

DIGITAL TECHNOLOGY AND CULTURAL POLICY

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Abstract

This paper reviews how digital technology, and the devices and broadband networks associated with it (the Internet, for short), can be expected to affect the ways in which books, music, the visual arts, libraries and archived cultural heritage (cultural goods, for short) are produced, distributed and consumed. The paper has four parts. First, I place the growth of the Internet in historical and comparative perspective. I argue that the United States is presently engaged in a regulatory effort similar in intent to those imposed on earlier communications revolutions. In this context, I outline the ways that the Internet can be expected to change how people produce and consume cultural goods. I distinguish between practices the technology makes possible and practices likely to become established as typical for the majority of people. Second, I discuss some of the new arenas for cultural policy thrown up by the Internet. I argue that, just as it has bound many kinds of cultural content into a single medium, the Internet has tied together a variety of regulatory issues and brought cultural policy into contact with areas of policy-making not normally associated with culture. Third, I focus on the relationship between creativity, consumption and copyright law. Fourth, I describe a number of key conflicts over the Internet's architecture and content. How these are resolved through policy choices will have important consequences for how we consume and experience cultural goods of all kinds in the future.

INTRODUCTION

My desktop computer has more processing power, memory and storage space than machines that ran the accounting and payroll departments of entire corporations twenty years ago. This is an instance of Moore's Law, the well-known rule which says that, for a fixed amount of money, the amount of computer processing power you can buy doubles every 18 months or so. Moore's law was formulated in 1965 and has held true since the early 1970s. It was one of the reasons that the futurists of thirty years ago were convinced that digital technology would be a driving force for social change as the 21st century approached.

Although the difference in processing power between a new PC and a comparably priced one from 1981 is enormous, this is not what really distinguishes them. The key difference is that the older computer sat in a room by itself; the new one can be connected around the clock to a global information network. Whereas any well-informed computer user in the early 1980s could have predicted how powerful computers were likely to be in 2001 in terms of sheer speed, the rise of the Internet in the late 1990s took many people (not to mention companies and governments) by surprise. In the early 1990s, just before the sudden growth of the Web, the future of home computing was supposed to be multimedia CD-ROMs. But beginning in 1995, from its modest, non-commercial origins in academic and state institutions, the Internet mushroomed into an open, heterogenous network of enormous scope and variety. Technical advances in computing speed continued as expected over the period, but the explosive growth rate of the Internet changed what computing meant. For most users today, a computer without a connection to the Internet seems hardly worth owning, no matter how powerful it is.

As it expanded, the Web took on an economic, social and cultural life of its own. For a time, the economics of the Internet seemed to be breaking most of the established rules of business growth and development. The volume of investment and speculation that surrounded Internet hardware, software and service companies was simply remarkable. The "Great IPO Rush of 1998" saw dozens of start-ups sprout out of the ground with no

products, no profits and huge net worth. Well-established Internet companies — meaning ones that were more than two years old — found themselves valued as highly as some of the largest corporations in the world. A defining moment of the boom came early in January of 1999, when Amazon’s total stock market value rose to more than \$30 billion, making it worth more on paper than Texaco.¹

This investment boom happened, in part, because people were convinced that the Internet was about to change how people did everything from comparison shopping to concert going. Social commentary on the Internet paralleled what was happening in the stock market. Predictions of revolutionary change abounded, along with extravagant extrapolations of uncertain trends, from utopian fantasies to Orwellian nightmares. Now that the dot-com boom has ended after four frenzied years, it should be easier to grasp the social and cultural changes brought about by digital communications and information technology.²

In this paper, I examine the implications of the Internet for the production, distribution and consumption of cultural and expressive goods, broadly defined. By this I mean literature, music, visual and performance arts, libraries, archives, and the like. The rise of the Internet has affected many areas of life. 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, and so on.³ 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. Besides news stories, weather reports and sports scores, cultural are much in demand. Music (in the form

¹Doreen Carvajal, “Amazon Surge May Reflect The New Math Of the Internet”, *The New York Times* January 11 (1999); Economist, “When the bubble bursts”, *The Economist* January 28th (1999).

²For the rest of the paper when I refer to “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 (and challenging in the context of cultural policy) mainly because they can tie themselves to or take advantage of services provided through the wider network.

³For a wide-ranging review of the Internet’s social impact, see Paul DiMaggio et al., “Social Implications of the Internet”, *Annual Review of Sociology* (Forthcoming).

of MP3 files) has been the most visibly exchanged item so far. But video is not too far off, with literature, images of all kinds and archival materials also very common. In the past year or so, it has become obvious that the Internet's technical capacity to move these goods around does not mesh easily with established legal practice, government policy or commercial interests.

This makes cultural goods interesting and important. Shopping online may be more convenient than going to the mall, but the underlying transaction is the same. Running a project using email and versioning software may allow a manager to be more efficient, but the company need not change its business model. But being able to search for and freely download a novel, a few hours of music, or an entire movie is both immediately appealing to many people and completely incompatible with how many corporations and artists now make their money. So 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. The potential for change is very great here, as is the resistance of entrenched parties.

It is therefore time to think carefully about the relationship between technical change and the social organization of cultural production. It is no longer plausible to think that the Internet will sweep away existing institutions simply by virtue of its technical characteristics, or that it will escape political and legal regulation because of its novelty. At the same time, standard ways of making, selling and consuming books, music or art cannot go on as if the Internet did not exist. Neither can those involved in these areas simply assimilate the new medium without changing themselves. This means that the important issue is not whether technology will overwhelm us (or vice versa) but how the new technologies and existing institutions will influence one another. Rather than expecting the future to inevitably roll over us, we should think about how policy makers might help reshape the social organization of cultural goods.

The technological changes of the last few years helped bring into focus central concerns in the field of cultural policy. Discussions of cultural policy in the United States have sometimes been quite narrowly focused (e.g., whether and how the government should fund the arts) or reflexive (e.g.,

whether there is such a thing as cultural policy at all). The rise of the Internet has done a great deal to bring questions of cultural policy to the forefront of public discourse. How will literature, music and film be produced and made available to people? How will people's tastes change as their choices do? How accessible will cultural goods be, and how profitable? Will a bountiful cultural heritage, presently stored in museums, libraries and archives, be made more easily available to a much wider audience, or will it come under tight corporate control? How much of our common heritage will be locked away under copyright restrictions, and how will that affect the production of culture? How much censorship will be built into the system? How will local and national cultures be changed?

Questions proliferate. The general point is that cultural consumption is already a large part of what the Internet is used for. The ways the technology is built and regulated will have an immediate and deep impact on how people read, listen, view and learn. The Internet binds all kinds of content together in a common digital medium, which means that historically separate activities and organizations now face similar policy issues about audiences, access, archiving, censorship, distribution, property, and pricing. As it gets built, the digital communications network undergirding these processes will have assumptions and regulations about all of them built into its code.⁴

The paper is divided into four parts. First, I put the growth of the Internet in historical and theoretical context. I show how its trajectory and impact resemble the effects of previous communications revolutions in many ways, even though its potential scope is wider in the long run. The historical lessons are that new technologies are adapted to social uses in complex ways, and that the myths that grow up around new technologies in their early days are not good guides to their long-run impact. With this historical context in mind, I discuss some of the ways that the Internet is changing the world of cultural goods. Second, I argue that the concerns of cultural policy have expanded as a consequence of the new technologies. I lay out a number of these new policy areas. Third, I describe how questions of authorship and

⁴Lawrence Lessig, *Code and Other Laws of Cyberspace*, (New York: Basic Books, 2000).

copyright raise serious issues in almost every area of cultural policy. Fourth, I pick out some specific substantive tensions in the area of cultural policy that are likely to persist and demand attention for the foreseeable future.

TECHNOLOGY AND SOCIAL CHANGE

In this section I compare the growth of the Internet to previous communications revolutions, with an eye to highlighting their similarities. I show how common patterns of development appear across cases. Typically, as a communications technology emerges, people find it mysterious. Those who use the new technology find themselves objects of attention from a curious public. Later, stable conventions of use grow up in the wider population, though the underlying organization of the technology may still be quite fluid. Then serious efforts at regulation begin. Specific outcomes vary with regard to pricing, business structure, typical use, network openness, and so on. In the case of the Internet, we are quickly moving into a regulatory phase where serious choices about the architecture of the network will be made.

How big a revolution?

How much has the Internet affected people's lives in the few years since it began to grow beyond its original bounds? It is undeniable that it has already changed the way many people communicate with each other, how they organize their lives, how they work, how they consume. In 1995 only three percent of Americans had ever used the Internet.⁵ Five years later, about 83 million Americans were regularly online, 56 million of whom used the net to shop.⁶

Such rapid change at the level of individual users should be placed in historical and social context. Histories of the Internet show that it had a long incubation period before bursting on the world. The Internet grew

⁵Pew Research Center for People & the Press, *Technology in the American Household*, 1995 (URL: www.people-press.org/tech.htm) – visited on April 9th 2001.

⁶IntelliQuest, *IntelliQuest study shows 83 million U.S. internet users and 56 million online shoppers*, 1999 (URL: intelliquest.com/press/release78.htm) – visited on April 9th 2001.

up as a fortuitous and unexpected consequence of government-sponsored research, where the researchers were left more or less to themselves for crucial periods.⁷ The seeds of its growth were planted in universities and the Defense Department in the 1950's, and by the late 1970's nearly all of the core technical ideas were in place. Looking back even further, the rise of the Internet can be placed in the context of ongoing trends in American society. Economic historians have traced the growth of distributed information and communications networks in the U.S. back to the founding of the Post Office.⁸ On this view, the U.S. has been an information society for a very long time, and processes that might seem unique to the Internet have been at work in other communications networks (such as those constituted by the postal service, railroads, telegraph and radio) over the past 150 years or so. Research like this is a good antidote to futuristic hype. It does not dismiss the Internet's impact, but does show that the Web does not mark an unprecedented rupture with the past.

It took a little longer than expected for the promised economic benefits of digital technology to register in standard measures. Economists pointed out that the rise of computers in the workplace did not seem to have any impact on productivity statistics.⁹ For most of the 1990s, there was no measurable macro-economic effect of investment in information technology on productivity, even though businesses had been spending money on computers and communications for some time. This non-finding was puzzling given all the talk of an information society. But recent research has found computers to be responsible for an increasingly large percentage of productivity growth since the 1980s.¹⁰ Economically, it looks increasingly as though the spread of com-

⁷Janet Abbate, *Inventing the Internet*, (Cambridge, MA: MIT Press, 2000); Katie Hafner and Matthew Lyon, *Where wizards stay up late: the origins of the Internet*, (New York: Simon & Schuster, 1996).

⁸Alfred D. Chandler and James W. Cortada, eds., *A Nation Transformed by Information*, (Cambridge, MA: Harvard University Press, 2000).

⁹Erik Brynjolfsson, "The Productivity Paradox of Information Technology", *Communications of the ACM* 36 (1993).

¹⁰Stephen D. Oliner and Daniel E. Sichel, "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" *Journal of Economic Perspectives* 14 Winter (2000), no. 4.

puters counts as an important structural shift in the macro-economy.¹¹ The Internet is the latest wave of digital “informationalization.” What effect will it have in the sphere of arts and culture? The historical continuities suggest that comparisons with earlier communications revolutions will be useful.

Early experimentation

People experiment with new technologies to find out what they can do, and to figure out ways of integrating them into their lives. Several communications technologies have been put to work in ways that, in retrospect, appear strange, misguided or merely quaint. The telephone, for instance, was initially used in some areas as a broadcast medium for music (more like a radio) rather than as a means of person-to-person communication. Other inventions inspired even odder responses. Carolyn Marvin’s study of the early days of electricity reproduces some photographs of New York society ladies posing in dresses lined with electric light-bulbs and wires.¹² This way of incorporating technology into everyday life was driven by fashion. What mattered was not the technology as such, but rather its novelty.

Hobbyists experiment with technology to a different end. They want to find out what it is capable of. In the process, they have a tendency to build exclusive communities for themselves, closed to those who lack the practical knowledge to work the equipment or speak the jargon. Again with 19th century technology, Marvin shows how the spread of electric lighting and the telegraph was accompanied by professional and popular efforts to distinguish between those who knew how things worked and those whose role was merely to look on in awe. Sharp distinctions were drawn between competent and incompetent users, usually reflecting and reinforcing existing gender, racial and class-based stereotypes.¹³ The history of radio broadcasting in the late 19th and early 20th centuries shows a similar pattern. Radio enthusiasts (almost all young men) built a community whose members were

¹¹J. Bradford DeLong, *Do we have a “New” Macroeconomy?* 2001 (URL: www.j-bradford-delong.net) – visited on April 3rd 2001.

¹²Carolyn Marvin, *When Old Technologies were New: Thinking about electric communication in the late nineteenth century*, (New York: Oxford University Press, 1990).

¹³Marvin, *When Old Technologies were New*, *ibid.*

were profiled in the popular press for their ability to control the mysterious ether, communicate with one another over great distances, and even listen in on other people's conversations.¹⁴ The parallels to the early days of home computing and the Internet are clear.¹⁵ The home-computer enthusiasts of the 1970s, the teenage hackers of the 1980s, and the architects of Open Source software in the 1990s have all generated their own myths, exclusivist cultures and individual heroes in much the same way.¹⁶

Artists pick up on new technology in a way that positions them somewhere between the hobbyists and the fashion victims. They may quickly become sophisticated and creative users of new technologies; but at the same time art inspired by and produced during the early phases of a new technology is often quite ephemeral. Artists have used computers almost since they became available to the public.¹⁷ Our cultural sensibilities about digital technology are more deeply rooted than they might appear, and a "technological aesthetic" has existed in some form or other since the 19th century.¹⁸ The Internet has precipitated a dizzying variety of artistic experimentation, much of it using the new medium to comment on the very changes the technology is thought to be bringing about. Artists have often focused on the increasingly close meshing of humans and machines, the fear of surveillance, the ubiquity of information, and anxiety about intelligent computers, amongst other themes.¹⁹

¹⁴Susan Douglas, *Inventing American Broadcasting, 1899-1922*, (Baltimore, MD: Johns Hopkins University Press, 1994).

¹⁵Eszter Hargittai, "Radio's lessons for the Internet", *Communications of the ACM* 41 (2000).

¹⁶Glyn Moody, *Rebel Code: Linux and the Open Source Revolution*, (New York: Perseus, 2001); Steven Levy, *Hackers: Heroes of the Computer Revolution*, (New York: Penguin, 2001); Steven Segaller, *Nerds 2.0.1: A Brief History of the Internet*, (TV Books, Inc, 1999).

¹⁷Timothy Druckrey, ed., *Ars Electronica: Facing the Future: A Survey of Two Decades*, (Cambridge, MA: MIT Press, 1999).

¹⁸N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (Chicago: University of Chicago Press, 1999); Robert Rutsky, *High Techne: Art and Technology from the Machine Aesthetic to the Posthuman Condition*, (Minneapolis: University of Minnesota Press, 1999).

¹⁹Mark Dery, *Escape Velocity: cyberculture at the end of the century*, (New York: Grove Press, 1996).

I say more below about how digital technology has been used in different forms of art. For now, however, I just want to emphasize that the art springing up around computers and the Internet seems similar in spirit to other movements in the past. Modern art in general bears the marks of 20th century technology, and has sometimes taken technologically driven social change explicitly as a theme, as with the Italian Futurists. As a rule, however, contemporary art movements that tie themselves to specific pieces of technology tend to date very quickly. (This was the fate of Futurism and its love of the automobile.) There is an extraordinary variety of artistic content on and about the Web (or both). But most of it is unlikely to have any long-term significance. This is true both for new cultural practices as well as cultural goods. The historical evidence suggests that the more exotic Internet communities — technopagans, cyborgs, posthumans, cyberpunks and the rest — are likely to be seen more as products of their time than avatars of the future. There may not be that much distance between them and the society ladies who dressed in light-bulbs.

This does not mean that the work of these artists is uninteresting, just that it is probably an unreliable guide to what lies ahead. Although it should be clear that artists and audiences relate to the new digital technology in different ways, it is surprising how often the creative and experimental work of artists in a new medium is taken as an indication of how the future will look for most users in short order. But the technical capabilities and expressive possibilities of communications media are almost always wider than the routine uses to which they are eventually put.

Conventions and habitual use

When confronted with a new technology we ask “What is this for?” and “How does it fit in to 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.

Conventions are shared expectations about how someone should act or something should work. They include such things as what you normally say when you answer the phone, what you expect to hear when you switch on the radio or turn on your computer. Conventions may be built in by design (in which case they are standards) or emerge through experimentation or trial and error. As conventions of use become fixed, so do assumptions about a technology and its proper uses.

Claude Fischer's social history of the telephone is an excellent example.²⁰ Fischer shows how Americans gradually integrated phone use into everyday life, figuring out different uses for it, deciding what was and was not appropriate, and so on. This process ranged from deciding what one said when answering the phone ("Ahoy!" was an early contender), to experimenting with the phone as a way of broadcasting music, to discovering it could be more than a business tool. The technology of the telephone network proved itself adaptable to many different kinds of conventional standards, and it is clear from the historical record that the ones that became well-established were not superior to the alternatives in any obvious sense.

As a technology becomes a familiar part of life, it can have knock-on effects on other social practices. Individuals and organizations may change in response to it. Wolfgang Schivelbusch's study the rise of gas and electric lighting shows the many ways this can happen. As artificial lighting became more widespread in cities throughout the 18th and 19th centuries, the modern idea of urban night life developed along with it. The modern shop window took shape as a well-lit display of what was available inside, though the store was closed in the evenings. The experience of going to the theater changed, too. In the 18th century the audience was as well lit as the performers on stage; the advent of electric spotlights in the 19th century showed up cheap backdrops and prompted the design of more naturalistic sets. Even ideas about the city's relationship to the countryside changed, as rural areas became a place for people to escape the city lights (and vice

²⁰Claude S. Fischer, *America Calling: A Social History of the Telephone to 1940*, (Berkeley: University of California Press, 1994).

versa).²¹ Again, it is unhelpful to think of the technology as *determining* these changes. They developed through reciprocal cycles of innovation and sense-making.

A similar process is taking place today as users graually become more familiar with digital technology and the Internet. A solid core of user convention already exists. Some of it is built into computer operating systems and graphical user environments; some exists as rules of “netiquette” for online interaction; some as search strategies for locating information. At all these levels, users are not simply *learning* what the technology is for, they are *deciding* what it is for. Often, users will put a technology to use in an unexpected way. In many countries, for instance, the cell phone network is used for text messaging almost as much as for voice communication, and a specialized shorthand language has developed out of this practice. Of course, users are not guaranteed to choose the most interesting, productive or efficient use for a technology. In the corporate world, a great deal of computer time is taken up producing slide-based presentations. Managers and executives now spend a good deal of time preparing elaborate Power-Point slide shows, perhaps to no great productive effect. Each new version of this software adds new capabilities, allowing expectations to rise further. This now common use of PCs would likely amaze many of those who pioneered personal computing 20 years ago.

Conventions are not dictated by engineering or instituted by law, and they are thus perhaps the hardest area for policy makers to affect. But they have a great deal of force. The force of conventions are clearest when they are absent or ignored. Most of us know the frustration of being unable to carry out a simple task on a computer because the menu item is not where we expect it to be, or of having spammers abuse email. The disadvantages of convention appear when we want to change or challenge an established routine or practice. Conventions can calcify over time, leaving designers and users little choice but to follow an established rule, no matter how inane. Computer interface designers continuously struggle with this prob-

²¹Wolfgang Schivelbusch, *Disenchanted Night: the industrialization of light in the nineteenth century*, (Berkeley: University of California Press, 1995).

lem.²² The kind of knock-on effects we saw in the historical examples apply here as well. Interface design embeds assumptions about users and uses into hardware and software that may constrain as much as they enable.²³

All of this means we should think carefully about what users are coming to take for granted about digital technology, and how this is happening. In the case of cultural goods, we can ask whether arts administrators really want people to get used to the idea of clicking their way through online exhibitions instead of visiting galleries or downloading music for free. Similarly, do university deans really want online classes and distance learning courses? In many ways, conventions and expectations can be hard to make policy about, because they often emerge from the ground up. But (as advertisers are well aware) the assumptions of some users may be easier to shape than others. ZapMe, for example, is a company that provides computers to schools for free in return for being allowed to collect marketing data from children and then “zap” them with advertisements as they use the PCs. We can ask if this is the sort of trade-off we would like to see become standard.

Convention and habitual use are important for policy because they are the main ways that peoples’ expectations about a technology begin to solidify. We expect previews at the cinema but not at the opera; we accept full-page advertisements in magazines but not in novels; we plan to pay for some television shows but not others. These assumptions imply differing business models and organizational structures. The Internet can be made to look or sound like all existing media, or it can be something quite different from any of them. Thus, the conventions and expectations that users settle on will have important consequences for content-providers of all kinds.

Institutions and regulation

Beyond practical conventions of use lies the world of infrastructural design and regulation by the state, the market and the law. Rules laid down here

²²Jef Raskin, *The Humane Interface: New Directions for Designing Interactive Systems*, (New York: Addison-Wesley, 2000).

²³Steven Johnson, *Interface Culture: How New Technology Transforms the Way We Create and Communicate*, (New York: Harper Collins, 1997).

will determine what is possible for the majority of new users, particularly as more and more come on stream who have no knowledge of, or interest in, how the underlying technology actually works. Radio is again 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's way of making money changed, too. Companies had started off selling radio sets to consumers; they ended up selling consumers to advertisers by providing entertainment to listeners.²⁴ The "interactivity" of radio thus declined and the character of the medium changed.

Commercial and regulatory efforts run deeper than simple convention because they involve choices about architecture and infrastructure. The Internet got off to a lucky start in this respect. The packets of information traveling through it are all seen by the network as being equally important (unlike the postal network), so when there is congestion it affects everyone. There is no billing mechanism built into the network (unlike the phone system), so it's possible to use the network for free. In principle anyone can publish their work very easily (unlike print and broadcast media) and have their Website be as accessible as anyone else's. The protocols that shuttle data back and forth across the Web 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 with them much social commentary telling us how the Web was about to sweep away the old regime, both in general and with specific reference to the arts and culture industry.²⁵ The pendulum swung back

²⁴Hargittai, Radio's lessons for the Internet, *ibid.*

²⁵Esther Dyson, *Release 2.0: a design for living in the digital age*, 1st ed.. (New York:

quickly, however, as dystopian visions emerged to compete with the utopian ones.²⁶ But it is clear by now that technology, 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 inter-operability, open standards, anonymity, and many other features of the Internet that once seemed to define the medium.

The historical record should make this unsurprising, but the belief that the Internet is somehow immune to these social and political forces is quite persistent. This is especially true in the hacker community, where it has taken on a strong libertarian tinge.²⁷ But the amount of corporate investment in the Internet, together with the public interest issues that it raises, mean that hardware and software developers can no longer pretend that they live outside of society. It is not *whether* there will be regulation, but *what kind*.²⁸ The Internet carries cultural content to people, in many forms. How it is designed and regulated will have an immediate effect on the production, distribution and consumption of that content.

Technology and cultural goods

How are these processes of experimentation, habituation and regulation affecting how artists, composers and writers work? From a sociological perspective, the production of art is a collective activity. Artists work in an environment with established standards and expectations that make it possible to produce art and have an audience for it.²⁹ Artists have always

Broadway Books, 1997); Michael Dertouzos, *What Will Be: How the New World of Information Will Change Our Lives*, (New York: Harper Business, 1997); V. A. Shiva, *Arts and the Internet: a guide to the revolution*, (New York: Allworth Press, 1996).

²⁶Simson Garfinkel, *Database Nation*, (Cambridge, MA: O'Reilly and Associates, 2000); Andrew L. Shapiro and Richard C. Leone, *The Control Revolution: How The Internet is Putting Individuals in Charge and Changing the World We Know*, (Public Affairs, 1999).

²⁷The irony is that this libertarian culture was fostered in university computer science departments and financed by the government. This sometimes gets acknowledged in the community. A recent post on slashdot.org complained that the attitude of many hackers toward both government and investors was "Go away and give me more money."

²⁸Lessig, *Code*, *ibid*.

²⁹Howard Becker, *Artworlds*, (Berkeley: University of California Press, 1984).

experimented with new materials and techniques and will continue to do so. Howard Becker's work makes it clear that artists who try to use new technologies always run into some trouble with existing material culture, organizational practices and cultural expectations. He cites the example of an artist who made a sculpture out of heavy steel machinery which had been salvaged from a factory. The artist was able to produce the work and have it accepted for exhibition by a gallery. But when it was delivered, the curator found that it would not fit through the doorway. This was probably just as well, because the sculpture was so heavy that it would have fallen through the gallery floor had it gotten inside. Becker's point is that assumptions about what art is are not merely cognitive. They are literally built in to the working environment of artworlds. So when new technologies appear, we should not think the problem is one of fusty traditionalists resisting new ideas, but rather as an instance of the interplay of technology and social practice that I have been emphasizing.

Visual artists are experimenting with the Internet and "virtual environments" of different kinds.³⁰ Recent art exhibitions (such as *BitStreams* at the Whitney and 010101 at the San Francisco MOMA) perhaps signal the emergence of digital art as a serious medium.³¹ The practice of musical composition has been changed by digital technology, too. Software applications for scoring, sequencing and mixing music have altered the work environment of composers. For many composers, the gap between writing music and hearing it for the first time has been compressed. Comparatively cheap digital recording equipment has made high-quality sound-engineering and production faster and easier. And innovations in instrument design have changed the sonic possibilities open both to musicians and composers.³² In the case

³⁰Mary Moser and Douglas McLeod, eds., *Immersed in Technology: Art in Virtual Environments*, (Cambridge, MA: MIT Press, 1996).

³¹There is a distinction between *digital art* and *digitized art*. The Whitney's *BitStreams* exhibition is an example of the former. Here, digital technology was an artistic medium. A "virtual gallery" of old masters at, say, the Smithsonian Museum of American Art's Website is an example of the latter. It treats digital technology as a communications medium. Digitized art raises questions about the differences between seeing a painting hanging in a gallery and seeing a reproduction of it displayed on a computer screen.

³²Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology*,

of writing, word processing software diffused very quickly, and changed the way that many authors produced and revised their work. The effects of word processors on the content of writing are less clear, but it does seem that the experience of composing text on a word processor is quite different from writing longhand.³³

Two specific developments in book publishing are of great interest. First, on-demand book production is now economically viable (using what are essentially high-quality photocopying/binding machines). The main use of this technology at present is keeping specialist books (like academic monographs) in print, though in the long term they may have wider commercial applications.³⁴ In the wider market, e-books are becoming more common thanks to the arrival of relatively cheap, high-quality viewing hardware. One potential effect of e-books on literary production is to reintroduce the novella as a commercially viable literary format. Unlike paper books, there is essentially no difference in production cost between a seventy page and a seven hundred page e-book.

The argument that computers signal the death of books and book-reading has also resurfaced recently. Some commentators on this topic, such as Sven Birkerts, are careful about how, exactly, they see the culture of books being changed by computers.³⁵ But others offer little more than a nostalgia bordering on fetishism for the world of leather-bound volumes and pure cotton paper — a perfect example of how entrenched expectations about the experience of culture can lead to a backlash against new technolo-

(Wesleyan University Press, 1999).

³³The research literature on this point is not large. But experiments confirm the intuition that using a word processor changes how texts get revised. There is some evidence that, when revising a document written with a word processor, authors may make more frequent but less substantial revisions than when they write longhand. See E. Joram et al., “The effects of revising with a word-processor on written composition”, *Research in the Teaching of English* 26 (1992), no. 2.

³⁴For an exchange on this development, see Niko Pfund and Michael Groseth, “Frustrated Authors: We can help you...” *The Chronicle of Higher Education* XLVII March 29th (2001), no. 29 and Michael J. Bugeja, “...But Make Sure You Read the Fine Print”, *The Chronicle of Higher Education* XLVII March 29th (2001).

³⁵Sven Birkerts, *The Gutenberg Elegies: the fate of reading in an electronic age*, (New York: Fawcett Books, 1995).

gies.³⁶ Such views also carry a strong whiff of elitism. Harold Bloom uses Microsoft's eBook to read a potboiler by Michael Crichton. His contempt for the novel makes it easier to dislike the technology. When he extols the virtues of printed books, however, he thinks only of Shakespeare, Montaigne and Jane Austen.³⁷ It turns out that announcements of the death of the book (and of reading itself, and *a fortiori* of civilization in general) have consistently appeared with every major transformation of book production, such as that from manuscript to print, print to newsprint, and cloth binding to mass-market paperbacks.³⁸

Digital technology does not just change how familiar cultural goods are produced, it also provides the raw material for new genres. Computer gaming, for instance, is one area where significant developments are likely. We do not normally think of computer games as serious cultural goods. At the moment, the market for computer games is largely limited to particular demographic groups — mainly young men. This focus has had strong implications for software design, as a glance at the games available in your local store will quickly reveal.³⁹ But the game industry is beginning to turn out titles of increasing depth and sophistication whose appeal does not depend on the “gee-whiz” aspect of the technology or the preoccupations of adolescent boys.⁴⁰ We can make an analogy to computer animated films. The earliest efforts in this medium focused mainly on stretching the technology to its limits, rendering complex lighting effects or difficult textures like skin and hair. Things have now reached a stage where a film's purely technical features do not dominate the experience of viewing it. This has happened partly because the genre has matured, and film makers try to avoid its clichés. But audiences have also become much more familiar with

³⁶Willam Gass, “In defense of the book”, *Harper's* November (1999).

³⁷Harold Bloom, “On first looking into Gate's Crichton”, *The New York Times* June 4th (2000).

³⁸For historical context see the essays in Geoffrey Nunberg, ed., *The Future of the Book*, (Berkeley: University of California Press, 1996).

³⁹Jane Fountain, “Constructing the information society: women, information technology and design”, *Technology in Society* 22 (2000).

⁴⁰A recent example is *Black & White*, a complex and innovative game that received serious attention in the mainstream media.

computer animation, and so can read its conventions without thinking about them. Computer games are likely to follow a similar line of development. Those who advocate ratings and censorship rules for these games already think that the genre is developing along the same lines as the cinema. Other markers of a well-defined, legitimate cultural good (an adult audience, serious critics, a market for classics, and so on) are also visible. This trend is likely to become more marked as people who grew up with game consoles in their bedrooms get older and more affluent.

It is difficult to be specific about the long-term effects of new technology on artistic production. Almost by definition, we cannot say what artists or other cultural producers are likely to come up with, or what the long-term value of works made using new media will be.⁴¹ As with any medium, however, the chances are high that work judged to be original and important will be produced sooner or later.⁴² A historical perspective shows that this kind of innovation happens all the time.⁴³ We should not think that every experimental work involving digital technology heralds a revolution in art. But neither should we be tempted to slip into a narrative of decline simply because we cannot yet point to acknowledged masterpieces.

NEW ARENAS FOR CULTURAL POLICY

At the beginning of the 1990s, the policy questions posed by the Internet were often thought of as abstract dichotomies that would be resolved by the technology itself. In the past few years, things have become more concrete. We now face many specific infrastructure issues, organizational problems, legal cases, and political initiatives. As we shall see, the most bitter legal and political conflicts directly concern the ownership and distribution of cultural goods.

⁴¹For further discussion see Sean Cubitt, *Digital Aesthetics*, (Thousand Oaks, CA: Sage, 1999) and Steven Holtzman, *Digital Mosaics: The Aesthetics of Cyberspace*, (Touchstone Books, 1998).

⁴²Margot Lovejoy, *Postmodern Currents: Art and Artists in the Age of Electronic Media*, (New York: Pentice Hall, 1996).

⁴³Michael Rush, *New Media in Late 20th-Century Art*, (Thames & Hudson, 1999).

I begin with the problem of attracting the attention of Internet users. (From the users' point of view, the problem is figuring out what to pay attention to.) I speculate a little about the role of arts organizations in a world of information overload, suggesting that their old role as arbiters of taste might reappear in a positive new way. The problem of attention-getting and filtering leads directly on to the question of censorship. The censoring of controversial art is a common issue in cultural policy; it takes on new dimensions when the availability of culture over the Internet is considered. Gradually broadening the focus, I sketch the issues surrounding inequality of access to the Web, and then (in the next section) move on to a discussion of copyright and intellectual property. My main aim is to show how specific issues in cultural policy are implicated in much wider debates.

Finding an audience; searching for content

In 1995, Nicholas Negroponte presented an upbeat vision of the future in his book *Being Digital*.⁴⁴ 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 *New York Times* that you automatically throw away. With perfect information about your habits, the *Times* could instead tailor its product to individual users — perhaps I want sports scores (but no baseball), foreign news (but no business reports), for example. I would not have to wade through unwanted information, and the *Times* would not have to waste money providing me with content I pay no attention to. 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 idea of a “Daily Me” than Negroponte was six years ago. For one thing, the prospect of private corporations holding huge amounts of personal data on every consumer is not very attractive.⁴⁵ Precisely targeted content can be accompanied (or

⁴⁴Nicholas Negroponte, *Being Digital*, (New York: Knopf, 1995).

⁴⁵Garfinkel, Database Nation, *ibid.*; A. M. Froomkin, “The death of privacy?” *Stanford Law Review* 52 (2000)

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.⁴⁶ 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.⁴⁷ 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 each individual’s 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 arts participation as it is to politics. 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 to the arts. 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 arts policy might look like. The government might require a certain amount of cultural content

⁴⁶Greg Sandoval, *Failed dot-coms may be selling your private information*, 2000 (URL: www.cnet.com/news/0-1007-200-2176430.html) – visited on April 30th, 2001.

⁴⁷Cass Sunstein, *Republic.com*, (Princeton, NJ: Princeton University Press, 2001).

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 seems paternalistic. And the idea of “required linking” dispenses with the idea of the Internet as an 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.

The selection mechanism itself is very important. There are 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.⁴⁸ (To be fair, portal sites can also sustain communities interested in very specific topics, as Yahoo does with its Groups system.) Magazine format sites work like print magazines, bringing specific, pre-selected 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 relying on a moderation system (which I will describe below) to organize the material. Sites like Plastic (plastic.com) are trying to blend this approach with the Slate-style format. Finally, organizations always have the option to build their own site or network of sites, in the hope that users will find their way to it and stay. In this case, the trick is setting up the site in a way that allows a community of users to form around it, rather than treating it solely as a brochure or shop.⁴⁹

⁴⁸Eszter Hargittai, “Open Portals or Closed Gates: Channeling Content on the World Wide Web”, *Poetics* 27 (2000), no. 4.

⁴⁹Amy Jo Kim, *Community-building on the Web: Secret strategies for successful online communities*, (Berkeley, CA: Peachpit Press, 2000).

In Negroponte's vision, the technology would be perfectly transparent and pliant 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 (assuming they do not know of its existence in advance). 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.⁵⁰ 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 the 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. The idea is that registered users have a certain number of points (often called “karma” or something similar) which they use to mark articles, posts or notices as worth reading or not. Each contribution to the site (an article, op-ed piece or news item, say) carries a score that is the sum total 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.

This sort of moderation system has been used for some time on “geek” sites such as Slashdot (slashdot.org) and Kuro5hin. It has several advan-

⁵⁰J. Waxman, *The old 80/20 rule takes one on the jaw: Internet trends report 1999 review*, (San Francisco: Alexa Research, 2000); J. Waxman, *Leading the Pack... Internet trends report 1999 review*, (San Francisco: Alexa Research, 2000).

tages. 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 browse at -1 and see everything.⁵¹ Moderation systems are also to be found on sites such as Plastic (plastic.com) which focus on arts and culture and aim to have a broad appeal.

All kinds of moderation systems are possible. They vary in the degree to which they require an active community of participants prepared to put the time into moderating posts. They are not a panacea — they can do nothing to address the problems associated with searching the Internet as a whole, for instance. Instead they work as ways to reduce the noise on a site that many users are contributing to all the time. 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.

The needs of users are too varied for any one approach to work in every case. The more general lesson, though, is that the combination of information glut and portal concentration is an excellent reason to look again at the role of foundations and arts organizations as gatekeepers and filterers of cultural content. Because it is so difficult to choose what to focus on, an organization that helps you make that choice by taking on the burden of sorting and ranking what was available is very useful. Again, details matter. Carrying out this process through a community of users, a service provided by a staff, or some special-purpose network of linked organizations would make a difference to the outcome. A main function of these organizations in the past was to exclude forms of art (and people) rather than include them. But things are now at a point where exclusivity is necessary in order to process the range of choices at all.

⁵¹Choosing to see everything posted on a site like Slashdot will quickly convince one of (a) the reality of information glut, and (b) the need for some kind of filtering system.

The interesting question is how different approaches to searching and filtering will mesh with society-wide patterns in the stratification of taste and information access. One possibility is that being an omnivore will simply become a specialized market niche in itself, and remain the preserve of those with the time or money to have such tastes, and the skill to find ways to specify their preferences online. Some Websites already cater to such people. In the longer term, this approach might benefit a small minority of sophisticated users. Meanwhile, the majority (voluntarily or by default) might end up using the Internet via the mega-portals, in an essentially passive and broadcast-based way. They might then be subject to a bastardized version of Negroponte's "Daily Me" based on marketing data collected from browser cookies as they surf — a kind of "Daily Sell". A more optimistic view is that, as users become more familiar with computers and the Internet, they will choose different searching and filtering mechanisms in a functional way, based on the task at hand. They might be happy to use a mega-portal for one kind of content, a magazine-style site for another, and a discussion board for some very specific interest or hobby.

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 same questions of free speech carry over to the Internet.⁵²

As is usual with the Web, the technological potential for regulation and censorship is high. The most plausible negative scenario for free-speech and privacy advocates is some combination of state-sponsored and market-driven tracking and blocking. Intel, the computer chip manufacturer, had

⁵²David Sobel, *Filters and Freedom: Free Speech Perspectives on Internet Content Controls*, (Electronic Privacy Information Center, 1999).

planned to encode unique serial numbers in its new Pentium processors this year. The serial number could be checked by, say, e-commerce sites to verify your identity. The controversy that followed this announcement led Intel to reverse its decision. A somewhat similar idea from Microsoft, involving compulsory online registration and authentication of its software, is presently in the works. Neither of these plans is censorship as such. But if users can be identified, then, in principle, content can be kept away from them much more easily. The student computer networks run by universities are an interesting testing ground for these ideas. Traffic over the network can quite easily be traced back to specific machines. The question is whether and to what extent universities should monitor the activities of its student users.⁵³

Hardware-based methods of identification and authentication are likely to encounter the 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" (as it has come to be known) 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 (i.e., their meaning), and this is a very difficult thing to do.⁵⁴ When it comes to parsing the meaning of text, even the best software does very poorly compared to people.⁵⁵ Even if the

⁵³A. Graham Peace, "Academia, Censorship, and the Internet", *Journal of Information Ethics* 6 (1997), no. 2.

⁵⁴Censorware that relies on lists of site names or IP addresses does not face this problem head on, but face their own problems because sites may have multiple names and (especially) multiple IP addresses. Even worse, they may simply have a blacklist of keywords whose appearance on a site will cause it to be blocked, regardless of context.

⁵⁵A potential solution is to provide content on the Web in a semantically rich mark-

software did a very good job, the problem in this area is not really a technical one. Though they are much better at parsing meaning when compared to 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 artworks is 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.

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 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.⁵⁶

Knowledge of these topics is increasing quickly, however, and there is a

up language. Currently, HTML consists of metadata that describes the structure of a document to a Web browser, marking which parts are headers, which parts are images, where everything should go on the page, and so on. In principle, marking up Web pages in this way can be extended to define very general, semantic categories that the software can process in the same way as it processes a “Headline” or “New Paragraph” tag. In this way, your Web browser would “know” what the content of a document meant without having to work it out via some sort of artificial intelligence. Rich information about content would be embedded in the document in a way the Web browser could parse. A working system like this is still quite a long way off. For further discussion, see World Wide Web Consortium, *Semantic Web Activity Statement*, 2001 (URL: www.w3.org/2001/sw/Activity) – visited on April 30, 2001.

⁵⁶M.K. Buckland, “What is a “document”?” *Journal of the American Society for Information Science* 49 (1997); Mike Featherstone, “Archiving Cultures”, *British Journal of Sociology* 51 (2000); B. D. Case, “Love’s labour’s lost: The failure of traditional selection practice in the acquisition of humanities electronic texts”, *Library Trends* 48 (2000).

thriving industry investigating how people navigate databases and archives, and how best to structure them.⁵⁷ 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 the potential disadvantages of having to pay for access to primary research materials or archives of cultural materials.⁵⁸ 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 administered by some organization. A good deal of the conflict comes down to who should have control of a 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 scientific 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* (533 U.S. 2001). The case resulted from the *New York Times's* policy of making archival material

⁵⁷A.P. Bishop, "Document structure and digital libraries: how researchers mobilize information in journal articles", *Information Processing and Management* 35 (1999); C. Stephenson, "Recent developments in cultural heritage image databases: Directions for user-centered design", *Library Trends* 48 (1999), no. 2.

⁵⁸T.A. Callister and Nicholas C. Burbules, "Paying the Piper: The Educational Cost of the Commercialization of the Internet", *Electronic Journal of Sociology* <http://www.sociology.org> 3 (1998).

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. Nevertheless, by a 7-2 majority, the Supreme Court held that the freelance writers were entitled to compensation.⁵⁹

The *Tasini* case is only one of the many fronts that the relationship between cultural goods, digital technology and intellectual property is being decided. I discuss this issue in more detail in the next section. For now, it is worth remembering that access to archives like these presupposes access to the Internet in the first place. Although the number of Americans online is rising quickly, the existence of a “digital divide” between computer users and non-users has been noted for some time. In the mid-1990s, it was thought that the problem was the cost of computer hardware. But the price of an entry-level PC has been under \$500 for about three years now. Comparison to similar goods suggests that inequality of access to communications technology is sharpest where regular bill-payments are required, as opposed to a one-time purchase price. Thus, many more people have televisions than telephones, and more people have televisions than have cable. For the Internet, subscription services (paying your ISP every month) are an additional disincentive to many users on the wrong side of the digital divide. If they do make it online, the pricing structure of many websites poses a further barrier. If users must subscribe to archives, this might exclude those who find it difficult to afford the fee.

⁵⁹The central 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.

CONTENT, CREATIVITY AND COPYRIGHT

The problems of filtering, audience building, censorship and archiving all concern 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.⁶⁰

The standard legal and economic justification for copyright and patent law is that it represents a bargain between the various 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 privatising the common stock of culture. Copyright is not an absolute right, either. The concept of fair use of copyrighted material allows for many cases 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. The long-term purpose of copyright and patents, according to the U.S. Constitution, is “to promote the progress of science and useful arts.”

Digital technology's threat to copyright

Digital technology allows cultural goods to be copied with perfect fidelity and at virtually no 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. Until quite recently, it was easy to believe in this slogan, and plausible to think that, by its nature, the Internet guaranteed that things could not be otherwise. The recent controversy surrounding applications which, like Napster, allow for easy sharing of music files, proves this idea wrong. As the radio spectrum was radically reor-

⁶⁰For an excellent summary of the complex legal issues involved here, see Jessica Litman, *Digital Copyright*, (Prometheus Books, 2001).

ganized 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 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.

We have already noted the importance to both artists and consumers of distribution channels.⁶¹ Artists who do not get “in the pipeline” 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 very profitable position. Napster (and other applications like it) took advantage of the Internet to create a giant, distributed, consumer-controlled copying and distribution center that bypassed the conventional channels that record companies control and profit from.⁶² 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 (such as the heavy-metal band Metallica) have argued in similar terms. No-one really doubts 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 disgruntled recording artists who

⁶¹Paul Hirsch, “Processing Fads and Fashions: an organization-set analysis of cultural-industry systems”, *American Journal of Sociology* 77 (1972).

⁶²Jack Miles and Douglas McLennan, *The Essential Napster*, 2001 (URL: artsjournal.com/artswatch/napsterprimer.htm) – visited on March 14, 2001.

do not make it big, it is easy to appreciate the force of the RIAA's view. A cartoon repeated with numerous variations in newspapers late last year 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. Distributors are then just trying to help artists make an honest living. But 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 no longer acts as 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.⁶³ 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 the each record company's catalogue. It will be interesting to see how this limited selection affects their popularity. It may be that the biggest long-term effect of Napster on consumer preferences will not be demand for *free* music, but rather demand for *complete access* to the available material. Databases that provide limited choices may well be unpopular if consumers expect to find everything on-line.

Copyright law's threat to culture

Napster was a sudden (and perhaps temporary) upset in a long trend towards greater copyright control over artistic works in the U.S., a trend which itself reflects the continuing expansion of the scope of intellectual property at the

⁶³These services include Gnotella, Aimster, KaZaa, LimeWire, BearShare, Gnucleus, Audiogalaxy, MusicCity Morpheus, and WinMX.

expense of first-sale and fair-use rights, and the public domain in general.⁶⁴ Thanks to heavy lobbying by interested parties, Congress has lengthened the duration of copyright eleven times in the past forty years. Similarly, in the case of inventions and discoveries, things that people once thought could not be patented — facts, organisms, genes, algorithms — are now routinely registered as belonging to individuals and (more often) large corporations.⁶⁵

The degree of legal copyright control is increasing, and the technical means to monitor and enforce the new rules is 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.⁶⁶ Some software licenses, for instance, try to make it an infringement for the buyer to write a review of the software without permission. Such restrictions potentially extend to works of fiction, too. 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.⁶⁷ On the Internet, companies have tried to patent 1-click shopping (Amazon), indexing and searching the Web (AltaVista) and even the hyperlink itself (British Telecom).

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

⁶⁴In 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 control subsequent sales. First-sale doctrine ensures that you can buy used books, for example. "Fair use" rules define the limits of control that a copyright holder can have over someone who has legally purchased a copyrighted work. Whether (and to what extent) it is legal to quote parts of a book or piece of music or make a copy of a CD to play in your car stereo, for instance, are questions of fair use.

⁶⁵Seth Shulman, *Owning the future*, (New York: Houghton Mifflin, 1999).

⁶⁶Henry Jenkins, *Digital Land Grab*, 2000 <URL: www.technologyreview.com/> – visited on April 30, 2001.

⁶⁷Paul Starr, "Parodies Lost", *The American Prospect* (Forthcoming).

create a “pay-per-use” society.⁶⁸ Most legal commentators agree that the erosion of first-sale and fair use rights is a serious problem. The two pieces of legislation responsible for the most far-reaching changes of the last few years 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. It has already been passed in Delaware, and is set to pass in Virginia. Its opponents argue that it virtually eliminates first-sale rights by allowing vendors to impose “shrink wrap” or “click-through” licenses which users 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 the ability of libraries to provide information to the public on a shared-use basis.

The DMCA is a wide-ranging piece of legislation that implements several new copyright controls. The most controversial of these is a clause that 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.⁶⁹

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. In order to do so, you need software that can decrypt the CSS copy protection. It

⁶⁸Ronald V. Bettig, *Copyrighting Culture: The Political Economy of Intellectual Property*, (Boulder, CO: Westview Press, 1997).

⁶⁹That is, over further exchange of a good, whether for profit or not. Laws like the DMCA make it hard to imagine the growth of second-hand eBook stores, for example.

turns out that someone has written a program, called DeCSS that does just this. Because Linux software 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.⁷⁰ 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 New York court decision (presently under appeal).

What are the implications? First, as far as most computer scientists are concerned, computer code is a form of speech and should therefore have First Amendment protection. If this sounds strange, visit David Touretsky's gallery of CSS descramblers at Carnegie Mellon (<http://www.cs.cmu.edu/~dst/DeCSS/Gallery>).⁷¹ As a practical as well as a conceptual matter, the line between code and speech is not at all clear. Second, 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. But he has been unable to publish his results, because to do so would make a circumvention device available.⁷² Third, it means that if a user wants to play a DVD, she is restricted to those platforms endorsed

⁷⁰There are many reasons one might want to break a copy protection for fair-use reasons. These include, but are not limited to, (1) To convert it to another format to use on different playback media, (2) To generate an archive, (3) To write your own viewer (e.g. to write a DVD decoder that can fast-forward through advertisements), (4) To quote from a work, (5) To make a security copy of the media. In its publicity about the DeCSS case the MPAA has continuously conflated those people who use DeCSS to watch their DVDs as they choose, with those people who physically copy DVDs in order to sell them. The former can be seen as an effort to break down a digital fence in order to exercise fair use rights. The latter is an expensive and certainly illegal method of making money. The MPAA calls both of them piracy.

⁷¹Providing this link constitutes a violation of the DMCA under the current interpretation of the law.

⁷²A court case is in process at the time of writing. Felten vs RIAA, CV-01-2660 (GEB).

or supported by the vendor, even if other platforms could easily play it in principle. In short, the DMCA is a supporting leg in what James Boyle calls “the content industries’ preferred trifecta: expansive intellectual property rights, digital fences, and enforceable click-wrap licenses.”⁷³

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 now take for granted about copyright were argued about at every turn.⁷⁴ 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.⁷⁵

⁷³“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.” James Boyle, “Cruel, Mean or Lavish? Economic analysis, price discrimination and digital intellectual property”, *Vanderbilt Law Review* 53 (2000), p. 2020-1.

⁷⁴Mark Rose, *Authors and Owners: The Invention of Copyright*, (Cambridge, MA: Belknap Press, 1995); Martha Woodmansee and Peter Jaszi, eds., *The Construction of Authorship: Textual Appropriation in Law and Literature*, (Durham, NC: Duke University Press, 1994).

⁷⁵Martha Woodmansee, “The Genius and the Copyright: Economic and legal conditions

This view was developed in opposition to a conception of books and writing in which the author was only one contributor to the final product. An eighteenth century dictionary defines “book” in terms more reminiscent of Howard Becker’s picture of artworlds than our image of the solitary artist: “the scholar . . . the paper-maker, the type-founder and setter, the proof-reader, the publisher and book-binder, sometimes even the gilder and brass worker” are all “fed by this branch of manufacture.”⁷⁶ The elevation of the author was a hard-fought historical process.

The actual importance (or alternatively the death) of the author is something that might be worth arguing about elsewhere, but the point here is that 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 image can be far removed from the reality. As James Boyle points out, the problem 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.”⁷⁷ 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. When video recorders came to the market in the 1980s, the MPAA contested their legality in the Supreme Court. At the time, the MPAA saw only the potential for abuse and piracy. The possibility of a huge, profitable market in video rental had not occurred to them.

The social organization of some other creative 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 as a fact of life, without apparent damage to their

of the emergence of the “Author””, *Eighteenth-Century Studies* 17 (1984), no. 4, p. 427.

⁷⁶Woodmansee, *Eighteenth-Century Studies* 1984, *ibid.*, p. 425.

⁷⁷James Boyle, *Shamans, Software and Spleens: Law and the Construction of the Information Society*, (Cambridge, MA: Harvard University Press, 1997), p. 55.

creativity or profitability. My point is 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 there are other goods (in both the civic and the commercial sense of the word) that need to be considered, and that experience 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 largely owes its fame to the efforts of later authors to imitate, parody or refer to it for other purposes.⁷⁸ Arguments based on the image of the romantic author refuse to acknowledge these possibilities. Organizations whose mission is to foster artistic production and public access to art in the long term should consider the importance of the role they would play in a world of arts consumption dominated by strong copyright and limited fair use rights. If nothing else, with public support and collaboration, these organizations might make inroads as competitors in the distribution pipeline, transferring rights (and profits) back to artists while preserving the fair use.

DECIDING ON A FUTURE

I am not an expert on the activities of arts and cultural organizations, and I have not tried to describe specific policies or strategies that they should be following as they enter the digital age. Neither have I tried to act as some kind of avatar, predicting what is around the corner for the information society. As I have already noted, the major pitfall of futurism is that the future will be determined, in part, by events that haven't happened yet. Instead, I have argued that questions of cultural policy are only one aspect of much bigger debates about the social organization of information. The legal and political contests currently being played out will go a long way toward deciding the sort of society we will have in ten years, and the place cultural goods will hold in it.

⁷⁸Jenkins, *Digital Land Grab*, *ibid.*

I have made a simple argument about this macro level of social change. Digital technologies make many new things possible, but do not (by themselves) fix the shape of the future. We already have many different kinds of distribution channels, systems of content management, modes of cultural production and so on. There is a tendency, when thinking about how these things will change, to imagine that one particular alternative must ultimately be selected (by whatever mechanism) and that this will provide the basic organizing principle for the future. This is a mistake. It is more likely that a variety of forms will survive, but they will become attached to different producers and audiences. Cars, trains and airplanes serve different markets and have different costs and benefits. These different transport networks have not competed each other out of existence. Instead, the alternatives are stratified partly by kinds of use and partly by kinds of users. This still leaves the possibility that there will be a *dominant* mode of organization on the Internet and that culture will, in the main, be distributed or consumed in one more or less standardized way. Influencing the availability of these forms of organization and regulation is one of the jobs of cultural policy. It would be a shame, for instance, if the services that offered consumers the widest real choice, or the greatest degree of interactivity, or the most personal freedom and privacy, ended up being accessible only to the well-off.

Each of the new arenas for cultural policy discussed in this paper has its own peculiarities and twists. Nevertheless, they are all animated by some basic tensions that influence the specific policy options 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 almost any specific question of 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 — the choices of policy makers will involve taking a position along these dimensions.

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 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.

Much of the software that runs the Internet is distributed under the terms of the GPL or licenses similar to it.⁷⁹ 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 in the context of cultural policy 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 more deeply than this, nonprofit organizations may have a strong interest in encouraging the development and use of software that is free to be developed 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."⁸⁰ There is evidence that software platforms built on free software are more likely to be innovative

⁷⁹Some software is produced under licenses that put it wholly in the public domain, which allows proprietary modifications to be made. More than twenty variations of "open source" licenses exist.

⁸⁰This distinction between two senses of free is a useful one. Stallman himself notes that he conflated the two when he came up with the idea of the GPL. 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.

and less likely to be subject to the dictates of particular companies.

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.⁸¹ 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.⁸²

Leaky systems, in contrast, are ones where a certain degree of control is

⁸¹Mark Stefik, “Shifting the Possible: How trusted systems and Digital Property Rights challenge us to rethink digital publishing”, *Berkeley Technology Law Journal* 12 (1997), no. 1; M. Stefik and G. Lavendel, “Libraries and digital property rights”, in *Research and Advanced Technology For Digital Libraries*, Vol. 1324. (1997).

⁸²This 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.

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. In leaky systems, copy-protection is strong enough for some purposes, but not so strong that vendors can control the after-market for their products. 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:

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 cesarean sections, about the Manhattan Project when they were supposed to be learning

about Manhattan?⁸³

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.”⁸⁴ 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.⁸⁵

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 navigate the interstate. 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 wouldn’t have to. Almost all of the policy issues discussed in this paper persist regardless of the level of expertise of most users. To continue the transportation analogy, think of travelling 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.

⁸³Boyle, *Vanderbilt Law Review* 2000, *ibid.*, p. 2033.

⁸⁴Manuel Castells, *The Rise of the Network Society*, (Oxford: Basil Blackwell, 1996), p. 371.

⁸⁵Though some predict that habits of passive consumption may be hard to break (Neuman, 1992).

Note that the important differences between the two kinds of traveller does *not* lie in some personal characteristic or other, such as their skill levels, their social capital or their capacity for interaction. It does not matter if everyone travelling by train knows an enormous amount about train timetables or locomotive engineering. They will still not be able to travel as widely as the people who go by road. What matters is the structure of the network itself. This structure is established in large part through policies that encourage one model of development over another. At the risk of overextending the metaphor, we can say that, although it is important that people know how to drive, this individual-level skill is only one small component of a well-functioning transport network. Structural flaws in the system — such as bad connectivity, poor maintenance, too many toll-roads and the like — will not be solved by investing in more driving lessons for road users.

CONCLUSION

The information society did not begin with the arrival of the World Wide Web in 1991. To say this is not to deny the Web's importance, but only to suggest that it was not something that burst upon the world full-formed and without precedent. In this paper, I have emphasized the importance of a historical perspective because it helps us distinguish real social change from hype and fashion. I have argued that, as with similar developments in the past, a great deal of the cultural experimentation surrounding the Internet will turn out to be ephemeral, especially that which dwells excessively on the technology itself.

At the same time, many aspects of art and culture will almost certainly be transformed in important and unanticipated ways. However, by definition, we cannot say in advance what those ways will be. This inevitable uncertainty implies that the concerns of cultural policy will not change very much on the "production side." Artists will innovate as they always have, using and adapting the new technologies, sometimes in interesting and important ways, sometimes not. From a policy point of view, it is only necessary to have an open attitude to the new media, and to treat this technology

as at least having the potential to yield new artistic genres and important work. As with any medium, most experiments will fail in hindsight, but there is no point cutting off options in advance.

While policy may not change very much with regard to cultural production, distribution and consumption may be changed beyond all recognition. I have tried to emphasize 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 effect how art and culture are consumed, the kind of work that artists can do, and the rewards — financial and otherwise — that consumers, artists and nonprofits will be able to reap from the new technologies.

The arts and cultural community can help shape the evolving architecture of the Internet in decisive ways. Doing so means taking a position on some basic principles: the preservation of a public domain for a shared and exchangeable cultural heritage; the benefits of diverse cultural content that is accessible to normal users; the centrality of free-expression and privacy rights, and so on. It is clear from history that new technologies do not, by themselves, decide the shape of society. The irony is that 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. Leaders in the arts and cultural community should make sure that the options chosen help further their cause, before we forget that alternative paths ever existed.

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