TIME FOR THE RECORDING INDUSTRY TO FACE THE MUSIC: THE POLITICAL, SOCIAL AND ECONOMIC BENEFITS OF PEER-TO-PEER COMMUNICATIONS NETWORKS

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ISSUE BRIEF

PIRACY PANICS V. THE PUBLIC INTEREST

A critical debate over a technological revolution is underway in the U.S. that will have far reaching implications for economic growth and global competitiveness, technological innovation and creativity, and the capacity of an open, democratic society to adapt to breakthroughs in the way we communicate. This debate is over advances in peer-to-peer technologies and whether their growth will be driven by the capacity of human innovation or hindered by special interests reluctant to embrace change. This debate is unfolding in the U.S. court system, the halls of Congress at universities and research organizations, and among entrepreneurs everywhere from corporate boardrooms to the lone innovators looking for next great invention.

If vested interests in the recording and movie industries have their way, innovation and progress will be the victim of a public relations campaign intended to paint file sharing as "piracy." Big movie studios and recording companies are attempting to squelch peer-to-peer networks just as their potential to deliver economic growth and technological progress is only beginning to be exploited. However, contrary to the copyright holder claims that peer-to-peer communications networks are copyright infringement schemes, decentralized peer-to-peer networks have become the dominant form of Internet communications because they are vastly more efficient. Peer-to-peer technologies eliminate the congestion and cost of central servers and distribute bandwidth requirements throughout the network. In so doing they become a powerful force to expand freedom of expression and the flow of information, stimulate innovation, and promote the economic interests of consumer and creative artists alike (see Exhibit EX-1).

This report explains why public policy should embrace peer-to-peer technologies. It examines the history of technological innovation in communications and the "piracy panics" they cause among entrenched incumbents. For three centuries, in battles over the printing press, telegraphy, mechanical pianos, cinematography, radio, cable television, photocopying, video and audio recorders, and the current generation of digital technologies, public policy has favored technological innovation by refusing to allow copyright to regulate technology. The paper reminds policymakers of the historic lesson that technological innovation promotes political, cultural, and social development, and economic growth. The analysis demonstrates the social and economic harms of the "tyranny of copyright" that recording companies and movie studios seek to impose on peer-to-peer technologies, as well as the legal and public policy grounds for rejecting this tyranny.

THE ATTACK ON PEER-TO-PEER COMMUNICATIONS NETWORKS

In a case before the U.S. Supreme Court, *Metro-Goldwyn-Mayer (MGM) Studios, Inc. vs. Grokster, Ltd*., MGM is attempting to hold Grokster and Streamcast Networks liable for illicit file sharing activities undertaken by users of their technology – attempting to hold the innovator accountable for the way in which the innovation is used. They want the Supreme Court to turn its back on the sound legal principals enunciated in 1984 in the Sony Betamax case that protected the innovations that sprung from the VCR in spite of protests from the movie industry that it would destroy Hollywood.

The recording companies and movie studios would fundamentally alter the nature of peer-to-peer communications networks to secure greater protection for their copyrighted materials by punishing technologies that facilitate file sharing, imposing technology mandates that inhibit file sharing, short-circuiting citizen rights to due process, and invading consumer privacy to speed lawsuits. They would create a surveillance society that casts a long shadow over freedom of expression and innovation. They demand a "hub and choke" architecture of central servers and lists that the Internet has left behind.

They would force network operators to assert control over every bit of communication that takes place in the peer-to-peer communications network. Indeed, they angrily disparage network operators for removing themselves from the conversation that the users of the networks have. In essence, they would make it illegal to refuse to install eavesdropping capacity in the networks. They would then require network operators to fingerprint every file, tag every user and monitor every transaction. They would hold technologists accountable, not only for what the users of those networks do, but also for anticipating what they might do. Similar demands have been pushed in Congress, as in the United States Senate, where the recording and film industries have backed the so-called "Induce Act," a clear break from the precedent of protecting innovators from liability for illicit uses of their creations.

Much like the motion picture industry's discredited "piracy panic" in the 1980s - in which it sought (and failed) to judicially enjoin distribution of Sony's Betamax on the grounds that VCRs posed a threat to movie copyright holders - the recording companies and movie studios are seeking judicial intervention against peer-to-peer communications networks. In now famous testimony from 1982 before a Congressional hearing on the use of the VCR for home recording, president of the Motion Picture Association of America Jack Valenti declared: "I say to you that the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone." Two decades later, the motion picture industry has not only thrived during the age of the VCR, but sales and rentals of tapes and DVDs have generated over $25 billion in annual revenues for the industry - twice as much revenue as theatrical showings.

The paper presents a comprehensive review of the legal and public policy issues glossed over by the rhetoric of "piracy panic." It examines the impact of peer-to-peer communications networks as a multi-faceted, broad purpose technology in the long line of advancement of (1) "technologies of democracy," 2) "technologies of innovation," 3) "technologies of distribution," 4) "technologies of creativity."

TECHNOLOGIES OF DEMOCRACY

The attack on peer-to-peer networks by the record companies and movie studios involves much more than entertainment industry economics. It is also a dispute about striking the proper relationship between the private and public spheres. It raises profound questions about how far our society should go in projecting the state-conferred and constitutionally limited private monopolies into public *fora* where citizens rely on information and communications technology to enable personal expressive freedom. Beyond the entertainment area, individual citizens communicating without mediation are increasingly sharing critical information with each other in rapidly expanding peer-to-peer communications networks that enable them to not only consume information and entertainment products in the precise quantities and at the time they want, but to produce content as well.

The resolutions of past "piracy panics" in favor of preventing copyright from suppressing expression share a central theme. Consistent with the free-speech ideals, technological innovation historically has progressed via the mechanism of consumer access leading to grass roots quality control and "research and development." As reflected in important fair use decisions, including the Sony Betamax decision, technological innovation often originates in minds freshly exposed to the work of others. In addition, a technology's original producers often only become aware of improvements after consumers test their products. Greater access to technology also has had the socially desirable effect of expanding the market to which entrepreneurs might cater. Correspondingly, the competition to obtain greater shares of a growing market leads to more efficient distribution of resources and to incentives for improving existing technologies and services.

Because peer-to-peer networks lower the cost of moving large files to a fraction of what they are with the client-server, central-index networks, they dramatically expanding the ability of ordinary people and noncommercial entities to speak in the digital age, to distribute video and other content in new and innovative ways. More than ever, digital communications over the Internet allow individuals to communicate and express themselves. For example, self-published, public domain and authorized non-musical works are exchanged in peer-to-peer networks. Political speech has been fostered for candidates and citizens, not to mention dissidents living under authoritarian regimes. Journalists and media critics have turned to peer-to-peer to enrich their documentary and commentary activities. Educators, librarians, historians and archivists find that peer-to-peer greatly expands their ability to catalogue and make available informative materials.

These are the reasons why First Amendment advocates on the left, like the American Civil Liberties Unions and Free Press, and the right, like the American Conservative Union and the Eagle Forum Education and Legal Defense Fund, and institutions dedicated to expanding the availability and use of content, like the Creative Commons, the Free Software Foundation, and Media Studies Professors, have weighed in at the Supreme Court against the demands of the recording companies and movie studios.

TECHNOLOGIES OF INNOVATION

Obsessed with copyright above all else, the recording companies and movie studios are blind to the fact that Internet and communications network architecture has evolved away from the centralized structure for obvious design and economic reasons. They see only a conspiracy to undermine their rights, while network efficiency is the driving force behind architectural design.

The current demands of the recording companies and movie studios seek to radically expand copyright law into a broad regulatory role over technology innovation. In short, the digital "piracy panic" has driven the recording companies to seek to freeze Internet technology and to lock in a "hub and choke" design – because it provides a useful control point to protect their interests.

Peer-to-peer networks, especially in their most recent form, are a perfect example of Internet architecture. They are decentralized communications networks that rely on distributed intelligence. They promote direct communication between users at the edge of the network.

On the supply-side, peer-to-peer communications networks are efficient, robust and scalable. As long as principles of open architecture prevail, efficient solutions will economize on scarce resources by exploiting more abundant resources. As hardware and communications costs declined and larger faster PC's penetrated the market, the design principles of the Internet made it inevitable that software would seek to escape the central server bottleneck by tapping into the abundant resources that are now available on the edges of the network. By building multi-level connectivity that adds redundancy, the network becomes more robust. By adding points of communication, it becomes more scalable.

On the demand-side, peer-to-peer communications networks encourage three different forms of relationships directly between individuals – exchange, viral communications and collaboration. The recording companies lament the fact that these networks facilitate exchange between individuals. The searchability of the network and direct relationships undermine control over exchanges between equals. As the capacity for networks to facilitate exchange increases, they exhibit classic demand-side economies of scale, or network effects.

However, peer-to-peer networks exhibit much more. These networks encourage not only exchange, which so concerns the record industry, but also viral communications and collaboration. Some musicians and politicians, not to mention commercial companies, have begun to discover the ability of information and ideas to spread virally among members of peer-to-peer networks. Viruses spread autonomously by infecting neighboring individuals who are susceptible to the message. Action-oriented individuals can seek out and influence others. Humans infected by ideas can go one step farther. Like-minded people can find each other and form communities, encouraging and reinforcing action. Exchange and/or viral communication can serve as a launch pad for collaboration, resulting in new, joint products. Consumers become producers, fulfilling the aspiration of the First Amendment and returning the nation to the digital age equivalent of its pamphleteer origins.

These are the reasons why computer, software, and communications companies, large (e.g. Intel and the Cellular Telecommunications & Internet Association) and small (e.g. Altnet and Shared Media Licensing, Inc.), the National Venture Capital Association and the National Association of Shareholder and Consumer Attorneys, and over a hundred professors and scholars, specializing in copyright, intellectual property, technology and Internet law, economics, innovation and computer science, have all weighed in at the Supreme Court against the demands of the recording companies and movie studios. These groups have also strenuously have opposed Congressional efforts to stymie peer-to-peer technology.

TECHNOLOGIES OF DISTRIBUTION

The business model that the industry is defending is a tight oligopoly in which a handful of companies control the distribution of content. Anticompetitive practices and anti-consumer policies have forced the public to buy overpriced CDs. Over the course of the 1990s, the record companies fixed prices and eliminated singles. The industry maximizes its control and profits by promoting a small number of blockbuster albums. Most artists receive little if any compensation for their albums and the public receives a narrow range of products at high prices.

File sharing technology entered this market as an "arbitrage" opportunity. These observations are not intended to condone copyright infringement, but to help explain its social antecedents and to put the industry's claims of harm in context. The growth of sales in 2004, and particularly the explosion of sales of digital singles, reinforces this view and throws the whole industry argument into doubt.

Rigorous statistical analysis does not support the claim that peer-to-peer has reduced sales sufficiently to threaten the health of the recording industry or that it harms society. Simply put, the results are all over the map. Some studies have found increases in sales resulting from stimulation of sales in some population segments (older consumers) that offset losses in others (younger users). Others have found little or no effect. Still others have found losses that are not large. Moreover, because of recording industry pricing practices, even where industry revenue declined as a result of peer-to-peer, consumer welfare may increase. One econometric study of downloading found that the increase in consumer surplus was almost 200 percent larger than the loss of industry revenue.

Digital distribution threatens the control of the recording companies. It dramatically lowers manufacturing and distribution costs, while putting pressure on marketing and overhead costs. In a digital delivery environment, consumers should never be forced to pay for songs they do not want in order to get songs they do want. Having failed to shut peer-to-peer distribution down over the course of five years, in 2004 the record industry finally decided to begin to adapt its business model, at the same time that it continued its litigation.

The results were remarkable. The industry sold more singles in 2004 than at any time since 1984. Assume, based on the evidence of downloading, an average of 1.5 songs downloaded per album. With 150 million downloads in 2004, consumers would have been forced to buy 100 million albums to get the satisfaction of owning the songs they wanted. At an average price per CD of $13, that would have cost consumers some $1.3 billion. Buying digital singles at $1 per single, they spent only $150 million. The gain in consumer surplus could be over $1 billion and is likely to be at least hundreds of millions of dollars.

Part of the gain is in the form of money not spent, part of it in music purchased that would not otherwise have been purchased.

These are the reasons why consumer advocates, like Consumers Union and U.S. PIRG, and consumer equipment manufacturers, like the Consumer Electronics Association, have weighed in at the Supreme Court and in Congress against the demands of the recording companies and movie studios.

INCENTIVES FOR ARTISTS

While the anti-consumer practices of the recording industry are proven as a matter of law, some have argued that the worst aspect of the industry, though harder to prove, is its anti-artist and therefore anti-social impact. Pricing abuse only costs the consumer money; the centralized, star-oriented system that the industry enforces tyrannizes artists and impoverishes our culture.

It is a frequent lament in the music industry that few albums and almost no artists ever make any money on the sale of records. The spread in income between the handful of stars and the vast body of artists is huge. The range of works that is played and circulated widely is narrow. A handful of companies select a small number of releases and promote them heavily, marketing them through distribution channels that are expensive.

Peer-to-peer technologies are a win-win for consumers and creative artists, particularly in the music business because they lower the costs of production, marketing, promotion and distribution. They eliminate the "brick and mortar" middlemen, enabling creators to reach and communicate directly with their audiences cheaply and effectively. As costs fall, the highly centralized blockbuster system that benefits a handful of recording companies and a few star artists by restricting the variety of content that reaches the public, will recede. New approaches to digital distribution enable more artists to earn more selling singles through peer-to-peer networks at a fraction of the cost of albums. Because they can charge less and earn more, more artists will succeed financially and a broader range of work will receive wider distribution.

There should be little wonder that the musicians are supportive of the use of the Internet to advance their works and careers, but more divided on file sharing. Substantial majorities feel that the Internet has helped them, particularly in connecting with fellow musicians, expanding and reaching their audience, and promoting their performances. Just over one third of musicians said downloading is not bad and another one third said it was both good and bad. Just under one-quarter said it is bad.

The instincts and actions of the musicians who are supportive of peer-to-peer networks are easily explained by economic theory. The obvious reduction in search costs and improvement in information quality should lower total cost and increase demand. More importantly, from the artist's point of view, the new technologies change the social relations of production. Peer-to-peer networks disintermediate the recording companies.

The ultimate cost savings in marketing and distribution comes from both the supply-side and the demand side. On the demand-side, the ability to sample "is an information-pull technology... a substitute to marketing and promotion, an information-push technology." As the cost structure of the industry changes through the adoption of digital

technologies performance improves, since "variable costs relative to fixed costs are more important for music downloads than for CDs. This suggests that acts with a smaller audience can succeed in the digital music market. As a consequence, we could observe more music diversity and a less skewed distribution of sales among artists."

These are the reasons why many recording artists have embraced peer-to-peer distribution of their works and have weighed in at the Supreme Court against the demands of the recording companies and movie studios.

CONCLUSION: PUBLIC POLICY AND LEGAL PRINCIPLES FAVOR PROTECTING CONSUMERS AND PEER-TO-PEER NETWORKS

Fortunately, neither public policy nor law will tolerate the tyranny of copyright pushed by the recording companies and movie studios. The legal prospects for rebuffing the assault of the record companies on this new technology are good. Indeed, the constitution and three centuries of jurisprudence lean in the opposite direction. Promoting progress takes precedence over protecting copyrights. The Supreme Court should not only rejects the demands of the recording companies and movie studios to extend their copyright to regulate technology, but also takes this opportunity to put an end to the reign of litigation terror that the copyright holders have launched in an effort to slow technological progress. The Supreme Court must make it clear that technology is not the villain and send a signal to the lower courts to dismiss out of hand the frivolous litigation brought by the recording companies and movie studios.

The public must not be lulled into a false sense of security, however, even with a victory in the courts. Piracy panics are potent afflictions and the copyright holders have been in a fever since the advent of the Internet and the emergence of digital technologies. Copyright holders rarely accept court decisions when the underlying laws can be amended to do their bidding. There will be protracted legislative fights before the digital piracy panic subsides. In order to protect their rights as citizens and consumers, the public must become aroused and engaged to balance the immense monetary and political power of the record companies and movie studios.

EXHIBIT ES-1: EXAMPLES OF SUPPLY-SIDE AND DEMAND-SIDE BENEFITS OF PEER-TO-PEER TECHNOLOGY

SUPPLY-SIDE

Efficiency

BitTorrent allows a large number of computers that have a file to share in copying it to a person seeking it. Because the sharing is simultaneous (each computer that has the file transfers a portion of it at the same time as other computers that have it) the transfer can avoid or lessen bottlenecking that occurs if the entire file is copied from a single computer…

To maximize literacy, education and entertainment through the distribution of information to the public peer-to-peer systems such as Grokster can be of critical assistance in achieving these goals…. For example… Project Guttenberg's goal is... by 2013… over 1 million titles will be part of the collection and available to the public…

Peer-to-Peer networks also play an important role in the Internet Archive's effort. The Internet archive currently hosts about 60,000 books, music, software and video items. Approximately one terabyte of data is downloaded from the Internet Archive each day… traditional web-based distribution of material in such volumes – especially large files like audio and video files – can become tremendously expensive and, at a certain point, cost-prohibitive. That is because web-based publishing requires the host to bear both the data storage costs and the bandwidth costs associated with traffic to and from its site…It is precisely because peer-to-peer networks reduce costs that some content providers are increasingly relying on them to distribute their products.

By bundling Altnet's technology to interoperate with peer-to-peer software applications like those at issue in this case, Altnet can distribute music and movies at a small fraction of the cost needed to operate Petitioners' "brick and mortar" distribution businesses. Altnet also competes with several of the Petitioner-owned and sponsored *Amici*, such as MusicNet, who operate "web-based" business for internet distribution of licensed content. Altnet possesses competitive advantages over *amici* because the use of peer-to-peer distribution technology does not require the same investment in web-based server architecture, and it is more popular among consumers.

Scalability

While decentralized PtP systems inherently are more scalable and frugal on bandwidth than centralized systems, BitTorrent is far more efficient and especially fast at exchanging very large content files. Indeed, BitTorrent originally was invented (and continues to be utilized) for the lawful sharing and distribution of huge Linux operating systems and application programs among developers and licensed users…

A judicially imposed regime that would require Respondents' technology, BitTorrent, and their inevitable technological progeny to impose a centralized hub choke point to filter out infringing files would degrade these technologies to destroy the intrinsic advantages of speed, frugality in consumption of bandwidth, and scalability.

Robustness

Designing large-scale networks is notoriously difficult. Large networks must cope with vexing issues of scale, reliability, robustness and security that simply do not arise in smaller networks. Consequently, researchers are looking more to P2P networks, which offer

significant advantages over client-server networks that have bottlenecking problems when many users try to access a web site, and can easily be taken down due to single points of failure and denial of service attacks…. One beneficiary of such lessons is the National Science Foundation-funded Infrastructure for Resilient Internet Systems (IRIS) Project. IRIS… a multi-institutional collaboration… seeks to use P2P design strategy to support large-scale Internet services.

DEMAND-SIDE

Exchange:

Peter Jackson… is keeping an online reduction diary of the making of the film… he is using BitTorrent to share the work of distributing the files… [A]fter the Tsunami, naturally there was great interest in seeing the video that had been taken on scene. A number of trackers are available for those amateur videos. A rule that would make a developer… secondarily liable for copyright infringement, merely because his software can be and is used for infringing purposes would also cripple advances in large scale design.

Red Hat, a major packager of Linux software, uses a torrent tracker to save bandwidth in the distribution of software…

Skype is the first Internet telephony technology to use P2P distributed computing. P2P telephony utilizes decentralized networking technology to significantly increase call completion rates compared to more costly, centralized voice-over-IP technologies. Skype allows for free calls to other Skype users, paid calls to all land and cellular telephones, file transferring, and instant messaging. Skype relies on P2P technology not only for completing phone calls, but also for distributing its telephony software by bundling its applications with popular P2P software.

Ms. Ian has been significantly helped by peer-to-peer technology. Traffic to her website (www.janisian.com) has increased dramatically since the rise of P2P technology, going from approximately 60,000 unique visitors annually to five times as many. Because people have been able to discover her music on P2P networks, her compact disc sales on her website have increased over 250%, generating an additional $5,000 to $10,000 annually. P2P technology allowed her to save money on marketing while expanding the reach of her music.

Viral communications

Shared Media Licensing operates the DRM technology known as “Weed.” When a file is protected by Weed technology, that file may be played up to 3 times for free. After this, if the user wishes to continue to play the file, he or she must pay for it. The price for any given file is set by the rights holder. The file can be copied to other users for free, whether across the Internet or otherwise. If the file is copied onto another machine, the file can be played 3 times without payment. When a user purchases a file, the rights holder receives 50% of the money paid by the purchaser and 15% of the purchase price goes to Shared Media as a processing fee. The remaining 35% of the purchase price is shared among those who previously purchased and distributed the music. This payment system is designed to encourage users to actively distribute authorized files.

Heart supports the use of peer-to-peer technology and believes that it is a very efficient means of distributing music. Encrypted with “Weed” technology (www.weedshare.com), “Jupiter Darling” was released on the Internet and has been shared on P2P networks. Heart’s “Weed” files outsold those on Apple’s iTunes during the third week of their availability on both services.

The Jun Group estimates that 2.5 million copies of one of his classic songs were downloaded. The initial impact on the star's new album, solely attributable to peer-to-peer file-sharing, was an eight times increase in sales in some regions.

According to Jun Group, by conservative estimates, P2P represents more than 8 million people online at any given time executing over 600 million content searches per day. In 2003, the company released five files from Kevin Martin and the Hiawatts on behalf of YooHoo Chocolate Drink. The Music was downloaded more than two million times over a four-week period and helped YooHoo achieve the largest spike in website traffic since the inception of its site.

Collaboration

In recent years, as digital technologies and powerful networks granted remarkable creative tools to scholars, teachers and students, the climate of panic and fear induced by the uncertainties of fair use in the new digital environment has generated a chilling effect. University and school administrators are cautious about or vehemently against experimenting with new methods of distribution, even for educational or research purposes. For example, Professor Henry Jenkins at the Massachusetts Institute of Technology uses – as most media studies teachers do – clips and quotes from copyrighted works in his courses. On advice from MIT lawyers, the university has not allowed Jenkins to post the essential clips on its open courseware servers – only on server spaced closed to readers who are not registered MIT students. However, MIT allows students from Harvard to take courses at MIT. Such material is inaccessible to Jenkins' students from Harvard….

Many scholars use peer-to-peer technology in their work. Some seek a song or a video clip that is out of print and unavailable in their libraries, so they use the vast publicly generated library of files as an efficient index and virtual library…

Colin Mutchler… believes that P2P technology is a great catalyst for musical collaboration. In 2003, he contributed an acoustic guitar song entitled "My Life" to the website Opsoud.com, licensing it with the permission to be downloaded, shared on peer-to-peer networks and reused. In just a few weeks, a young violinist from North Carolina who Mr. Mutchler had never met added to it and renamed it "My Life Changed." The most recent remix, which includes artists from three different continents, would never have been possible without peer-to-peer networks… Mr. Mutchler's first commercial album is due later this year. He anticipates that his sales will be much higher because of his Internet collaborations and the exposure of his music to audiences through P2P technology.

Mr. Holowach released his first album, a solo effort, for free on the Internet. One of his songs was then remixed by another musician hundreds of miles away, Andrew Vavrek, spawning a professional collaboration and the formation of their band Tryad. The band now releases all of its songs through Creative Commons licensing.

Sources: All of these examples are from Supreme Court briefs of *Amici Curiae.* See text at 39-43, 64-65.

I. PIRACY PANICS AND TECHNOLOGICAL CHANGE

Major technological change always challenges entrenched interests. It threatens incumbent institutions and stakeholders by creating new economic opportunities and changing social relationships. The initial reaction of those most threatened by change is to use political force to protect their interests. With court cases and legislation, the incumbents seek to undermine emerging competition from new business models.

The Internet is no exception. As a powerful new means of distribution and communication, it undermines the role of intermediaries. Producers of goods and services are finding new ways to deal directly with consumers, eliminating or reducing the role of middlemen. Consumers also are able to establish relations with one another, or to become producers in their own right.

The sale of recorded music is a perfect example of how middleman costs are undercut by Internet distribution. Well over half the cost of producing a CD is manufacturing, distribution and marketing costs, which could be largely replaced by electronic distribution of music files over the Internet.[1] Further, control over the recording industry, which is centralized in the hands of four[2] and gives rise to a star system that promotes a small number of performers, is also threatened by the ability of creators and artists to reach out directly to the public and bypass the recording companies.

The ongoing effort by the recording companies and movie studios to shut down peer-to-peer communications networks is a classic reaction against technological change. This effort should be firmly rejected by the public and policymakers. Undermining the emerging peer-to-peer communications networks will be bad for society, bad for the economy, bad for creative artists and even bad for the recorded music and movie industries – the copyright holders.

It may seem ironic to suggest that the dominant firms in the recorded music and movie industries cannot grasp their own long-term interests, but that is in fact not an uncommon reality when major technological change confronts an industry. The track record of copyright holders in predicting how improvements in communications technology will affect their interests is miserable. "Firms in the music recording industry, as well as firms in other culture-based industries such as motion pictures, have traditionally preferred technological stability, but have ultimately benefited from technological change."[3]

Just two decades ago, Hollywood's top representative Jack Valenti declared that "the VCR is to the American film producer and the American public as the Boston Strangler is to the woman home alone."[4] Hollywood claimed that allowing consumers to tape television programming would undermine the post-theatrical market for

feature films. By allowing consumers to skip commercials, the value of advertising would be destroyed.

Rebuffed by the Congress and the Supreme Court, the industry adjusted its business model and reaped huge monetary rewards, at the same time that the public enjoyed an immense improvement in their ability to enjoy video content. Today, sales and rentals of videotapes and DVDs generate over $25 billion in annual revenues for the industry, twice as much revenue as theatrical showings.[5] In the past twenty years, revenues from broadcast advertising has increased almost twice as fast as it did in the twenty years before the use of VCRs became widespread. In 1960, TV ad revenue was .3% of gross domestic product (GDP), about $1.6 billion. By 1980 it had grown to $11.5 billion, or .4% of GDP. In the next twenty years, when the VCR was supposed to be strangling the industry, TV ad revenue grew to almost $60 billion, about .6% of GDP.

The VCR example does not represent the first time that copyright owners have been thrown into a "piracy panic" by technological change, nor is it only the music and movie industries that are afflicted by this disease. The list is long, stretching back centuries: the initial adoption of copyright principles in relation to the printing press in England in the 18th century, the telegraph in the late 19th century, mechanical pianos at the turn of the 20th century, cinematography early in the 20th century, radio in the 1930s, cable TV in the 1960s, photocopying in the 1970s, VCRs in the 1980s, CD burners in the 1990s, and various digital video recorders (DVRs) in the early 2000s. Copyright holders of all stripes have been seized by fears that new modes of reproduction and communications might undermine the structure of incentives embedded in the copyright laws. They have demanded protection from the courts and Congress (see Exhibit I-1).

While the term of copyrights has been extended in duration and scope in recent years, the Congress and the courts have refused to abandon the central principle of copyright law – that copyright should regulate the users of technology rather than the technology itself. In the pending case before the Supreme Court, *Metro-Goldwyn-Mayer Inc., et al. v. Grokster Limited* (Grokster),[6] the recording companies and movie studios have demanded that the Court, rather than Congress, do just that.

The Unique Importance of Technologies of Expression

The attack on peer-to-peer communications networks by the recording companies and movie studios involves much more than entertainment industry economics, however. It involves a technology with a much broader impact in terms of both economic value and non-economic values.

Exhibit I-1: Piracy Panics V. Technological Progress:
Economic & Moral Catastrophes are Always about to Befall the Entertainment Industry

John Phillip Sousa, "The Menace of Mechanical Music," ***Appleton's Magazine,*** **Vol 8 (1906)**

SWEEPING across the country with the speed of a transient fashion in slang or Panama hats, political war cries or popular novels, comes now the mechanical device to sing for us a song or play for us a piano, in substitute for human skill, intelligence, and soul… And if we turn from this comparison in pure mechanics to another which may fairly claim a similar proportion of music in its soul, we may observe the English sparrow, which, introduced and welcomed in all innocence, lost no time in multiplying itself to the dignity of a pest, to the destruction of numberless native song birds, and the invariable regret of those who did not stop to think in time.

I foresee a marked deterioration in American music and musical taste, an interruption in the musical development of the country, and a host of other injuries to music in its artistic manifestations, by virtue — or rather by vice — of the multiplication of the various music-reproducing machines…

It cannot be denied that the owners and inventors have shown wonderful aggressiveness and ingenuity in developing and exploiting these remarkable devices. Their mechanism has been steadily and marvelously improved, and they have come into very extensive use. And it must be admitted that where families lack time or inclination to acquire musical technic, and to hear public performances, the best of these machines supply a certain amount of satisfaction and pleasure.

From the days when the mathematical and mechanical were paramount in music, the struggle has been bitter and incessant for the sway of the emotional and the soulful. And now, in this the twentieth century, come these talking and playing machines, and offer again to reduce the expression of music to a mathematical system of megaphones, wheels, cogs, disks, cylinders, and all manner of revolving things, which are as like real art as the marble statue of Eve is like her beautiful, living, breathing daughters.

Right here is the menace in machine-made music! The first rift in the lute has appeared. The cheaper of these instruments of the home are no longer being purchased as formerly, and all because the automatic music devices are usurping their places.

And what is the result? The child becomes indifferent to practice, for when music can be heard in the homes without the labor of study and close application, and without the slow process of acquiring a technic, it will be simply a question of time when the amateur disappears entirely, and with him a host of vocal and instrumental teachers, who will be without field or calling.

Jack Valenti, "Home Recording of Copyrighted Works," ***Committee on the Judiciary, United States House of Representatives,*** **April 12, 1982**

But now we are facing a very new and a very troubling assault on our fiscal security, on our very economic life and we are facing it from a thing called the video cassette recorder and its necessary companion called the blank tape. And it is like a great tidal wave just off the shore. This video cassette recorder and the blank tape threaten profoundly the life-sustaining protection, I guess you would call it,

on which copyright owners depend, on which film people depend, on which television people depend and it is called copyright.

Because unless the Congress recognizes the rights of creative property owners as owners of private property, that this property that we exhibit in theaters, once it leaves the post-theatrical markets, it is going to be so eroded in value by the use of these unlicensed machines, that the whole valuable asset is going to be blighted. In the opinion of many of the people in this room and outside of this room, blighted, beyond all recognition. It is a piece of sardonic irony that this asset, which unlike steel or silicon chips or motor cars or electronics of all kinds — a piece of sardonic irony that while the Japanese are unable to duplicate the American films by a flank assault, they can destroy it by this video cassette recorder.

I say to you that the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone.

[T]his becomes a devastating problem for both advertisers and producers, who will get less for their programs on the air and that is what I am talking about. When less revenues are available to the networks and less revenues are available then to the producer — Mr. Ferris and his people will tell you, oh, the marketplace will adjust, as if some tooth fairy hovers over the place and says whenever you lose here, we will be glad to pay for it. Nobody pays for value they don't receive and that is an axiom of the business marketplace.

Brief for Motion Picture Studio and Recording Company Petitioners, *Metro-Goldwyn-Mayer Inc., et al., v. Grokster Limited,* January 24, 2005

Because so many people have joined Grokster and StreamCast, virtually all popular sound recordings are available for free on the service…

Grokster's and StreamCast's services are designed so that users can easily and anonymously connect with like-minded infringers…

Respondents' services inflict massive and irreparable harm because of the viral distribution they make possible. A copyrighted motion picture or sound recording in digital form – unlike prior media such as videotapes – can be copied and disseminated, swiftly and without degradation, an infinite number of times…

As a result, piracy of sound recordings has reached epidemic proportions. By some estimates, more than 2.6 billion infringing music files are downloaded each month. Empirical studies confirm that services like respondents' have caused a sharp decline in sales of music… Shipment of the "Top 10" popular albums dropped 50% over a three-year period. The motion picture industry suffers as well, with as many as 400,000 feature-length motion pictures – many of which are still in theaters – unlawfully downloaded each day. The damage will only grow as increased bandwidth allows users to transfer files more quickly.

Grokster and StreamCast also inflict a more insidious form of harm. Their services breed a culture of contempt for intellectual property, and for the rights of others generally in cyberspace. Respondents and those like them reinforce the notion that the direct infringement on their services is unobjectionable by proclaiming that the services are "100% Legal!" Respondents thus erode not only the public perception of the value of sound recordings, musical compositions, and motion pictures, but respect for the very foundations of copyright law in the digital age.

Looking back over the course of the twentieth century, Lawrence Lessig identifies four major changes in technology for the distribution of content – technologies of expression,[7] he calls them – that gave rise to a "piracy panic" – piano players, radio, cable TV, and the VCR.[8] In all four cases, policymakers resisted the call to lock down content or cast a long shadow of liability over technological innovation. In analyzing these twentieth century cases of content sharing in which policymakers refused to "condemn it to the gallows with the charge of piracy," Lessig identifies three separate economic benefits that were a counterbalance to the claim of copyright holders. He argues that all of these apply in large measure to peer-to-peer file sharing – "For (1) like the original Hollywood, p2p sharing escaped an overly controlling industry; and (2) like the original recording industry, it simply exploits a new way to distribute content; but (3) unlike cable TV, no one is selling the content that is shared on p2p services."[9]

There is a reason that "piracy panics" seemed to come faster and faster as the 20th century progressed and seemed to involve broader impacts on social and economic activity. Technological progress has accelerated and penetrated more deeply into all realms of social order. That is all the more reason to resist proposals that would burden innovators. While the recording companies and movie studios see peer-to-peer communications networks as a bane, other commercial activities see it as boon. The Supreme Court record in Grokster includes examples of applications that benefit from peer-to-peer across a range of industries including telecommunications,[10] software,[11] publishing,[12] advertising[13] and government services.[14]

Amici briefs demonstrate that the technology industries that would fall under the chilling shadow of copyright liability generate between ten and twenty times as much economic output as the content industries that are seeking to regulate technology development.[15] In short, the economics of the recording industry is a strong reason to reject efforts to regulate peer-to-peer technology with copyright, but it is the least important reason to do so.

This analysis starts with a careful understanding of the political reason to reject efforts to use copyright to regulate technologies of expression. It then proceeds to an analysis of the negative impact copyright-based regulation would have on technologies of innovation. Finally, we consider the case for copyright regulation of technology to protect the economic interest of recording companies and movie studios at the expense of consumers and artists. The argument for expanding copyright fails in all four analyses.

Even within that narrow context of industry economics, the case the recording companies and movie studios have made is not persuasive. The very same parties who were so grossly wrong in the early 1980s when they railed against the VCR are wrong today. Thus, even if the impact of these policies were limited to the

entertainment industries, the draconian measures pressed in the Court are not justified. The economic harm claimed does not justify such measures.

Creating a Surveillance Society in Cyberspace

Current efforts by recording companies and movie studios to use copyright to regulate technology pose a greater threat than in the past. The attack on technology goes far beyond previous attacks on the technologies of expression and innovation in part because the technologies go so much farther in empowering people to speak and create. The burden that copyright holders would place on peer-to-peer communications networks and innovators are truly remarkable.

The recording companies would fundamentally alter the nature of peer-to-peer communications networks to secure greater protection for their copyrighted materials by punishing technologies that facilitate file sharing, imposing technology mandates that inhibit file sharing, short-circuiting citizen rights to due process, and invading consumer privacy to speed lawsuits. They would create a surveillance society that casts a long shadow over freedom of expression and innovation.

They would force network operators to assert control over every bit of communication that takes place in the peer-to-peer communications network and, since these networks are coming to dominate the Internet, cyberspace itself. Indeed, they angrily disparage network operators for removing themselves from the conversation that the users of the networks have. In essence, they would make it illegal to refuse to install eavesdropping capacity in the networks. They would then require network operators to fingerprint every file, tag every user and monitor every transaction. They would hold technologists accountable, not only for what the users of those networks do, but also for anticipating what they might do.

The Importance of Peer-to-Peer Communications Networks and the Pervasive Impact of the Expansion of Copyright

To fully appreciate the threat that the expansion of copyright poses, we must consider its impact across several dimension of society (see Exhibit I-2). We identify four dimension of society – polity, social institutions, technology and the economy.[16] These parallel Lessig's four modalities of regulation[17] – law, norms, architecture and the market. More precisely, in each of these dimensions of society, social order is created by a principle of action or a constraining force. Individuals have multiple roles in society that are defined across these realms. They are citizens in the polity, people in social institutions, inhabitants of physical and virtual spaces, and consumers or producers in the economy.

Peer-to-peer communications networks enhance key aspects of social life in each of these realms. They facilitate expression and use. They stimulate and speed

Exhibit I-2:
Legal, Economic and Social Reasons to Reject a Tyranny of Copyright Expansion

Dimensions of Society	Modality of Regulation	Social Role	Central Value	Anti-Social Impact	Legal Authority to reject expansion of copyright
Polity	Law	Citizen	Expression	Gatekeeper	First Amendment
Social Institutions	Norms	Person	Fair & Customary use	Criminalization	Copyright Act First Amendment
Technology	Architecture	Inhabitant	Innovation	Regulator	Progress Clause
Economy	Market	Consumer	Production/ Distribution	Bottleneck	Copyright Act

innovation. They lower costs of production and distribution, enabling consumers to become producers.

The tyranny of copyright that the recording companies would impose would require a "hub and choke"[18] architecture on peer-to-peer communications that undermines each of the benefits of peer-to-peer technology. In short, the digital "piracy panic" has driven the recording companies to seek to freeze Internet technology at the client-server, centralized-index stage because it provides a useful control point to protect their interests. In so doing, they sacrifice the interests of:

- citizens, by inserting a gatekeeper in the realm of expression;
- people, by criminalizing and imposing surveillance on routine personal relationships;
- the public, by imposing a regulator on the environment for innovation; and
- consumers, by creating a bottleneck in the economics of prodcution and distribution.

In this sense, the recording industry is a classic example of a Luddite reaction to technological change. As *Webster's Third New International Dictionary of the English Language* describes them, Luddites were "a group of early 19th century English workingmen engaged in attempting to prevent the use of labor saving machinery by destroying it."

Fortunately, neither public policy nor law will tolerate this massive intrusion on the citizen/consumer. There is no legal basis for the courts to accept this tyranny of copyright. Indeed, the constitution and three centuries of jurisprudence lean in the opposite direction. Free speech requires copyright holders to not infringe on citizen rights of expression. Fair use rights and customary behavior require copyright holders not to intrude on legitimate personal relations. Promoting progress takes precedence over protecting copyrights. Consumers deserve an efficient, non-abusive marketplace.

There is one critical difference between the Luddites of the 19th century and the recording companies and movie studios of the 21st. Ned Ludd and his fellows were relatively powerless. The recording companies and movie studios are quite powerful and politically well connected.

Thus, the public must not be lulled into a false sense of security, even with a victory in the courts. "Piracy panics" are potent afflictions and copyright holders have been in a fever since the advent of the Internet and the emergence of digital technologies. Copyright holders rarely accept court decisions when the underlying laws can be amended to do their bidding. There will be protracted legislative fights before the digital piracy panic subsides. In order to protect their rights as citizens, people, and consumers, the public must become aroused and engaged to balance the immense monetary and political power of the recording companies and movie studios.

This paper is divided into four sections following this introduction. Although the central focus in the courts has been on recording industry economics, the other realms take precedence. Section II examines the expressive dimension of society – the polity and social institutions. Section III examines technology and innovation. Section IV examines the economics of peer-to-peer from the consumer point of view. Section V examines the economics of peer-to-peer from the artists' point of view.

II. TECHNOLOGIES OF DEMOCRACY*

Recent Congressionally enacted copyright extensions and new copyright enforcement technologies are altering the basis for democratic culture,[19] but the content industries' efforts to use copyright law to regulate multi-purpose information technology, rather than the use of technologies, would be an additional, severe blow to freedom of expression. It would reverse the fundamental premise on which our democracy has rested for three centuries.

The law in question is not just any law; rather, it is copyright law, which the Supreme Court recently has noted has an intimate connection to the cherished constitutional value of free expression.[20] Nor are the technologies involved ordinary ones. Rather they are what Ithiel de Sola Pool memorably dubbed the "technologies of freedom:"[21] the media by means of which members of free societies communicate and extend knowledge from print to the Internet. The Supreme Court has recognized that the Internet "enables tens of millions of people to communicate with one another and to access vast amounts of information from around the world. [It] is 'a unique and wholly new medium of worldwide human communication.'"[22] In particular, the World Wide Web is "comparable... to both a vast library including millions of readily available and indexed publications and a sprawling mall offering goods and services."[23]

The assault on technologies of democracy is also a dispute about striking the proper relationship between the private and public spheres. It raises profound questions about how far our society should go in projecting the state-conferred and constitutionally limited private monopolies into public fora where citizens rely on information and communications technology to enable personal expressive freedom.

THE ORIGIN OF FREEDOM IN TECHNOLOGIES OF EXPRESSION

In England, before the invention of copyright, powerful interests sought control over technology to perpetuate their private monopoly power over book production, and law often operated in ways that were inimical to the society's interest in free expression. Faced with the spread of the disruptive technology of movable type, the London-based publishers' guild cemented a deal with the state in which it obtained a collective monopoly in exchange for the obligation to police the unruly printing trade. In carrying out that obligation, the guild put a special emphasis on controlling the means of book production.

*/This section is based upon the brief *amicus curiae* filed in MGM v. Grokster on behalf of the Consumer Federation of America, Consumers Union, the Free Press, and Public Knowledge by the Glushko-Samuelson Intellectual Property Law Clinic, Washington College of Law, American University.

> By the early seventeenth century the Stationers' Company had become the English state's principal enforcement authority... Their officials carried out frequent searches in printing houses, shops and ships for books that infringed state textual controls, state-conferred monopoly franchise, and private intellectual property conventions. They had the power to fine members and non-members, to arrest apprentices who left their masters, to destroy types and presses, to imprison alleged offenders without trial, and to obtain the severest penalties from the courts, including death, for some publishing offences.[24]

In effect, the Stationers' Company exercised its delegated authority to check the spread of innovative information technology for the benefit of its members but to the detriment of readers, the "information consumers" of the day.

The parliament responded to this overt censorship of printing technology by rescinding the Stationers' collective monopoly. When it took effect in 1710, the first copyright statute ushered in a fundamentally new approach to the regulation of information production, fueled in part by the distrust of monopoly power characteristic of the early eighteenth century.[25] Like every copyright law that was to follow in Great Britain and the United States, the Statute of Anne focused regulatory authority on the *users* of information technologies rather than on the technologies themselves.[26]

Such monopolies die hard, however, and the publishers' guild was the first among many to try to turn the clock back on progress. The dramatic embrace of free expression, once legislated, was resisted in the courts. It was not until over half a century later, in 1774, that the issue was finally decided against the would-be monopolists.[27]

In the ensuing decades and centuries that followed, access to (and distribution of) print technology and consequently of printed works increased dramatically. Book prices fell, and a wider variety of books became available. The ultimate beneficiaries of these trends were the members of the reading public.[28] The Statute of Anne was understood then and since as a necessity to protect political expression, as communications technology was and remains integral to the public's ability to engage in political speech.

The American Approach to Anti-Monopoly

The Progress Clause of the Constitution starts from the premise that there is no copyright. Intellectual and creative works are born free of the monopoly of ownership. The Constitution then gives the Congress the right to create a limited monopoly, not to enrich authors, but to promote the public interest by creating adequate incentive to create and invent.

> Congress has the power to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

The Progress Clause and the Copyright Act of 1790 that followed soon thereafter were written at a time when the battle against the efforts of the London publishers to reassert their monopoly was still quite fresh in the minds of the Founders. The American Revolution was in one sense a revolt against such monopolies. The belief in the free flow of information was strong. As Thomas Jefferson wrote a quarter of a century after the Copyright Act:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been particularly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot in nature, be a subject of property.
>
> Society may give an exclusive right to the profits arising from [inventions] as an encouragement to men to pursue ideas which [sic] may produce utility, but this may or may not be done, according to the will and convenience of the society, without claim or complaint from any body.[29]

Almost two centuries later, the fundamental issue has not changed. In the Sony decision, the balance between private monopoly and the public interest remained central to the decision not to allow copyright to regulate technology.

> The monopoly privileges that Congress may authorize are neither unlimited nor primarily designed to provide a special private benefit. Rather, the limited monopoly is a means by which an important public purpose may be achieved. It is intended to motivate the creative activity of authors and inventors by the provision of a special reward,

and to allow the public access to the products of their genius after the limited period of exclusive control has expired.[30]

In *Sony Corp. v. Universal City Studios*, *Inc.*[31] the Supreme Court refused to find Sony guilty of copyright infringement for merely manufacturing the Betamax (VCR). Called the *magna carta* for the digital age, the case restates the historic disengagement of copyright law from technology regulation. Behind the principle is the same policy implicated in the British legislation of 1709 and the United States Copyright Act of 1790: the scope of the copyright monopoly is to be restricted to preserve "the rights of others freely to engage in substantially unrelated areas of commerce."[32] And, as the Betamax opinion makes clear, this principle is of special importance where clear future benefits will flow to information users if the challenged technology is not enjoined.[33] This venerable rule of general applicability, dating back to the first British and U.S. copyright statutes, has benefited the public by creating the legal conditions for rapid, widely accessible innovations in information and communications technology.

The thrust of the Progress Clause against monopoly and in favor of technological progress is reinforced by the First Amendment. The First Amendment is based on the implicit premise that freedom of speech is best fostered by a bustling and vibrant marketplace of ideas. As vendors have moved from the soap box to podcasting, from UHF to HDTV, and from dittos to digital scanning, technological innovation has consistently extended the marketplace to such indispensable realities as improved education, greater entrepreneurial efficiency and enriched artistic expression. Throughout the history of copyright, despite a series of "piracy panics" characterized by fears that new modes of reproduction and communication might undermine the structure of incentives embedded in the copyright laws, courts have held firm to the core principle of the Statute of Anne: that copyright should regulate the users of technology rather than technology itself.

The Supreme Court has 56 briefs before it in the *Grokster* case arguing about what the bright line test in Sony means. The briefs leave no doubt that the recording companies and movie studios want to move that line radically in their favor, so that technological innovation falls under the control of copyright. We are confident that the Supreme Court will turn down the invitation to legislate a new balance in copyright law. This paper shows why such a change would harm citizens, people, the public and consumers. It is intended in preparation for the inevitable debate that the copyright holders will push in Congress, after the Supreme Court turns them down. The best place to start is with a review of the history of "piracy panics." For, while it is certainly true that being wrong in the past is no guarantee that the industry will be wrong in the future, the consistent record of failure to predict how their own industry will be affected establishes a trend that demands attention.

The History of Piracy Panics

From the 1790's to the 1980's, even as the judge-made law of secondary liability for copyright infringement burgeoned in the courts of the United States,[34] no reported case involved a copyright owner's challenge to a technology designed to facilitate the recording or exchange of information.[35]

In the 1870's, as the transmission of news by the new medium of telegraphy became a matter of increasing public interest and commercial concern,[36] disputes broke out between news organizations about the theft by telegraphy of valuable financial and other data. Eventually, these issues were resolved in decisions imposing sanctions on predatory *conduct* under the common law of misappropriation (both state and federal), while protecting this powerful technology and emphasizing that it was capable of both good uses and misuses.[37]

A few decades later, as described in the dire predictions of John Phillip Souza (cited in Exhibit I-1), when mechanical players came upon the scene, we encounter the first modern technological revolution that caused a "piracy panic" in the music industry. Developers of this technology were never found guilty of infringing copyright.[38] While copyright was not allowed to regulate technology, Congress did step in to afford copyright holders relief by imposing a compulsory license, which allowed competitors to use copyrighted materials without permission, as long as they paid the fee. This system balances the need to reward creators with the need to prevent the copyright monopoly from restricting the public's access to the material.

A few decades later, concerns were raised about widespread "piracy," carried on by means of new technology within the fledgling film industry According to one authority, "[p]iracy in the film industry through the period lasting until near the onset of World War I was rampant. Most of it was committed by one film production company against another."[39] "As audiences grew tired of rival film versions of Niagara Falls . . . and so forth, producers turned to comic episodes and then began to steal each other's plots . . . made 'dupes,' and sold them under new titles."[40] Production companies enthusiastically participated in infringing practices, especially when competitors failed to register their copyrights.[41] In addition to competitors' plots, production companies based films on newspaper stories and comics[42] as well as a range of literary sources.[43] Some early film producers brought lawsuits against others who copied from or duplicated their works.[44] But it was not until the Supreme Court's 1911 decision in the *Kalem* case that intellectual property law was deployed to discipline the creative side of this unruly young industry.[45] That discipline consisted of regulating *how* technology could be used in the film industry, not *what* technology could be used.

In the 1920's, the new technology of radio threatened a music industry whose income depended on live performances, sheet music sales and (increasingly) the

distribution of mechanical sound recordings. The capability of radio to broadcast live and pre-recorded music to large audiences put all of these sources of revenue at risk. So, as one authority of the history of the music industry put it, "most people believed that the recording companies were really more interested in terminating all radio-station use of records than in collecting fees."[46] At the behest of the industry, the federal government set a policy of "grant[ing] broadcast licenses only to stations that promised not to play records [although] practically speaking most stations never really stopped playing them."[47] In the end, the interest groups compromised with a system of collective licenses for the performance of music, creating organizations like ASCAP and BMI. This resolution, and the benefits it would bestow on the industry and the public at large, would never have come about had recording companies been able to enjoin a critical part of the new medium's potential functionality. Under the principle of secondary liability that would receive its fullest articulation in *Sony*, however, they could not do so; at best, they could (and did) attack the misuse of technology by radio stations that broadcast music without licenses.[48]

Forty years ago, photocopying was the focus of yet another "piracy panic." The 1935 "Gentleman's Agreement" (or "Reproduction of Materials Code") negotiated between libraries and publishers was breaking down under the pressure of technological change, "in large measure because of the volume of photocopies made possible by the Xerox photocopier."[49] Experts were predicting dire consequences for authors and the copyright system in general.[50] Significantly, however, in all the arguments about photocopying that occurred in the years preceding the general revision of U.S. copyright law in 1976, publishers never suggested that the technology itself should be modified (or access to it regulated) to reduce the threat to their revenues. Not only did the social benefits of photocopying technology put such an approach practically and politically out of reach, but also the traditions of copyright law offered no support for it. Publishers could and did challenge the *use* of photocopies in libraries, schools and businesses,[51] but the technology itself was sacrosanct. Ultimately, the "photocopying panic" was resolved by a mixed solution, including legislative clarification of the scope of "fair use," provision for ongoing supervision of library photocopying practices, and – crucially – the creation of a private mechanism (the "Copyright Clearance Center") for the collective administration of copyright owners' rights in the field of reprography.[52] This latter feature parallels the creation of the performing rights organizations that mediated the end of the crisis provoked by radio broadcast of recorded music.

At roughly the same time that the photocopying "piracy panic" was playing out in the world of print media, copyright holders attacked the new electronic video media – cable TV – as an infringing technology. The Supreme Court twice refused to find the retransmission of broadcast signals an infringement.[53] Ultimately, Congress stepped in with a compulsory licensing approach. Such an approach provides an economic reward to creators, while preventing a copyright holder from abusing its monopoly power.

Although there are credible, well-developed proposals for a similar resolution to our contemporary "peer-to-peer panic,"[54] the copyright industries have so far preferred to litigate rather than to negotiate. Technological responses by content proprietors may proceed through several iterations and phases – a process with which courts should be loathe to interfere. Music copyright owners were the first to profit from consumer digital technologies by launching prerecorded products in the Compact Disc format (invented and introduced by Sony and Philips) in the early 1980s.[55] When later in the same decade they saw Digital Audio Tape recorders as a threat, music publishers filed suit against Sony for introducing this product as well.[56] They then negotiated and secured passage of the Audio Home Recording Act,[57] and the suit was dismissed.[58]

When personal digital music players were introduced, music interests filed and lost a suit under the AHRA.[59] They then began to apply "anti-copy" technology to control "ripping" from Compact Discs,[60] and to license new formats in which the digital audio is encrypted.[61] Finally, as a parallel with what occurred in the VCR market, they began to offer paid music services, such as *iTunes*, to take advantage of the market for portable music players – the very market that was established by the technology they initially sought to control. These developments were possible because, under the *Sony* principle, these multi-purpose consumer technologies could not be suppressed.

The assault on digital appliances has been particularly intense and unrelenting. Copyright holders have responded instantly and intensively to devices such as MP3 players,[62] DVRs,[63] not to mention software such as search engines.[64] Sheltered, to date, by Sony, but harassed by the recording industry practice of litigating first and asking questions later, the technology pot has continued to boil, much to the benefit of the public.

The Unique Role of Digital Communications as a Technology of Democracy

The resolutions of past "piracy panics" in favor of preventing copyright from suppressing expression shares a central theme. Consistent with free-speech ideals, technological innovation historically has progressed via the mechanism of consumer access leading to grassroots quality control and "R&D." As reflected in important fair use decisions, including the Sony decision itself, technological innovation often originates in minds freshly exposed to the work of others.[65] In addition, a technology's original producers often only become aware of improvements after consumers test their products.[66] Greater access to technology also has had the socially desirable effect of expanding the market to which entrepreneurs might cater. Correspondingly, the competition to obtain greater shares of a growing market leads to more efficient distribution of resources and to incentives for improving existing technologies and services.[67]

More than ever, digital communications over the Internet allow individuals to communicate and express themselves. "P2P enables a single node to spread its digits far and wide, without being overwhelmed. This is the substance of freedom of speech in cyberspace, a kind of First Amendment of the Net. This is media democracy, every node capable of communicating with every other."[68] While the recording companies and movie studios attempt to paint peer-to-peer overwhelmingly as a machine for copyright infringement, it supports a wide range of uses and forms of expression that are perfectly legal and socially beneficial.

The remainder of this paper will explain the technological and economic reasons why peer-to-peer has evolved as a central technology on the Internet. The Creative Commons *amicus* brief points out the critical First Amendment implications of the technology. Reminding the Court that the Sony decision cited Fred Roger, of "Mister Rogers Neighborhood," who supported a technology that made it easier for families to tape his copyrighted content, at least for "noncommercial use,"[69] Creative Commons notes that "the Internet has produced millions of 'Mister Rogers.' Millions offer their creative work on the Internet for free. Millions invite others to build upon and share that work, without first requiring permission from them."[70] Peer-to-peer technology has become the enabler of their speech because "a growing number of these millions use the technology at issue in this case... to disseminate their work. For many of them, effective dissemination would be impossible without p2p."[71]

> Much of the discussion about p2p technologies has assumed that the speech effects of any decision in this case will be trivial. This assumption is false. For large video and audio files – which will comprise an increasingly important category of Internet speech – p2p networks are the *only* economical method of distribution for many commercial and noncommercial speakers. For this class of content, the "cheap speech" virtues of the Internet – virtues that this Court found so central to First Amendment analysis of Internet issues – are at risk from a decision that burdens p2p technologies.[72]

The central characteristic of P2P technology "enables a kind of speech that would otherwise be economically infeasible."[73] It empowers the least powerful to speak, a central concern of the Court,[74] in the most compelling way, with the dissemination of video content. "This architecture of distribution enables many who otherwise could not afford the costs of client-server distribution to distribute creative work. It thus opens a channel for communications that otherwise would not exist."[75] "While the Internet may have been a revolution for 'cheap speech,' 'cheap speech' for video will exist only if p2p technology is common.[76]

This technology becomes the vehicle for the community meeting, door-to-door advocacy, campaign yard signs and billboard of the digital age. "Community colleges could use p2p technologies to aid distance education. Religious leaders could use

p2p technologies to spread sermons. School boards could make video of regular board meetings available using p2p technologies – rather than running a radio station for that purpose... Political campaigns could enable the cheap distribution of campaign ads."[77]

Non-commercial activities benefit greatly from the reduced costs of communications. Individuals can exchange a vast array of materials. Self-published, public domain and authorized non-musical works are exchanged in peer-to-peer networks.[78] However, it is a mistake to focus only on the content. The activities that peer-to-peer communications networks engender are even more important. Political speech has been fostered for candidates[79] and citizens,[80] not to mention dissidents living under authoritarian regimes.[81] Journalists[82] and media critics[83] have turned to peer-to-peer to enrich their documentary and commentary activities. Educators,[84] librarians,[85] historians and archivists[86] find that peer-to-peer greatly expands their ability to catalogue and make available informative materials.

Thus, it is safe to say that "as a speech-facilitating technology, p2p software implicates important First Amendment interests that must be considered when applying copyright doctrine to the technology."[87] The Supreme Court has noted the enhanced ability to speak on the Internet. Peer-to peer networks enrich that ability to speak in important ways. These networks encourage not only exchange, which so concerns the recording industry, but also viral communications and collaboration.

Some musicians and politicians, not to mention commercial companies, have begun to discover the second relationship – the ability of information and ideas to spread virally among members of peer-to-peer networks. Viruses spread autonomously by infecting neighboring individuals who are susceptible to the message. Action-oriented individuals can seek out and influence others.

Humans infected by ideas can go one step farther. Like-minded people can find each other and form communities, encouraging and reinforcing action. Exchange and/or viral communication can serve as a launch pad for collaboration, resulting in new, joint products. Consumers become producers, fulfilling the aspiration of the First Amendment and returning the nation to the digital age equivalent of its pamphleteer origins.[88]

Social Relations of Use

For the recording companies, technologies that facilitate exchange breed "disrespect" for the law. On the contrary, a good case can be made that the attack on fair and customary use ignores the rights of people to use legally obtained content as they always have,[89] not to mention the pervasive denial of due process and intimidation in which the recording companies have engaged in their frenzy of lawsuits.[90]

In Grokster, several sets of *amici* have argued that the broad-based attack on fair use undermines routine social relations of exchange. They suggest that public policy and the courts should recognize fair use by consumers.[91] As one set of *amici* point out,[92] the recent "piracy panics" have played out in the realm of secondary liability without a close and detailed analysis of actual downloading behavior. Contrary to assertions of the recording companies and movie studios, whether a use is fair or foul has not been examined carefully.

Although the recording companies would like to have us believe that any unauthorized download is an infringement, neither law nor social norms takes that view. On the contrary, "much of the unauthorized sharing of copyrighted works through P2P networks constitutes a fair and hence noninfringing use."[93] The bottom line that emerges from this view is quite different from the accounting presented by the recording companies. "While P2P may decrease copyright owners' revenues somewhat more than home videotaping, P2P also generates a far more substantial, even radical, expansion in access to existing works."[94]

> For more than two hundred years, no copyright owner successfully asserted an infringement claim against an individual who without authorization copied a work for his or her own personal or private use... Yet, in the last four years, virtually overnight, millions of Americans found themselves branded criminals and threatened with outrageous penalties and personal bankruptcy for conduct that has been widespread and accepted for almost fifty years. This radical change in the law came not from Congress or our elected representatives, nor from judicial proceedings in which these citizens had the right and opportunity to be heard. Rather, this change came from judicial proceedings strategically orchestrated by copyright owners to exclude the relatively sympathetic P2P users in order to focus judicial ire on the relatively unsympathetic P2P service providers.[95]

These *amici* suggest that, taking personal, private, noncommercial use into account, a substantial amount of downloading of music is non-infringing.[96] Included in that quantity is a subset of downloads that is authorized. Hundreds, if not thousands, of musicians have made thousands of titles available. They see it as a means of communicating directly with and stimulating interest and support from their audiences. Similarly, the count could well include works in the public domain, which require no authorization.

Lessig uses a somewhat different line of reasoning to explain our current situation, but the end point is roughly the same. He argues that a wide range of uses that were unregulated and therefore widely practiced have now become regulated because of the technical legality of digital use and the ability of technology to enforce copyright. There was a wide range of:

> uses that involve copying, but which law treated as unregulated because public policy demands that they remain unregulated... Unregulated uses were an important part of free culture before the Internet.... But the law now purports to regulate any transformation you make of creative work using a machine. "Copy and paste" and "cut and paste" become crimes...
>
> Never in our history has a painter had to worry about whether his painting infringed on someone else's work; but the modern-day painter, using the tools of Photoshop, sharing content on the Web, must worry all the time. Images are all around, but the only safe images to use in the act of creation are those purchased from Corbis or another image farm. And in purchasing, censorship happens.[97]

Lessig does not believe that the "fair use" category can expand to bear the "extraordinary burden that fair use never before had to bear... A thin protection grounded in fair use makes sense when the vast majority of uses are *unregulated.* But when everything becomes presumptively regulated, then the protections of fair use are not enough."[98]

To capture the breadth of these two ideas we might argue that fair and customary, unauthorized use has not been illegal. Thus, neither law nor social norms support the recording company efforts to subjugate technologies of expression to the gatekeeping or surveillance the tyranny of copyright would entail.

The Flowering of Peer-to-Peer Technology Expands Speech

The Supreme Court record contains numerous concrete examples of the important contribution of peer-to-peer communications networks to this political discourse. Each discussion of the impact of peer-to-peer technology will conclude with a brief account of *some* of the concrete examples of the non-infringing uses of this technology and the political, social and economic benefits that flow from these uses.

The American Civil Liberties Union, et al., point out that there are already 10,000 times as many files available on peer-to-peer networks as there are volumes in the Library of Congress. It is simply not economic to make such huge quantities of materials available to the public at large in any other way.

> Peer-to peer networks are also being used by individuals to express and disseminate their political views and beliefs to as many people as possible, and to provide the public with vast amounts of government information and political speech....

> Congressional hearings are now being made available to the public via peer-to-peer networks. Some of these hearings, while broadcast live, are not recorded by the government; peer-to-peer technology enables interested individual to record the hearings themselves and efficiently (and cheaply) make them available to others. Similarly, recording of oral arguments before this Court are being digitized and made available on peer-to-peer networks.[99]

> P2P technologies are also important for distribution beyond video. The recent announcement by Google of a project to digitize 20,000,000 books form major libraries around country highlights one important limitation on such project that p2p technology might help solve... High quality digital scans of books are very large files. A single 300 page book, for example could produce a 2 gigabyte file. The cost of serving such files through the traditional client-serve model is prohibitive for many libraries. But were p2p technologies common, scanned public domain books could be made available through many digital library projects, as well as large file archive resources, such as scans of original and ancient texts...[100]

Creative artists have found this technology extremely important in expanding their opportunities to express themselves and encouraging other to do so.

> P2P technologies have also inspired creators to offer their creative work in new and different ways. Filmmaker Robert Greenwald, for example, has made the source interviews for his latest documentary available for free download using bitTorrent technology. ... These interviews are licensed under a Creative Commons license that invites other filmmakers to use the interviews to make their own films. Thousands have downloaded these source files, made available through LegalTorrent, a BitTorrent site. The bandwidth costs have been 0.4% of the total bandwidth costs incurred by this distribution... Without this savings, it would not be economically feasible for Greenwald to make this source material available on the Internet.[101]

Musicians are using peer-to-peer communications networks as a means of political expression as well.

> Mr. Smith believes that peer-to-peer technology is essential to democracy. By providing an alternative to traditional distribution channels, P2P networks reach audiences hungry for politically minded, though less mainstream, music. His song “The Bell” was released as a free MP3 on the Internet and became the most-played antiwar song on American radio in the run up to war with Iraq. Added to the playlists of

> over 150 stations nationwide, the song emerged from P2P networks to be printed over 200,000 times on various albums and compilations worldwide.[102]

CONCLUSION

A recent article commemorating Sol Linowitz, involved in the founding of Xerox, reminds how important technologies of expression are and how important it is to resist the efforts to regulate technologies of expression with copyright law.

> According to David Owen, whose book "Copies in Seconds" (2004) traces the history of the Xerox machine, the effect on human communication of xerographic copiers is comparable to that of Gutenberg's printing press. "It has given ordinary people a simple means of reproducing and sharing printed information, and, by doing so, it has reduced the ability of the strong to keep secrets from the weak. (Without photocopying, there could have been no Pentagon Papers, for example.)"[103]

The Internet certainly ranks with these inventions in the pantheon of technologies that expand speech, and peer-to-peer communications networks deserve to be seen and treated as a natural evolution in this long line of technological developments. The Creative Commons brief cites a concurrence by Justice Kennedy in *Ashcroft v. ACLU,* identifying a remaining obstacle to speech: "it is easy and cheap to reach a worldwide audience on the Internet, but expensive if not impossible to reach a geographic subset."[104] As the remainder of this paper shows, peer-to-peer technologies attack this remaining obstacle to expression by creating searchable and decentralized networks that can move large files at very low cost to self-defined communities of peers.

III. TECHNOLOGIES OF INNOVATION

BEHAVIORAL PROBLEMS CAUSED BY COPYRIGHT ASSAULT ON INNOVATION

The analysis in this section emphasizes the threat that the digital "piracy panic" poses to the structural conditions for innovation in digital communications networks by explaining the fundamental change in innovation that has resulted from open, decentralized communications networks. This is in contrast to most of the debate in the Grokster case, which devotes an immense amount of attention to the behavioral conditions for innovation. That is, the respondents in the case and about two dozen *amicus* briefs describe in great detail the long shadow and chilling effect that the threat of liability will have on the behavior of innovators. Liability risk will drive innovators away and slow those that remain.

> Imposing on innovators, such as Intel, an obligation to anticipate potential uses of their innovations, to correctly guess which uses will predominate, and then to design their technologies to prevent infringing uses (even it if it were technically and practically feasible to do so) would stifle innovation and dramatically increase the cost of such technologies and other consumer and enterprise products based on those technologies. This would result in timidity in innovation and would not serve the copyright law's purpose of encouraging innovation for the benefits of the public and U.S. economy.[105]
>
> If petitioners' theories are adopted, virtually all digital technologies will be subject both to advanced clearance by a small group of content conglomerates and to after-the-fact second guessing by virtually any copyright owner about how the technology was designed and how it is being used. If a technology provider guesses wrong, it will be subject to potentially ruinous statutory damages. Innovation and investment cannot survive in such an environment.[106]
>
> Under this regime, federal trial courts would assess the worthiness of a neutral technology *de novo,* and wherever believed to be appropriate for "optimal" enforcement of copyright in currently implemented business models, order the deformation or redesign of the technology to attempt to limit the amount of infringing use. Each assessment would require the estimation, weighing and balance of a panoply of fact-specific and highly speculative "factors." In actual practice, such a regime would create immense and continuing uncertainty as to the legality of innovative products, and require complex litigation, if the innovator could afford the risks. Such a regime would impose a huge new "tax" of litigation expense and legal uncertainty on the

development and supply of a vast range of new technologies, introducing a non-trivial drag on the Nation's economic growth.[107]

This negative behavioral effect on innovation is readily apparent and serious. However, the structural harm that the tyranny of copyright would do is more profound, precisely because it seeks to impose a structural requirement on peer-to-peer communications networks. The recording companies and their supporters have claimed that it is possible to impose a client-server, central-index, filter structure on peer-to-peer communications networks, but they ignore the damage that would do. The insertion of centralized elements destroys the architecture. Obsessed with copyright above all else, they are blind to the fact that network architecture has evolved away from the centralized structure for sound design and economic reasons. They see only a conspiracy to undermine their rights, where network efficiency is the driving force behind architectural design.

What will be lost in network architecture, should the recording companies succeed, may be more important than what is lost in entrepreneurial behavior. "Timidity in innovation" behavior is damaging, but it may be less harmful than rigidity in the environment for innovation. The ultimate irony is that the filtering approach the recording companies advocate is not likely to have the desired effect on the vast majority of "piracy," but it is likely to chill innovation.[108]

A close look at the characteristics of the digital communications networks that make them so powerful in promoting innovation is important because the effort of the recording companies to freeze technology undermines exactly these vital traits of the emerging peer-to-peer communications networks.

Communications Networks as the Seedbed of Innovation

Peer-to-peer networks, especially in their most recent form, are a perfect example of Internet architecture. They are decentralized communications networks that rely on distributed intelligence. They promote direct communication between users at the edge of the network.

The success of the Internet has stimulated a deepening examination of the key elements of network architecture that create robust environments for growth and innovation. Decentralized, distributed networks grow and establish structures according to rules that foster efficiency. The expenditure of time and effort (energy) to accomplish a task are critical factors in efficient structures. Networks gain robustness by creating links that reduce effort, popularly called shortcuts.

Searchability is a critical and "generic property of social networks."[109] Searchability is facilitated by paying attention to one's neighbors (chosen by preferential attachment).[110] "By breaking the world down the way we do – according to multiple simultaneous notions of social distance – and by breaking the search

process itself down into manageable phases, we can solve what seems to be a tremendously difficult problem with relative ease."[111] Duncan Watts describes a special characteristic of robust networks that result from balancing these architectural principles as "multiscale connectivity," and the network architecture that exhibits superior performance as an "ultra-robust" network.

Searchability is one of the key advantages of multiscale networks because "in ambiguous environments, information congestion related to problem-solving activities causes individuals – especially those higher in the hierarchy – to become overburdened. The local response of these individuals is to direct their subordinates to resolve problems on their own by conducting directed searches."[112] Watts argues that "[w]hen problem solving is purely local, requiring messages to be passed between members of the same work team, for example, or subscribers to the same ISP, congestion can be relieved effectively by a process that corresponds to *team building*."[113]

> Lacking a central directory of organizational knowledge and resources, the subordinates rely on their informal contacts within their firm (or possibly in other firms) to locate relevant information... A direct consequence is that the internal architecture of the firm is driven away from that of a pure hierarchy by virtue of the new links that are being formed and consolidated over many repeated searches.
>
> The equilibrium state of this process is a multiscale network for the simple reason that only when the network is connected across multiple scales is individual congestion – hence the pressure to create new connections – relieved... the process of ties at multiple scales also renders the network highly searchable, so that the multiscale state becomes effectively reinforcing.[114]

Albert Barabasi notes that the Internet "evolves based on local decisions on an as needed basis... The underlying network has become so distributed, decentralized, and locally guarded that even such an ordinary task as getting a central map of it has become virtually impossible."[115]

Networks are critical to innovation, which "spreads from innovators [nodes] to hubs. The hubs in turn send the information out along their numerous links, reaching most people within a given... network."[116] Most importantly, "the structure of the network can have as great an influence on the success or failure of an innovation as the inherent appeal of the innovation itself."[117] Effective adoption of an innovation requires the ability to search the network for solutions and synchronize the modules when one is found.[118] "Routine problem solving both balances the information-processing burden across the individuals of an organization and sets up the conditions under which exceptional problems can be solved."[119]

Recent analyses of technological innovation provide strong evidence that the digital communications platform transformed the very fabric of the innovation process.

> von Hippel notes that greater efficiency can be achieved by dividing the overall problem-solving effort into tasks, showing maximal interaction within them and minimal interactions across them. In doing so, one can reduce one fundamental source of inefficiency, notably that actions in one particular innovation stage or activity may require information or even exchanges of actions in several other innovation stages or activities.[120]

Technological innovation is an information problem that challenges the network structure. There are two hurdles. First, knowledge is local and flowing it through hubs to solve problems creates inefficiency (uses energy). Second, the possibility of failure increases as the number of interrelated problems that must be solved sequentially increases, because of dependence on multiple solutions to problems across numerous nodes. The solution to the problem is to distribute responsibility, thereby reducing the amount of information that must flow through the network to solve the problem.[121] The parallel to the network problem is quite strong. Efficiency in technological innovation comes by breaking the problem down and solving it at the "local" level because local information is the ultimate source of the solution. The solution is efficient as long as one economizes on the need to flow information up through the hierarchy. The "changing technology of technical change"[122] is driven by changes in information and communications structures.

The technological revolution of the late twentieth century has altered the information environment to make distributed solutions more feasible. The uniquely user-focused character of the communications-intensive Internet solution recurs. Eric von Hippel argues that "the primary irreversible factor that we speculate is making user-based design an increasingly attractive option is technological advance."[123] Ashish Arora et al. note that "the recent evolution of technology and knowledge bases... has created greater opportunities for task portioning."[124] This allows greater local autonomy in decision-making. "Specifically, the main force behind the changing technology of technical change is the complementarity between increased computational power and greater scientific and technological understanding of problems."[125]

Arora et al. argue that the "changing technology of technical change" allows technological innovation to move outside the firm; others argue that the form of organization changes as well:

> [M]odularity in product design brings about modular organizations... the standard interfaces of a modular design provide a sort of "embedded

> coordination" among independent firms and innovators, which can coordinate their activities independently of a superior managerial authority. ... [M]odular systems that are also open (i.e., where the interfaces are not proprietary standards) make market leaders more vulnerable to competition. While modularity can accelerate overall product innovation, because of the contribution of several specialists, the presence of many specialists can also lead to tougher competition and greater entry.[126]

As hierarchical modularity in the network replaces vertically integrated hierarchy in the firm, complex digital platform industries have benefited from open network approaches:

> The open system approach fuels the growth of many smaller innovative firms. The presence of several firms for each subsystem or component, and the narrow focus pursued by each firm will lead to higher degrees of experimentation and innovation with a faster rate of technical progress.[127]

The most successful firms and regions take on the characteristics of layered multiscale networks.[128] We could look to a variety of high technology industries to find examples of this process, but we should not be surprised to find that the best examples come from the components of the digital information platform. Interconnection and interoperability to maximize the availability of functionality have been the hallmarks of the open architecture of the digital communications platform.

> These are *enabling technologies.* They contain valuable content or information that probably could have value (i.e. price) in the marketplace. But protecting that content, such as by hiding the detailed specifications of the hardware or software interfaces, would defeat their entire *raison d'etre:* Interfaces exist to entice other firms to use them to build products that conform to the defined standards and therefore work efficiently with the platform.[129]

As a recent review of technology innovation concluded:

> Given that use innovation is welfare enhancing, policymakers may find it useful to encourage product (and process and service) development and modification by users followed by free revealing... public policy should think about how to strengthen users' incentives both to innovate and to freely reveal their innovations when this behavior is not already present due to insufficient reward... Technical barriers inserted by manufacturers... can slow or prevent other forms of user activity such as innovation by users.[130]

WHY THE CHARACTER OF DECENTRALIZED PEER-TO-NETWORKS SHOULD NOT BE UNDERMINED

Economists debate whether certain major technological changes – the steam engine, electricity, the Internet – are general purpose technologies, depending on the extent of the change in economic and social activity that they occasion.[131] Whether the Internet deserves that classification remains to be seen. Peer-to-peer networks are only one of the many changes the Internet has made possible. It is certainly a broad purpose technology having many applications.

> More fundamentally, P2P technology – like the Internet itself – is a generic platform technology that enables many other uses and applications. Unlike the VCR in *Sony,* P2P is infrastructural in that it generates value by being used as an input to a wide range of productive processes, the output of which are often public and non-market goods that generate positive externalities which benefit society. P2P is also "generative" in the sense that it has a great capacity to produce unanticipated change driven by broad, varied audiences based on fundamental characteristics such as its ability to make a wide range of tasks easier, its adaptability to a range of different tasks, its ease of mastery by both tinkerers and consumers, and its accessibility and ease of distribution.[132]

To describe the way the Internet moves information, Vinton Cerf uses a postcard analogy. Bits of information are put on separate postcards and the underlying architecture of the Internet allows the information to flow and be reassembled at the receiving end. This allowed for the decentralization of communications.[133] Eben Moglen, writing on behalf of the Free Software Foundation in the Grokster case, describes peer-to-peer communications networks as a "'bucket brigade' communal approach to distribution."[134] The vastly greater capacity of peer-to-peer communications networks, suggested by the much larger carrying capacity of a bucket than a postcard, constitutes a major advance. In fact, the immense carrying capacity of the current generation of peer-to-peer communications networks exists precisely because they are decentralized. The decentralized nodes that communicate have become buckets, but their value can only be realized if they can communicate directly with one another.

It is critical to recognize that the development of peer-to-peer technology is not some aberrant branch of Internet development that can be lopped off without doing damage to the health of the total organism.

> The *Sony* case is being re-played in the instant case, with decentralized PtP networking software assuming the VCR's role. But to avoid the compelling VCR analogy, Petitioners mistakenly imply that decentralized

> PtP information sharing is a recently invented "rogue" product, confected merely to evade copyright infringement liability. They assume that, in the interest of "cost efficiently" protecting copyright, courts may order this technology to be distorted or degraded to conform to a centralized, hub and choke point design to enable "filtering" of copyrighted content without adversely impacting "legitimate" technologies.
>
> As a matter of impact on the future economy, there simply is no truth to this assertion. In fact, decentralized PtP technologies for the direct exchange of information between and among disparate databases constitute a mainstream and respected implementation of PtP network architecture, as old as the Internet itself. They serve many economically important current uses and hold the capacity for additional dramatic advances...
>
> Such a regime effectively would outlaw many of the technological leaps that PtP technologies represent. The result would be a court-ordered detour out of the Internet age, contrary to the object of the intellectual property laws to advance the progress of arts and science for the general benefit of the public.[135]

The critical threat to peer-to-peer technology in the demands of the recording companies is the threat to the deeply embedded architecture of the network. The essence of the Luddism in the record company rant against peer-to-peer is symbolized by its effort to freeze the Internet at the state of client-servers, central-index architectures that can filter and control access. The result would be "Hub and Choke" design.

On the supply side, peer-to-peer communications networks are efficient, robust and scalable. The central servers, though, quickly became economic bottlenecks. As long as principles of open architecture prevail, efficient solutions will economize on scarce resources by exploiting more abundant resources. As hardware and communications costs declined and larger, faster PC's penetrated the market, the design principles of the Internet made it inevitable that software would seek to escape the central server bottleneck by tapping into the abundant resources that are now available on the edges of the network.

By building multi-level connectivity that adds redundancy, the network becomes more robust. By adding points of communications, it becomes more scalable. This is the sense in which the effort by the recording companies to pick a point in the evolution of the digital communications platform and freeze development there is Luddism pure and simple.

As noted above, on the demand-side, peer-to-peer communications networks encourage three different forms of relationships directly between individuals – exchange, viral communications and collaboration. The recording companies lament the fact that these networks facilitate exchange between individuals. The searchability of the network and the direct relationships between nodes undermines control over exchanges between equals. As the capacity for networks to facilitate exchange increases, they exhibit classic demand-side economies of scale, or network effects. However, peer-to-peer networks exhibit much more. Viral communications and collaboration enhance the ability to market and expand the ability to innovate.

The Flowering of Peer-to-Peer Technology Benefits the Economy

The speed with which peer-to-peer networks have spread is testimony to the power of the technology. The ultimate impact of this technology will be determined by the myriad of applications to which it gives rise. The Supreme Court record is filled with non-music applications. (Examples from individual musicians will be provided after the discussion of the economics of that industry in Section V.)

Efficiency:

> BitTorrent allows a large number of computers that have a file to share in copying it to a person seeking it. Because the sharing is simultaneous (each computer that has the file transfers a portion of it at the same time as other computers that have it) the transfer can avoid or lessen bottlenecking that occurs if the entire file is copied from a single computer.[136]
>
> Consider for instance, the recent catastrophe caused by the Indian Ocean tsunami. Shortly after the disaster hit, websites across the world started facilitating the sharing of video files collected from witnesses to the disasters. These files were large and they would have been extremely expensive to distribute by a traditional web-hosting method. Many of the providers of this content thus chose to use p2p technologies to enable the free spread of this urgent, and dramatic, content. Using BitTorrent, for example, one site was able to serve over 150 GB of content at a bandwidth cost of just 1.26 GB – approximately 0.8% of the total cost of distribution.[137]
>
> *Amici* include Internet-based libraries and libraries that provide traditional and network-based services. *Amici* seek to maximize literacy, education and entertainment through the distribution of information to the public. Peer-to-peer systems such as Grokster can be of critical assistance in achieving these goals.... For example... Project

Guttenberg's goal is... by 2013... over 1 million titles will be part of the collection and available to the public....

Peer-to-Peer networks also play an important role in the Internet Archive's effort. The Internet Archive is an attempt to create an "Internet Library" to offer permanent digital access to historical collections, many of which are no longer available through traditional publishers. The amount of material available through the Internet Archive is enormous. The Internet archive currently hosts about 60,000 books, music, software and video items. Approximately one terabyte of data is downloaded from the Internet Archive each day...

For *amici,* traditional web-based distribution of material in such volumes – especially large files like audio and video files – can become tremendously expensive and, at a certain point, cost-prohibitive. That is because web-based publishing requires the host to bear both the data storage costs and the bandwidth costs associated with traffic to and from its site...

It is precisely because peer-to-peer networks reduce costs that some content providers are increasingly relying on them to distribute their products.[138]

Altnet has issued approximately 300,000 licenses each day for electronic content, which it makes available for peer-to-peer searching and downloading. In less than a year, Altnet had not only populated the so-called "file-sharing networks" with an enormous amount of licensed content, but had implemented means for collecting revenue from users of peer-to-peer software applications and distributing that revenue to copyright holders.

While embraced by many artists and labels not blessed with recording, marketing, or distribution contracts from the major record labels, Altnet is viewed as a direct, competitor to the Motion Picture Studio and Recording Company Petitioners. By bundling Altnet's technology to interoperate with peer-to-peer software applications like those at issue in this case, Altnet can distribute music and movies at a small fraction of the cost needed to operate Petitioners' "brick and mortar" distribution businesses. Altnet also competes with several of the Petitioner-owned and sponsored *Amici,* such as MusicNet, who operate "web-based" business for Internet distribution of licensed content. Altnet possesses competitive advantages over *amici* because the use of peer-to-peer distribution technology does not require the same investment in web-based server architecture, and it is more popular among consumers.[139]

Scalability:

> While decentralized PtP systems inherently are more scalable and frugal on bandwidth than centralized systems, BitTorrent is far more efficient and especially fast at exchanging very large content files. Indeed, BitTorrent originally was invented (and continues to be utilized) for the lawful sharing and distribution of huge Linux operating systems and application programs among developers and licensed users...
>
> A judicially imposed regime that would require Respondents' technology, BitTorrent, and their inevitable technological progeny to impose a centralized, hub choke point to filter out infringing files would degrade these technologies to destroy the intrinsic advantages of speed, frugality in consumption of bandwidth, and scalability.[140]

Robustness:

> Designing large-scale networks is notoriously difficult. Large networks must cope with vexing issues of scale, reliability, robustness and security that simply do not arise in smaller networks. Consequently, researchers are looking more to P2P networks, which offer significant advantages over client-server networks that have bottlenecking problems when many users try to access a web site, and can easily be taken down due to single points of failure and denial of service attacks....
>
> One beneficiary of such lessons is the National Science Foundation-funded Infrastructure for Resilient Internet Systems (IRIS) Project. IRIS... a multi-institutional collaboration... seeks to use P2P design strategy to support large-scale Internet services.[141]

Exchange:

> BitTorrent itself does not support file searching. Consequently, a common way of determining whether a file has been torrented (formatted so that it can be copied using BitTorrent) is to look at a so-called tracker site: a site that keeps track of torrented files, and allows one to join in the swarm if one wants to copy a file...
>
> Red Hat, a major packager of Linux software, uses a torrent tracker to save bandwidth in the distribution of software... Peter Jackson... is keeping an online reduction diary of the making of the film... he is using BitTorrent to share the work of distributing the files...

> A rule that would make a developer... secondarily liable for copyright infringement, merely because his software can be and is used for infringing purposes would also cripple advances in large scale design.[142]
>
> Rather than placing all bandwidth costs on the original distributor, with P2P technology the distribution cost is spread among millions. Spreading distribution costs gives content owners far more flexibility in making their works available to the public. P2P has empowered not only content providers, but also has spawned many new business applications that utilize distributed computing technology...
>
> Skype is the first Internet telephony technology to use P2P distributed computing. P2P telephony utilizes decentralized networking technology to significantly increase call completion rates compared to more costly, centralized voice-over-IP technologies. Skype allows for free calls to other Skype users, paid calls to all land and cellular telephones, file transferring, and instant messaging. Skype relies on P2P technology not only for completing phone calls, but also for distributing its telephony software by bundling its applications with popular P2P software.[143]

Viral communications:

> Shared Media Licensing operates the DRM technology known as "Weed." When a file is protected by Weed technology, that file may be played up to 3 times for free. After this, if the user wishes to continue to play the file, he or she must pay for it. The price for any given file is set by the rights holder. The file can be copied to other users for free, whether across the Internet or otherwise. If the file is copied onto another machine, the file can be played 3 times without payment. When a user purchases a file, the rights holder receives 50% of the money paid by the purchaser and 15% of the purchase price goes to Shared Media as a processing fee. The remaining 35% of the purchase price is shared among those who previously purchased and distributed the music. This payment system is designed to encourage users to actively distribute authorized files.[144]

Collaboration:

> In recent years, as digital technologies and powerful networks granted remarkable creative tools to scholars, teachers and students, the climate of panic and fear induced by the uncertainties of fair use in the new digital environment has generated a chilling effect. University and school administrators are cautious about or vehemently against experimenting with new methods of distribution, even for educational

or research purposes. For example, Professor Henry Jenkins at the Massachusetts Institute of Technology uses – as most media studies teachers do – clips and quotes from copyrighted works in his courses. On advice from MIT lawyers, the university has not allowed Jenkins to post the essential clips on its open courseware servers – only on server space closed to readers who are not registered MIT students. However, MIT allows students from Harvard to take courses at MIT. Such material is inaccessible to Jenkins' students from Harvard....

Many scholars use peer-to-peer technology in their work. Some seek a song or a video clip that is out of print and unavailable in their libraries, so they use the vast publicly generated library of files as an efficient index and virtual library...

Recent moral panics about peer-to-peer distribution of copyrighted files have reaching into the educational realm and disrupted reputable software engineering experiments that might yield better tools if allowed to flourish or fail outside the threat of civil judgments or state-imposed restrictions.[145]

IV. TECHNOLOGIES OF DISTRIBUTION

The Uncertain Effect of File-Sharing on the Industry

The broad political and economic impact of peer-to-peer networks argues strongly against adopting the policies advocated by copyright holders that would cast a long shadow over speech and innovation. Even within the narrow confines of the economics of distribution of music and video content, the evidence does not support the claims of the copyright holders.

Rigorous statistical analysis does not support the claim that peer-to-peer has reduced sales sufficiently to threaten the health of the recording industry or that it harms society. Simply put, the results are all over the map. Findings cover a broad range.

Some studies have found increases in sales resulting from stimulation of sales in some population segments (older consumers) that offset losses in others (younger users).[146] Others have found little or no effect.[147] Still others have found losses that are not large.[148] Moreover, because of recording industry pricing practices, even where recording industry revenue declined as a result of peer-to-peer, consumer welfare may increase.[149] One econometric study of downloading found that the increase in consumer surplus was almost 200 percent larger than the loss of industry revenue.

The analytic problem is rendered complex by a variety of competing factors to explain the changing level of demand for certain types of recording industry products, which cut against the industry claims. A debate has raged about the positive and negative factors affecting sales. On the one hand, a series of partial explanations for decline in recorded music sales, independent of the advent of file-sharing has been offered, including substitution of other forms of entertainment, saturation of new music technologies, and a decline of output from the recording companies.[150] On the other hand, a series of potential positive impacts of peer-to-peer communications networks has been put forward, including sampling and networking.[151]

The public policy problem is rendered complex by the fact that the ultimate issue is not whether some revenues have been lost as a result of peer-to-peer communications networks, but whether the losses have been sufficient to threaten the viability of the industry[152] and whether the new business models and industry structure might better serve the purpose of promoting progress.[153]

This ambiguous empirical outcome from an analytic point of view is perfectly predictable from a theoretical point of view.[154] It has been well-recognized for over two decades that some technologies that appear to facilitate “piracy” can actually stimulate sales or have effects that offset the presumed loss of sales that result from

increased "piracy." This is especially true, where, as here, the technology reduces costs dramatically or enhances the consumer experience of the product and the industry has not been vigorously competitive.

Digital distribution can dramatically lower the costs of producing and distributing physical copies of CDs. The cost of manufacture, transport, storage and sale of CDs constitutes over half the total cost of the final product. Elimination of many of these costs is overwhelmingly efficiency gains, although some part of the cost of burning a CD is transferred from the record company to the consumer. Instead of CDs being produced by an assembly line in a factory, they are burned by consumers on an as-needed basis. The fact that supply and demand can be better matched in the process in which consumers become producers multiplies the efficiency gains by avoiding the waste that occurs when recording companies misestimate consumer tastes.

Every downloaded song does not present a lost sale. There are many songs that would not be purchased because their price, bundled into CDs, which is the manner in which the industry insists on selling music, is too high. Sampling of individual songs through downloads may increase sales of CDs, as consumers experience the music and discover its value.

Prior to the 1990s, singles had this effect. During the 1990s, however, the industry virtually eliminated sales of singles and provided no alternative online. Only after peer-to-peer file sharing became prevalent did the industry reluctantly offer sales of singles online.

> At one time, singles made up a hefty part of the record industry's income... But things have changed. Record companies want consumers to buy full length CDs when they fall in love with a song. So they have shut off the spigot when it comes to releasing less expensive commercial singles to retail...
>
> The debate rages. Labels insist they simply cannot make a big enough return if fans are buying $3 singles instead of $16 albums. Retailers, though, fume that they are suffering without singles, which have historically increased foot traffic in stores, especially among younger shoppers.
>
> Labels like the single when it suits their purposes; during parts of the overheated 1990s, labels released them in floods at deeply discounted prices to help promote blockbuster albums and claim fanciful new sales records...
>
> But that was then, this is now, and the music fans are the losers.[155]

There is evidence that lower value songs are more likely to be downloaded than higher value songs.[156] This is consistent with the notion that some of the downloads would not have been purchased, so no sales are lost. There is evidence that downloaders in high purchase groups purchase some CDs after downloading some songs and that downloading increases purchases in those demographic groups least likely to purchase.[157] This supports the sampling function of downloading.

In a broader sense, singles and albums are complements to the purchase of audio equipment and other merchandise and services. By stimulating purchases of complementary and related goods and services, downloading may ultimately expand the market for legitimate purchase of content to play on the newly acquired equipment or goods and services related to albums. Artists are the primary, direct beneficiaries of the revenues, rather than recording companies.[158]

As one recent analysis of the effects of file sharing concluded:

> It must also be recognized that illegitimate uses of copyright products also have the potential to increase demand of authorized products. Uncompensated downloads of a product, for example, can have sampling effects in that users may test content, determine whether they like it, and then purchase legitimate versions that they might not have otherwise purchased.
>
> It is interesting to note that despite the fact that the least opportunity for damage occurs in cases of theft, infringement, or piracy of virtual products, laws are increasingly providing greater protection and higher penalties for appropriation of virtual rather than physical products in which losses are inevitable.[159]
>
> This leads to questions about the rationales for this difference, primarily because they have not been, and are not being, clearly articulated in legislative debates...
>
> Contemporary legal measures to provide increased protection for virtual products represents the use of law to heighten excludability, but in doing so, they run the serious risk of destroying recognized social benefits of the development and spread of information, knowledge, and cultural products previously recognized in all copyright law.[160]

ANTI-CONSUMER CONDUCT IN THE 1990S

Any analysis of the economic impact of peer-to-peer networks on the recording industry must start from an understanding of the structure and conduct of the industry in the years leading up to the piracy panic. The picture is not pretty. Long before peer-to-peer technology came along, the industry was engaged in an

anti-consumer, anti-competitive campaign against the consumer benefits of a new technology. "The music recording industry is a highly-concentrated five firm oligopoly. Much of dominance achieved by large firms in the industry results from control over the distribution and promotion of the products of the industry."[161]

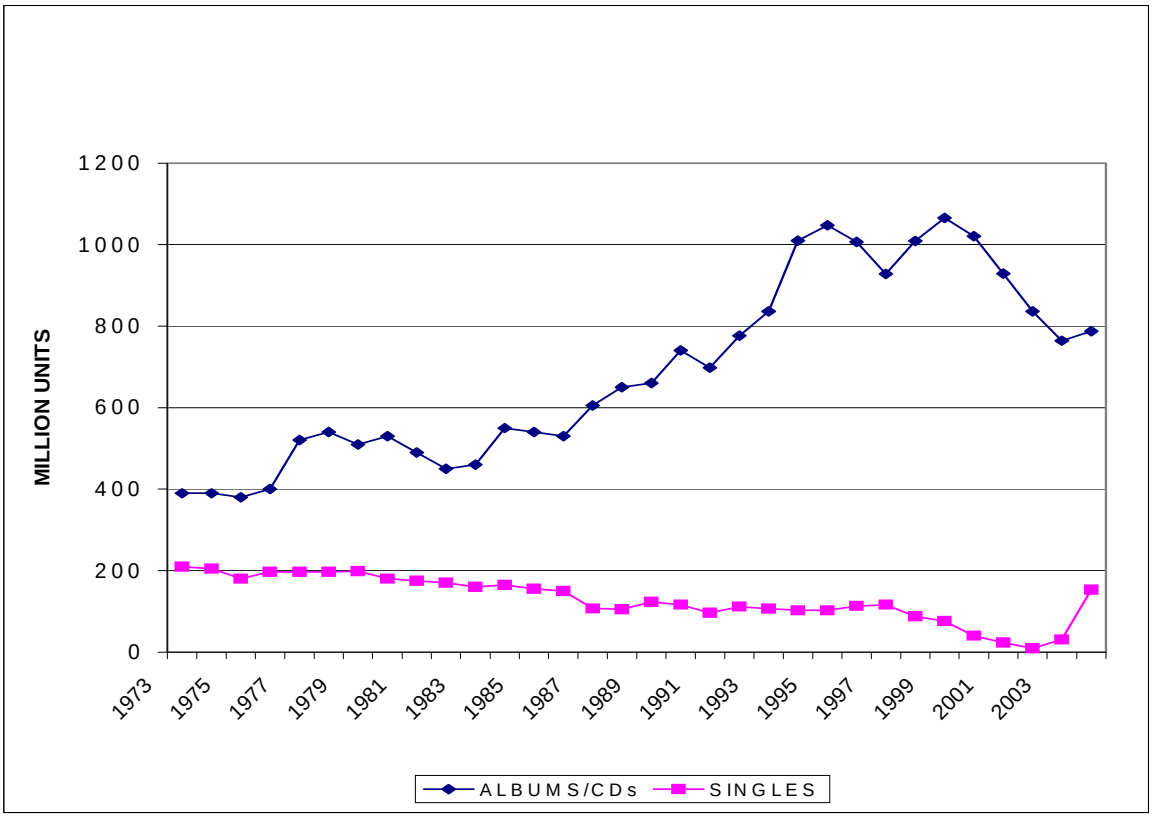
Two lawsuits in recent years, one by state Attorneys General and an earlier one by the Federal Trade Commission, were settled in 2002 and 2000 respectively. As the complaint filed by 41 state Attorneys General put it:

> The purpose of the illegal agreements was to raise prices and reduce retail price competition which threatened the high and stable profit margins for CDs enjoyed by both the defendant labels and distributors and many music retailers.
>
> This competitive threat arose with the entry into music retailing of several discount retailers (for example, Best Buy, Circuit City and Target), which could profitably undercut the prevailing retail prices charged for CDs by traditional retailers. Consumers flocked to the discount retailers which rapidly gained market share at the expense of traditional retailers.
>
> The traditional retailers reacted by pressuring defendant distributors to impose minimum advertised pricing ("MAP") policies which established the retail price levels at which CDs were sold, thereby effectively reducing and/or eliminating retail price competition for CDs.
>
> The effect of these anticompetitive agreements has been twofold. First, retail CD prices, which had been dropping, were stabilized and then raised industry-wide. Second, the oligopoly of defendant distributors was able to maintain high wholesale prices and margins for CDs. As a result of both effects, consumers have paid higher prices for CDs than they would have absent the illegal agreements. [162]

The history of the anticompetitive behavior outlined by the Attorneys General makes fascinating reading in light of subsequent developments. Competition arrived in the early 1990s along with the expansion of CDs, a new technology of distribution that was lower cost and easier to store and handle. CDs entered the market in the mid-1980s, constituted a quarter of total sales by 1990, and three-quarters by 1995.

Competition drove prices down, "from $15 to $10 in a short period of time."[163] As a result, "discount retailers' sales grew dramatically."[164] Total sales grew dramatically as well (see Exhibit IV-1). In fact, this period of price competition saw a faster rate of sales growth than at any time over the past 30 years.

Exhibit IV-1:
Record Industry Shipments

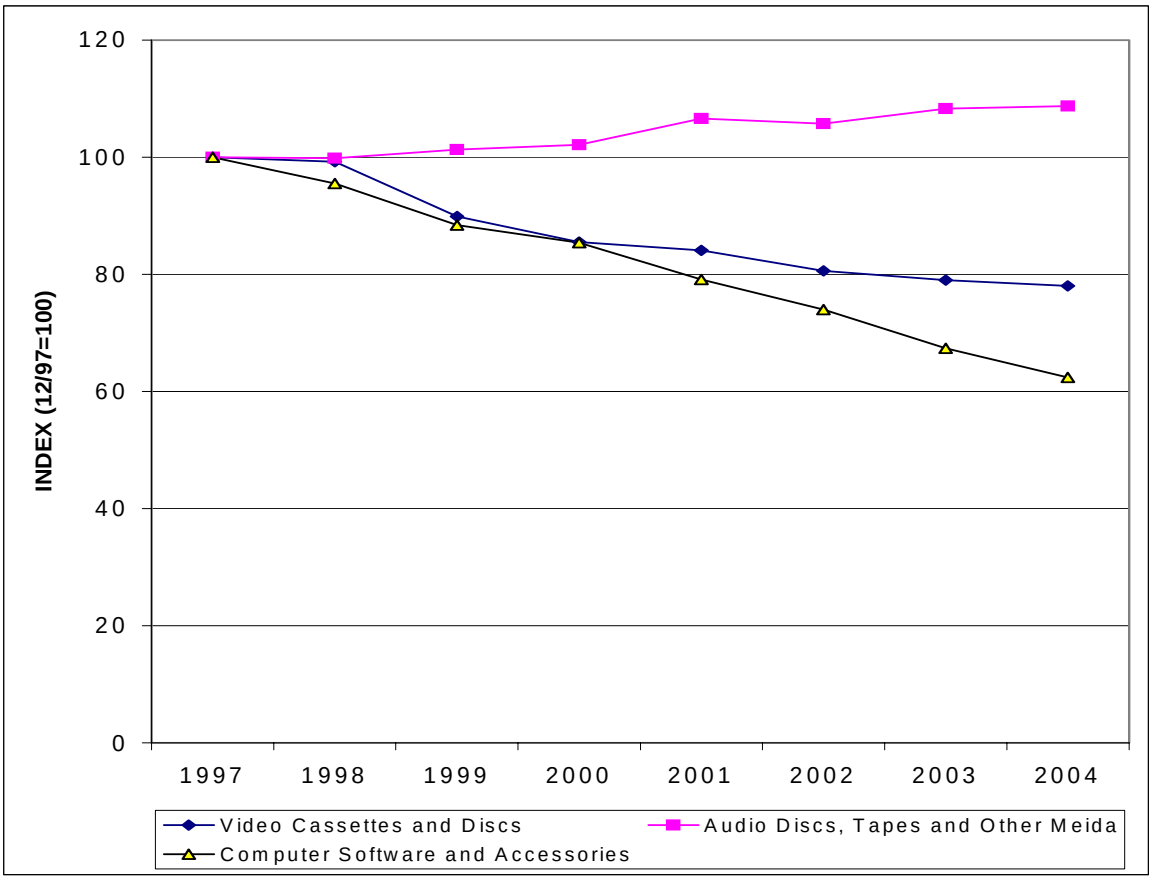


Source: Recording Industry Association of America, *Yearend Statistics*, various issues; Eric S. Boorstin, *Music Sales in the Age of File Sharing*, Princeton University, Department of Economics, April 2004; "US Sees Growth in CD Sales Market, *BBC News*, January 6, 2005; "More Music Purchases in 2004: Nielsen Soundscan," *CBC Arts*, January 6, 2005.

"In a series of announcements to their retail customers in 1995 and 1996 the defendant distributors transformed their MAP programs into blunt and effective instruments for putting an end to price competition."[165] With discipline applied to the industry, "retail and wholesale price increases occurred despite the fact that, as the records of one of the music companies revealed, per-CD unit costs had decreased sharply during the 1990s."[166] Once pricing discipline and prices began to rise, sales increases stopped.

While these anticompetitive practices were enjoined in 2000 by the Federal Trade Commission and in 2002 by the state Attorneys General, the industry remains a tight oligopoly with suspect business practices.[167] There continue to be battles over high prices of CDs. The anecdotal example frequently cited is the fact that "The soundtrack to the film *High Fidelity* has a list price of $18.98. You could get the whole movie [on DVD] for $19.99."[168]

Exhibit V-2: Price Indices of Goods Affected by Digital Distribution



Source: Bureau of Labor Statistics, *Consumer Price Index*, database.

A survey of consumers at the time of the first consent decree in 2000 revealed significant consumer dissatisfaction with recording industry pricing.[169] Three-quarters of respondents felt that pricing levels were unreasonable and almost as many felt they were excessive compared to other forms of entertainment. They said they would increase their purchases of music, if prices fell substantially, and almost all the respondents said they would not be willing to buy digital downloads at the same prices as CDs. The public was clearly not satisfied.

Exhibit IV-2 compares CD prices with several other products that were subject to pressures of digital distribution as Internet usage spread rapidly. The data is available only back to 1997 at this level of disaggregation, but that is a reasonable starting date. Each of the products was affected somewhat differently, but the pattern is quite clear. CD prices increased somewhat, while the other product prices declined.

The manipulation of CD prices was combined with a second strategy to further exploit consumers. Over the course of the 1990s, even though production costs were falling, the recording industry all but eliminated the sale of singles. In other words, consumers were being forced to pay too much for CDs that contained a lot of content they did not want to purchase.

Thus, the growth in industry revenue through the 1990s was, in part, a result of anti-competitive and anti-consumer practices. Prices for other products that could be digitally delivered were declining. File-sharing enters this market structure as an "arbitrage" opportunity.

These observations are not intended to condone copyright infringement, but to help explain its social antecedents and to put the industry's claims of harm in context. The experience of rising sales and declining prices in the early 1990s due to competition is what we would expect with a cost-reducing technology penetrating the market. The experience of declining costs of digitally distributed products should extend to the music industry. When the opportunity for arbitrage presented itself, in the face of anti-consumer and anti-competitive practices, we should not be surprised that consumers sought to reduce the burden of abuse.

> Perhaps most peculiarly, the costs of production, reproduction and distribution in the industry are close to zero (from a physical point standpoint), yet the industry structure in which five firms dominate the field worldwide has been essentially unchanged since the mid-1980s. One implication of this structure is that firms are able to more easily coordinate and carry out anticompetitive activities, such as price fixing. Prices that are held artificially high generate social welfare losses (in absence of perfect price discrimination), and might have accelerated and amplified the use of file-sharing networks by consumers.[170]

This underlying economic picture also casts doubt on the claims that every downloaded file is a lost sale. One can certainly argue that the combination of anticompetitive pricing and the elimination of singles hurt consumers in two ways. It priced a significant number of people out of the market and transferred a great deal of surplus from consumers to producers.

The sale of over 150 million digital downloads also suggests that illicit file-sharing has some drawbacks. In fact, unauthorized copies may not be as good as authorized copies. While digital technologies allow perfect copying, the humans who operate the technologies are far from perfect. They label them incorrectly, miss the start, stop too soon, or interrupt the copying. The files they exchange are more likely to be infected with viruses. This is in addition to the measures taken by copyright holders to raise the costs of unauthorized sharing.

The history of the Betamax provides a similar lesson. In the battle between RCA's DiscoVision video disc[171] (a non-recordable format) and VHS/Betamax (recordable formats[172]) recordable tape formats killed the non-recordable. Given a little more functionality and flexibility, consumers migrate to it and buy official content. Similarly, the first VCR with pre-recorded tapes[173] died because it had the same problems DiVX had when it was battling the DVD format. Providing consumer responsive functionality is the basis for business models.

Ignoring Anti-competitive Structure and Anti-consumer Practices Distorts the Analysis of File Sharing

The failure to take into account the anti-competitive, anti-consumer practices of the industry in the 1990s completely distorts the picture one paints of the events of the period after peer-to-peer communications networks came into existence. For example, Stan Liebowitz, one of the strongest defenders of the claim that file-sharing is harming the industry, uses the competitive period of the early 1990s as the basis for estimating the harm, but never mentions the anti-competitive behavior of the late 1990s, which set the stage for peer-to-peer growth.

> Driven largely by the growth in DVDs, the prerecorded video market experiences a large growth in sales beginning in the year 2000. This might be why DVDs are often mentioned as a potential cause of the decline in CD sales.
>
> But there is a fly in this ointment. The VHS market experienced a similar increase in sales from 1991 to 1996. If large increases in video sales lead to large declines in CD sales, CD sales should have been damaged during this earlier period. Returning to the data in Figure 1 we can see that CD sales during this period has the largest *increase* of any 5 year period in our data, quite the contrary to what might have been expected.[174]

"The largest *increase* of any 5 year period" is a result of the price competition that had broken out. The fly in the recording industry's ointment was competition.[175]

Liebowitz goes on to conclude that pricing behavior does not account for much of the change in purchase behavior, by ignoring discounting in the early 1990s, which of course underestimates the important role of price and especially the relative prices of CDs and other forms of digital entertainment.

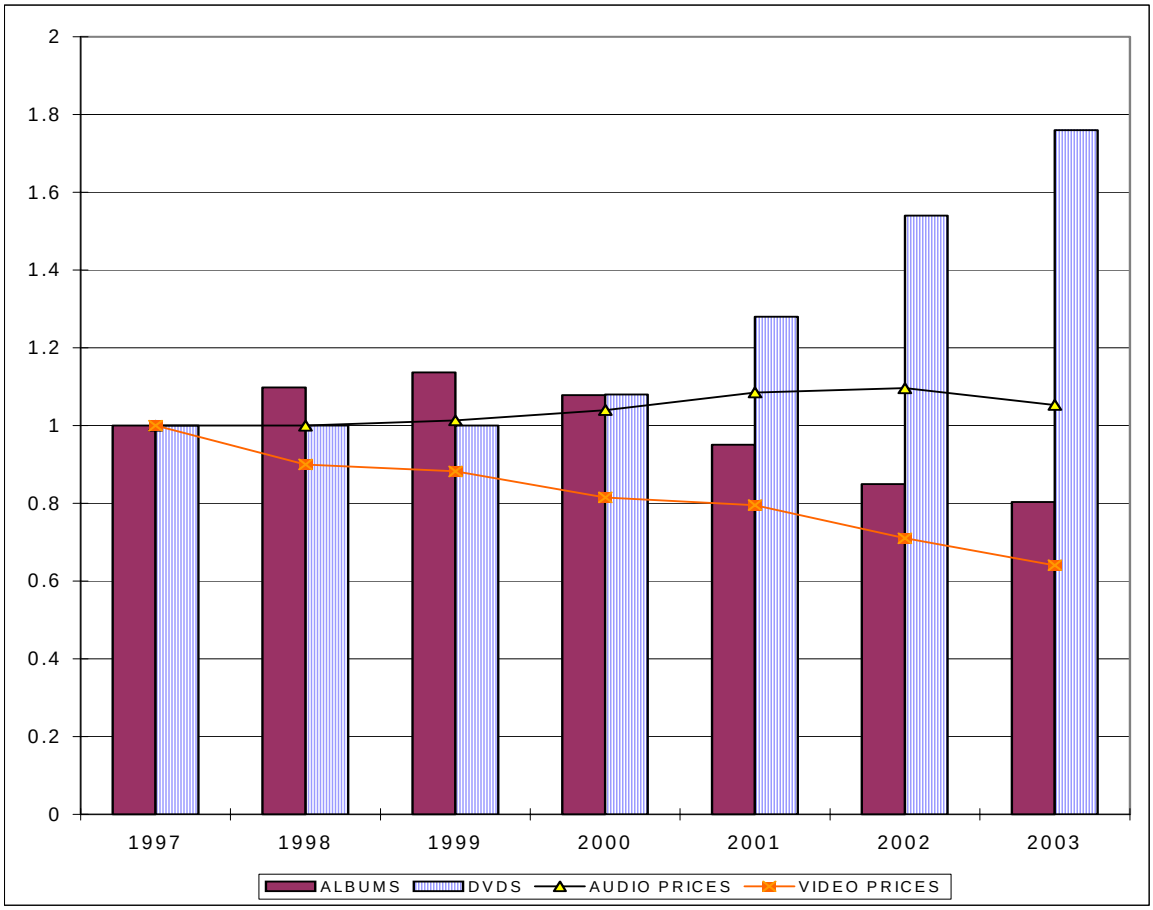
> It is unclear how serious a problem the use of list, as opposed to transaction prices, would be in this case.[a/] Although there was a fairly significant fall in the inflation adjusted list prices from 1978 until 1982 (a time of highly variable vinyl prices, unusually high inflation, and a

changeover from vinyl records to the less expensive prerecorded cassette), inflation adjusted list prices have remained remarkably constant since 1981. The consistency of list prices is almost as if the record industry decided to keep prices in line with the inflation rate.

[a/] If discounts were relatively constant from year to year, list prices would be good proxies for actual prices. On the other hand, if discounts varied considerably from year to year (the growth of Wal-Mart might be just one reason to suspect that discounts have not stayed constant) then the use of list prices could cause misleading results.[176]

There are three critically important observations here. First, the conclusions about price are suspect since the discounts were variable, and much larger during the competitive period. Second, the constancy of prices should have been a sign that

Exhibit IV-3: Sales and Prices of Audio and Video Discs



Source: Bureau of Labor Statistics, *Consumer Price Index*, database; Stan Liebowitz, *Pitfalls in Measuring the Impact of File Sharing*, School of Management, University of Texas at Dallas, 2005.

prices were being managed. Third, the fact that prices failed to fall with the shift to much less expensive CDs reinforces that suggestion.

Ignoring discounting of CDs in the early 1990s, Liebowitz concludes that price elasticity does not matter. Yet, contrasting the price changes for DVDs and CDS in the period where we have consumer price data suggests otherwise (see Exhibit IV-3). Sharply declining prices for DVDs in the late 1990s were associated with sharply increasing sales. In contrast, rising prices for CDs were associated with declining sales. We observe a similar effect for digital singles in the audio market in 2004. As shown in Exhibit IV-1 above, when prices of singles tumbled from $4 for CDs to $1 for digital singles, sales skyrocketed.[177]

Ironically, Liebowitz essentially ignores the impact of the anti-consumer practice of eliminating singles in his analysis.

> For all intents and purposes, singles are now practically nonexistent. It seems possible that MP3s are responsible for killing off the singles market, even if what was left of the market was small (in 1997 singles accounted for merely 3.6% of record revenues). Nevertheless, the downloading of MP3s was clearly not the primary factor in the fall of singles, although it might have been the final nail in the coffin.[178]

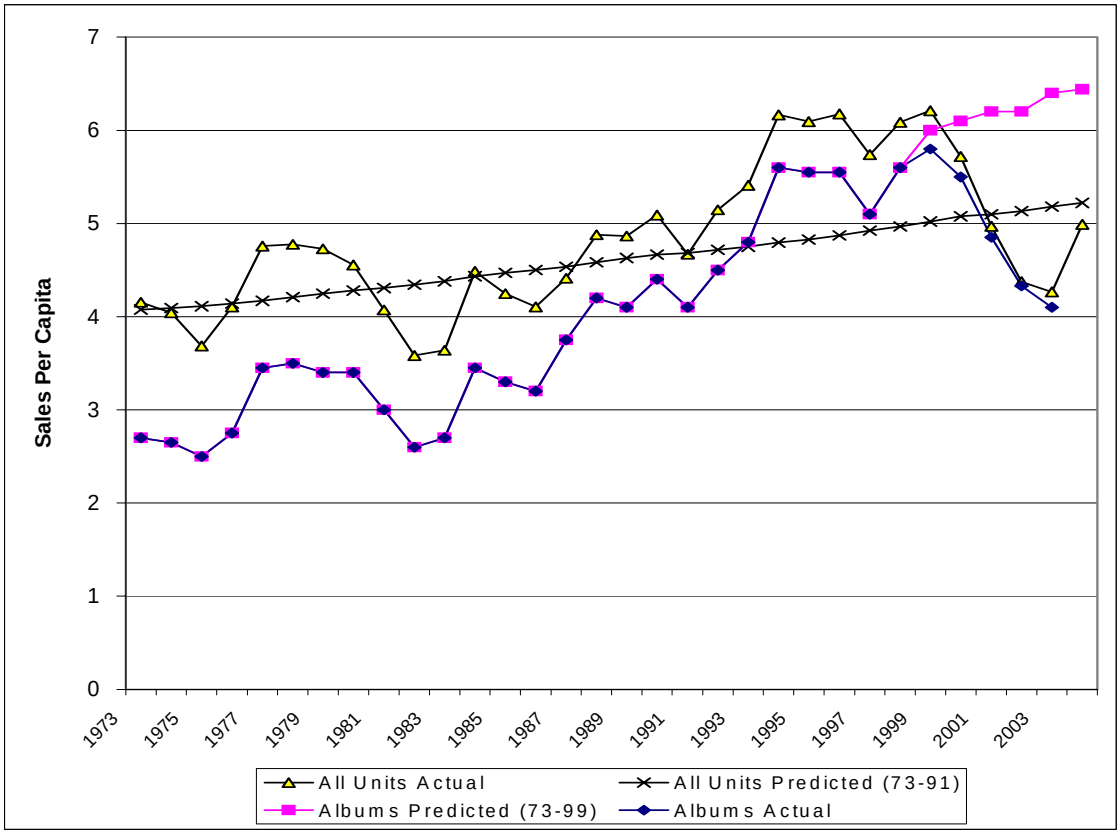
The fact that singles now play a larger role than at any time in almost two decades casts doubt on the decision to exclude them from the analysis.

As a result of excluding the anti-competitive and anti-consumer practices of the recording companies from the analysis, the impact of peer-to-peer communications networks is vastly overstated (see Exhibit IV-4). Liebowitz estimates that in 2003 sales of albums were over fifty percent lower than they would have been, based on the correlation of income and sales over the 1973-1998 period. If we include singles and albums and base the projection of sales on the period before competition broke out to be quickly snuffed out by the industry, we conclude that sales in 2003 were only 20 percent below what they would have been. More importantly, by 2004, with the strong return of singles, sales were only about 5 percent below the predicted level based on income.

These are not the only aspects of the analysis in which Liebowitz disagrees with several others. The “overheated 1990s” were heated up by more than price competition early in the decade. Several analysts suggest that there was also a technology process that sped up sales. As a new technology takes over, sales speed up as consumers replace their stock of albums.

Liebowitz is correct to argue that the data available is not well-suited to test the specific arguments being offered by the recording companies and the peer-to-peer advocates and that the public policy question may be much broader than the

Exhibit IV-4: Actual v. Predicted Album and All Unit Sales



Sources: Stan Liebowitz, *Pitfalls in Measuring the Impact of File Sharing*, School of Management, University of Texas at Dallas, 2005; Recording Industry Association of America, *Yearend Statistics*, various issues; Eric S. Boorstin, *Music Sales in the Age of File Sharing*, Princeton University, Department of Economics, April 2004.

narrow issues on which the "evidence" at trial has focused. The Supreme Court briefs discussed above correct that problem. Having challenged "us to respect the fact that we have," it is odd to ignore pricing and bundling behavior. There is no doubt that price competition has certainly broken out in the industry in the form of digital singles, although the "brick and mortar" distribution system is still resisting the new reality in the sales of albums. If digital sales grow at anywhere near the rate predicted, total units sold will exceed even Liebowitz's prediction in a year or two. Because the courts did not kill the new technology, prices are falling, output is rising and diversity is increasing exactly what we want in a competitive market.

The Flowering of Peer-to-Peer Distribution Benefits Consumers

The growth of sales in 2004, and particularly the explosion of sales of digital singles, reinforces this view and throws the whole industry argument into doubt. The

fact of the matter is that there was an immense, latent demand for singles that had been suppressed by the anti-consumer practices of the industry, and perhaps expressed in the form of illicit file sharing. File sharing activity was concentrated in downloading of singles by at least a ratio of two-to-one. Indeed, the most detailed study of downloading found that only one or two songs were downloaded from the more popular albums and digital sales are concentrated in singles by more than twenty-to-one, breaking the chains of anti-consumer bundling and anti-competitive pricing.[179]

It is certainly true that the recording industry makes a higher rate of profit and captures more consumer surplus by forcing consumers to buy multi-song, over-priced CDs, but that outcome is not synonymous with the public good or economic efficiency. In a physical world context, it can be claimed that the fixed costs of CD production favor bundling of songs into albums, but that argument evaporates in the digital context. In the digital distribution environment, there is no reason for consumers to be forced to buy any songs they do not want in order to obtain a song they do want. At every stage of production, from creation to marketing to distribution, the claim that fixed costs must be spread across forced bundles is undercut if not eliminated.

The consumer benefits of digital technology and distribution are immense. Assume, based on the evidence of downloading, an average of 1.5 songs downloaded per album. With almost 150 million downloads in 2004,[180] consumers would have been forced to buy 100 million albums to get the satisfaction of owning the songs they wanted. At an average price per CD of $13,[181] that would have cost consumers some $1.3 billion. Buying digital singles at $1 per single, they spent only $150 million. The gain in consumer surplus could be over $1 billion and is likely to be at least hundreds of millions of dollars. Part of the gain is in the form of money not spent, part of it in music purchased that would not otherwise have been purchased.[182] Even if the download of digital singles was by people who had been priced out of the CD singles market, the difference in cost of $3 per single has a value of almost half a billion dollars.[183]

These estimates of welfare gains may sound large, but they are consistent with a calculation provided by *amici* in the Grokster case that approached the analysis from a completely different angle. The recording companies claim billions of illegal downloads, but, at most, several hundred million lost album sales. As they put it: "P2P file sharing has provided unauthorized access to the tune of 3.12 billion albums annually – expanding access to existing works by an astounding 300 percent."[184] Put in other words, they conclude that 90 percent of the unauthorized downloads did not cost the recording industry any revenue, since they do not constitute lost sales. A similar calculation done for prices and quantities at the time of the Napster case put the figure of increased access at 178 percent. Both of these estimates may be too low, since they accept the physical world price relationship between singles and

albums as indicating that consumers want albums with four or five songs. This number may be too high.

Thus, very large gains in consumer surplus appear to accrue to digital delivery of music, particularly singles. Given the fact that the industry has only begun to figure out business models for digital distribution, it is safe to say that the experience of the VCR is about to be repeated. Technology will expand the market and better serve the consumer.

CONCLUSION

The economic literature has recognized the potential anti-consumer, anti-competitive impact of this bundling strategy. By pursuing this strategy where they have market power, the recording companies can extract consumer surplus and make competitive entry more difficult. The possibility of extracting "consumer surplus" has hinged on key assumptions about the nature of demand and underlying cost.[185] Over the past two decades the anticompetitive potential of bundling has been explored and documented in detail. Indeed, almost immediately after bundling was declared benign, the potentially anticompetitive effects of bundling reemerged in the literature because it was noted that one had to assume extreme conditions to have confidence in its efficiency benefits. Firms whose market power is neither total nor permanent can use bundling to defend or extend their market power. Under a wide range of assumptions, the dynamic[186] ability of bundling to undermine competition has been demonstrated through a number of mechanisms including inducing exit,[187] restricting entry by raising barriers,[188] relaxing price competition,[189] distorting investment,[190] retarding innovation,[191] and extending market power into new markets.[192]

As described above, there is good empirical evidence to support the conclusion that the recording industry has suffered from many of these afflictions in the 1990s. There is no doubt whatsoever that consumers should benefit mightily if digital technologies are not prevented by the courts from working their magic on the production and distribution of music.

Early examination of the impact of the Internet first seemed to suggest large bundles would make economic sense,[193] but the relentless march of technology has undercut that prospect by lowering the costs of production, as one of the leading students of information economics has recently suggested:

> Today most newly created textual, photographic, audio and video content is available in digital form. Even older content that was not "born digital" can relatively easily be converted to machine-readable formats. At the same time, the world has become more networked making it easy to transfer digital content from one person to another. The combination of technological progress in both digitization and

> computer networking has been a challenge for traditional ways of managing intellectual property. Some observers have even questioned whether current models for intellectual property can or should survive in a digital world...
>
> These developments have led to a revival of interest in the economics of copying and copyright... and... alternative business models for provision of copyrighted works...
>
> All of these business models have their problems, of course, and none is likely to yield any sort of social optimum. On the other hand, copyright is a second-best solution to intellectual property provision as well...
>
> Perhaps the ultimate saving grace is that the same technological advances that are making digital content inexpensive to copy are also helping to reduce the fixed cost of content creation. Hundreds of thousands of people are giving away digital content, from blogs to garage video to open source software. The increased availability of content due to the reduction of cost of creating and distributing it will presumably increase competition and reduce the price consumers pay for legitimate access to content. This trend may service to counterbalance some of the forces that have led to demand for increased copyright protection.
>
> It is unlikely that free content alone will meet all of society's needs for content. However, free content together with some combination of the business models described above and traditional copyright may do an adequate job of satisfying society's demand for information goods.[194]

Change may be hard, but it is not necessarily harmful, in the sense that the Progress Clause demands. Destruction of business models may be creative. In order to evaluate the impact on society of these technological changes, we must assess how the current system meets society's demand for music and the likely impact of the change on creative artists. That is the topic of the next section and it reaches the same conclusion as the analysis of the industry from the consumer point of view. The spread of digital technology and peer-to-peer networks is likely to significantly enhance the prospects for the vast majority of artists and expand the variety music that is widely available in society. Technological progress is a win-win for consumers and artists.

V. INCENTIVES FOR ARTISTS

ANTI-SOCIAL EFFECTS OF THE CURRENT SYSTEM

While the anti-consumer practices of the recording industry are proven as a matter of law, some have argued that the worst aspect of the industry, though harder to prove, is its anti-artist and therefore anti-social impact. Pricing abuse only costs the consumer money; the centralized, star-oriented system that the industry enforces tyrannizes artists and impoverishes our culture.

It is a frequent lament in the music industry that few albums and almost no artists ever make any money on the sale of records. The spread in income between the handful of stars and the vast body of artists is huge. The range of works that is played and circulated widely is narrow. A handful of companies select a small number of releases and promote them heavily, marketing them through distribution channels that are expensive.

> Hollywood major movie studios and recording companies have long understood that their profits are directly tied to their ability to monopolize distribution. After all, [they] are not the creators of the copyrighted works at issue; they are simply the assignees and licensees of copyrighted works. As such, they have but a single means for deriving revenue: control of distribution.[195]

Peter Alexander has examined product diversity over the history of the recording industry and reached a clear conclusion.

> Methods that count the number of hit songs and then relate them to market structure have been employed. These studies unambiguously suggest a strong negative, linear link between market structure and diversity. The more atomistic the structure is, the greater the diversity is, and the more concentrated the structure is, the less diversity there is...
>
> On the other hand, a study using actual musical characteristics of high songs, rather than simply the number of songs, suggest that a moderately concentrated industry structure may better promote diversity than either an atomistic or monopoly structure... When measured against market structure, these results suggest that produce diversity is maximized in a structure characterized by a four firm concentration ratio of about 50 percent.[196]

By either measure, then, when the top four firms in the industry have more than 50 percent of the market, the output is likely to be less diverse than would be socially desirable. Given that the current market structure in the U.S. has a four firm

concentration ratio of about 85 percent, the implication is that, by historical standard, it is far too concentrated.

Prospects for Change

Alexander goes on, however, to consider the prospects for diversity in an industry that relies on digital technology for production and distribution. After studying repeated historical examples of technological change leading to outbreaks of competition in the recording industry, in 1994, Alexander offered the first reference to the potential impact of digital file distribution in the academic literature. He offered a remarkably prescient analysis of the potential cost saving and "exponential" increase in product offerings creativity of new digital technology.

> The network for distribution in the music recording industry is highly concentrated, and many fringe firms and new entrants are unable to obtain national distribution. This trend limits the extent of competition in the industry, and possibly reduces the diversity and variety of product offerings (in part, because small new firms tend to be product innovators). If non-exclusive distribution network existed, fringe firms and new entrants might provide robust competition for market share....
>
> A digital delivery highway for the products of the music recording industry might take the following form. A distributor, or group of distributors, would transmit digital product samples to consumers via cable or telephone lines. The consumers could review the product samples... and then inform the distributor... which products they wish to purchase. These products would then be uploaded to the consumers, and a charge made to the consumers' account.
>
> A distribution network of this type may potentially attenuate the effects of the significant barriers to entry in the music business. First, it could give firms (particularly fringe firms and new entrants) the opportunity to have their products distributed in a less costly and non-exclusionary fashion. By providing product sample to consumers, the new distribution network would also transmit information relating to product specifications. This would lessen the need for more traditional and less efficient techniques, such as radio airplay and other costly promotional activities, to inform consumers of the existence of new products. Given the modest marginal costs of adding a new product line to a digital delivery system, it is conceivable that the number of product offerings could increase exponentially. The costs of distribution should decline dramatically, as physical distribution at national or international level has significant scale features. A competitive digital delivery system

> would reduce substantially the minimum efficient scale of distribution, and likely stimulate a highly competitive producer market.[197]

The costs of the distribution system that the recording companies control places a huge drag on the market. Manufacturing, distribution and retail account for over half of the final price of the CD. These costs could be all but eliminated with digital distribution. Another quarter of the costs – record company overhead and marketing – is vulnerable to sharp reduction in an environment that emphasizes horizontal structure and peer-to-peer communications. Thus, three-quarters of the costs and the central point of control could be eliminated, spelling the end of the highly skewed star system.

To put these numbers in stark relief, one author notes that the average price per CD in 2001 was about $17.99, while the cost of producing a CD in quantity was $0.50. The average amount an artist receives is $0.12.[198] Others put the artist share somewhat higher, but not much more than a dollar, net of costs.[199] Thus, the intermediaries that stand between the musician and the audience account for a huge part of the final price.

These large intermediary costs are seen as inefficient from two points of view. The recording companies that control distribution have an incentive to maximize profits at the expense of the artists and the public.

> Music is owned by the artists, but in control of the sellers. There are traditional agency problems in this context. Those who have control of music distribution have incentives to sell the music that can bring them the most revenues, and distort the market by extensive and disproportional promotions in favor of a small number of works. Music listeners may not value the music produced by the big labels as much if they have a chance to know about smaller labels and new musicians; this is a severe distortion and source of social inefficiency. The overwhelming advertising campaign may further skew the consumers' preferences and lead to distorted demand.[200]

It is possible to arrive at this inefficiency and distortion as a pure information problem.

> In essence, music consumers do not have accurate information on the quality of the music, because it is an experience good. Music publishers, because of the delay in obtaining market information for all of their music, may over-invest in certain music genre and under-invest in others. A typical strategy to overcome the inefficiencies and uncertainties in the market is to focus on superstars.[201]

The brunt of these inefficiencies falls on the artists. High costs and the incentive to focus on a narrow range of output reduces demand for the product overall and narrows the prospects for most artists.

> New scale-reducing technologies can erode existing market structures by facilitating new entry... [N]ew technology has fostered two periods of significant structural turbulence in the music recording industry in which new firms, producing innovative products, displaced the existing firms. Reconcentration resulted from horizontal mergers among other factors. New digital distribution networks may promote greater competition in the industry, if they are non-exclusionary. This should promote greater levels of product diversity and variety in the offerings of the music recording industry.[202]

The Flowering of Peer-to-Peer Technology Benefits Artists

Thus, there should be little wonder that musicians are supportive of the use of the Internet to advance their works and careers, but more divided on file sharing (see Exhibit V-1). Substantial majorities feel that the Internet has helped them, particularly in connecting with fellow musicians, expanding and reaching their audience, and promoting their performances. Just over one-third of musicians said

Exhibit V-1:
Effect of Internet on Musicians: % saying big effect

Internet effect	All Musicians	Starving Musicians
Make more money	34	44
Improve connection with music community	70	79
Allowed to reach a wider audience	65	75
Easier to book appearances	42	52
Improve ability to communicate with audience & fans	65	77
Made it harder to protect music from piracy or unlawful use	16	20

Source: Mary Madden, *Artists, Musicians and the Internet,* Pew Internet and American Life Project, December 5, 2004

downloading is not bad and another one-third said it is both good and bad. Just under one-quarter said it is bad.

A wide range of suggested responses to file sharing was offered by the musicians. One-fifth of the respondents suggested a business/licensing approach that offered "something legal, convenient, robust and fairly priced." One-seventh said there is no problem to respond to. One-sixth suggested that the industry had to accept it or could do nothing about it. Just under one-fifth suggested punitive approaches. One-twelfth felt technology solutions should be sought. One-in-twenty-five said multiple solutions should be pursued.

This survey can also be used to highlight the question of the norms of conduct mentioned earlier (see Exhibit V-2). The musicians whose interests are most directly affected by downloading behavior were asked to evaluate the legality of a series of actions, "assuming a person does NOT have permission from the copyright holder."

Exhibit V-2:
Musicians Perceptions of Legality of Various Copying Behaviors

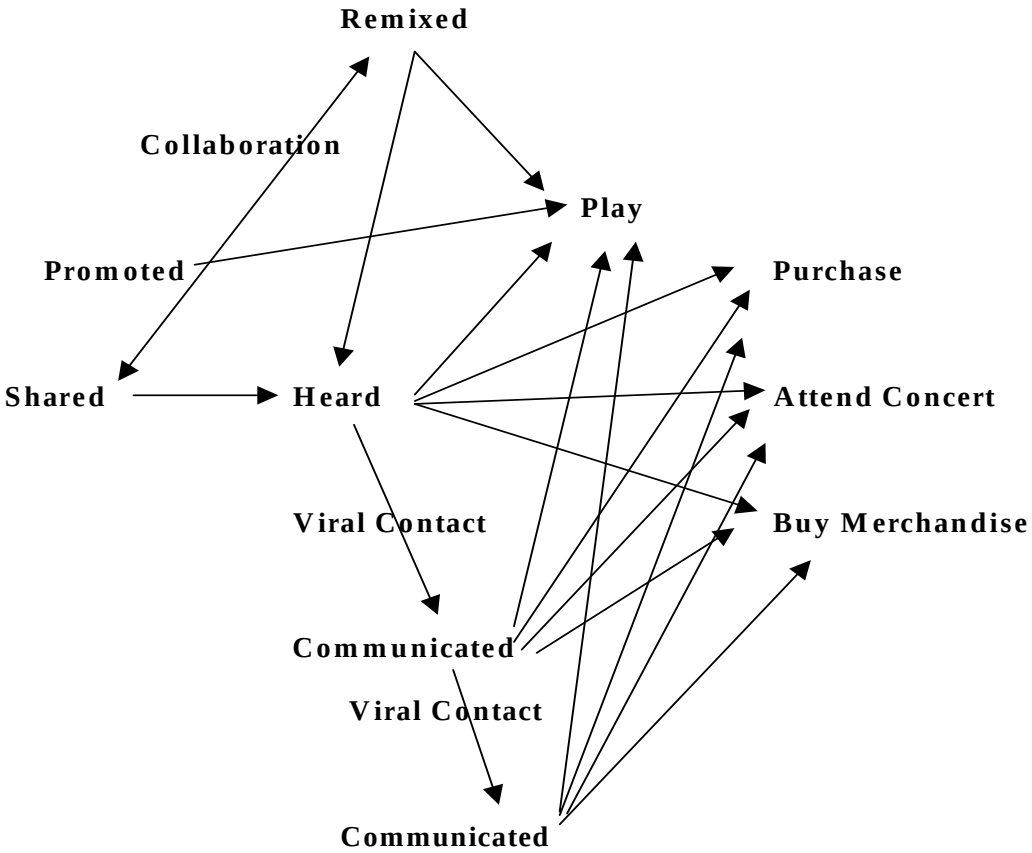
Copying Activity	Legal	Illegal
Recording a TV show on a VHS tape to watch in your own home at a later time	90	6
Making a photocopy from a book or article for personal use	91	5
Ripping a digital copy of music on your own computer from a CD you purchased	90	6
Posting a story or article online to critique or comment on it	89	5
Sending a digital copy of music over the Internet to someone you know	56	31
Burning a copy of a music of CD for a friend	47	41
Downloading a music or movie file off a file sharing network	33	48
Sharing a music or movie file from your computer over a file-sharing network	33	50
Making copies of much, movies or television programs and sending them to other people	3	95

Source: Pew Internet and American Life Musician Web Survey, March April 2004.

They overwhelmingly see personal use copying as legal. They overwhelmingly see noncommercial, critical use as legal. These are the norms that have come from the pre-digital age of photocopying and taping. The musicians are more divided on sharing materials with friends, but they overwhelmingly see unauthorized copying for commercial purposes as illegal.

The positive potential for peer-to-peer networks reflected in the survey research is given real world meaning in the *amicus* brief of Sovereign Artists in the Grokster case. Exhibit V-3 provides a simplified description of the viral communications and collaboration aspects of the peer-to-peer model discussed earlier. The Sovereign Artists give tangible testimony to these beneficial effects. While all of the artists attest to having experienced the benefits of peer-to-peer communications networks, the following statements give precise details and examples.

Exhibit V-3:
Benefits of Digital Distribution and Viral Marketing for Artists



Exchange:

Contact with fans:

Ms. Ian has been significantly helped by peer-to-peer technology. Traffic to her website (www.janisian.com) has increased dramatically since the rise of P2P technology, going from approximately 60,000 unique visitors annually to five times as many. Because people have been able to discover her music on P2P networks, her compact disc sales on her website have increased over 250%, generating an additional $5,000 to $10,000 annually. P2P technology allowed her to save money on marketing while expanding the reach of her music.[203]

Viral Communications:

Distribution:

Heart supports the use of peer-to-peer technology and believes that it is a very efficient means of distributing music. Encrypted with "Weed" technology (www.weedshare.com), "Jupiter Darling" was released on the Internet and has been shared on P2P networks. Heart's "Weed" files outsold those on Apple's iTunes during the third week of their availability on both services.[204]

The Jun Group estimates that 2.5 million copies of one of his classic songs were downloaded. The initial impact on the star's new album, solely attributable to peer-to-peer file-sharing, was an eight times increase in sales in some regions.[205]

Promotion (of other products):

According to Jun Group, by conservative estimates, P2P represents more than 8 million people online at any given time executing over 600 million content searches per day. In 2003, the company released five files from Kevin Martin and the Hiawatts on behalf of YooHoo Chocolate Drink. The Music was downloaded more than two million times over a four-week period and helped YooHoo achieve the largest spike in website traffic since the inception of its site.[206]

Collaboration:

Anonymous Elaboration:

Colin Mutchler... believes that P2P technology is a great catalyst for musical collaboration. In 2003, he contributed an acoustic guitar song

> entitled “My Life” to the website Opsoud.com, licensing it with the permission to be downloaded, shared on peer-to-peer networks and reused. In just a few weeks, a young violinist from North Carolina who Mr. Mutchler had never met added to it and renamed it “My Life Changed.” The most recent remix, which includes artists from three different continents, would never have been possible without peer-to-peer networks... Mr. Mutchler’s first commercial album is due later this year. He anticipates that his sales will be much higher because of his Internet collaborations and the exposure of his music to audiences through P2P technology.[207]
>
> Interactive Co-Production:
>
> Mr. Holowach released his first album, a solo effort, for free on the Internet. One of his songs was then remixed by another musician hundreds of miles away, Andrew Vavrek, spawning a professional collaboration and the formation of their band Tryad. The band now releases all of its songs through Creative Commons licensing.[208]

Theory Fits Reality

The instincts and actions of the musicians are easily explained by economic theory. The obvious reduction in search costs and improvement in information quality should lower total cost and increase demand. More importantly, from the artists’ point of view, the new technologies change the social relations of production. Peer-to-peer networks disintermediate the recording companies.

> More interestingly, artists and publishers may benefit differently from the network effects generated by the number of those who buy legal copies and those who obtain illegal recordings... If the demand for, say, live performances is enhanced by the “popularity” of the artists generated from the number of distributed recordings (legal and illegal copies combined), then we obtain the conditions under which publishers of recorded media may lose for piracy, whereas artists may gain from piracy.[209]

At the same time that the new technology changes the relationship between artists and recording companies, it weakens the star system because “there is a greater probability of discovering other high quality music items by lesser know artists with the new technology.”[210]

The ultimate cost savings in marketing and distribution comes from both the supply side and the demand side. On the demand side, the ability to sample “is an information-pull technology, is a substitute to marketing and promotion, an information-push technology.”[211] As the cost structure of the industry changes

through the adoption of digital technologies performance improves, since "variable costs relative to fixed costs are more important for music downloads than for CDs. This suggests that acts with a smaller audience can succeed in the digital music market. As a consequence, we could observe more music diversity and a less skewed distribution of sales among artists."[212]

In fact, we do observe this pattern. The payoff for artists and society is increasing diversity (see Exhibit V-4). Although the examples above are geared more toward the starving artists, those who may never get onto the charts, the impact has been documented even at the top of the charts. One set of authors states that:

> we find strong evidence that over the last decade, the number of unique artists and albums that have appeared on the Billboard Top 200 album charts is statistically related to the number of Internet users. The implication is that with lowering of information sampling costs, consumers become aware of more new albums they like, leading to more artists and albums being ranked on the charts....
>
> The implication is that as sampling becomes less expensive, the superstar effect is eroded overall, and more users purchase music items base on their actual, not perceived, valuations.[213]

We need only recall the Shared Media License Weed distribution approach mentioned in section III to appreciate the value of the new distribution model to artists. An artist, who uses this peer-to-peer approach to sell two singles at $1 per single, nets more than would be gained by selling a $16 album through the recording industry's "brick and mortar" oligopoly distribution model. With an ambiguous empirical record of the harm imposed by file-sharing, strong theoretical reasons to believe that the technology is welfare enhancing (if not perhaps profit maximizing for individual recording companies) and the artists most disadvantaged by the current system adopting and benefiting from the technology most, attention has shifted to efforts to institutionalize new business models.[214]

In sum, the recording industry has waged a ten-year battle against technology and competition, first with price fixing, then with a tyranny of copyright litigation. Those strategies have failed and we now have the last gasp effort to turn copyright into technology regulation. It is time for the recording industry to face the music.

CONCLUSION

Even if the recording companies suffer some losses and must restructure their business models as a result of digital technologies, the vast consumer and artist benefits weigh heavily against expanding copyright as the recording companies demand. The economic test of the limits of copyright has never been monopoly profits. The threshold of "harm" of unauthorized use that triggers liability has never

been whether the industry loses anything, but whether it loses so much that the balance between the incentive to create is so reduced that progress will be diminished. The ultimate objective of the copyright laws is not that recording companies earn maximum profits, but that artists have sufficient incentive to create. With sales rising, costs falling and artists finding more ways to create content and relate to their audiences through peer-to-peer networks, there is no doubt that the law and public policy should favor the technology of democracy, innovation and economic distribution.

The speed and savagery with which the recording companies have attacked digital technologies, the boldness of the expansion of copyright they seek in the courts, and the haste with which they would like the courts to proceed, reflect the weakness of their claims and the strength of the public interest in promoting these technologies. With sales for albums rebounding from a recession induced slump and sales of digital singles exploding, Chicken Little has once again been proven wrong. The sky is not falling.

Recording companies are not making as much as they claim they could if, by their calculations, their losses are equal to the multiplication of their anti-competitive prices by the total amount of music being listened to, but the purposes of the Progress Clause of the Constitution are being served. Citizens have a powerful new means of expression and political speech. People have a new means of exchange. The public enjoys an innovation-friendly technology environment. Consumers are enjoying more music than ever at prices that are (finally) declining to reflect the massive efficiencies of digital distribution.

The public interests will be greatly advanced if the Supreme Court not only rejects the demands of the recording companies and movie studios to extend their copyright to regulate technology, but also takes this opportunity to put an end to the reign of litigation terror that the copyright holders have launched in an effort to slow technological progress. The Supreme Court must make it clear that technology is not the villain and send a signal to the lower courts to dismiss the frivolous litigation of the recording companies and movie studios out of hand.

This will also set the stage for the legislative battle that the recording companies and movie studios will inevitably force.

ENDNOTES

[1] William Fisher, *Promises to Keep* (2004), Appendix; Dereck Slater, et al., *Content and Control: Assessing the Impact of Policy Choice on Potential Online Business Models in the Music and Film Industries* (Cambridge: Berkman Center for Internet and Society, Harvard University, January 7, 2007), Appendix I.

[2] The Big Four include Universal Music Group, which includes A&M, Decca/London, Deutsche Grammophon, Island, MCA, Motown, PolyGram and others; Sony BMG Music Entertainment, which as of August 2004 consists of the merger between Sony Music Entertainment and BMG Entertainment, and includes Columbia, Epic, Arista, RCA, and others; EMI Group, which includes Angel, Blue Note, Capitol, Odeon, Parlophone, Virgin and others; and Warner Music Group (a.k.a. WEA), which includes Atlantic, Elektra, London, Reprise, Rhino and others ("A Look at Four Music 'Majors' Left Following Sony-BMG Merger," *AP vi SFGate.com*, July 20, 2004).

[3] Peter J. Alexander, "Peer-to-Peer File Sharing: The Case of the Music Recording Industry," *Review of Industrial Organization*, 20 (2002) at 154.

[4] Jack Valenti, "Home Recording of Copyrighted Works," *Committee on the Judiciary, United States House of Representatives*, April 12, 1982.

[5] Bureau of the Census, *Statistical Abstract of the United States*, Tables 11, 1119, 1134.

[6] There are 56 briefs in the case, broken down as follows:

Respondents and *amici*: Brief for Respondents; *Brief of Computer Science Professors; Brief of National Association of Shareholder and Consumer Attorneys (NASCAT); Brief of National Venture Capital Association; Brief of Creative Commons; Brief of Malla Pollack and Other Law Professors; Brief of Professors Edward Lee, Peter Shane, and Peter Swire; Brief of Felix Oberholzer-Gee and Koleman Strumpf; Brief of Intel Corporation; Brief of Internet Law Professors W. Fisher III, J. Zittrain and J. Palfrey, Jr.; Brief of the Consumer Electronics Association, the Computer and Communications Industry Association, and the Home Recording Rights Coalition; Brief of the Cellular Telecommunications & Internet Association, US Telecom Association, US Internet Industry Association, AT&T, BellSouth, MCI, SAVVIS, SBC, Sun Microsystems, and Verizon; Brief of Professor Glynn Lunney and Other Law Professors; Brief of Innovation Scholars and Economists; Brief of 60 Technology Law Professors and USACM; Brief of the Consumer Federation of America, Consumers Union, Free Press, and Public Knowledge; Brief of the Free Software Foundation and New Yorkers for Fair Use; Brief of Musical Artists; Brief of Media Studies Professors; Brief of Charles Nesson; Brief of Altnet, Inc.; Brief of Sharman Networks Limited; Brief of Distributed Computing Industry; Brief of the American Conservative Union and National Taxpayers Union; Brief of American Civil Liberties Union, National Library Associations, Internet Archive and Project Gutenberg; Brief of Emerging Technology Companies; Brief of Eagle Forum and Educational Defense Fund.*

Briefs of Petitioners and *amici: Brief for Motion Picture Studio and Recording Company Petitioners; Brief for Songwriter and Music Publisher Petitioners; Amicus Briefs Supporting Petitioners; Brief of the Progress and Freedom Foundation; Brief of the United States Solicitor General's Office; Brief of the Business Software Alliance; Brief of Law Professors, Economics Professors and Treatise Authors in Support of Petitioners; Brief of Kids First Coalition, Christian Coalition of America, Concerned Women for America, et al. in Support of Petitioners; Brief of Law and Economics Professors in Support of Petitioners; Brief of the Defenders of Property Rights in Support of Petitioners; Brief of State Attorneys General in Support of Petitioners; Brief of Commissioner of Baseball, NBA, NFL, Professional Photographers of America, et al. in Support of Petitioners; Brief filed by Napster, Movielink, CinemaNow, MusicNet et al.; Brief of the American Federation of Musicians of the United States and Canada, American Federation of Television and Radio Artists, Directors Guild of America, Screen Actors Guild, and Writers Guild of America, West; Brief of International Rights Owners; Brief of National Association of Recording Merchandisers; Brief of Macrovision Corporation; Brief of Professors Menell, Nimmer, Merges, and Hughes in Support of Petitioners; Brief of National Academy of Recording Arts & Sciences (NARAS), et al. in Support of*

Petitioners; Brief of ASCAP, BMI, et al. in Support of Petitioners; Brief of Americans for Tax Reform in Support of Petitioners; Brief of the National Assoc. of Broadcasters (NAB) in Support of Petitioners.

Neutral *Amicus* Briefs*: Brief of The Digital Media Association, Netcoalition, The Center for Democracy and Technology, and the Information Technology Association of America; Brief of Senators Leahy and Hatch in Support of Neither Party; Brief of the American Intellectual Property Law Association (AIPLA) in Support of Vacatur and Remand; Brief of Video Software Dealers Association (VSDA) Suggesting Reversal; Brief of Professor Lee A. Hollaar in Support of Neither Party; Brief of Audible Magic, Digimarc and Gracenote in Support of Neither Party; Brief of IEEE-USA in Support of Neither Party; Brief of iMesh in Support of Neither Party; Brief of Snocap in Support of Neither Party.*

[7] Lawrence Lessig, *Free Culture* (2004) at 77.

[8] Lessig, Free Culture at 77.

[9] Lessig, Free Culture at 66.

[10] Distributed Computing Industry Association at 18; Cellular Telecommunications & Internet Association.

[11] Free Software Foundation, Altenet.

[12] Distributed Computing Industry Association at 24-25.

[13] Sovereign Artists at 2.

[14] Distributed Computing Industry Association at 26.

[15] Intel at 19 cites a figure of $844 billion for a broadly defined group of industries that are impacted by digital communications technologies, in contrast to movie industry revenues of $35 billion. Recording industry sales are less than $15 billion (Oberholzer-Gee and Stumpf). Innovation Scholars and Economists at 6 identify over $250 billion of output in a narrowly defined set of information technology and communications industries.

[16] Mark Cooper, "Inequality in Digital Society: Why the Digital Divide Deserves All the Attention it Gets," *Cardozo Arts & Entertainment Law Journal*, 20: 1 (2002).

[17] Lawrence Lessig, *Code and Other Laws of Cyberspace* (1999), Chapter 7 and Appendix, presents a detailed description.

[18] Innovation Scholars and Economists at 10.

[19] Lessig, Free Culture, Chapter Ten.

[20] *Eldred v. Ashcroft*, 537 U.S. at 186, 219 (2003).

[21] *See generally*, Ithiel de Sola Pool, *Technologies of Freedom on Free Speech in an Electronic Age* (1983).

[22] *Reno v. A.C.L.U.*, 521 U.S. at 844, 850 (1997).

[23] *Reno* at 853.

[24] William St. Clair, *The Reading Nation In The Romantic Period* at 61-72 (2004) (footnotes omitted).

[25] *See* L. Ray Patterson, *Copyright In Historical Perspective* at 83-90 (1968).

[26] *See generally* Craig Joyce & L. Ray Patterson, *Copyright in 1791*, 52 Emory L.J. at 909 (2003).

[27] *Donaldson v. Becket* 98 Eng. Rep. at 257 (H.L. 1774).

[28] *See* Richard D. Altick, *Writers, Readers & Occasions* at 209-30 (1989) (discussing reading publics in England and America).

[29] *See* James Boyle, The Second Enclosure Movement and the Construction of the Public Domain, Conference on the Public Domain, Duke University School of Law, November 9-11, 2001, at http://www.law.duke.edu/pd/papers/boyle.pdf citing Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in The Writings of Thomas Jefferson 326, 333-34 (Albert Ellery Bergh ed. 1907) urging that Jefferson's comment should only be quoted in context to fully convey Jefferson's message as "a skeptical recognition that intellectual property rights *might* be necessary, a careful explanation that they should not be treated as natural rights, together with a warning of the monopolistic dangers that they pose."

[30] 464 U.S. 417, 429 (1984); see Mark Nadel, "How Current Copyright Law Discourages Creative Output: The Overlooked Impact of Marketing," *Berkeley Technology Law Journal*, 19 (2004), Section II, for a review of the arguments that in the current industry structure copyright undermines, rather than promotes progress and the public interest.

[31] 464 U.S. 417 (1984).

[32] *Sony*, 464 U.S. at 442, 464 U.S. at 441 n. 21: "It seems extraordinary to suggest that the Copyright Act confers upon all copyright owners collectively… the exclusive right to distribute VTR's simply because they may be used to infringe copyrights.... [R]espondents seek, in effect, to declare VTR's contraband."

[33] *See, e.g., Sony* at 446: "If there are millions of owners of VTR's who make copies of televised sports events, religious broadcasts, and educational programs such as Mr. Rogers' Neighborhood, and if the proprietors of those programs welcome the practice, the business of supplying the equipment that makes such copyright feasible should not be stifled simply because the equipment is used by some individuals to make unauthorized reproductions…."

[34] *See* Melville B. Nimmer & David Nimmer, 3 *Nimmer on Copyright* § 12.04[A] [1] at 12-72 to 12-74 (2004).

[35] Thus, early in his opinion in *Sony*, Justice Stevens could characterize the copyright owner plaintiffs' "attempt to impose copyright liability upon the distributors of copying equipment" as literally "unprecedented." 464 U.S. at 421.

[36] *See* Tom Sandage, *The Victorian Internet: the Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers* at 148-152 (1998).

[37] *See International News Service v. Associated Press*, 248 U.S. 215 (1918). An earlier decision of special interest is *Kiernan v. Manhattan Quotation Telegraph Co*, 50 How. Prac. Rep. 194 (Sup. Ct. N.Y.) (Ct. App. 1876).

[38] *White v. Smith Music Publishing Co. v. Apollo Co.* 209 U.S. 1 (1908).

[39] Kerry Segrave, *Piracy in the Motion Picture Industry* at 28 (2003).

[40] Segrave at 25.

[41] Segrave at 25-26. *See also* Charles Musser, *Before the Nickelodeon* 421 (1991).

[42] *See Musser* at 162-167.

[43] *See* Eileen Bowser, *The Transformation of Cinema, Volume 2: 1907-1915* at 256 (1990).

[44] *See, e.g.*, *American Mutoscope & Biograph Co. v. Edison Mfg. Co.*, 137 F. 262 (C.C.D.N.J. 1905); *Edison v. Lubin*, 122 F. 240 (3rd Cir. 1903); and *Barnes v. Miner,* 122 F. 480 (C.C.S.D.N.Y., 1903).

[45] *Kalem Co. v. Harper Bros.*, 222 U.S. 55 (1911).

[46] Russell Sanjek III, *American Popular Music and its Business: The First Four Hundred Years (From 1890 To 1984)* at 144 (1988).

[47] Mark Coleman, *Playback* at 34 (2003).

[48] See *Jerome H. Remick & Co. v. Gen. Elec. Co.* 16 F.2d 829 (S.D.N.Y. 1926).

[49] Laurie C. Tepper, *Copyright Law and Library Photocopying: An Historical Survey*, 84 Law Lib.J. at 341, 348 (1992). *See also* Louise Weinberg, *The Photocopying Revolution and the Copyright Crisis*, 38 Pub. Interest at 99 (1975). For the Xerox 914 that spearheaded the "revolution" *see* David Owen, *Copies in Seconds: Chester Carlson and The Birth of the Xerox Machine* at 245-257 (2004).

[50] *See* Melville B. Nimmer, *New Technology and the Law of Copyright: Reprography and Computers*, 15 U.C.L.A. L.Rev. at 931, 951 (1968).

[51] *See, e.g., Williams & Wilkins Co. v. United States*, 487 F.2d. 1345 (Ct. Cl. 1973), *aff'd by an equally divided Court*, 420 U.S. 376 (1975) (library photocopying upheld as "fair use"); *Basic Books, Inc. v. Kinko's Graphics Corp*, 758 F. Supp. 1522 (S.D.N.Y. 1991) (commercial photocopying service liable for direct infringement for photocopying); *American Geophysical Union v. Texaco, Inc*., 60 F.3d 913 (2d. Cir. 1984) (business corporation liable).

[52] For the elements of this solution, see Paul Goldstein, *Copyright's Highway* at 109-17, 207-207 (Rev. ed. 2003).

[53] *Fortnightly Corp. V. United Artists Television, Inc.* 392 U.S. at 390 (1968).

[54] *See* Fisher, Promises at 199-258 (describing a statutory "alternative compensation system").

[55] Janis Ian, a 1970s musician who has made quite the comeback by being great with these issues and putting out free mp3s of her work has an article on her website about all this.

> Let's take these points one by one, but before that, let me remind you of something: the music industry had *exactly* the same response to the advent of reel-to-reel home tape recorders, cassettes, DATs, minidiscs, VHS, BETA, music videos ("Why buy the record when you can tape it?"), MTV, and a host of other technological advances designed to make the consumer's

life easier and better. I know because I was there. The only reason they didn't react that way publicly to the advent of CDs was because *they believed CD's were uncopyable*. I was told this personally by a former head of Sony marketing, when they asked me to license *Between the Lines* in CD format at a reduced royalty rate. ("Because it's a brand new technology.") http://www.janisian.com/article-internet_debacle.html

[56] Philips also introduced a product of concern to the music industry, the first CD recorder. *See* "Philips To Launch First Audio CD Recorder," *Reuters*, June 25, 1997, *archived at* www.minidisc.org/philips_rec_cd.html.

[57] 17 U.S.C. §1001-1010

[58] *See* S. Rept. 102-294 at 32–33 (1992).

[59] *See RIAA v. Diamond Multimedia Systems, Inc.*, 180 F.3d 1072 (9th Cir. 1999).

[60] *See, e.g.*, Tony Smith, *Macrovision preps '99% effective' CD lock-in tech*, July 24, 2004, *available at* www.theregister.co.uk/2004/07/26/macrovision_cds300_7/

[61] *See, e.g.*, Alan Lofft, *Is DVD-Audio or Super Audio CD In Your Future?, available at* www.axiomaudio.com/archives/DVDA.html.

[62] RIAA v. Diamon Multimedia, 1999.

[63] Cellular Telecommunications & Internet Association at 14, citing MGM Studio, Inc. v. ReplayTV, 2001; Opposition of the MPAA, *Digital Output Protection Technology and Recording Method Certifications,* FCC MB Dkt. No. 04-63 (April 4, 2004).

[64] Cellular Telecommunications & Internet Association at 16, citing *Perfect 10 Inc. v. Google Inc.*, No. 2:04-cv-09484 (C.D. Cal. Filed Nov. 19, 2004); *Perfect 10, Inc. v. Visa Int'l Serv. Ass'n, et al.*, No. C-04-0371, 2004 WL 1773349 (N.D. Cal. Aug. 5); Consumer Electronic Association citing complaint against Clearplay.

[65] *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (1992).

[66] *See generally* Mark Cooper, *Open Communications Platforms: The Physical Infrastructure as the Bedrock of Innovation and Democratic Discourse in the Internet Age*, 2 J. on Telecomm. & High Tech. L. at 177, 188 (2004).

[67] Cooper, Open Communications at 189.

[68] Nesson at 2.

[69] Creative Commons at 3.

[70] Creative Commons at 3.

[71] Creative Commons at 4.

[72]

[73] Creative Commons at 10.

[74] Creative Commons at 14, "Historically, this Court has been especially sensitive to legal rules that impose costs blocking access to important speech opportunities. This was a central concern of the Court in *Reno*… It was also one reason that this Court rejected the statute's technological safe harbors… The same concern also has guided this Court's review of regulations that burden speech beyond the Internet."

[75] Creative Commons at 7.

[76] Creative Commons at 12.

[77] Creative Commons at 12.

[78] Creative Commons at 1, alone counts 10,000,000 objects marked with its license.

[79] American Civil Liberties Union, et al. at 13.

[80] American Conservative Union at 8.

[81] Eagle Forum at 7; American Civil Liberties Union at 14.

[82] Distributed Computing Industry Association at 21-22.

[83] Media Studies Professors at 9-10; American Civil Liberties Union at 11.

[84] Media Studies Professors; Computer Science Professors at 11.

[85] American Civil Liberties Union at 11-12.

[86] Distributed Computing Industry Association at 22-23, 26, cites the Internet Archive, Guttenberg Project, and the Prelinger Archive.

[87] Lee et al. at 3.

[88] Lessig, Code at 183.

[89] Lessig, Free Culture, Chapter Ten.

[90] Peter Alexander, "Music Recording," in James Brock (Ed.), *The Structure of American Industry* (2005) at 119.

[91] Mark Cooper, "Fair Use and Innovation First, Litigation Later: Why Digitally Retarding Media (DRM) Will slow the Transition to the Digital Information Age," *Online Committee, Federal Communications Bar Association*, January 29, 2003.

[92] Law Professors.

[93] Law Professors at 4.

[94] Law Professors at 5.

[95] Laws Professors at 8… 11, 12.

[96] Law Professors, at 22-23, estimate a 90 percent ratio, comparing the quantity of downloading claimed by recording companies compared to an estimate of lost sales. The assumption is that a download that has not displaced a sale is not an infringing use. Other estimates are substantial as well, including Rafael Rob and Joel Waldfogel, *Piracy on the High C's: Music Downloading, Displacement, and Social Welfare in a Sample of College Students* (NBER Working Paper Series, October 2004), whose analysis implicitly puts the figure at two-thirds, as pointed out by Stan Liebowitz, "Will MP3 Downloads Annihilate the Record Industry? The Evidence so Far," in Gary Libecap (Ed.), *Advances in the Study of Entrepreneurship, Innovation and Economic Growth* (2003). He puts the figure at over 80 percent, but later cites data that would put it at zero (see Stan Liebowitz, *File Sharing: Creative Destruction of Just Plain Destruction?* School of Management, University of Texas at Dallas, November 2004 at 14).

[97] Lessig, Free Culture at 142…144.

[98] Lessig, Free Culture at 145.

[99] American Civil Liberties Union, et al. at 12-13.

[100] Creative Commons at 12-13.

[101] Creative Commons at 11-12.

[102] Sovereign Artists at 4-5.

[103] Joe Holly, "Sol Linowitz Dies; Carter Era Envoy Helped Found Xerox," *The Washington Post*, March 19, 2005, B-6.

[104]

[105] Intel at 4.

[106] Consumer Electronics Association at 30.

[107] Innovation Scholars and Economists at 3.

[108] While numerous *amici* argue that filtering will fail, the most compelling statements can be found in Computer Science Professors at 15-16, Intel at 12-13 and Innovations Scholars and Economists at 4.

[109] Duncan Watts, NEED FIRST CITE at 279-280.

[110] Searchability in problem solving implies another characteristic of the network, feedback. Steven Johnson, *Emergence* (2001) at 134, frames the explanation in terms of neural networks asking, "why do these feedback loops and reverberating circuits happen?"

[111] Watts at 56.

[112] Watts at 288.

[113] Watts at 279.

[114] Watts at 288.

[115] Albert-Laszlo Barabasi, *Linked* (2002) at 148.

[116] Barabasi at 129.

[117] Watts at 244.

[118] Mark Buchanan, *Nexus* (2002) at 69.

[119] Watts at 287.

[120] Ashish Arora, Andrea Fosfuri and Alfonso Gamardella, *Markets for Technology: The Economics of Innovation and Corporate Strategy* (2001) at 106.

[121] Arora et al. at 106.

[122] Arora et al. at 112.

[123] Von Hippel at 642.

[124] Arora et al. at 112

[125] Arora et al. at 112.

[126] Arora et al. at 104-105.

[127] Arora et al. at 255.

[128] Chong-Moon Lee, William F. Miller, Marguerite Gong Hancock and Henry S. Rowen, "The Silicon Valley Habitat," in Chong-Moon Lee, William F. Miller, Marguerite Gong Hancock and Henry S. Rowen (eds.), *The Silicon Valley Edge* (2000) at 6.

[129] Annabelle Gawer and Michael A. Cusumano, *Platform Leadership: How Intel, Microsoft and Cisco Drive Innovation* (2002) at 55-56.

[130] Joachim Henkel and Eric von Hippel, *Welfare Implications of User Innovation* (MIT Sloan School of Management, Working Paper 4327-03, June 2003) at 18… 19.

[131] See, for example, "Was Electricity a General Purpose Technology: Evidence from Historical Patent Citations," *American Economic Review* 94 (2004) at 388-393, for a taste of the discussion of older technologies. On the impact of information and communications technologies see David B. Audretsch and Paul J.J. Welfens, "Introduction" in David B. Audretsch Paul J.J. Welfens (Eds.), *The New Economy and Economic Growth in Europe and the US* (2002); Joel Mokyr, "Innovation in an Historical Perspective: Tales of Technology and Evolution," in Benn Steil, David G. Victor and Richard R. Nelson (Eds.), *Technological Innovation and Economic Performance* (2002).

[132] Sixty Intellectual Property and Technology Law Professors at 28.

[133] Robert Kahn and Vinton Cerf, "What is the Internet," in Mark Cooper (Ed.), *Open Communications.*

[134] Free Software Foundation at 10.

[135] Innovation Scholars and Economists at 9-10…12.

[136] Computer Science Professors at 13-14.

[137] Creative Commons at 11.

[138] American Civil Liberties Union, et al. at 10-11.

[139] Altnet at 2.

[140] Innovations Scholars and Economists at 11.

[141] Computer Science Professors at 10-11.

[142] Computer Science Professors at 13-14.

[143] Distributed Computing Industry Association at 15…18.

[144] Distributed Computing Industry Association at 19.

[145] Media Studies Professors at 9…10.

[146] Eric S. Boorstin, *Music Sales in the Age of File Sharing,* Senior Thesis, Princeton University, April 2004.

[147] Martin Peitz and Patrick Waelbroeck, *The Effect of Internet Piracy on CD Sales: Cross-Section Evidence* (CESifo Working Paper No. 1122, January 2004), *An Economist's Guide to Digital Music* (CESifo Working Paper No. 133, November 2004); Alejandro Zentner, "Measuring the Effect of Online Piracy of Music Sales," Unpublished Manuscript, University of Chicago Price, December 2003; StanLiebowitz, "Will Downloads Annihilate the Recording Industry? *Pitfalls in Measuring the Impact of File-Sharing,* paper presented at the CESifo Conference, July 2004, Munich Germany.

[148] Zentner, Measuring the Effect of Online Piracy; Liebowitz, "Will MP3 Downloads Annihilate the Recording industry?

[149] Rob and Waldfogel, *Piracy on the High C's.*

[150] Martin Peitz and Patrick Waelbroeck, *File-Sharing, Sampling and Music Distribution* (International University, School of Business Administration, Working Paper 26, December 2004), *Piracy of Digital Products: A Critical Review of the Economics Literature* (CESifo Working Paper No. 1071, November 2003), An Economist's Guide.

[151] Ram D. Gopal, Sudip Bhattacharjee and G. Laurence Sanders, "Do Artists Benefit From Online Music Sharing," *Journal of Business,* forthcoming; Michael X. Zhang, *A Review of Economic Properties of Music Distribution,* Working Paper, November 2002 at 14; Martin Peitz and Patrick Waelbroeck, *An*

Economists Guide to Digital Music (CESIFO Working Paper, No. 1333, November 2004); Alexander, The Music Industry.

[152] Even Liebowitz (Will MP3s Annihilate the Record Industry at 27) recognizes this "harm is not the same as fatal harm."

[153] Nadel, How Current Copyright Law Discourages Creative Output; Raymond Shih Ray Ku, "The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology," *University of Chicago Law Review,* 69 (2002).

[154] Robert Picard, "A Note on Economic Losses Due to Theft, Infringement, and Piracy of Protected Works," *Journal of Media Economics* 17: 3 (2004).

[155] Boelhert, Eric, "Why the Recording industry is Killing the Single," *Salon.com,* December 19, 2004.

[156] Rob and Waldfogel, Piracy on the High Cs at 15-16, 22-25; Oberholzer and Stumpf at 20.

[157] Boorstin, Music Sales, at 60-62. Liebwoitz's (Pitfalls, at 31) reanalysis of Boorstin reduced the size of the effect and in some cases eliminated the statistical significance, but did not demonstrate the effect was absent.

[158] Amit Gayer and Oz Shy, *Publishers, Artists and Copyright Enforcement,* Working paper, January 27, 2005.

[159] Picard at 216.

[160] Picard at 216-217.

[161] Alexander, Peer-to Peer at 151. Note that a subsequent merger rendered the industry a four firm oligopoly.

[162] State of Florida by Attorney General Robert A. Butterworth, et al., v. BMG Music, et al. at paras 3-7.

[163] State of Florida at para 37.

[164] State of Florida at para 38.

[165] State of Florida at para 49.

[166] State of Florida at para 72.

[167] Bill Werde, "Payola Probe Heating Up: New York Attorney General Investigating Record Labels' Links with Radio Stations," *Rolling Stone,* November 1, 2004. The importance of promotion and radio play (and hence payola) is emphasized by Alexander, The Music Industry at 137, and the core of the argument presented by Nadel, How Current Copyright Law Discourages Creative Output.

[168] Lessig, Free Culture at 70, citing Jane Black, "Big Music's Broken Record," *BusinessWeek Online,* February 13, 2003.

[169] Michele Wilson-Morris, "28 States Sue Major Labels and Retailers Over Alleged Price Fixing Conspiracy," *Music Dish,* August 8, 2000.

[170] Peter Alexander, "Music Recording," in James Brock (Ed.), *the Structure of American Industry* (2005) at 138.

[171] http://www.cedmagic.com/history/discovision-marketed.html

[172] http://www.cedmagic.com/history/vbt200.html

[173] http://www.cedmagic.com/history/cartrivision.html

[174]

[175] Pitfalls at 22.

[176] Liebowitz, Will MP3s Annihilate the Record Industry at 13.

[177] Because sales of singles had been artificially suppressed, calculating a price elasticity is difficult. The aggregate data reviewed by Alexander, Music Recording at 127, indicates a price elasticity of 6.8. The experience of the digital distribution industry is consistent with this level, as Slater, Content and Control at AII-9 point out "When Real's Rhapsody cut in half its per-song CD burning rates, CD burning tripled; when the Real Music Store cut its per-song and per-album download prices in half, purchases increased six-fold." The headlines of the press accounts reporting these experiences tell the story, for example, Stephen Levy, "Forecast: Song Costs May Fall Like Rain, *Newsweek,* September 27, 2004; Amy Harmon, "What Price Music?", *The New York Times,* October 12, 2003.

[178] Liebowitz, Will MP3s Annihilate the Record Industry at 9.

[179] Oberholzer-Gee and Stumpf at 6; "US Sees Growth in CD Sales Market, *BBC News,* January 6, 2005.

[180] "US Sees Growth in CD Sales Market, *BBC News*; "More Music Purchases in 2004: Nielsen Soundscan," *CBC Arts,* January 6, 2005.

[181] Oberholzer, amici at 10.

[182] The actual size of the gain in surplus depends upon the number of albums that would have been bought and the value of the other songs on the album. The upper limit is set by assuming all the albums would have been bought and none of the other songs on the albums had any value.

[183] The consumer surplus gain could be smaller, since people with a willingness to pay only $2 might have entered the market. Their consumer surplus gain would be only $1. On the other hand, if the single titles were not available on CDs, the consumer surplus gain could be larger, since a consumer might value a single at $12, but be priced out of the market for CDs.

[184] Law Professors at 23.

[185] The price discrimination literature W. J. Adams and J. L. Yellin, "Commodity Bundling and the Burden of Monopoly," *The Quarterly Journal of Economics* 90 (1976); R. Preston McAfee John McMillan and Michael D. Whinston, "Multiproduct Monopoly, Commodity Bundling and Correlation of Values, *Quarterly Journal of Economics* 104 (1989).

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[194] Hal Varian, *Copying and Copyright,* Working Paper, December 2004 at 1…16.

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[196] Alexander, "Music Recording."

[197] Peter J. Alexander, "New Technology and Market Structure: Evidence from the Music Recording Industry," *Journal of Cultural Economic*, 18 (1994) at 121.

[198] Bill Wittur, "Selling Minor Chords in Exchange for a Happy Tune," *Music Dish,* December 12, 2004.

[199] Fisher, Promises, Appendix A.

[200] Michael X. Zhang, *A Review of Economic Properties of Music Distribution,* Working Paper, November 2002 at 14.

[201] Gopal, Bhattachariee and Sanders.

[202] Peter Alexander, "New Technology and Market Structure: Evidence from the Music Recording Industry," *Journal of Cultural Economics*, 18 (1994) at 122.

[203] Sovereign Artists at 3-4.

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[205] Sovereign Artists at 2.

[206] Sovereign Artists at 2-3.

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[208] Sovereign Artists at 38.

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[213] Gopal, Bhattacharjee and Sanders, at 33-37.

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