Survey Article:
Digital Technology and Cultural Goods*

KIERAN HEALY
Sociology, University of Arizona

THIS ARTICLE examines the implications of the Internet for the ownership, distribution and consumption of cultural and expressive goods, broadly defined.[1] By this I mean literature, music, visual and performance arts, libraries, archives, and the like. The growth of the Internet has affected many areas of life besides this one, of course. It has allowed the growth of new ways to associate with others, new ways to work and do business, new ways to be politically active, amongst many others.[2] So why focus on cultural goods?

It turns out that one of the main attractions of the Internet to ordinary users is its ability to deliver content over the network quickly and at zero cost. Literature, images of all kinds and archival materials are accessible to anyone with a network connection. Music is also easy to come by, and has been the most controversial (and popular) kind of cultural good exchanged so far. Video is available to those who—like many college students—have a lot of bandwidth and the knowledge to use it. In each case, however, the Internet's technical capacity to move these goods around does not mesh easily with established legal practice, government policy or commercial interests. For many interested parties, the Internet's most distinctive characteristic is a bug, not a feature.

This makes cultural goods interesting and important. Being able to search for and freely download a novel, a few hours of music, or an entire film is both immediately appealing to many people and completely incompatible with how many corporations and artists now make their money. Although the Internet's effects are manifold, it is in the sphere of cultural goods that digital technology is putting the most pressure on established ways of doing things. Given the new possibilities, we want to know how literature, music and film will be produced and made available to people. Will people's tastes change as their choices do?

[1]When I say 'the Internet' or 'the Web', it should be taken to refer not only to the network itself but also to the panoply of digital technologies and gadgets centered around it, like wireless networking, MP3 players, PDAs, eBooks and so on. These things are interesting mainly because they can tie themselves to or take advantage of services provided through the wider network.

[2]For a wide-ranging review of the Internet's social impact, with particular reference to inequality, see DiMaggio et al. 2001.

How accessible will cultural goods be? How much censorship will there be? Will cultural heritage, presently stored in museums, libraries and archives, be made more easily available to a much wider audience? How much of our stock of cultural goods will be locked away under copyright restrictions? How will that affect the production of culture in the future? Questions proliferate. Efforts to answer them raise deep questions about the social and legal regulation of speech, property, privacy and business. How the new technology is institutionalized will have an immediate and deep impact on how people read, listen, view and learn. The medium is new, but the philosophical and political problems are often fundamental and familiar.

This article has four main parts. First, I identify three sites where technical and social choices are being made—in the infrastructure of the system, in its social organization, and in its meaning to individual users. Second, I discuss a number of ways in which information technology is changing our experience of cultural goods. As the Internet binds communications media together, the flood of content raises political questions in at least three areas: how to find and filter what is available, how much to censor it, and how to regulate access to archives. Third, I discuss recent developments in the legal regulation of cultural goods, focusing on copyright law in the United States. The Internet has expanded the scope and severity of copyright. I discuss some of the implications of recent law for freedom of speech, innovation and fair use of cultural goods. Fourth, I pick out some basic dichotomies that help us understand political regulation of the Internet's infrastructure, social organization and individual users. I argue that, once set, standards may be difficult to change in each case. These dilemmas are worth facing up to explicitly, but despite their importance I argue that this has not really happened.

I. THREE SITES OF CHANGE

The research literature on technology and social change is too large to discuss here, but a basic lesson from it is clear enough. Technological innovations become integrated into social life through a long-running process that, while not deterministic on either side, does tend to have a significant degree of path dependence.[3] Thus, while information technology promises to change existing institutions and practices, social and political choices can put technology to work in particular ways and close off other possibilities.[4]

Throughout this article, I will be examining efforts to shape the new information technologies at three levels: its infrastructure, its social organization, and its meaning to individual users. My theme is a simple one. Outcomes will be deeply affected by choices made at each level; therefore there is value in making

[3]Bijker 1995; Mackenzie 1996.
[4]Kubicek et al. 1997.

those choices self-conscious, careful and well informed. Decisions taken over the past few years have not tended to have these qualities, however, and the result is an emerging 'information regime' that poses significant threats to the public good.

A. INFRASTRUCTURE

Communications networks have assumptions about their purpose built into their physical infrastructure.[5] The Internet got off to a lucky start in this respect. Unlike the postal network, the packets of information traveling through it are all seen by the network as being equally important. Unlike the phone system, there is no built-in billing mechanism, so it is possible to use the network for free. Unlike print and broadcast media, people can publish their work very easily and have their website be as accessible as anyone else's. Unlike the computers themselves, the protocols that shuttle data back and forth between them are open and inter-operable. The end user need know nothing of the many different hardware and software platforms that comprise the network. Taken as a whole, the Internet's infrastructure was designed to be robust and damage-tolerant (again, unlike phone or broadcast networks). And its ability to carry all kinds of data meant that it had the potential to be a kind of superset of every other communications medium.

Because of these characteristics, the early days of the Internet's expansion brought much social commentary telling us how the Web was about to sweep away the old regime, both in general and with specific reference to cultural goods.[6] The pendulum swung back quickly, however.[7] It is clear by now that the Internet, by itself, is not going to determine the shape of the future either way. It is not even going to determine its *own* shape. Many of its central features could easily be regulated, legislated or competed out of existence. As we shall see below, this is true of interoperability, open standards, anonymity, and many other things that once seemed to define the medium.

B. SOCIAL ORGANIZATION

As is now well known, the Internet was a fortuitous and unexpected consequence of government-sponsored research, where the researchers were left more or less to themselves for crucial periods.[8] The seeds of its growth were planted in universities and the U.S. Defense Department in the 1950s, and by the late 1970s nearly all of the core technical ideas were in place. The rise of the Internet can be seen as part of long-term trends in American society. Economic historians have

[5]Lessig 2000.
[6]Shiva 1996; Dertouzos 1997; Dyson 1997.
[7]Shapiro and Leone 1999; Garfinkel 2000.
[8]Abbate 2000; Hafner and Lyon 1996.

traced the growth of distributed information and communications networks in the U.S. back to the founding of the Post Office.[9] On this view, the U.S. has been an information society for a very long time. Processes seemingly unique to the Internet can be seen in other communications networks, such as the postal service, railroads, telegraph and radio.

Nevertheless, the belief that the Internet is somehow immune to social and political regulation is quite persistent. This is especially true in the hacker community, where it has taken on a strong libertarian tinge. (The irony is that this libertarian culture was fostered in university computer science departments and financed by the government.) But the amount of corporate investment in the Internet, together with the public interest issues that it raises, mean that hackers can no longer pretend that they live outside of society. The question is not *whether* there will be regulation, but *what kind*.[10]

Radio is analogous to the Internet here. By 1920, this initially anarchic, egalitarian medium had consolidated commercially and come under government regulation. The state sliced up the broadcast spectrum and allocated it to different uses. Ham radio operators were relegated to a small part of the available bandwidth. The industry reorganized itself around a new way of making money. Companies had started off selling radio sets to consumers; they ended up selling consumers to advertisers by providing entertainment to listeners.[11] The 'interactivity' of radio thus declined and the character of the medium changed.

C. INDIVIDUAL USERS

Although most users tend not to care about technological details (except perhaps to wonder why their computer crashes all the time), their views should not be underestimated. When confronted with a new technology, we ask 'What is this for?' and 'How does it fit into my life?' New technologies slowly become familiar ones; novel tasks eventually become habitual; innovative practices become conventional. This process is a complex one. The more versatile and general the innovation, the less obvious the process of adaptation will be, and the more options there will be to select from. Nevertheless, people do choose some uses over others, even if the technology does not require it.[12] Of course, users are not guaranteed to choose the most interesting, productive or efficient use for a technology.

Conventions and expectations can be hard to track, because they emerge from the ground up. But technology use solidifies through convention, so we need to attend to it. We expect previews at the cinema but not at the opera. We accept

[9]Chandler and Cortada 2000.
[10]Lessig 2000.
[11]Hargittai 2000b; Douglas 1994.
[12]Schivelbusch 1995; Fischer 1994.

full-page advertisements in newspapers but not in novels. We plan on paying for some television shows but not others. These assumptions imply differing business models and market structures. In each case, users are not simply *learning* what a particular technology is for, they are *deciding* what it is for. Often, users will put a technology to use in an unexpected way. Because the Internet can be made to look or sound like all existing media, or something quite different from any of them, the conventions and expectations that users settle on will have important consequences.

II. CULTURAL GOODS AND THE POLITICS OF INFORMATION

New information technologies are changing the conditions under which cultural goods are produced, distributed and consumed. On the production side, new technologies are changing established forms of art and creating new ones.[13] Once a cultural good is produced, the problem is attracting the attention of someone to it and deciding under what conditions they may own, use or experience it. From the consumer's point of view, the initial problem is figuring out what to pay attention to. Strategies for attention-getting and filtering lead directly on to the possibility of censorship. The censoring of controversial art is a common issue that takes on new dimensions in the context of the Internet. This is partly because of the Internet's potential to make cultural goods more widely available than ever before. But it is also because the social regulation of art now overlaps more than ever with the regulation of other kinds information. In this section, I discuss the problem of finding and filtering online content. I then sketch the issues surrounding inequality of access to, and censorship of, data. My main aim is to show how our treatment of cultural goods is now implicated in much wider questions of regulation.

A. FINDING AN AUDIENCE; SEARCHING FOR CONTENT

In 1995, Nicholas Negroponte presented an upbeat future in his book *Being Digital*.[14] One of the main benefits of the new information technologies, in his view, was that they enabled the collection of precise data on the habits, preferences and practices of individual users. Think of the parts of the Sunday paper that you never read. With perfect information about your habits, your newspaper could tailor itself to you—sports scores (but no baseball), foreign news (but no business reports), for example. Readers could avoid unwanted

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[13]The relationship between technology and art is a fascinating one, but a discussion of it here would take us too far afield. For a systematic sociological treatment of art production see Becker 1984. Holtzman 1998 and Cubitt 1999 provide general discussions of the effects of digital technology on art forms. For specific issues in the visual arts see Rush 1999 and Moser and McLeod 1996; for music see Théberge 1999; for literature see Nunberg 1996.

[14]Negroponte 1995.

information, and newspapers provide a better service. Negroponte called this idea the 'Daily Me'. He meant it to be liberating: people would finally have the freedom to consume what they wanted.

Readers today are more likely to be ambivalent about the 'Daily Me' than Negroponte was. For one thing, the prospect of private corporations holding huge amounts of personal data on every consumer is not very attractive.[15] Precisely targeted content can be accompanied (or replaced) by precisely targeted advertising. One of the few assets a bankrupt dot-com has is its customer database, and since the investment bubble burst these have often been up for sale, whatever the original privacy policy might have said.[16] But even if we could make sure that our personal information would not be abused, there are still good reasons to worry about the 'Daily Me'. Cass Sunstein recently made a comprehensive attack on the idea of perfectly customized consumption.[17] His argument is that the Internet has the capacity to make us more extreme in our views and less tolerant of other people precisely because it allows individuals to specify in advance what they want to see, hear and read. Unless we believe that individuals' preferences are fixed forever, it is surely restricting and potentially harmful to be able to block out new ideas and experiences so easily.

Sunstein is mainly concerned about the effects of the Internet on democracy. But the point he makes is as relevant to cultural goods as it is to politics, and a moment's thought shows they are not unrelated. For instance, audience development is one of the main tasks of any arts organization, and on the face of it the Internet provides new and exciting ways to attract people. One might think, for example, that building a quality website would open up an arts organization to a much larger audience. Sunstein's arguments suggest the opposite might happen, or at least that the effects might be minimal. It would be a nasty irony if the main result of the digital communications revolution was to make people *less* likely hear about or try out new things. Sunstein's own remedy for the problem of political diversity requires government regulation. He argues that the state should help create 'Town Halls' where people can debate various issues, and that political websites should be required to link to sites espousing alternative views. Beyond that, search engines and portal-sites (like Yahoo) might be required to provide links to nonprofit or political sites on their front page.

It is easy to see what similar remedies in the area of cultural policy might look like. The government might require a certain amount of cultural content relative to all material on a particular site, for example. Whether or not this approach is a good idea is another matter. Television programming aimed at children is required to have a minimum level of educational content, a policy most people favor. But government regulation of arts programming in this way is paternalistic. And the idea of 'required linking' dispenses with the idea of the Internet as an

[15]Froomkin 2000; Garfinkel 2000.
[16]Sandoval 2000.
[17]Sunstein 2001.

open network. The issue is a complex one. Sunstein is right to suggest that a steady diet of things you have already tried is likely to be bad for you (and bad for civil society) in the long run. Arts administrators, trying hard to get people into performances and exhibitions of new work, are likely to agree. But Negroponte is not entirely mistaken: there is simply too much information out there to evaluate. To make use of the Web properly, people must of necessity be very selective.

This means the selection mechanism is very important. You can search on your own, using a search engine like Google (google.com), or you can have someone do the job for you. The latter approach comes in four main varieties. Mega-portals, like Yahoo, aim to cover the entire Web. They have the greatest scope and by far the largest amount of traffic, but also the greatest potential for channeling content in narrow ways.[18] Magazine-type sites work like print magazines, bringing specific, preselected items, written by freelance writers. Online magazines can easily link to external sites, and can also support discussion groups. Slate (slate.com) is a good example of this model. User-driven sites like Kuro5hin [*sic*] (kuro5hin.org) get all their content from their users and rely on a moderation system (which I describe below) to organize the material.[19]

In Negroponte's vision, the technology is perfectly transparent and compliant to each user. Things have not turned out so smoothly. Many users depend on the search engine they use. If a website is not in a search engine's database, then it will effectively be unavailable to users. This is not the kind of system that Negroponte had in mind. But as an increasing proportion of Internet traffic is concentrated on a very small number of portals, those portals are in a position to shape what the Web looks like to most users.[20] The archetype here is America Online, which prefers its customers to use its AOL browser rather than Netscape or Internet Explorer. In this browsing environment, the naïve user might easily think the Internet is part of a suite of services offered by AOL rather than a vast network that exists outside of it. Here the problem is not hyper-specialization, but its opposite—users who search exclusively through mega-portals and are all subject to whatever selectivity, search-blindness or bias the portal might suffer from.

If the choice is between 'self-selection' on the part of users and 'search-blindness' courtesy of the Web portals, we would probably want to choose the former. But these might not be the only options. A number of Internet sites have community-based, user-controllable moderation systems built in to them, and they work quite well.[21] This system has been used for some time on 'geek' sites

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[18]Hargittai 2000a.

[19]For other examples, see Kim 2000.

[20]Waxman 2000b; Waxman 2000a.

[21]The idea is that registered users have a certain number of points (often called 'karma') which they use to mark articles, posts or notices as worth reading or not. Each contribution to the site carries a score that is the sum of all user moderations on it. So, for example, an article may score anything from -1 to $+5$. Users choose the moderation level they want to browse at—say, $+2$—and then see only contributions with that score or higher. Users can earn karma by posting items themselves judged to be of good quality.

such as Slashdot (slashdot.org) and Kuro5hin. It has several advantages. It allows users to filter content by attributed quality; community standards emerge from the aggregation of individual votes; users do not have to vote on every story; participation is rewarded with karma; and nothing is really censored, because you can always choose to see everything.

Moderation systems vary in the degree to which they require an active community of participants prepared to put the time into moderating posts. Such sites do not address the problems associated with searching the Internet as a whole, of course. Instead they work as ways to reduce noise and focus attention. But if many of these users are scanning different bits of the Web and submitting stories to the community site, and the moderation system in turn sorts and ranks those stories for users, then the community as a whole can function as a powerful distributed system that collects, processes and evaluates information and promotes discussion in a way that combines the best elements of Sunstein's and Negroponte's visions.

Strategies for searching and filtering are unevenly distributed across users, however. Who participates in these communities, and who relies on the mega-portals? Research is scarce, but the social stratification of Internet use may end up mirroring broader trends of cultural consumption. For the first half of the twentieth century, cultural sophistication was marked by the consumption of specific high-culture goods. This has changed since the 1960s. Instead of specializing in traditionally legitimate high-culture goods to the exclusion of low-culture alternatives, sophisticated consumers of culture are more likely to be 'omnivores'. They will enjoy all kinds of music, for instance, instead of just classical music.[22] Being culturally omnivorous may be good for you, but empirically it is a specialized consumption niche. This pattern might carry over to the Internet as people start to rely on it for the discovery and delivery of culture.

B. CENSORSHIP AND CENSORWARE

Censorship is closely related to filtering, and many of the same issues apply. The main difference is that with censorship someone else is deciding what you can and cannot see. You have no choice at all in the matter. In the United States, several attempts have already been made to regulate content on the Internet, such as the Clipper Chip and the Communications Decency Act, and most recently the Children's Internet Protection Act. The problem of censorship of art and music is a familiar one, and many of the same questions of free speech carry over to the Internet.[23]

The technological potential for regulation and censorship is high. Hardware-based methods of identification and authentication are likely to encounter the

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[22]Peterson and Kern 1996.
[23]Sobel 1999.

most resistance from free-speech advocates. In the meantime, software that tries to filter content is the most popular method of censorship. A number of companies offer services to parents who wish to control or monitor their children's access to the Internet. Given that some of the most profitable and easily locatable sites on the Internet are pornographic, demand for this software is strong. 'Censorware' is prone to two errors. Either it underblocks sites, letting objectionable ones get through, or it overblocks, banning unobjectionable ones. As might be expected, certain kinds of arts sites are prime candidates for overblocking.

Censorware based on some kind of artificial intelligence is hard to write, precisely because a program needs to be able to discriminate between Web pages on the basis of their content (that is, their meaning), and this is a very difficult thing to do.[24] When it comes to parsing the meaning of text, even the best software does very poorly compared to people. Even if the software did a very good job, the problem in this area is not really a technical one. Though they are much better at it than computers, people nevertheless disagree all the time over whether this or that text or image is obscene or not. So even if the software was as good at discriminating and categorizing as a person, everything would still depend on what its standards were, and this is an inescapably political problem. As more and more cultural goods become available online, efforts to monitor (and censor) access to books, photographs, films and other art works are likely to become more common. This will be especially true for libraries and for material made available through sites that receive any kind of public subsidy.

Computer software need not only be used to prevent access to cultural goods. It can also be used to create new goods which cause trouble for existing standards of free speech. 'Virtual' child pornography, for example, appears to depict children but in fact uses realistic, digitally generated images. In the U.S. such images are protected under the first amendment. The Supreme court has ruled that they are, because no actual children are harmed in its production. Actual child pornography is of course not protected, but the virtual representation of illegal acts is usually not itself illegal. It is often difficult, however, to specify content-based prohibitions, and in this case rapidly improving technology makes it even harder than usual.[25]

C. Archives and Access

Filtering and censorship continue to be relevant when we consider the accessibility of archived works in digital collections. Unsurprisingly, the explosion of online content has created something of a crisis amongst data

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[24]Censorware that relies on lists of site names or IP addresses does not face this problem head on, but faces its own problems because sites may have multiple names and (especially) multiple IP addresses. Even worse, there may simply be a blacklist of keywords whose appearance on a site will cause it to be blocked, regardless of context.

[25]*U.S. vs Free Speech Coalition* 795 U.S. 2000.

librarians, archivists and curators. They face problems on at least two sides. First, although people increasingly expect archival material to be available by digital means, it is not clear how to make this material available online easily and efficiently. Second, at least some material created solely for online consumption is worth keeping. It is not clear how best to select, categorize and store it.[26]

Knowledge of these topics is increasing quickly, however, and there is a thriving industry investigating how people navigate databases and archives, and how best to structure them.[27] Professional researchers in many fields now routinely rely on searchable full-text archive services such as ProQuest and Lexis-Nexis. These companies have expanded the range of services they provide as the number of Internet users (that is, potential customers) has grown. The role the market should play in allocating access to knowledge and culture, both inside and outside of academic settings, is thus an important question. Some have worried about having to pay for access to primary research materials or archives.[28] In the life sciences, for example, there is a lively debate over whether prestigious journals like Nature should charge for access to their archives. Access to these journals is a must for serious researchers and there is strong support for keeping scientific knowledge easily available. But editors want subscription-based access to the archives. The issue is complex, because there is more than one model of access and payment. Regardless of whether access to an archive is free or not, it must still be run by some organization. A good deal of the conflict comes down to who should administer the common research archive, regardless of the pricing model.

So there are at least two dimensions to this issue: whether this kind of archive should be free to everyone (as the print archive is in public libraries); and if not, who can legitimately expect to share in the profits. The question of payments to authors does not usually arise in the case of academic articles. But archives of cultural goods contain material produced by authors or artists who may want to be paid if their work is made available in this way. The legal status of online archives like these was recently clarified by the Supreme Court in *New York Times Co. vs Tasini*.[29] The case resulted from the New York Times's policy of making archival material available to users on a pay-per-article basis. A group of freelance writers argued that authors are entitled to a residual payment from the *Times* each time someone downloaded one of their articles. The newspaper replied that it had already paid its writers both for their work, and for the right to reprint it in this context. The *Times* also claimed that it would be too expensive to administer a royalty system for all of the material in its archives. Beyond this, free access to newspapers, artworks, manuscripts and the like has long been thought vital to preserving a common culture and an open public sphere.

[26]Case 2000; Featherstone 2000; Buckland 1997.
[27]Bishop 1999; Stephenson 1999.
[28]Callister and Burbules 1998.
[29]533 U.S. 2001.

Nevertheless, by a 7–2 majority, the Supreme Court held that the freelance writers were entitled to compensation.[30]

The *Tasini* case is only one of the many fronts on which the relationship between cultural goods, digital technology and intellectual property is being decided. I discuss this issue in more detail in the next section.

III. CONTENT, CREATIVITY AND COPYRIGHT

The problems of filtering, audience building, censorship and archiving all concern how users should (or should not) pick their way through the huge amount of information available on the Web. But as the *Tasini* case shows, the question of who owns all that content is not far behind. In this section, I discuss some of the issues that the Internet has raised about copyright.[31]

The legal justification for copyright and patent law is that it represents a bargain between the interests of authors and the public. The temporary control that copyright law confers on authors is meant to encourage their creativity in the short term and give them a chance of getting a return on their investment. The fact that this control eventually lapses is meant to encourage creativity in the long term by not privatizing the common stock of culture. The purpose of copyright and patents, according to the U.S. Constitution, is 'to promote the progress of science and useful arts'. Copyright law allows for many cases of 'fair use' where a strict application of copyright would be unfair or impractical—quoting from a book to review it, making a cassette copy of a CD for use in the car, lending a video to a friend, playing a piece of music at a party, and so on.

A. DIGITAL TECHNOLOGY'S THREAT TO COPYRIGHT

Digital technology allows cultural goods to be copied with perfect fidelity and at virtually zero marginal cost. High-speed computer networks allow those copies to be transferred between users simply and quickly. In the techno-libertarian vision of the Internet, information wants to be free and, in the long run, no-one can stop it. The recent controversy surrounding applications like Napster, which allow for easy sharing of files, proves this idea wrong. As the radio spectrum was radically reorganized in the early part of the last century, so the character of the Web might be completely changed in the next few years through a combination of market power, legislation and case law. A small number of cases presently working their way through the courts are likely to have lasting effects on the

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[30]The legal issue was whether an online database constituted an alternate version of the original (like a microfilm or braille edition, for instance) or a new product. Freelance writers are not entitled to compensation for alternate versions of the same work, but must be compensated for new editions or products. Because online databases reproduce articles one-by-one, rather than as a copy of the original newspaper page they appeared on, the court ruled that it counted as a new product.

[31]See Litman 2001 for an introduction to the relevant law.

architecture of the Internet. All of these cases are about the proper extent of fair use rights and the corresponding limits of copyright; all of them concern the regulation of cultural goods like film and music.

A central question is how these goods can be copied and distributed. Distribution channels are of central importance to both artists and consumers. Without a distributor, artists will not be able to find an audience. Consumers who do not use the mainstream channels find their search costs are higher. The owners of the various distribution pipelines are therefore in a powerful position.[32] Napster took advantage of the Internet to create a giant, consumer-controlled copying and distribution system that bypassed conventional channels.[33] The Recording Industry Association of America (RIAA) demanded that Napster be shut down for precisely this reason. In its public statements, the RIAA protested the service on moral grounds, calling Napster users 'pirates' and arguing that artists should be paid fairly for their work. A few high-profile artists have argued in similar terms. Few deny that artists should be paid for their work, but most commentators agree that the terms of a standard recording contract and the size of the typical mark-up on CDs makes it hard to see the RIAA as disinterested defenders of artists' rights.

There is no evidence that CD sales were negatively affected by music trading on Napster. But the record companies did not need to prove that they lost money, only that their copyrights were violated. Under the law as it stands, they were. If we do not think of the profit margins of the recording industry, or of the legions of recording artists who are not rich or famous, it is easy to appreciate the force of the RIAA's view. A cartoon repeated with numerous variations in newspapers in late 2000 captures the recording industry's position. It shows a father complaining to his son, who is downloading music via Napster. 'You don't know how easy you have it,' he says, 'In my day, I had to shoplift the albums I wanted.'

It is tempting to see the issue in this way, with exploited artists on one side and thieving teenagers on the other. Things are not so simple. Very few participants in this debate believe that copyright law should be scrapped or that cultural goods should be available for free. What is at issue is how far the reach of copyright should extend, and at what point the law stops representing a bargain between artists and the public and instead becomes a way to extract as much money from consumers as possible.

In the wake of Napster's demise, a number of other distributed file-sharing networks have been accumulating users. Many of these services are both potentially more efficient than Napster at sharing files and less susceptible to the legal problems that shut Napster down. At the time of writing, neither of the two commercial MP3 sites in development by the major record companies has been launched. It appears that the official sites will only offer a subset of each record

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[32]Hirsch 1972.
[33]Miles and McLennan 2001.

company's catalog. This limited selection may affect their popularity. It may turn out that the biggest shift in expectations produced by services like Napster is not the idea that access ought to be *free*, but rather that it ought to be *complete*. Databases that provide limited choice may well be unpopular when consumers expect to find everything online.

B. COPYRIGHT LAW'S THREAT TO CULTURE

Increasingly, however, it looks as though Napster was a sudden but temporary upset. The long-run trend has been towards greater copyright control over artistic works, continuing expansion of the scope of intellectual property, and the restricting of first-sale and fair-use rights, and the public domain in general.[34] Thanks to lobbying by interested parties, Congress has lengthened the duration of copyright eleven times in the past forty years. The technical means to monitor and enforce the new rules is also improving all the time. It seems clear that the long-term impact of these changes is bad for people both as consumers and citizens. Consumers are more likely to be charged on a per-use basis for goods that were once covered by first-sale rules. Licensing rather than purchasing is becoming the preferred business model for software manufacturers. Stronger copyright rules make it easier to suppress or censor authors who parody, satirize, or even simply criticize the works of others.[35] The estate of Margaret Mitchell recently tried to prevent the publication of *The Wind Done Gone*, a retelling of *Gone with the Wind* from the slaves' perspective. They objected that the author's work was pirating characters they owned.[36] Some software licenses try to make it an infringement for the buyer to write a review of the software without permission, though it is an open question whether such a license could be enforced.

The severest critics of current copyright law see it as a tool used by owners and manufacturers to exploit consumers and, in the long run, to create a 'pay-per-use' society.[37] Most legal commentators agree that the erosion of first-sale and fair-use rights is a serious problem. In the U.S., two pieces of legislation are responsible for the most far-reaching changes of the last few years. These are the Uniform Computer Information Transaction Act (UCITA) and the Digital Millennium Copyright Act (DMCA). UCITA is a proposed state contract law designed to standardize the licensing of software and all other forms of digital information. Its opponents argue that it virtually eliminates first-sale rights by allowing vendors to impose 'shrink wrap' or 'click-through' licenses which users

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[34] In law, the 'First-sale' doctrine is a standard exception to the exclusive right of a copyright owner to sell a work. The copyright owner has the right to sell the work, but not to control subsequent sales. First-sale doctrine ensures that you can buy used books, for example.

[35] Jenkins 2000.

[36] Starr 2001.

[37] Bettig 1997.

must agree to before they even use the product. This law does not just affect individuals. Libraries are also strongly opposed to UCITA because its scope is very broad (covering 'computer information' of almost any kind) and because it would undermine their ability to provide information to the public on a shared-use basis.

The DMCA implements several new copyright controls. Most controversially, it makes it illegal to break any copy-protection scheme implemented by the vendor. This may seem like a reasonable provision, but in fact it significantly changes the balance of power between vendors and consumers. Prior to the DMCA, the existence of 'digital fences' such as copy-protection schemes did not supersede the fair-use rights of consumers. Consumers would be justified in breaking down such a fence in order to exercise those rights. The DMCA makes this illegal, thereby increasing the control that vendors have over the after-market for their products.

This section of the DMCA is currently being tested in the courts. The case at issue concerns an encryption mechanism, called CSS, that is used to copy-protect DVDs. Say you have legally purchased a DVD and want to play it on your computer, which runs the Linux operating system. To do so, you need software that can decrypt the CSS copy protection. It turns out that someone has written a program, called DeCSS that does just this. Because Linux is an open source operating system, you can download the source code for this program, compile it on your computer and then use it. Prior to the DMCA, doing this would have fallen under your fair-use rights. You paid for the DVD and you should be able to watch it on the player of your choice.[38] But the new law makes the DeCSS program an illegal circumvention device. Using it, even for a legal purpose, is now outlawed. Making it available for others to use is also illegal, as is even *linking* to a site that makes the software available, according to a recent court decision.

Most recently, the 'Consumer Broadband and Digital Television Promotion Act' (or CBDTPA) has been introduced. The nominal goal of this legislation is to promote the uptake of digital television by enforcing standards for secure transmission of signals. Its main effect would be to build copy-protection equipment into the *hardware* of all consumer digital devices and make it a crime to remove it.

What is the broader political importance of this legislative activity? These laws have deep implications for individual freedoms and public goods. Because of their technical focus, they have not received as much public or academic

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[38]There are many other reasons one might want to break a copy protection for fair-use reasons. These include wanting (1) to convert it to another format to use on different playback media, (2) to generate an archive, (3) to quote from a work, (4) to make a backup copy. In its publicity about the DeCSS case the MPAA argues that people who use DeCSS to watch their DVDs as they choose are akin to people who physically copy DVDs in order to sell them. But the former is an effort to break down a digital fence in order to exercise fair-use rights; the latter is an illegal way to make money. The MPAA calls both piracy.

attention as more familiar arguments about freedom of speech, state regulation or the common good. Yet the emerging information regime will have profound effects in each of these areas.

First, it will affect free speech rights in unexpected ways. For example, as far as most computer scientists are concerned, computer code expresses ideas. It is therefore a form of speech and, many argue, should have First Amendment protection. If this sounds strange, visit David Touretsky's gallery of CSS descramblers at Carnegie Mellon.[39] There you will see the DeCSS code—or rather, the idea the code implements—expressed in a bewildering variety of forms, not only as different sorts of computer code, but also in visual form and even as a musical performance. As a practical as well as a conceptual matter, the line between code and speech is not at all clear.

The DMCA is also forcing consideration of free-speech issues in other ways. In March of 2002, for example, Google temporarily removed a number of URLs from its search engine at the request of the Church of Scientology. The Church claimed that a site critical of it was posting copyrighted church materials and that, by providing links to this site, Google was in violation of the DMCA. This strategy is potentially a very effective way for the Church to silence its critics. If search tools like Google cannot find a website for you, it might as well not be there at all.

Second, the emerging regime looks set to stifle both technical and cultural innovation. On the technical side, the DMCA means that vendors do not need to produce good encryption systems, because it is illegal to circumvent them, no matter how badly designed they are. Princeton University computer science professor Edward Felten recently figured out a way to break the Secure Digital Music Initiative's (SDMI) watermarking systems. He was initially prevented from publishing his results, because to do so would have made a circumvention device available. More generally, the expansion of copyright and patent law frustrates creativity by giving existing producers and distributors a veto on innovations:

> In both contexts [copyright and patent law], the emerging regime will have a significant regulatory effect. In both contexts, the emerging regime will shift protection from the new to the old. The law in both cases will, on the margin, protect the old against the new. . . . Those most likely to be displaced by new innovation will have the power, through these government-backed monopolies, to check or inhibit this innovation.[40]

Efforts to impose such regulation are not new. When video recorders came to the market in the 1980s, the Motion Picture Association of America (MPAA) contested their legality in the Supreme Court. At the time, the MPAA saw only

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[39]http://www.cs.cmu.edu/~dst/DeCSS/Gallery. Providing this link constitutes a violation of the DMCA under the current interpretation of the law.
[40]Lessig 2001, 215. See also Vaidhyanathan 2001.

the potential for abuse and piracy. The possibility of a huge, profitable market in video rental had not occurred to them.

Third, new property rights are being implemented through new technology, and many fair-use rights that users assume they hold have already been removed. If a user wants to play a DVD, for instance, she is restricted in several ways. She can play it only on a machine with the right country coding, otherwise (after a warning) the player will disable itself. She can play it only on a platform endorsed or supported by the vendor, even if other platforms could easily play it in principle and even if she prefers that alternative for other reasons. All of these restrictions apply even though the consumer has already paid for the DVD. In short, the DMCA and related legislation implement what James Boyle calls 'the content industries' preferred trifecta: expansive intellectual property rights, digital fences, and enforceable click-wrap licenses.'[41]

In the early days of the Internet revolution, techno-optimists proclaimed that the Internet was immune from this sort of regulation because of its ethereal nature. John Perry Barlow's grand 'Declaration of the Independence of Cyberspace' proclaimed this thought early and directly:

> Governments of the Industrial world, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. . . . Your legal concepts of property, expression, identity, movement and context do not apply to us. They are based on matter. There is no matter here.[42]

Ironically, it is the very intangibility celebrated by Barlow that has made possible the regulatory strategies critiqued by Boyle. The ability to separate content from its storage media—whether for books, music or software—has not led to the liberation of mind from matter. Rather, it has provided vendors with an opportunity to implement ever more fine-grained licensing schemes that, at the limit, eliminate the traditional benefits of ownership associated with more tangible items.

C. THE IMAGE OF THE ROMANTIC AUTHOR

From a historical perspective, concepts of intellectual property and copyright emerged slowly and somewhat precariously. The idea that authors should be entitled to royalties on their work, that other publishers should not be allowed to print unauthorized versions of their work, and all the other things that we

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[41]'Think of barbed wire. Ranchers want to use barbed wire to protect their herds, but the wire will enclose not only their land but also portions of the commons. The state can do three things. It can forbid the use of barbed wire. It can allow it, but also allow others to use wire-cutters to get through it, punishing them if they rustle cattle but leaving them alone if they merely exercise their free range rights. Finally, it can make it a free-standing tort to cut barbed wire, regardless of one's purpose, and then it can outlaw the production of wire-cutters. The content industries pick option three.' (Boyle 2000, 2020–1).

[42]Barlow 1996.

now take for granted about copyright were argued about at every turn.[43] A key image in the rise of copyright doctrine as we know it is the 'romantic author'. When they discussed the concept of authorship, eighteenth-century theorists

> minimized the element of craftsmanship (in some instances they simply discarded it) in favor of the element of inspiration, and they internalized the source of that inspiration. That is, inspiration came to be regarded as emanating not from outside or above, but from within the writer himself. 'Inspiration' came to be explicated in terms of *original genius* with the consequence that the inspired work was made peculiarly and distinctively the product—and the property—of the writer.[44]

This image of the author or artist as the sole creator of unique and original works has shaped copyright law for the past two hundred years. The problem, as James Boyle points out, is that 'the tension between the rhetoric of Wordsworth and the reality of suburban corporate capitalism is one that continues to bedevil intellectual property discourse today.'[45] Corporations, and not individual authors, hold the copyright on most cultural goods. For them, the main promise of digital technology is the control it permits over all aspects of the market for cultural goods.

The rhetoric of the romantic author implies that artists will starve if people are allowed to copy their work without paying for it, in any form. Yet the social organization of some other culture industries suggests that creative work is not always hampered by the possibility of copying. Fashion designers, for instance, have long taken limited patentability and low enforceability of copyright on their designs as a fact of life, without apparent damage to their creativity or profitability. The point is emphatically not that authors and artists should assent to having their work ripped off, nor that piracy is not a real problem. There is no serious argument over either of these points. Rather, it is that other goods, both civic and commercial, need to be considered.

IV. DECIDING ON A FUTURE

Regulation of the Internet is inevitable and already well under way. For legal scholars, the central question is how to apply and extend existing law to this new realm.[46] In the case of cultural goods, precedent suggests that *both* new kinds of culture *and* new kinds of markets are best encouraged by limiting the control that authors and corporations can have over existing works and what consumers do with them. Henry Jenkins cites the example of *Alice in Wonderland*, a book which is famous largely because other authors imitated or parodied it.[47]

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[43]Woodmansee and Jaszi 1994; Rose 1995.
[44]Woodmansee 1984, 427.
[45]Boyle 1997, 55.
[46]Biegel 2001.
[47]Jenkins 2000.

Arguments based on the image of the romantic author refuse to acknowledge these benefits.

Each of the issues discussed in this article has its own peculiarities and twists. Nevertheless, they are all animated by some basic tensions that influence the choices available in each case. In the next few paragraphs, I sketch some of these tensions. I present them here as dichotomies, because they capture fundamental differences of principle over the Internet's architecture, purpose and content. In specific arguments over policy—how arts organizations should approach getting online, the best way for nonprofits to feed into emerging digital media networks, the right way to price and license cultural goods—taking a position will involve placing oneself along these dimensions.

A. OPEN VS CLOSED CODE

At the level of *infrastructure*, a key issue has to do with whether the code used to run the Internet remains open or not. The transparency of code has so far been an important reason for the rapid growth, relative openness and interoperability of the Internet. The concept of free software was originated by Richard Stallman at MIT in the early 1980s. His main innovation was a new kind of software license, the General Public License (GPL). Under the terms of the GPL, software and its source code were provided to the user as a package. Users were free to modify the source however they liked (to add new features to it, for instance), but only on the condition that they made the resulting source code available as well. Proprietary modifications are not allowed. Stallman's aim was to promote the development of freely available software (an entire operating system, in the long run) that could never be taken over and turned into a proprietary product owned by a specific company.[48]

Much of the software that runs the Internet is distributed under the terms of the GPL or licenses similar to it. Sendmail (which sends email through the Internet) and Apache (which serves the majority of the Internet's Web pages) are two prominent examples. The importance of free software to cultural goods should not be underestimated. At the most practical level, software that is free of charge is of great benefit to organizations and artists. If artists are to incorporate new technologies in their work they must be able to afford the tools. But free software's main virtue is not that it comes free of charge, but that it gives users the opportunity to develop it further. This is the distinction, first made in this context by Richard Stallman, between free as in 'free beer' and free as in 'free speech'. Software produced under the GPL is often free as in beer, but its real value lies in the fact that it is free as in speech.

[48]Williams 2002.

B. LEAKY SYSTEMS VS TIGHT CONTROLS

At the level of *social organization*, legal regulation of the Internet will decide how much control vendors can have over how consumers use cultural goods once they have purchased (or licensed) them, how much price discrimination there can be, and how much users will be monitored. Open source or free software is perfectly compatible with tight systems of watermarking, copy-protection and so on. In the open source community, cryptographic software has been developed to protect the privacy of individuals, but protecting the copyright of eBooks, DVDs or MP3 files is also perfectly feasible. Users might be monitored to ensure that they do not put these goods to unauthorized uses, for instance, or their viewing and spending habits could be tracked.

At issue is how closely we wish to regulate the use of technology, and what the consequences of differing degrees of control might be. A world of tight controls would allow vendors to contract with buyers in a very fine-grained way, probably through some kind of 'trusted system' which would securely deliver the content and enforce the terms of the license at the same time.[49] Trusted systems have the ability to enforce copyright licenses on a per-user basis, to implement precise price discrimination, and to ensure that illegal copying and distribution of software does not happen. They do this by replacing a commons based on fair use with a myriad of individual contracts.[50]

Leaky systems, in contrast, are ones where a certain degree of control is possible, but the regulation mechanisms stop well short of the perfect price-discrimination and individual licensing of rights. Leaky systems make for inefficiency and also for probable infringement. They are inefficient because different methods of licensing or selling might require the user to do the same thing over and over again. Think of having to have a different user name and password for every computer network you log on to, or for every Website you buy something from, for example. Or think of how, at present, you can access one set of journals or magazines from one service, and a different set from a competitor. But from a different perspective, leakiness is a virtue. It makes it harder for individuals to be monitored. It preserves rights of fair use and first sale partly through its own inefficiencies. It may also be better at the long-term goal of fostering innovation and creativity. A leaky system gives its users a kind of peripheral vision as they search for information or browse through what's available. James Boyle captures this effect nicely:

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[49]Stefik and Lavendel 1997; Stefik 1997.

[50]This is obviously objectionable to those who believe in fair use. In response, advocates of trusted systems have suggested that people could be given general-purpose 'fair use licenses' that would allow them to access content (in libraries, or borrowed from others) in a limited way defined by the law. Critics of this approach suggest that this amounts to issuing licenses to read. Advocates reply that the market might drive vendors who issue too-strict licenses out of business. (Though this does not seem to be happening in the software market.) Besides, they argue, it is difficult to see how the problems of wholesale copyright infringement can be overcome otherwise.

Most of the people who read this Article are the products of a leaky and imperfectly controlled system, an information ecology, in which they could get access to large quantities of apparently irrelevant information because it was 'free'. They learned that the book next to the one you are supposed to be researching is always more interesting, and that the accumulation of apparently useless information pays dividends in the long run. What kind of preferences will be formed in the generation that comes of age in the world of perfect price discrimination, with the Visa card symbol always spinning in the background, and the micro-charges always ticking? Would they spend fifteen minutes (and some number of cents) reading about Caesar's campaigns when they were supposed to be studying caesarean sections, about the Manhattan Project when they were supposed to be learning about Manhattan?[51]

C. Interaction vs Passive Consumption

Finally, at the level of *users*, there is a tension between seeing the Internet as an interactive environment, on the one hand, or as another prepackaged delivery system, on the other. Again, the question is not which one will take over the entire Web, but rather how different options will be stratified and how easily they will be available to most people. Manuel Castells sees an emerging gap between 'two essentially distinct populations, the *interacting* and the *interacted*.' The former can exploit the internet fully, the latter consume a 'restricted number of prepackaged choices.'[52] According to this view, the Internet will eventually become another broadcast medium, a more sophisticated form of TV. As yet, however, it is too early to tell what the universe of content will look like on the Internet: we do not know enough about what users want from the media, and there are too many policy choices yet to be made that might push the medium in one direction rather than another.

We should beware of confusing Castells' categories of 'interacting *vs* interacted' with people who know how computers work *vs* those who do not. It should not be necessary for users to know very much about the hardware and software that allows them to surf the Internet—no more than they need to know a great deal about their car engine before they can drive around. The problem is not getting people to understand how computers work. Most people have no interest in learning, and if the machines were better designed they would not have to. The key issues remain regardless of the level of expertise of most users. To continue the transportation analogy, think of traveling by road *vs* rail in the U.S. People who travel by rail are much more restricted in their choice of destinations and general flexibility of travel arrangements. The personal characteristics of travelers, such as their skill levels, their social capital or their capacity for interaction, do not really matter. It makes no difference, for example, if everyone traveling by rail knows an enormous amount about train timetables or

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[51]Boyle 2000, 2033.
[52]Castells 1996, 371.

locomotive engineering. They will still not be able to travel as widely as road users.

V. CONCLUSION

In this article, I have emphasized the importance of basic choices about the architecture of the Internet, the system of property rights governing it, and the kinds of laws regulating it. These choices will greatly affect how art and culture are consumed, the kind of work that artists can do, and the rewards, financial and otherwise, that consumers, artists and others will be able to reap from the Internet. Yet the success of new technologies tends to obscure the choices made about them. Once the opportunity passes, it can take a great deal of scholarly and imaginative effort to reconstruct just what the alternative possibilities were during a technological revolution. Constitutive choices about digital technologies are being made now. We should make sure we know which—and whose—principles these choices further, before we forget that alternative paths ever existed.

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