted works to whomever they want. By empowering copyright owners to control all "downstream" uses of their product, the law allows large copyright industries to stifle competition and innovation, and prevent the widest possible distribution of creative works. This, of course, is the very constitutional purpose of copyright law: to advance and diffuse knowledge. In giving private companies the ability to control the public's access and use of copyrighted works—and in so doing control the flow of public knowledge—the DMCA is a direct affront to the First Amendment.

This kind of heedless expansion of copyright protection for digital information logically culminates in a copyright police state. After all, in a pay-per-use environment, a single unauthorized use—even for uses historically recognized as legal—constitutes "piracy." Enforcing the law *requires* intrusive monitoring of people's reading and viewing habits. And now that technology can feasibly detect such "violations," copyright industries have every incentive to step up their monitoring of people's private reading, viewing and listening habits. The right to be an "anonymous reader" is being superseded by corporate interests in "digital rights management."[31]

Already the law has been invoked to criminally prosecute a Russian programmer who had disclosed to others encryption flaws in ebook software made by Adobe. The film industry is invoking the DMCA to wage a civil lawsuit against a website that posted information about de-encrypting a DVD movie (even

though no copyright violation or sale of pirated material was alleged). The recording industry has invoked the DMCA to threaten a Princeton professor with legal action if he presented a paper at a conference about the flaws in the music industry's encryption software. The threat was successful and the paper has not yet been published. More legal action is sure to follow.

As the effects of the DMCA have become clear, public outrage has been building. The Electronic Frontier Foundation has been challenging the constitutionality of the DMCA, asserting a violation of the First Amendment, though any final court resolution could take years. In the meantime, the Library of Congress has formally determined that there is no evidence that the DMCA is causing "substantial harm" to the fair use rights of individuals. This October 2000 ruling will be revisited by the Library of Congress in 2003.

Some relief from the DMCA's chokeholds may come if Rep. Rick Boucher (D-VA) succeeds in his plans to introduce and enact a bill to eliminate the anti-circumvention clause of the DMCA. The bill is likely to encounter stiff opposition from the recording and film industries. But as more consumers and musicians, scholars and scientists run up against the straightjacket imposed by the DMCA as they try to exercise their legitimate fair use rights, the political calculus that has sanctioned draconian copy-protection may change and force new compromises.

Affirm Free Speech over Trademark Law

Trademark law is commonly regarded as an arcane backwater of the law, hardly deserving much attention. But increasingly, trademark law is being used to stamp out any unauthorized uses of a company or product name, wherever it may occur. For years, the accepted standard for trademark protection had been whether the questioned usage would cause "confusion" with the trademarked name or product. But this reasonable standard was radically expanded by the federal Trademark Anti-Dilution Act, a 1998 law that prohibits any use of names that may "dilute" or "blur" the trademarked work. Furthermore, by applying this stricter standard only to brands already recognized as "famous" (which is not legally defined), the law gives the most powerful market players a stronger level of protection than all others, and thus a greater ability to stifle uses of trademarked words that it dislikes.

The upshot is that a person can be held liable for using someone else's trademark even if the public is not deceived or confused as to the source of goods or services. All that matters is that the distinctive quality of the trademark is "blurred" by the unauthorized usage, thereby "tarnishing" the trademark's value.

For example, many companies have used trademark claims to shut down websites that use their name in a disparaging way, as in "walmartsucks.com" and many other "sucks" sites.[32] Other companies have gone after people who use their product to make a cultural commentary they regard as insulting. Still other companies are claiming property ownership in phrases, words or even single letters.

Trademark law has allowed McDonalds to claim ownership of 131 different words and phrases, such as "Black History Makers of Tomorrow," "America's Favorite Fries," "Healthy Growing Up," "Play & Fun for Everyone" and "Hey It Could Happen."[33] McDonalds has also been known to harass stores and services that use the two letters "Mc." In 1996, for example, its lawyers went after a sandwich shop named "McMunchies"

in the English village of Fenny Stratford. The U.S. Olympic Commission now has a virtual hammerlock on the word "Olympics," enabling it to prohibit the use of the term "Gay Olympics" by gay and lesbian athletes while allowing athletes with disabilities to use the term "Special Olympics."

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It is constitutionally acceptable to burn an American flag as a form of free speech, Professor James Boyle has noted, but similar expressions of hostility toward the Golden Arches, Mickey Mouse, Mr. Clean or the Taco Bell Chihuahua are likely to run afoul of trademark law.

Attempts to commodify culture and communications have reached such extremes that a German publisher recently sued in the U.S. to claim ownership of the letter "O." It seems that a high-gloss fashion magazine in Germany named "O" believed that Oprah Winfrey's magazine by the same name (or letter) was infringing on its trademark, competing unfairly and harming its reputation. In the same vein, the World Wildlife Fund, an environmental group, prevailed against the World Wrestling Federation in a British court in its attempt to "own" the letters "WWF."

Amusing as such examples may seem, they represent a worrisome trend in the use of trademark law by corporations to stifle creativity and free expression. This impoverishes the character of our culture and democratic life and restricts the flow of information in our society. In subtle but profound ways, it also asserts the supremacy of property rights over basic civic rights. It is particularly alarming when trademark protections are used to suppress consumer criticism or public debate about corporate products or policies.

One way to help arrest this trend is to rollback the provisions of the Trademark Anti-Dilution Act, which opened the floodgates for many of the legal challenges now being waged. It is also important to reform the process by which disputes between trademark owners and Internet domain names are resolved. Currently, these disputes are resolved through a quasi-private Uniform Dispute Resolution Policy adopted by ICANN. This body, a nonprofit corporation chartered by the State of California, was created by the U.S. Department of Commerce to manage technical aspects of the Internet's domain name system. It amounts to an outsourcing of government policymaking. Operating without the formal requirements of due process and openness that any government body would have to observe, ICANN has routinely favored trademark owners over domain name holders in disputes over control of a domain name.

The result, writes University of Miami Law Professor A. Michael Froomkin, are decisions that are often not technically expert, democratic or fair.[34] Restoring a balance between trademark law and the First Amendment will require that Congress confront the dubious constitutionality of ICANN and its own enactments in expanding the scope of trademark protection. It will also require changes in the governance of ICANN, so that its membership can be more open and inclusive. Also

needed are reforms in the election of at-large members and new accountability mechanisms to ensure transparency and clear limits on ICANN's authority.[35]

But the existing leadership of ICANN, particularly its executive director Stuart Lynn, has called for reforms that move in the opposite direction. Lynn wants to abolish global elections of ICANN representatives, limit public participation, give national governments and corporations greater control over the body and enlarge the scope of ICANN responsibilities. The move has prompted many members of Congress to call for hearings to revisit ICANN's charter and performance.

Promote the General Public License in Software

In the face of expanding intellectual property rights, one important form of creative work, open source and free software development, relies on a *waiver* of claims to intellectual property. As described earlier in Part I, Section C, the open source software revolution has improbably succeeded by bringing together a global corps of volunteers who collaboratively develop top-flight software for free. Software developed in this manner has proven remarkably efficient and free of errors, prompting thousands of businesses and organizations around the globe to use such systems as the Linux operating system and the Apache Sendmail email program.

The key to the success of this movement has been a licensing mechanism that ensures that free and open source software programs remain non-proprietary and open to modification. The **Free Software Foundation**, led by M.I.T. programmer Richard Stallman, devised a legal instrument known as the GNU General Public License, or GPL, which consists of a copyright and several license terms. The license grants anyone the freedom to use, modify and redistribute the software however they wish on the condition that the identical license terms apply to any future distributions of the software.

By licensing their software with the GPL, contributors to an online software community are assured that their creative efforts will remain in the public domain, and not claimed as private property by a commercial software maker. The GPL has become known as "copyleft" because it performs the opposite function to copyright. The value implicit in free software programs licensed with the GPL is permanently established as a public asset or a "commons" from which anyone can benefit, but which no one can enclose and exploit for their exclusive gain.

Over the past decade, the GPL has been applied to many thousands of widely used free software programs. Strong incentives exist for software companies to take these programs, hide the source code and sell them to clients, thereby violating the GPL. Several companies have been discovered doing just this but none have chosen to challenge the GPL in court. The enforcement of GPL'ed software typically occurs through the Free Software Foundation, which is often assigned copyrights to GPL'ed free software by authors. When authors discover misuse of their GPL'ed software, they report it to Eben Moglen, General Counsel for the Free Software Foundation and Professor of Law at Columbia University. He then contacts the company accused of the violation, explains the complaint and outlines how to comply with the terms of the GPL, typically removing proprietary claims to the product and publishing the source code.

Violations of GPL'ed software are peaceably resolved dozens of times a year, according to Moglen. He says there is now a strong social taboo protecting GPL'ed work in the software industry. Willfully violating a GPL would be perceived as an act of bad faith and would mean losing elite programming staff and customers. On a few occasions, Moglen has contacted the customers of some recalcitrant GPL violators and explained that they're paying a high price for a freely available piece of software, potentially exposing themselves to legal complications. This has encouraged the companies involved to comply with the GPL. Some lawyers see gray areas in the wording of the GPL relating to derivative works and this may result in court challenges in the future. However, the successful track record of the Free Software Foundation in enforcing the GPL for the past decade without litigation suggests that the wording of the license is generally sound.

GPL and Two Universes of Software
Every time the GPL is applied to a useful piece of collaboratively developed code, it adds to a permanent public commons in software. Eben Moglen argues that the GPL creates "two universes" of software development. One is comprised of teams of commercial programmers working behind closed doors to generate software commodities closely guarded by copyright. The second universe is defined by bottom-up, peer production to create free software in the public domain.

The GPL ensures the sustainability of the free software development universe by protecting its voluntary, collaborative processes from the privatizing powers of copyright. In fact, Moglen believes that the efficiency of free software production, as facilitated by the

GPL, means that it may eventually take over the proprietary software universe.

This is a radical claim, but there is nonetheless a growing recognition from the traditional software business community that the body of GPL'ed software represents a direct, long-term challenge to its traditional way of doing business. Some law firms for commercial software companies recommend that their clients avoid any involvement with GPL'ed software, lest it undermine future revenues from intellectual property. Several Microsoft spokespeople, including vice president Craig Mundie, have publicly decried the GPL as a "viral" threat to the vitality of the software industry, or at least Microsoft's proprietary strategies.

The point is that the GPL plays an exceedingly important role in allowing free software and open source software to flourish, and in protecting the information commons. It deserves the utmost encouragement and protection.

Explore GPL-like Licenses in Other Media
The GPL's impressive role in software development has prompted similar efforts to design and propagate licenses to protect other types of creativity. These efforts are still very new and experimental, but in their ambitions to emulate the GPL, they deserve further exploration.

One of the most ambitious licensing schemes, the **Creative Commons**, is being devised by Stanford Law Professor Lawrence Lessig and other legal scholars at Harvard, M.I.T., Duke and Villanova. This project plans to offer a variety of customizable licenses that will enable artists to specify how they wish to allow their works to be used. The goal is to carve out a new legal middle ground between full copyright protection, which allows only modest and irregularly applied "fair uses," and

unprotected public domain works, which can be used without any restrictions. Under freely available licenses crafted by the Creative Commons, for example, authors could choose licenses that allow their works to be freely used so long as they are not altered, used without attribution or used for commercial purposes.

Hybrid licenses that combine non-commercial and commercial uses may be offered as well. As Lessig explains, an artist may want to allow a work to be freely used without payment so long as no one is making money on it, but may want to trigger a sliding scale of payments if the work is sold. Still other legal templates may be offered as the needs and desires of the creative community evolve.

An innovative aspect of the Creative Commons licenses is the use of "metatags" to help Internet users locate and use public domain material. Coded, machine-readable "tags" in digital works will allow future users of a given work to search the Internet more easily for public domain works. Users will be able to quickly learn the identity of the rights holder and specific licensing conditions for usage. The goal is to facilitate cheap and efficient rights clearances, which are now a costly and often-prohibitive aspect of new creative projects, especially in film and music. If new films and MP3 songs were to contain metatags, for example, film students seeking to use public domain works could more easily find them and use them in their own creations: a huge boon to future creativity and the information commons.

Based on the concept of a land trust, the Creative Commons also aspires to build a "conservancy" for intellectual property that can be preserved and shared without the impediments of conventional copyright protection. Obsolete software programs that the original makers had abandoned could be placed in the conservancy, for example, allowing their continued use by others; artificial copyright restrictions and market barriers need not consign old works to oblivion.

By establishing clear licensing terms for property that is now either "bottled up" by strict copyright protection or available only through costly and inflexible licensing and rights-clearance regimes, the Creative Commons wants to develop the legal foundation that can catalyze a robust commons in information and creative works. A clear, reliable and enduring system of voluntary licensing is an ingenious way to enrich the flow and variety of creative works in our society, to the benefit of nonprofit and commercial players alike.

Some other novel licensing schemes based on the GPL have been recently launched. The **Electronic Frontier Foundation**, an advocacy group for the computer community, announced in April 2001 the "Open Audio License" (OAL) for music in digital formats. This has been followed by the establishment of a fledgling clearinghouse website, Open Music Registry, for OAL music of all styles. In another initiative, French visual artists created the "Arts Libre" or "Free Art" license for digital imagery. The "Open Content License" and the "Design Science License" were drafted as all-purpose licenses that could place any type of creative work in the public domain.

This is not an exhaustive list; there is a growing number of open license options available on the Internet for creators. But because software development on the Internet has been occurring longer than in other creative areas, none of these licenses is yet as widely used as the GPL.

The common motivation for these new licenses is to permanently place original works

in the public domain while ensuring that creators are properly credited. Licensed works can be freely enjoyed in their original forms or readily incorporated into new collaborative projects so long as they remain freely usable, modifiable and distributable. In essence, creators who employ the licenses are rejecting the closed model of production governed by copyright and joining Eben Moglen's second universe of open source, creative work.

How widely the OAL, Free Art license and their cohorts are employed in the future will depend to some extent on the cost-benefit calculation that creators and their distributors must make. Are the benefits of creating work collaboratively in the public domain large enough to justify giving up the compensatory mechanism of copyright?

Software differs from many other types of copyrighted work in the sense that it is a utilitarian object. One software program can be compared to another on the basis of how well it performs a particular function; one type of code can be measurably better than another. By contrast, while a book, song or piece of visual art can be modified through collaboration, their value is more subjective. This distinction matters because opening software code to public use, scrutiny and collaboration (as enabled by the GPL) brings valuable efficiencies. This benefit does not emerge in the same, direct ways from sharing music, film or other aesthetic works. For this reason, the economic incentives to utilize GPL-style licensing outside software may be less compelling.

Still, numerous non-economic factors do enter into the process of making, distributing and consuming creative work. A great deal of such work is produced by people driven by altruistic, cultural or civic motivations, including works produced by nonprofits or subsidized by charitable grants, that were never intended to be commercial or proprietary. For these authors and artists, GPL-style licensing may prove to be extremely compelling. While this issue will be an area of ongoing debate, the availability of open licensing arrangements for individual creators is an important experiment that deserves to continue. It may stimulate new ideas for strengthening the public domain.

IV. Fortify the Information Commons: Adopt Innovative Policy Initiatives

W e have seen in Parts II and III how a robust information commons requires an open infrastructure and strict limits on copyright protection. But there are also a number of government-sponsored programs and initiatives that could do a great deal to protect and fortify the information commons. Just as markets need government leadership and intervention to work properly (by defining market boundaries, requiring fair transactions and disclosures, enforcing laws, promoting trade, etc.), so the commons needs and deserves similar sorts of government leadership and support.

The following proposals are justified by a simple fact: the American people *own* certain common assets and as the trustee of those assets, the government is obliged to manage them conscientiously for the public benefit. The government is also charged with promoting the general welfare of its citizens, which is not necessarily synonymous with promoting market activity. The general, non-commercial interests of the American citizenry—as learners, creators, civic participants, community members and so on—have their own sovereign standing. After its long exile by its sibling, the market, the *commons* deserves its own place at the public policy table.

This section offers some fresh thinking about how government policies can advance the commons in digital media. As new and somewhat unorthodox approaches, the very unfamiliarity of these proposals may raise questions in some people's minds. But that is the nature of innovation itself: any new idea cannot answer all questions and contingencies at the outset, nor can it be judged solely by the parochial terms of existing policy. It should be judged by the larger values and

principles that we wish to protect and advance, and by the new technological and cultural context of our times. If the high-tech future is chiefly about innovation, then government policymaking must be innovative as well, seeking to re-embody certain core values of public purpose as new circumstances demand.

Earning a Fair Return on Our Airwaves

If the American people actually own the airwaves that are used by broadcasters for such lucrative ends, why then does the public reap so little in return?

The answer to that question lies in the statutory "deal" that gave rise to commercial broadcasting some 68 years ago, known as the Communications Act of 1934. The original idea behind the Act was that broadcasters would serve as "public trustees" of the airwaves (enlightened hosts of the broadcasting commons). Rather than give educators, organized labor, religious groups and other constituencies any direct ongoing control of the airwaves, a bargain was struck. Commercial licensees would receive free use of the airwaves in return for meeting certain standards of public service. And the public would reap its gains from licensees who were charged with acting as public trustees.

That, at least, was the ostensible rationale for the "public interest standard." The Communications Act authorizes the FCC to allocate frequencies to various services and to grant temporary licenses consistent with "the public interest, convenience and necessity." But this broad standard has always been exceedingly vague, loosely interpreted and rarely enforced. A handful of "public interest obligations" (PIOs) have sometimes been statutory, while most others have been FCC regulations or guidelines.

In the 1960s and 1970s, this arrangement was sufficient to induce broadcasters to produce respectable amounts of quality children's programming, news documentaries and local public affairs programming. In addition, the public had nominal access to the airwaves through the Fairness Doctrine, which required broadcasters to cover "controversial issues of public importance" and to allow opposing views to be heard. The public interest standard also required broadcasters to serve communities responsively; to allow candidates for federal office to buy airtime at the lowest rate offered to a station's other advertisers; to document how they were serving the public interest; and to ascertain the needs of communities that could be served by local broadcasting.

If this modest set of public obligations worked reasonably well in the context of a network oligopoly in broadcasting, it has become far less feasible in the media free-for-all of the 1980s and beyond. The political tide against the PIO regulations shifted in the 1980s as broadcast TV began to compete with cable TV, raising questions about why one should be regulated but the other not. The government also faced enormous practical difficulties in enforcing compliance with non-quantitative mandates. There are obvious First Amendment problems when government begins to judge "quality" programming and responsive community service. Yet applying neutral, formulaic approaches (such as requiring a station to air x hours of educational programming for children) is not necessarily effective either, particularly if the station (or chain of stations) is determined to resist its public interest obligations.

For example, after the Children's Television Act of 1990 required broadcasters to air an unspecified amount of "educational and infor-

mational" programming, a well-known study by the nonprofit Center for Media Education documented that stations were counting cartoons like *The Jetsons* and *The Flintstones* as educational programming for license renewal purposes. After a three-year process, the FCC finally spelled out a minimum requirement of three hours *per week* of "core educational programming." The three-hour rule, which took effect in the fall of 1997, has led to some improvement, but it seems clear that with few exceptions broadcasters are not really committed to the spirit of the FCC regulations.

When the Reagan administration lifted station ownership limits in the 1980s, it was influential in transforming broadcasting from a locally oriented business into a gigantic multinational enterprise. Broadcast stations became far less inclined to produce local programming or public service campaigns, a tendency reinforced by the repeal of rules that gave preferential treatment to local applicants for broadcast licenses. "For 61 years, the FCC has acquiesced in an incoherent compromise with television broadcasters," Reed Hundt observed in 1995, during his tenure as chairman of the FCC. "The rules it has adopted to implement the public interest mandate are vague to the point of meaninglessness."[36]

In any case, with the help of the Reagan and the first Bush administrations and the Telecommunications Act of 1996, broadcasters finally shed their most significant PIO obligations. But their free use of the public's airwaves—a valuable 6 MHz slice worth billions—continued. Then it got worse. In 1996, the broadcast industry convinced Congress to give it a short-term "loan" of another 6 MHz of spectrum for free—to facilitate the transition from analog to a more versatile, higher-resolution digital broadcast signal commonly known as HDTV. It is now six years later and it appears that a full conversion to digital television will not be consummated for many years and that the free "loan" will extend indefinitely. The estimated market value of spectrum now controlled by broadcasters—essentially an unacknowledged hidden subsidy for commercial broadcasting—is now well in excess of $300 billion.[37]

It is now clear that what may have been tolerable in another era—free and exclusive spectrum licenses in broadcasting—is now grossly inefficient and inequitable. The FCC's outdated zoning and giveaway policy has produced the worst possible outcome: spectrum management that is grossly inefficient and inequitable to both industry and the public that owns the airwaves. The policy also discriminates against the wireless industry, which pays billions of dollars for its licenses to the airwaves while adhering to the statutory mandate to operate in the "public interest, convenience and necessity." Free licenses also distort the television marketplace by giving some competitors a free asset for signal distribution (broadcasters) while denying it to others (cable TV, direct-broadcast satellite TV). Finally, free licenses and the elimination of PIOs cheat the American public, the owners of the airwaves, out of a fair return on their asset.

One might wonder how such a costly, irrational and unfair policy anachronism has survived so long. The answer has a lot to do with

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the broadcast industry's considerable political power. It has given generously to congressional and presidential campaigns, and it has managed news coverage of issues affecting it in self-serving ways.[38] Broadcasters also play a critical role in how politicians are portrayed to the voting public, a power that tends to make politicians highly solicitous of broadcasting interests.

In today's media technology environment, a return to the former FCC regulatory regime for broadcasting is impractical and undesirable. Yet a failure to institute an alternative regime for recouping a public benefit from the public's airwaves is indefensible. The issue at hand is *what* sort of policy scheme could work best.

Henry Geller, a former general counsel of the FCC, has proposed a fair and practical alternative to "public trusteeship": a usage fee that all broadcasters would have to pay. Instead of having to meet specified PIOs as the "in-kind" cost of their licenses—a legal fiction that gives the public virtually nothing—broadcasters would pay a spectrum usage fee of 5 percent of their gross advertising revenues.[39]

This is entirely consistent with the business costs and regulatory practices in other industries. Most cities and towns charge cable companies 5 percent for using the public right-of-way in city streets. Congress levies the same percentage on broadcasters who offer "ancillary services" (services other than non-subscription video broadcasting) via the extra spectrum they received under the Telecommunications Act of 1996. If wireless businesses have to pay billions to win auctions in order to use the public's airwaves; if newspapers have to pay for their newsprint; if valuable capital assets are to be efficiently allocated in the marketplace; then why shouldn't broadcasters have to pay the American people for their use of the public's spectrum?

Instead of trying to force broadcasters, via PIO obligations, to behave in ways they perceive undercut their commercial interests (and which they stoutly resist), it makes a great deal of sense in today's media environment to liquidate this obligation: reap the benefit in cash and use it to finance public benefits more directly. Based on $25.6 billion in advertising revenues of commercial TV stations in 2000 (national and local spot ads), Geller figures that the 5 percent usage fee would generate $1.28 billion in annual revenues to taxpayers.

How might the 5 percent spectrum fee, or $1.28 billion, be used to benefit the public? Geller offers a few ideas: "The Public Broadcasting System requires approximately $280 million, or 20 percent of [the $1.28 billion], to fully implement its expansive and much needed educational plans in the digital era," he writes. Geller sees this money being used to support pre-school ("ready-to-learn") educational programming, programs for the school-aged child (6-11 years old) and other programming for adults, literacy education, job training and technology training for teachers. The remainder of the sum could be used to fund perennially underfunded public television missions, such as culture, the arts, drama and in-depth informational programming.

The **New America Foundation** has taken Geller's approach a step further, advocating a new, more coherent national spectrum policy that is premised on the public's inalienable ownership of the airwaves, but that also promotes efficient allocation and a level playing field between industries and companies competing to use scarce frequencies. Michael Calabrese, Director of New America's Public Assets Program, is advocating spectrum reform that embraces the more flexible and market-based allocation policies sought by

most high-tech industries, while opposing the permanent "propertizing" of the airwaves advocated by conservative think tanks.[40]

New America's initiative represents a synthesis combining three critical elements of promoting a digital information commons. First, Congress should replace its inefficient policy of rigidly "zoning" the spectrum with a more flexible, market-based approach. Second, all commercial users should pay for licensing spectrum and the revenue should be reinvested in new public assets that fortify the non-commercial portion of our educational and civic infrastructure. (The Digital Opportunity Trust and New Voices Initiative described in Sections B and C, respectively, provide good examples of how Congress could earmark revenue from this public asset to invest in revitalizing the public information commons.) Finally, a substantial new allocation of "unlicensed" spectrum should be set aside to encourage "wireless community networks." This approach would promote both inexpensive wireless Internet connections and, as described in Section D, "open spectrum" that allows unmediated access to the airwaves by citizens using ultrawideband and "smart radio" technologies.

The Digital Opportunity Investment Trust

One bold idea for developing public interest content for broadcasting in new ways is the **Digital Opportunity Investment Trust** (DOIT), an idea hatched by Lawrence Grossman, former President of NBC News and the Public Broadcasting Service, and Newton Minow, the former FCC Chairman under President Kennedy. Two years ago, Grossman and Minow started the Digital Promise Project (www.digitalpromise. com) to promote this trust fund idea.

Assuming that new monies could be collected through an auction of the spectrum or a flat spectrum usage fee, the DOIT would act as a congressionally chartered fund to finance a wide variety of non-commercial programming. Minow and Grossman envision an initial endowment on the order of $18 billion, the sum that the Congressional Budget Office estimates that the FCC's spectrum auctions will yield over the next few years.

As now envisioned, the Trust would be administered by a board comprised of private citizens from all walks of life, who would make strategic, long-term decisions about how to support educational, creative, cultural, civic and other public service institutions. In structure, the Trust is envisioned as a kind of National Science Foundation or National Institutes of Health: a respected national institution comprised of distinguished leaders and experts from diverse fields of endeavor. While the Trust would not be a government agency, it would be accountable to Congress.

The Trust's board would choose the specific funding priorities, supervise the application and grant-making process and set research goals. In Minow and Grossman's words, the Trust would finance "innovation, experimentation and research in utilizing new telecommunications technologies across the widest possible range of public purposes." In practice, the Trust would fund new kinds of educational materials and instruction; job training, lifelong learning modules and online learning; new bodies of civic and community information; and programs to support the arts and culture.

Minow and Grossman compare the idea of the Trust to other innovative public investments that the federal government has instigated in the past: the Northwest Ordinance of 1787 that set aside public land to support

public schools in every new state; the Morrill Act of 1862 which helped establish dozens of land grant colleges, many of which have since become world-class universities; and the GI Bill of 1944, which helped make higher education more accessible to the average American. The Digital Opportunity Investment Trust aspires to be a new tool by which Americans learn, participate in their communities, engage in political life, create works of art and culture and meet other important social needs.

Like any new idea, the Digital Opportunity Investment Trust raises questions in some people's minds: How can it be structured to prevent politicization? Would its projects be able to find a distribution outlet in today's crowded television marketplace? How would the board be selected to ensure that it is representative and responsive? While Grossman has specific ideas for dealing with such issues, he has said that many issues relating to the Trust have been deliberately kept open to allow members of Congress to put forward their own proposals. A fuller treatment of the idea is set forth in Grossman and Minow's book, *A Digital Gift to the Nation* (Century Foundation Press, 2001).

By March 2002, legislation under the title, The Digital Opportunity Investment Trust Act, had been drafted by Sen. Chris Dodd with support from a bipartisan group of Senators. Rep. Edward Markey drafted similar legislation last year that would have earmarked spectrum revenue for a digital investment trust. Senior members of the Senate and House have also asked the National Science Board to undertake a study and report back to Congress this year on the feasibility and potential administrative structure of DOIT. Once the National Science Board submits its report, the Senate Commerce Committee plans hearings later in this session of Congress, according to the bill's supporters.

The New Voices Initiative

Going beyond public interest television programming, what would a public interest trust fund *for the Internet* look like? Reed Hundt, the FCC Chairman under President Clinton, has proposed the **New Voices Initiative**. This novel proposal seeks to channel a significant percentage of revenues from spectrum auctions (or straight user fees) to finance public interest projects on the Internet. The monies would serve as a new type of venture capital fund for non-commercial, public-spirited innovations on the Internet.

Unlike the Digital Opportunity Investment Trust, the New Voices Initiative would not allocate funds to specific types of content or projects. In explaining this departure, Hundt points out that an important lesson of the Internet is the unpredictability of bottom-up innovation. History has shown that it is exceedingly difficult to predict what sorts of content will prove interesting, useful or groundbreaking. The "experts" may or may not have the best insights or talent, he notes, citing the dynamics of open source software development and the thousands of valuable non-commercial websites that exist. There is no compelling reason to believe that a cadre of credentialed, politically connected movers and shakers would necessarily do better than a new mechanism designed to foster innovative ideas originating at the grassroots.

The challenge, Hundt believes, is to devise a funding apparatus that can seed new projects without being overly prescriptive or judgmental. Yet because public monies would be involved in this project, there must be certain basic standards of eligibility and oversight to prevent waste and fraud. Hundt's idea is to disperse funds to grant applicants through a lottery process or through a first-come, first-

serve arrangement. As Hundt told a conference of the Aspen Institute's Communications and Society Program in 2001: "There would be no distinguished group of peer reviewers, advisory committees or boards of directors deciding which proposal is more meritorious than another. There would be no vetting whatsoever as to the wisdom of an idea or the nature of the content, beyond the meeting of certain basic eligibility standards."

To ensure that funds are not abused or used for commercial purposes, Hundt proposes the following basic rules:

▌ All projects must raise matching funds from outside sources to validate the existence of broader support for the idea.
▌ Grant recipients cannot license or merchandise their works for profit, or create anything that results in advertiser support of any kind.
▌ Recipients cannot charge a subscription fee for anything that they create.
▌ All projects funded by the New Voices Initiative have to be made freely available on the Internet. If any grant recipient does commercialize their work under a New Voices grant, then their grant monies would have to be returned.

Hundt told the Aspen conference that he had two key motivations for making such a bold and different proposal: "First, this effort should be about the next generation of media and not the previous generation. Second, this project should take account of the distinctive attributes of the Internet, because the Internet is a medium that is different from all previous media."

To traditionalists, the refusal of the New Voices Initiative to select "the best" projects is disconcerting. But Hundt believes this is a major philosophical divide separating the mass media, especially television, from the Internet. The Internet has an intrinsically different process than television for warranting what is worthwhile. The Internet supports an open, bottom-up system for affirming the value of creativity and information. By contrast, "quality" and "credibility" in the mass media are generally regarded as functions of professional expertise, production values and marketing.

To some people, it is irresponsible to fund Internet projects without making refined judgments about their quality, especially when public monies are involved. But to many Internet champions, the verdict of *vox populi* arrived at through transparent scrutiny of multiple possibilities, is the most reliable way to generate "quality."

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In any case, projects that receive money under the New Voices Initiative would have to satisfy certain basic criteria, including outside funding commitments. Thus certain thresholds of quality and performance would have to be met. In addition, Internet champions point out that on the Web, high production standards, heavy marketing and credentialed expertise are no assurance of genuine quality. Indeed, in many instances high-tech bells and whistles serve only to mask substandard content.

While a novel proposal such as the New Voices Initiative may not be immediately embraced and may need modifications to make it politically palatable to a Congress that is not renowned for being daring or Internet savvy, it is a provocative idea that deserves further exploration. Its chief virtue is providing a feasible, adequately funded way to nurture innovative public interest content in the digital age.

The Open Spectrum Project

Although the radio frequency spectrum has long been a pillar of the nation's information infrastructure, this role could become even more important as advances in technology enable two-way communication using spectrum. In the near future, the airwaves could form the backbone of a vast wireless mediascape with content flowing back and forth among individuals, media organizations, educational institutions, businesses and governments. The policy decisions made about this resource today will have far-reaching implications for the character of our media environment, not to mention the future of science, business, education and democratic culture.

Traditionally, the central problem facing policymakers has been how to allocate slices of the airwaves among various competing users. In order to prevent transmissions from interfering with one another, a single user—a radio station or mobile phone company, for example—had to be granted a license to transmit over a specific frequency at a specific geographic location. Policy debates on spectrum management have therefore centered upon the pros and cons of allocation methodologies for licenses to spectrum.

Until the mid-1990s, the Federal Communications Commission assigned licenses at no cost and on the basis of industry submissions and financial considerations (so-called "beauty contests"). More recently, auctions have been staged to allocate licenses among mobile telephone operators, raising more than $20 billion in revenue for the federal treasury in the process.

But innovations in transmitter and receiver technology now offer an intriguing new way of solving the spectrum allocation problem. New "intelligent" devices can enable multiple users to transmit and receive information over the same part of the airwaves without creating interference problems. The devices employ what are known as "spread spectrum" techniques. Another technology, dubbed ultra-wideband (UWB), allows data signals to be sent in pulses across the spectrum, without interfering with other users.

Hundreds of entrepreneurs, community groups and do-it-yourselfers are already using spread spectrum techniques in the narrow pockets of airwaves that have been designated as "unlicensed" (that is, shared) to deliver services like wireless Internet connections and wireless networking. More than 4,000 wireless Internet access zones are now in operation in airports, cafes, university cafes and other such venues, using unlicensed spectrum.

Most of these services follow a technical standard known as "wireless fidelity," or WiFi, which was developed cooperatively by the Institute of Electrical and Electronic Engineers. Using a wireless modem card tuned to the WiFi 802.11b standard, dozens of users can connect wirelessly to the Internet by sharing a single wireline (cable or T1) connection at broadband speeds over a range of around 400 feet. Since the base stations used to broadcast the Internet connection cost as little as $300, the primary cost is leasing a high-speed wireline connection to the Internet.

Dewayne Hendricks, an Open Spectrum activist who is building a wireless community network for the Turtle Mountain Chippewa Reservation in Belcourt, N.D., notes that by leasing a T1 Internet connection and stringing up some repeater nodes on buildings, he can "act as my own ISP and redistribute bandwidth [wirelessly] without restrictions."[41]

In practical terms, the technological and economic limits that have historically required the demarcation of specific frequencies as the exclusive domain of license holders are fast disappearing. It is no longer necessary to divide the entire spectrum into exclusive, proprietary units of control. Sharing spectrum as a license-free, open commons resource is now a feasible alternative management approach.[42] As emerging technologies permit both more efficient reuse of spectrum and more democratic access to the airwaves, the FCC should consider greatly increasing allocations of unlicensed spectrum in addition to its current focus on freeing up spectrum for proprietary telephone company networks.

For many scholars, the prospect of an unlicensed spectrum commons has substantial and very welcome implications. The most immediate benefit, already happening, is more widespread access to high-speed and mobile Internet connections at costs low enough to make a dent in the digital divide. In London, for example, a wireless community networking effort called Consume has already extended free broadband connections using 400 nodes to an area containing 5,000 potential users.[43] The ability to access the Internet at broadband speeds without waiting for cable and/or phone companies to build wired connections to the home, is particularly important in rural areas.

A second potential benefit of unlicensed wireless networks is competition and con-

sumer choice, and in particular, the ability to bypass the big commercial Internet service providers that will soon control the terms of Internet access based on subscriptions to proprietary cable, DSL and wireless phone company networks. As discussed in Part II, the local cable and telephone monopolies have every incentive to attach restrictive commercial conditions to their broadband services and to shape the way their customers access and experience the Internet. Instead of offering an open Internet—with no filtering or blocking of content or applications flowing from one end-user to the next—the Internet could be modified to have the architecture of cable television: a closed, completely controlled content marketplace. In an era of consolidation and "facilities based competition," these companies would act as permanently entrenched "gatekeepers" by virtue of their control over millions of users' first point of access.

By contrast, unlicensed spectrum provides a space where local entrepreneurs, community groups and individual citizens can establish their own local wireless networks—whether for a fee or for free. This would ensure variations of two-way communication and unmediated Internet access that are now threatened on the commercial cable and telephone infrastructure.

A spectrum commons could provide a new platform for fresh competition and help reverse the rising tide of corporate concentration in television broadcasting, film studios, cable TV, book publishing and telecommunications. As we saw in Part II, Section D, this concentration has increased significantly over the past decade, and is expected to continue. If left unaddressed, a handful of giant media corporations, by controlling key communications conduits, could wield enormous power over the character, tone and focus of public life in

the United States. There is no reason that federal spectrum management policies should facilitate this trend.

Instituting a license-free approach to governing parts of the airwaves would move us away from this potentially stifling centralization of media to a more open, accessible and decentralized regime. In a spectrum commons, an individual or group's capacity to transmit information would be determined by a set of universal standards embedded in the transmitting equipment rather than by the owners of licenses of particular frequency bands. The result would be a more diverse set of users, greater diversity of information flow and more vibrant public dialogue.

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For some legal scholars—Yochai Benkler, Professor of Law at New York University is the most prominent among them—the move towards license-free spectrum management is actually required by the First Amendment of the U.S. Constitution. In their view, spectrum represents a core element of the public communications infrastructure, and is inextricably implicated in First Amendment principles. Thus, for the government to use a licensing regime that excludes individuals from transmitting in spectrum is only permissible constitutionally *if* it is necessary in a technical sense. This has been the historic rationale for exclusive licenses, but this technical predicate is no longer valid.

Now that a license-free management of spectrum is technically possible, there is a constitutional imperative to do away with licenses because government has no legitimate role in impeding individuals' freedom of expression.

Only very small bands of spectrum are unlicensed at present and their utilization has been limited to a large degree by influential incumbent license-holders, such as TV broadcasters and the military. If a larger, more fully realized spectrum commons is to develop, important policy questions need to be answered: How can the necessary standards for transmissions equipment built by equipment manufacturers be established? How can signal congestion at peak usage times be resolved? And, how can violations of standards be policed?

In order to answer these questions, Professor Benkler has founded an initiative called the **Open Spectrum Project** to work on refining the ideal regulatory framework for a commons of the airwaves. It is a collaborative research endeavor involving leading experts from computer science, economics and communications law. The project seeks to define in practical terms the best set of policies for governing license-free spectrum, given the evolving state of relevant technologies.

Critics of the license-free spectrum commons model such as Thomas Hazlett, a Senior Fellow at the Manhattan Institute, have argued that government mismanagement of these issues is unavoidable and will lead to an inefficient and anti-competitive regime. Hazlett advocates full privatization of the spectrum. However, participants in the Open Spectrum Project, such as David Reed, former chief scientist at Lotus, counter with preliminary research that shows that a well-designed cooperative architecture involving a large number of users could actually increase the total infor-

mation transmitting capacity of a given block of spectrum. Reed argues that closing off opportunities for spectrum sharing will stifle the technological experimentation necessary to take advantage of these efficiency gains.

Attempts to foster spectrum commons in the past have been stifled by poor regulation. In 1995, seeking to open up more spectrum, the Apple computer company asked the Federal Communications Commission to designate a 30 MHz band labeled Unlicensed Personal Communication Service (UPCS) as *unlicensed* In their submissions to the FCC, Apple and other PC makers argued that they wanted to create what would essentially be a public park in the airwaves, a free space for which they could build wireless networking applications to connect people.

But the frequencies that the FCC selected for UPCS were already encumbered by a small number of existing users, including sheriff's departments and the oil industry. The FCC stipulated that these users had to be compensated to the tune of $70 million for surrendering their spectrum. An agreement could not be reached among potential users of the new unlicensed bandwidth, so in response, the FCC authorized the creation of a *de facto* licensing body called UTAM. This body imposed a $20 fee on every device using the UPCS bandwidth in order to raise the required $70 million compensation. UTAM also banned the use of nomadic devices until the entire spectrum could be cleared of incumbent users.

Telecom industry lobbyists were influential in the design of these regulations and they were extremely disadvantageous to Apple and the other PC companies. The rules essentially created enough barriers to discourage them from using the UPCS spectrum commons. Not surprisingly, little experimentation using the band

has occurred since then. A small number of companies have used UPCS to offer advanced cordless telephone systems to hospitals and stock exchanges. In an August 2001 *Notice of Proposed Rulemaking* the FCC indicated that it was considering shutting down the UPCS spectrum commons due to "underuse"; it planned to reallocate the spectrum to the telecom industry through exclusive private license auctions.

The Open Spectrum Project is working to present alternatives to the restrictive regulations that have contributed to the stifling of the UPCS commons. Project leaders seek to present a compelling case for more extensive license-free management of the airwaves, so that access to the wireless mediascape of the coming decades is not conditioned upon the decisions of a few license-holding infrastructure proprietors. They envisage a radio spectrum that is open to the transmissions of many ordinary users and flexible enough to accommodate the ideas of technology innovators. This model will involve some form of traffic management scheme to ensure that spectrum commons bandwidths do not become congested through overexploitation. For users of the UPCS bandwidth, a flexible spectrum "etiquette" was developed; the Open Spectrum Project is working to refine this beginning into a new set of standards and rules.

Managing Government Information as If Citizens Mattered

Among the numerous sources of information in America's public discourse, the most prolific and arguably the most critical is the U.S. Government. Congress generates thousands of authoritative reports and hearing records each year. Federally funded bodies such as the National Science Foundation sponsor cutting-edge scientific research in dozens of fields.

Federal government agencies compile prodigious databases in a vast array of important areas including food and drug safety, environmental and weather conditions, financial and labor markets and demographics. Tens of billions of tax dollars are invested in these crucial information resources each year.

Internet technology offers an historically unprecedented opportunity to make the full range of government information cheaply and quickly accessible to all taxpayers. Although in recent years there has been notable progress in this area, there remain substantial gaps in the government information available online. Of the information that is available, many reports, databases and other materials are more expensive or difficult to access than need be. As a result, Americans who have paid for these materials with their tax dollars continue to be denied the economic and social benefits to which they are entitled. And Congress, by failing to exploit Internet technology to the fullest and make its own records and executive branch documents more available to ordinary citizens, is undermining a vital tool of democratic accountability, scientific progress and press oversight.

Brown University's annual survey of online government information reports that many federal government websites improved considerably from 2000 to 2001. The study ranked 58 sites according to their provision of publications, databases, search functions, contact information and certain online services. Outstanding sites included the Food and Drug Administration, Department of Agriculture and the Federal Communications Commission. Some of the poorest performers included the federal courts (including the Supreme Court), Congress and the Office of Management and Budget, all of which failed to offer a comprehensive array of timely documents via the Internet.

The Brown University report also found a general failure among federal government bodies to take advantage of interactive features of the Web. At many commercial websites, smart design features allow users to search for information or navigate the website in highly efficient ways. These features have yet to be adopted among government sites.

There are a variety of reasons for these ongoing failures to provide comprehensive and timely access to government information. Organization and coordination problems continue to hinder the adoption of information via Internet distribution at many agencies. Shifting from traditional modes of operating to an Internet-focused, more transparent model requires technical expertise and decisive leadership from managers, both of which are in short supply in large federal bureaucracies. Funding shortfalls compound the problem. Budget-setters, meanwhile, are reluctant to shift resources from established organizational units to new Internet information services. There are no influential constituencies lobbying for changes and few Congressional leaders have chosen to push for progress in making government information more accessible. This is no surprise. As politicians facing reelection, most Congresspeople have little desire to expose their daily performance to closer public scrutiny.

Creative Initiatives to Bolster
Access to Government Information:
The FirstGov Search Engine
An important step forward in the process of getting government information online came with the launch in November 2000 of **First-Gov**, the official federal government portal and search engine. FirstGov (www.firstgov.gov) was developed by Eric Brewer, cofounder of the search engine company Inktomi, and was

established via an executive order from the Clinton White House. The search engine covers 31 million pages of information from more than 22,000 government websites. In order to ensure the project got off the ground, Brewer agreed to provide the search engine to the government as a free service with no cost or banner ads until 2003. Funding for First-Gov's other operating costs in 2001 came from 22 individual federal agencies.

While many have welcomed the establishment of FirstGov as the single entry-point into the numerous stores of government information on the Internet, critics point to a number of glaring weaknesses in the service. The lead researcher on Brown University's e-government survey, Darrell West, says the biggest ongoing problem is poor visibility due to lack of promotion. FirstGov's search engine has been designed to handle 100 million searches per day but the site typically only averages between 800,000 and 1 million hits per *week* A FirstGov logo and hyperlink appears prominently on federal government websites but there has been no concerted effort or expenditure on educating the public about the service and raising its profile.

Another pressing concern is the future funding of the project. Eric Brewer's loan of search engine services to FirstGov will end in 2003 and although the General Services Administration has taken responsibility for shepherding the service into the future, there is no legislated guarantee that the service will receive funding to continue in its present form. The quality of the service depends on an efficient search engine technology and a thorough management team that works closely with all federal government agencies to ensure all information resources are covered by FirstGov. Both these requirements demand a generous and stable budget.

A Chief Information Officer for the Federal Government

One initiative that could well have a substantial transformative impact on the availability of government information is the proposed creation of an "Information Czar" or Chief Information Officer (CIO) post within the federal government.[44] In May 2001, Senator Joseph Lieberman introduced a bill to Congress that would establish a statutory position in the Office of Management and Budget to implement federal information policy. The bill, "The E-Government Act of 2001," would provide the Information Czar with a budget of $200 million a year with which to fund e-government initiatives. The new office would also take on responsibility for fostering the continued improvement of FirstGov.

Supporters of the legislation argue that a permanent leadership position with expansive decision-making authority in the executive branch is the best way to ensure that the full information resources of federal agencies are made available to the public in a coordinated way. An Information Czar could set cataloging standards ("metatags") so that all government sites could be searched in the same, straightforward way. The CIO could also act as a watchdog, putting pressure on agencies that fail to make their information available online in a reasonable amount of time.

A hearing on the Lieberman bill was held before the Senate Committee on Governmental Affairs in July 2001. While influential public interest groups like OMB Watch voiced support of the bill, some Republican Senators expressed concerns over the scope of authority of the new Information Czar and the proposed budget. The bill also faces opposition from the Bush Administration, which has its own plans for a smaller, less authoritative office of

information technology. Leaders from both parties have publicly agreed some compromises are necessary, but it is uncertain when or if an acceptable bill will come up for a vote soon.

The Trickle of Information from Congress

With its regular public hearings and deliberative approach, Congress is known as the most open branch of the federal government. But its performance in getting its information resources online for public access is woeful. It sponsors authoritative, nonpartisan research in all policy areas through the Congressional Research Service (CRS), but those reports are essentially hidden from public view on a private intranet accessible only to congressional offices. Some individual members post a select few CRS reports on their personal websites but there is no central repository online. Databases full of information useful to voters on such things as Congress members' fundraising, meetings with lobbyists and voting records on specific pieces of legislation are compiled with care, but are not posted or are incompletely posted on the Internet. Transcripts of public committee hearings take months to be posted online. And don't even bother trying to track revisions of bills as they pass through the Senate and House: this information, too, is unavailable.

Instead of seriously addressing these failures, Congress has quietly allowed the private sector to step in and sell congressional information for profit. HearingRoom.com, a company founded by former director of corporate communications at Monsanto, Philip Angell, now offers real-time transcription and audio service via the Internet from inside congressional hearings. The company has been granted permission to permanently lay its cables in the House and Senate's committee rooms and is charging between $5,000 and $10,000 a year for access. Many special interest lobbyists view this information as so critical to their day-to-day influence on the legislative process that they are happily forking out these prodigious sums. Few individual citizens and nonprofit watchdog organizations can afford the HearingRoom.com service, however.

By sanctioning this special private access to its hearings, Congress has in effect established a two-tier system of public information. HearingRoom.com's high-paying customers get full information privileges, while the ordinary taxpayers who fund Congress are forced to make do with second best.

Senator John McCain has twice introduced legislation in the Senate that would compel the posting of CRS research reports, lobbying and gift declarations and joint committee reports on the Internet. But opposition from senior lawmakers has ensured that the bill, known as the "Congressional Openness" resolution, repeatedly gets tied up in committee and never comes up for vote. McCain claims that the lack of progress is "part institutional bias, part business-as-usual thinking," but its opponents' reasoning on the issue is not hard to figure out. Despite the obvious public benefits of getting more congressional information onto the Internet faster, Senators and Representatives realize that it would also subject them to much closer—and sometimes embarrassing and politically vexing—public scrutiny. McCain has signed up co-sponsors Senators Patrick Leahy (D-VT), Senator Trent Lott (R-MS) and Senator Joseph Lieberman (D-CT), and has vowed to keep introducing the bill.
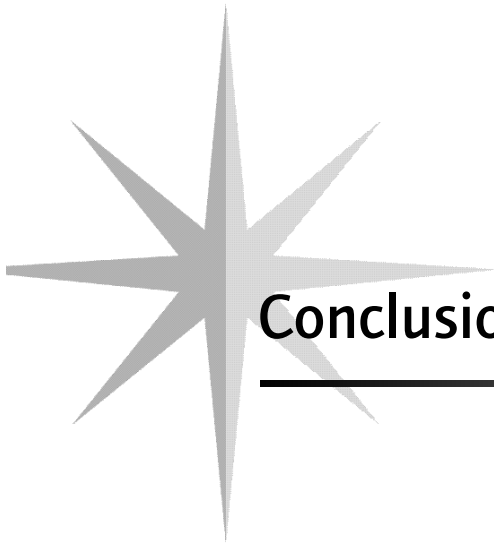
Conclusion: A Return to First Principles

The laws and policies that undergird our national communications system may change from time to time, but the deeper values that they seek to advance should not. The time is now ripe to bring our laws and policies into closer alignment with enduring American values. Even as we promote robust competition in open markets, we must ensure that market activity does not crowd out important *extra-market* values represented by the commons. Public policy should reflect this priority.

After all, people are not just "consumers" of content and other media products. They are citizens and creators in their own right. Opportunities for free expression should therefore be available to everyone, not just to the owners of large media enterprises. Public spaces for open interaction need to be freely available on a nondiscriminatory basis. If our public life is going to be hospitable to a diversity of expression, public policies must look beyond the demands of commercial content-providers and protect individual citizens and their artistic, civic, educational and cultural concerns. A rough equity of access and participation is part of our democratic heritage. This value needs to be championed as a central meaning of the public interest in media policy.

Amidst the confusion engendered by a crush of new digital technologies, especially the Internet, we believe that the commons offers a fresh and flexible paradigm for actualizing old values in a new communications context. The commons helps us articulate a constellation of values that market activity tends to denigrate or dismiss. It focuses on the need for free and open access to the media by everyone and the ability of all citizens to participate in a media platform as a matter of civic right, not economic clout.

The commons is concerned about communication inspired by all manner of moral, social, civic and artistic concerns, rather than only those types of communication that can yield corporate profits. Instead of fixating on the giant media corporations, its moguls and their competitive vicissitudes, talking about the commons opens the discussion of media policy to a broader perspective: our democratic culture. It shifts the focus to a more appropriate vector of analysis: the basic rights and needs of individual citizens. And it helps meet citizen needs through a vehicle that is neither market-based nor state-controlled, but a third domain of governance altogether: the commons.

As important as markets and technology are, for too long they have been regarded as ends unto themselves. The implicit assumption has been that the broader needs of our society would somehow take care of themselves. But as we have seen, market forces are uninterested in (and perhaps incapable of) meeting all sorts of societal needs. By contrast, the Internet, as a commons, has shown itself to be enormously versatile and powerful, creating value in ways that markets cannot while also nurturing new sinews of moral and social connection. Public policy needs to recognize these facts, and imagine innovative policy initiatives that protect and extend the Internet commons.

At a time when public policy in telecommunications has inexorably lost sight of the citizenry and the public interest (to the point where many profess that "the public interest" is meaningless or synonymous with the "free market"), we call for a new conversation about the information commons. The concept helps clarify that there is indeed a discernible and urgent public interest to be advanced. The commons is a conceptual framework upon which a new body of public interest policies

can be developed: new protections to assure an open, end-to-end Internet architecture, new government action to assure open standards for key communications platforms, new limits on copyright and trademark law so that the public domain and new creativity may flourish and new government initiatives to manage the public's airwaves to directly benefit the public.

We have seen a great deal of innovation in private-sector technology and markets. We have not seen a corresponding burst of leadership and innovation in protecting the public interest in this new environment. Just because many elements within Congress, the FCC and other government bodies have chosen not to develop new public interest policies does not mean that the public interest is an archaic, meaningless concept. This report offers ample evidence to the contrary.

But rather than quibble over the specifics of one proposal versus another, it may be more valuable to underscore certain first principles as we try to re-articulate the meaning of the public interest in the digital age. We again offer the following principles as guideposts:

1. Preserve significant slices of the communications infrastructure for non-commercial varieties of communication, and provide sufficient legal and financial support for creativity in these spaces.
2. Assure that markets are truly open, competitive and diverse, and not closed and concentrated.
3. Allow new technologies to evolve and innovate without being quashed or subverted by existing media industries.
4. Ensure that First Amendment freedoms are fully applied to individual citizens—the primary constituent of our democratic polity—and only secondarily to media corporations.

5. Revisit the cultural bargain of copyright and trademark law to assure that the public gets a fair return for the monopoly rights it gives.

6. Devise innovative policy structures that can affirmatively protect the information commons against proprietary free riders, as the General Public License has done for open source software and as the spectrum commons proposes to do for wireless communications.

7. Assure that the public reaps a fair return on the private uses of public assets, such as the electromagnetic spectrum.

While the pace of technological change and the power of market forces have been disruptive over the past decade, in both good and bad ways, we seem to have reached a plateau that affords us some perspective. It is time to instigate a new conversation about the public interest in digital media. Many things are far more evident than they once were, including the benefits of the Internet, the commercial threats to its architecture and digital content and the importance of the public domain. Fortunately, we can now contemplate a number of fresh and innovative proposals that can safeguard and extend the information commons.

Reader Resources

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Project Gutenberg: **http://promo.net/pg**

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Noesis Philosophical Research On-line: **http://noesis.evansville.edu**

Project Vote Smart: **http://www. vote-smart.org**

M.I.T. OpenCourseWare: **http://web.mit. edu/ocw**

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The Open Lab: **http://bioinformatics.org**

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The World Wide Web Consortium: **http:// www.w3.org**

Internet Engineering Task Force: **http:// www.ietf.org**

Hot Zones for Internet Standard Setting
INSTANT MESSAGING
IMUnified–the interoperability initiative spearheaded by Yahoo!, MSN and AT&T: **http://www.imunified.org**

Instant Messaging working group, Internet Engineering Task Force: **http://www.ietf. org/html.charters/impp-charter.html**

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Consumer Project on Technology's "Open Access" resources page: **http://www. cptech.org/ecom/openaccess**

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Media Access Project (Cheryl Leanza): **http://www.mediaaccess.org**

Center for Digital Democracy (Jeff Chester): **http://www.democraticmedia.org**

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Free Software Foundation's GNU General Public License and a list of other similar open software licenses: **http://www.fsf.org/licenses/license-list.html**

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Creative Commons (Molly Van Houweling): **msvh@pobox.com**

Electronic Frontier Foundation's Open Audio License (OAL): **http://www.eff.org/IP/Open_licenses/eff_oal.html**

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The Open Music Registry: **http://www. openmusicregistry.org**

Arts Libre or Free Art License text: **http://artlibre.org/licence/lalgb.html**

The Design Science License text: **http://www.dsl.org/copyleft/dsl.txt**

Open Content License: **http://www. opencontent.org**

IV. Fortify the Information Commons: Adopt Innovative Policy Initiatives

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