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Copyright and Digital Media in a Post-Napster World

GartnerG2
The Berkman Center for Internet & Society at Harvard Law School

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By GartnerG2 and The Berkman Center for Internet & Society at Harvard Law School

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0. Introduction

Digital technology and the Internet are altering many industries and changing the way people use and enjoy consumer electronic products, media and entertainment. This evolution, though, has exacerbated the tension between copyright holders (individual creators and corporate content providers), technology companies and consumers. This four-way tension is an important driver for business. When it is balanced, it provides all the benefits of a market-driven economy: Products are created, developed and distributed, and consumers choose from a variety of contents and goods—and pay a price they perceive as reasonable. When some part of this digital media ecosystem gains a disproportionate measure of influence, however, the system tends to flounder until balance is restored.

Technological development is the spur for change today and, as in other technologically turbulent periods, old methodologies and business models persist as new consumer-behavior models develop. In the case of digital media—music, movies and print—the transition to fully formed digital distribution services is now in progress.

What happens during this transitional period is important on a cultural as well as a commercial level. In the United States, for example, social values such as allowing access to information and creating an environment that encourages development and creation were important considerations in the codification of copyright law in the U.S. Constitution and later statutes.

Our objective is to provide a foundation to answer key questions facing copyright holders, technology developers and consumers. Among these: How do we balance the legitimate interests of copyright holders with the legitimate interests of the public in the use and enjoyment of digital media? Should technology developers be accountable to copyright holders? What future strategies might compensate copyright holders while also protecting innovation?

In this document, the Berkman Center for Internet & Society at Harvard Law School and GartnerG2 explore the issues surrounding the current digital media ecosystem:

- The legal and regulatory developments regarding copyright and related intellectual property issues.
- Business models upset by digital media distribution and new models made possible.
- Shifts in consumer attitudes and behavior.

Focusing on these topics, we have identified five scenarios that flow from the developments in law, technology and society. They are described at the end of this document and will form the basis of a second paper.

1. Evolution of Copyright Law: How We Got Here

Given the charter of this document, it is logical to start with the foundation of U.S. copyright law and its limitations, and then to consider later statutory responses to digitization and relevant developments in international and European law. In addition, we will briefly consider the issues that arise with the enforcement of copyright law across international borders.

The U.S. Constitution and the Copyright Act

The U.S. Constitution authorizes Congress 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."[1] This clause is interpreted as directing Congress to strike a balance between encouraging innovation by rewarding authors, and promoting the public interest by allowing for the free use of authors' works at the end of the "limited Times."

In the original Copyright Act, Congress granted authors 14 years of exclusive control over their works; in its many subsequent amendments, the term was incrementally extended. In 1998, the most recent revision, the term of copyright increased to life plus 70 years for authors and 95 years for corporations.

The U.S. Supreme Court upheld the constitutionality of this most recent 20-year extension (see *Eldred* v. *Ashcroft,* below). Still, other limitations on the rights of copyright holders to control use and enjoyment of their works remain. With the advent of new technologies such as the personal video recorder (PVR), courts are again weighing the rights of copyright holders against these traditional limitations.

Limitations on copyright

Any work in a "fixed" form with a modicum of originality may be eligible for copyright protection.[2] Registration of the work with the U.S. Copyright Office provides significant benefits,[3] but is not necessary for protection of the work.[4]

As a result, virtually everything on the Web is copyrighted. Unless it is excluded for other reasons, no copyright mark is required. A copyright holder has a number of exclusive rights in an original work, which means the public cannot copy it, sell it or make adaptations of it while the work is under copyright

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[1] *U.S. Const. art. I, § 8, cl. 8.*

[2] *Under the Copyright Act, a work is "fixed" when it is "sufficiently permanent or stable to permit it to be perceived, reproduced or otherwise communicated for a period of more than transitory duration." Movies, song recordings and books are obvious examples of fixed works. A live television broadcast is "fixed" if it is recorded simultaneously with the transmission.*

[3] *17 U.S.C. § 504(c), §411 (a)(1994) (An author may not sue for copyright infringement unless the work has been registered with the Copyright Office.).*

[4] *17 U.S.C. § 102(a) (1994).*

protection.[5] Because these rights are exclusive, a copyrighted work may not be used without permission during the period of copyright. However, there are important limitations, including (i) the "first sale" doctrine, (ii) the "idea/expression" dichotomy, and (iii) the doctrine of "fair use."

The **first sale doctrine** provides that certain of the copyright holder's rights end after the first sale of a particular copy of a work.[6] On this basis, a video rental store can rent videos to customers and a library can lend its books without seeking permission from the copyright holder or author. This legal concept does not provide a safe harbor in the context of digital media, however, because works shared over the Internet are not simply borrowed. Instead, in virtually all instances, a new copy is made, thus technically infringing on the copyright holder's rights over reproduction and distribution of the work.

The **idea/expression dichotomy** is the legal principle that copyright protection covers the particular expression of an idea, but does not extend to the idea itself. For example, an author cannot prevent others from writing a biography of Abraham Lincoln simply because she has written a biography of Lincoln.

Fair use of a copyrighted work does not require the creator's permission. Such use includes criticism, commentary, news reporting, teaching, research and certain personal uses. However, the Copyright Act does not specify which uses are fair. Those issues are adjudicated case-by-case, based on a four-factor balancing test. The four factors are: (i) the purpose and character of the use, (ii) the nature of the copyrighted work, (iii) the amount and substantiality of the portion used in relation to the copyrighted work as a whole, and (iv) the effect of the use on the potential market for, or value of, the copyrighted work.[7] This last distinction is critically important in an era of rapidly evolving technology.

Consumers may consider certain uses of copyrighted digital media as fair, such as making back-up copies of a DVD. But in many instances, the law is not definitive. Congress has responded to the confusion with legislation aimed at protecting the rights of copyright holders while also respecting the traditional limitations of copyright.

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[5] 17 U.S.C. §106 sets forth the exclusive rights: (i) to reproduce the copyrighted work in copies or phonorecords; (ii) to prepare derivative works based upon the copyrighted work; (iii) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending; (iv) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly; (v) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and (vi) in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.

[6] Codified at 17 U.S.C. §109(a).

[7] Codified at 17 U.S.C. §107.

Statutory responses to digitization

The **Audio Home Recording Act (AHRA)** of 1992 was developed as a compromise between the interests of the recording industry and those of consumers, who were then represented by the Home Recording Rights Coalition (HRRC). The recording industry's principal concern at the time was preventing the proliferation of consumer electronics devices capable of reproducing sound with perfect quality. The AHRA (i) requires that digital audio recording devices include a system that prohibits serial copying, (ii) establishes a royalty on sales of new digital audio recording devices, payable to the recording industry, and (iii) provides a safe harbor for consumers' personal use. Technology, however, has outstripped the AHRA and made it ineffective as an enforcement mechanism for the recording industry. It has also proven ineffective as a defense for companies that provide file-sharing services to consumers.

A significant problem is that many devices do not fall within the scope of the AHRA. The Act covers "digital audio recording devices," but excludes many others.[8] Computer hard drives, for example, have many uses other than storing audio data; therefore, they are not covered by the AHRA. Video home recording devices also do not fall within its scope.[9] Other new devices, such as MP3 players, are not included because they are capable only of playing material uploaded to them, rather than of reproducing material on their own.

Companies that provide file-sharing services to consumers have tried unsuccessfully to use in their defense the safe harbor provisions in the AHRA.[10] In recent litigation, Napster argued unsuccessfully that its file-sharing services did not fall within the AHRA's scope, setting a problematic precedent for other companies. Accordingly, the AHRA is becoming irrelevant to legal conflicts involving the digital distribution of music.

The **Digital Millennium Copyright Act of 1998 (DMCA)**[11] strengthened protections against unauthorized access to copyrighted material, and provides an additional layer of legal protection to copyright holders beyond the protections granted by the Copyright Act. The DMCA makes it a crime to circumvent the technological measures that control access to copyrighted works.[12] It also criminalizes the manufacture and distribution of any technology or tool designed to circumvent encryption

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[8] *17. U.S.C. § 1008.*

[9] *Consumer home recording from VCR devices for later playback is protected under the fair use doctrine as the Supreme Court ruled in* Sony Corp. of America v. Universal City Studios, Inc*., 464 U.S. 417 (1984).*

[10] *See* In re Aimster Copyright Litig*., 2002 U.S. Dist. LEXIS 17054 (N.D. Ill. 2002) Aimster took the position that the AHRA shielded Aimster from liability because the AHRA forbids actions based on the non-commercial use of a device to record digital or analog music recordings. 17 U.S.C. § 1008. The court however found that Aimster's services involved the copying of MP3 files from one user's hard drive onto the hard drive of another user, and this activity did not fall within the AHRA's protections.*

[11] *See http://www.loc.gov/copyright/legislation/hr2281.pdf.*

[12] *Section 1201 (a) (1) states, "no person shall circumvent a technological measure that effectively controls access" of a copyrighted work.*

technology,[13] a direct hit at halting piracy of copyrighted works in a digital format. However, the restrictions apply even to individuals who create or use a circumvention tool to make a legal or fair use of encrypted material. While there are a few narrow exceptions, the provisions do not adequately protect users who want to make legitimate use of copyrighted materials.

Section 512 of the DMCA does provide certain safe harbors to online service providers, defined as "a provider of online services or network access, or the operator of facilities thereof." Internet service providers (ISPs), Web-hosting services and search engines are all types of online service providers. So long as these providers have a "copyright agent" to respond to requests by copyright holders to remove infringing materials and follow the Act's procedural requirements, the providers are protected from liability for users' infringement by the Act's safe harbor provisions. This procedure is referred to as "notice and takedown."[14] Still, an online service provider may not be liable for its users' infringing acts, even if the provider does not follow the Act's safe harbor requirements, because the legal standards for contributory or vicarious liability may not be met. The safe harbor provisions merely provide an optional measure of security for online service providers.

In addition to proscribing circumvention of access controls and the creation or distribution of tools for such circumvention, the DMCA regulates the broadcast of digital audio transmissions (i.e., Webcasters and satellite radio stations). Providers of music or other audio content over the Internet are grouped into two categories: interactive and non-interactive. Interactive digital broadcasters allow listeners to control what they listen to and are required under the DMCA to negotiate directly with individual copyright holders or their performing rights societies for licenses to provide the copyrighted content to users. Non-interactive broadcasters operate like traditional radio stations and are permitted to operate provided they compensate copyright holders via a statutory license, with a fee periodically set by a Copyright Arbitration Royalty Panel.

Under the DMCA, Web radio broadcasters of digital transmissions are also required to pay royalties to record labels and recording artists. In contrast, traditional radio broadcasters only have to pay a royalty to composers, as radio broadcasts are considered to have substantial promotional value of benefit to the recording industry.[15] One justification forwarded in support of the additional burden on Web radio stations is the claim that digital transmissions are "perfect" copies of songs and their broadcast could therefore facilitate piracy or copying by listeners.

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[13] *Sections 1201 (a) (2) and 1201 (b) state that "no person shall manufacture, import, offer to the public, provide, or otherwise traffic in any technology" that can circumvent access controls or copy protection technologies.*

[14] *See http://www.chillingeffects.org/dmca512/notice.cgi?NoticeID=98#FAQID226.*

[15] *See http://www.kurthanson.com/archive/news/062002/index.asp.*

The **No Electronic Theft (NET) Act,**[16] signed into law in December 1997, criminalized the distribution of pirated software. This act is another statute enacted to protect the interests of copyright holders, although it is rarely invoked. It contains provisions that make liable even individuals who do not profit from such distribution, a loophole that previous laws left open. Similar to the DMCA, the **Computer Fraud and Abuse Act (CFAA)** is another statute providing broad prohibitions against tampering with or otherwise violating computers or computer systems other than your own. This statute has been invoked most notably against search robots and entities sending "spam" e-mail.[17] However, the open-ended statutory prohibitions may be more broadly construed to make illegal copyright holders' "self-help" measures against peer-to-peer (P2P) file-sharing of copyrighted material.

International and European laws

So far, most high-profile Internet copyright cases have taken place in the United States. But the global nature of the Internet means the copyright fight is being taken abroad.

Three principal **international copyright treaties** establish minimum standards for copyright protection, binding all the signatories to the respective treaties: the Berne Convention for the Protection of Literary and Artistic Rights, the Universal Copyright Convention (UCC), and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The signatories include the United States, the member states of the European Union (EU) and the member states of the World Trade Organization. Because each country has its own set of national laws and citizens who are transacting online and offline thousands of times a day, many international organizations are working to harmonize laws dealing with intellectual property and other rights between the individual nations and the EU collective.

Recently the World Intellectual Property Organization (WIPO) Copyright Treaty of 1996 and the WIPO Performances and Phonograms Treaty of 1996 entered into force; the United States signed both, and the EU member states are expected to follow suit. These treaties essentially reiterate the principles of the Berne Convention and the TRIPS agreement, while adding provisions that address digital transmissions and technological protection measures.

A European Copyright Act does not exist, as such. Rather, each individual member country has its own **national copyright law**. EU member states have, however, significantly harmonized their national copyright laws within the past decade as a result of a series of EU Directives.

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[16] *No Electronic Theft Act, Pub. L. No. 105-147, 111 Stat. 2678 (1997).*
[17] *Codified at 18 U.S.C. §1030; see also http://www4.law.cornell.edu/uscode/18/1030.html.*

Perhaps the most important piece of EU legislation regarding digital media is the **Information Society Directive**.[18] In tandem with the earlier Directive on Electronic Commerce[19] and the Directive on Access Control Services,[20] the Information Society Directive is viewed as the European parallel to the DMCA.

Still pending implementation, the Information Society Directive is designed to ensure that EU law extends a high level of protection to copyright holders. Like the DMCA, its provisions govern technological protection measures and significantly extend pre-existing laws on anti-circumvention.

The Euro DMCA is purposely less detailed than the U.S. version, perhaps to provide EU members the leeway to develop their own laws and to facilitate adoption of DMCA-like protections. The Directive calls for member nations to ensure "adequate legal protection" against circumvention of technological measures, which could be interpreted in numerous ways.

It remains to be seen to what extent the member states' implementations of the Directive will differ from one another—both on the books and in practice. Nevertheless, the Directive represents a significant step toward a closer alignment of European and U.S. treatment of intellectual property.

One intriguing aspect of the Information Society Directive is its effect on the limitations to copyright in the various nations. This is problematic, as the treatment of the idea of **fair use** or similar guidelines varies greatly among nations. For example, Germany and France maintain there is no general exception to the requirement to obtain permission to use copyrighted material, while Italy provides for a **free use** principle with a state-run fee structure. The Directive does aim to limit divergence by outlining regulations that a country is either required to, or has the discretion to implement. Yet at the same time, the current variations are dramatic and could potentially impact the Directive's implementation.

With the current web of international treaties on copyright and the increasing harmonization in copyright law among EU nations, "authors" in EU nations and the United States receive roughly the same level of protection—especially concerning the right to reproduction, the right to prepare derivative works, the right to distribution, and the right to public performance and display. However, conflicting international laws and enforcement of "local" regulations on the global Internet still present difficulties.

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[18] *See Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society.*
[19] *See Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market.*
[20] *See Directive 98/84/EC of the European Parliament and of the Council of 20 November 1998 on the legal protection of services based on, or consisting of, conditional access.*

International enforcement issues

The Internet's reach greatly disrupts the ability of governments to enforce national rights against foreign entities, highlighting conflicting international laws. The international component is one of the more interesting aspects of the U.S. recording industry's suit against P2P network operator **KaZaA**. KaZaA was established in the Netherlands, but then was sold to Sharman Networks, a company incorporated on the South Pacific island of Vanuatu and managed in Australia.[21] On 22 March 2002, a Dutch court ruled that KaZaA was not liable for copyright infringement by its users under Dutch law.[22] Ten months later, a Los Angeles federal judge determined that Sharman Networks, now owner of KaZaA, could be sued by the recording industry in U.S. courts under the equivalent U.S. law.[23] The case illustrates the enforcement obstacles for U.S. plaintiffs, raising questions about the enforceability of U.S. law with regard to foreign entities in the context of uncertain jurisdiction and conflicting international laws.

Perhaps more significant is KaZaA's roving international ownership, which some have characterized as "running from the law." While KaZaA has survived the suit filed by copyright holders in the Netherlands,[24] plaintiffs may appeal. The case in the United States[25] recently handed out a victory to the P2P file-sharing services.[26] However, the decision did not vindicate KaZaA, due to the company's non-participation in the suit, perhaps as a move to bolster its (unsuccessful) argument that it should not be subject to U.S. jurisdiction. Prior to handing down his decision vindicating the file-sharing services, Judge Stephen Wilson found that KaZaA did indeed meet the "minimum contacts" requirements to subject it to the jurisdiction of California's federal courts.

More recently, **Jon "DVD Jon" Johansen,** a Norwegian teenager (at the time of the alleged offense) was charged and tried for his role in a small team of software writers who created a software program to bypass the encryption on commercial DVDs.[27] Norway has no legal equivalent to the DMCA yet, and Johansen was found not guilty of violating Norway's existing data break-in laws. But Johansen is not yet in the clear. Not only has the Norwegian government appealed the decision, it is also crafting new DMCA-like legislation, pursuant to its WIPO obligations. The result is that the Johansens of the future likely will not fare as well in court.

In nations that do not recognize U.S. copyright law, do not have laws similar to the DMCA or are unlikely to be subject to U.S. jurisdiction, enforcing copyright in the traditional manner is significantly more difficult. Even where comparable national

[21] *See http://www.wired.com/wired/archive/11.02/kazaa.html.*
[22] *See http://news.com.com/2100-1023-870396.html.*
[23] *See http://news.com.com/2100-1023-980274.html.*
[24] *See http://www.eff.org/IP/P2P/BUMA_v_Kazaa/20020328_kazaa_appeal_judgment.html.*
[25] *See http://rss.com.com/2100-1023-980274.html?tag=rn.*
[26] *See the decision at: http://eff.org/IP/P2P/MGM_v_Grokster/030425_order_on_motions.pdf.*
[27] *See http://www.itworld.com/Man/2683/030107dvdjon/page_1.html.*

copyright laws are in place, the mobility of the Internet and Web sites make global enforcement a much more difficult and costly enterprise. As an example, in 2001, a Taiwanese Web site called **Movies88.com** offered videos on demand for US$1 per three-day "rental." (Movies88.com was a few steps ahead of Hollywood in providing such a service, since the industry-approved sites, Movielink.com, CinemaNow and others, have only recently launched.) While Movies88.com claimed it followed all Taiwanese copyright laws, it was clearly not in compliance with U.S. copyright law, because the films were "publicly performed" in the United States without the permission of the copyright holders. The site was shut down soon after it went online, perhaps due in no small part to the might and resources of its opponent.

The international counterpart to the **Motion Picture Association of America** (MPAA) sent a notice to Movies88.com's ISP demanding that the site be shut down. In February 2002, the ISP complied. No lawsuit was filed at the time, so presumably Movies88.com could simply seek another ISP. But there is clearly a limit to the number of times Movies88.com could employ such a strategy, if only because it would eventually run out of providers willing to service the site.

In another case illustrating the global reach of the Internet, the U.S. government brought criminal charges against the Russian programmer Dmitry Sklyarov and then his employer, **ElcomSoft**, for violating the DMCA. While working for ElcomSoft, Sklyarov created a program that disables the copy protection for Adobe's eBook reader. He was arrested in the United States while attending a conference at which he was an invited speaker, giving a presentation on the software. Charges against Sklyarov were eventually dropped, but ElcomSoft was tried and acquitted in the United States.

The law remains in flux regarding trial of foreign citizens and entities under U.S. copyright law. Access control technologies—such as "region coding" for DVDs—can subordinate foreign law by making technologically impossible what may be legal activity. New Zealand law currently has no DMCA and allows commercial importation of copyrighted goods from other regions.[28] Yet even a New Zealander could be proscribed from bypassing region codes, since distributing a program like ElcomSoft's could invite criminal prosecution under the United States' DMCA.

U.S. and international copyright law is changing in response to technological advances and, despite these adjustments, the global nature of the Internet continues to pose a challenge for the enforcement of copyright across international borders. In the next section, we will discuss the technological developments that continue to drive these changes in copyright and related law, the effect the developments are having on current business models, and contemporary shifts in consumer buying patterns and behavior.

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[28] *See http://www.med.govt.nz/buslt/int_prop/digital/ and http://www.med.govt.nz/buslt/int_prop/info-sheets/parallel.html*

2. Business Models in Transition

Changes in copyright and intellectual property law are driven by the emergence of devices that deliver increasingly higher quality reproduction and/or playback of copyrighted digital material—most commonly, music and movies. The Internet has further complicated matters by giving consumers the ability to easily redistribute content in a digital form. Perhaps the most significant development took place in the early 1990s, when CD-ROM drives became commonplace in personal computers, jumpstarting the PC's shift from a pure productivity tool to an entertainment platform.

Mass adoption of PCs and VCRs has changed consumers' expectations, notably by introducing the notions of time- and location-shifting. It also marked the beginning of the end of the entertainment industry's ability to control the distribution of content by controlling the physical medium on which the entertainment was delivered.

This ability to control how content gets to consumers is a cornerstone for the content industry—music, film, television and publishing companies. Business models in the last century succeeded largely by their ability to control distribution of product, commonly acquired in physical places, like a book or record store, or via controlled broadcast channels, such as a movie theater, radio or television. Copyright holders had a straightforward, though not foolproof, way to keep track of their work. And before digital technology, illegal copies were inferior to the original, thus making piracy arguably less attractive.

What confounds the content industry today is how to shift a century's worth of business models as quickly as digital technology evolves—or at least keep within sight of new technologies.

Music

The Internet and PCs equipped with CD-ROMs and CD burners have had a profound impact on the music industry. Revenue streams are based on a complex series of relationships among composers, recording artists, record labels, performance rights organizations, broadcast outlets and retailers. Before the Internet arrived, these relationships worked to the extent that the means for producing and distributing content were complex, but relatively easy to control given the long history of industry standardization and legal protections. This control is now weakened, and with the arrival of the MP3 file format and the popularization of P2P file-sharing through Napster and its progeny, the industry faces further challenges.

Napster terrified the music industry, but also illuminated the potential benefits of digital distribution. Chief among these: the ability to deal directly with an individual consumer without the

burden and expense of a physical distribution network. The goal remains to secure this type of transaction and, in light of KaZaA and other decentralized P2P networks, to create an alternative service more compelling than illegal file-sharing. The industry could then begin to look at PC and Internet technologies as vital marketing tools for recording artists and the music labels themselves. Labels could use Web sites to promote new releases and provide music samples as well as offer near-instantaneous access to an artist's back catalog.

While it might appear that the industry has clung to traditional business models, experiments are under way with a number of pay-per-download and online subscription services, including eMusic, Rhapsody, MusicNet and Pressplay. Rhapsody is now owned by Real Networks Inc., which bought Rhapsody and its parent company, Listen.com, in April 2003. Once they pay a subscription fee, Rhapsody subscribers have access to 330,000 songs and pay $0.79 per song to download and burn onto a CD. Pressplay boasts artists from the five major record labels, BMG Entertainment, EMI Recorded Music, Sony Music Entertainment, Universal Music Group and Warner Music Group. MusicNet offers music from BMG, EMI, Sony, Universal and Warner. For a fee, these online services allow consumers to stream or download music, and shift the content onto another device and, in some cases, actually burn the content onto a CD. Among the shortcomings of these services is that the music labels are not opening up their entire catalogs and that the terms of some subscriptions restrict the subscriber's ability to move the content onto multiple devices.

Neither Pressplay nor MusicNet will disclose the number of paying subscribers, an indication that they have so far been unable to attract substantial numbers. A third service, RadioMX from MusicMatch, boasts120,000 subscribers, but does not allow "burning" or portability of its content.

The biggest development in the online music distribution space as of this writing is Apple's announcement of its digital music distribution service. On 28 April 2003, the company jumped into the fray with its iTunes Music Store, a pay-per-download architecture and not a subscription service. Initially, the service is only available to Mac users running the Mac OS X version 10.1.5 or later. A Windows version of the iTunes Store and iPod is scheduled to ship at the end of 2003.

Among the highlights:

- Customers pay $.99 per song downloaded (users can play 30-second clips for free) or $9.99 for an entire album (no subscription fee).
- A catalog of 200,000 songs.
- Customers can make unlimited CD burns of their content (up to 10 burns of a user-created playlist).

- Content can be accessed by up to three Mac computers.
- Unlimited synchronization of purchased songs between the user's Mac and iPod portable music player.

Film

TV (first broadcast, then cable) and the **VCR** provoked the first major shift of the film industry's business model. TV networks and cable outlets became profitable secondary markets for the studios. While first perceived as a threat, the VCR eventually turned the film industry's business model on its head, with the revenue stream from movie rentals and sales surpassing that from ticket sales.

As disruptive forces go, the **Internet** is proving to be the most significant for the movie industry. Distributing films over the Internet is increasingly easier, either through Web sites like Movies88.com or via P2P file-sharing networks. Credible estimates of the financial impact of Internet movie piracy are hard to find. MPAA president Jack Valenti has quoted Viant, a Boston-based consulting firm, which estimated that more than 350,000 movies are illegally downloaded off the Internet daily.

The arrival of the **DVD** reprises a situation that has bedeviled the film industry: the threat of "bootlegged" copies of copyrighted films. Bootleg copies can be made from commercially released DVDs or copies of so-called promo DVDs. Promotional copies are sent out to industry personnel or movie critics ahead of a film's theatrical release for advance screenings; this was done with VHS tapes as well, which proved to be a source of pirated copies. One alternative will be offered by Disney's Buena Vista Home Entertainment division. This August, it will ship DVDs that render themselves unplayable 48 hours after rental, using technology from Flexplay Technologies Inc.

While the movie industry experiments with solutions to battle mechanical copying of DVDs, it is also experimenting with ways to safely get movie content online. In mid-2002, industry members banded together to launch Movielink.com, a joint project between MGM Studios, Paramount Pictures, Sony Pictures Entertainment, Universal Studios and Warner Bros. (A competing service, Intertainer, is currently offline due to an ongoing legal battle with the major studios, alleging that they abandoned their support of Intertainer in favor of the Movielink service.)

Movielink allows users with a broadband PC connection to purchase temporary access to films released at roughly the same time they become available at video rental stores. The digital content is stored on a PC hard drive and is viewable as many times as the purchaser desires within a 24-hour period after the first viewing. The user has 30 days to access the film from the time it is purchased. When either the 24-hour or 30-day period ends—whichever comes first—the Movielink client erases the content from the hard drive.

Another company that provides film viewing on demand is CinemaNow, which uses a proprietary distribution and digital rights management (DRM) technology platform to protect content. Launched in June 2001, CinemaNow has not published official subscriber numbers, but claims at least 1 million unique visitors each month. Both of these services are still very new and their chances for long-term success are difficult to gauge.

Television

TV's revenue model is dominated by advertising. Cable TV simply introduced a new revenue stream, from subscribers. In recent years, other revenue streams have emerged: selling boxed sets of a season's worth of popular shows like "The X-Files," "Sex and the City" and "The Sopranos"; and selling shows into syndication.

The TV industry remained relatively stable throughout the Internet explosion of the 1990s. It is only with the more recent introduction of the PVR that the traditional advertising-dependent revenue model has come under serious threat.

The two leading PVRs, SONICblue's ReplayTV and TiVo, allow viewers to set preferences for recording programs and subject matter, as well watching the programs whenever they choose and fast-forwarding through commercials. ReplayTV even allows viewers to skip commercials entirely. (This feature is at issue in SONICblue's court case with TV broadcasters and the major film studios. CEO Ron Ballard claims the suit is costing the company $3 million per fiscal quarter. In April 2003, SONICblue filed for bankruptcy and its ReplayTV unit was sold to D&M Holdings, a Japanese holding company that owns the Denon and Marantz brand names.)

The effect of these technologies may be to kill off the concept of "prime time" TV viewing. If so, PVRs could cause the death of virtually every TV advertising tactic and strategy developed in the past 50 years.

Publishing

Books are typically sold through retail stores, with "book-of-the-month" clubs adding revenue via catalog sales. Online retailers such as Amazon.com pioneered a new distribution channel. Their success essentially rivaled conventional retail bookstores. Copyright protection, however, is never in peril, as publishers and retailers keep physical control over the medium delivering the content.

Online versions of print publications—magazines and newspapers—and "e-books" are another matter, because of the possibility of digital piracy. Yet this risk is of little concern to the industry. Incremental ad revenue is a financial incentive for print publications to launch online versions, but the primary source of revenue remains subscription and newsstand sales. Meanwhile, consumers have not embraced e-books, most likely because a PC is not as portable and rugged as a paper book.

Some say promise remains for the online subscription model. *The Wall Street Journal* has always required a separate paid subscription for its online version, and *Consumer Reports* is reportedly the first online publication to have attracted 1 million subscribers. But virtually every newspaper that launched a Web site in the past four years has given visitors free access, so convincing consumers to pay for online content is difficult.

As for e-books, the ElcomSoft case may be an illustration of smoke without fire or flame. ElcomSoft's Sklyarov created a pirate's tool before there was any substantial content available and worth stealing. E-book titles have not yet approached the number or richness of their paper counterparts—and indeed, may never do if consumers continue to show little interest in them.

Changing consumer behavior

New technologies disrupt existing business models, but only to the extent that the public embraces them. By late 2001, PC manufacturers and consumer electronics companies had given consumers the tools to store vast quantities of digital content on massive hard drives, and the software necessary to create digital copies of pre-recorded CDs.

By mid-2002, copying CDs was a relatively common act for one-third of online adults and nearly 40% of the online teens queried by GartnerG2 in a survey of Internet users. (Respondents included 1,005 adults aged 18 or older and 1,009 teens ages 13 to 17. Samples were selected to be representative of online individuals with respect to geography, market size, household income, household size and presence of children. The adult sample was also selected to be representative of online individuals with respect to age.)

The survey revealed a remarkably high level of ownership of digital technologies among those queried. Among the findings:

- 62% of Internet users reported owning a DVD player.
- 95% owned a standalone CD player.
- 93% owned a PC with a CD player.
- 63% owned a PC with a DVD player.
- 56% owned a PC with a CD burner.
- 6% owned a PC with a DVD burner.

At the root of this high level of ownership is the continual enhancement of the PC platform at ever-decreasing prices. Gartner projects the basic component configuration and prices over time for different classes of PCs targeted to different market segments—advanced, premium and mid-range PCs. The mid-range PC category (see Table 1) makes up between 20% to 30% of the market at any point in time.

Table 1: Breakdown for mid-range PCs

	1997	2006
Hard drive storage	3.2GB	180GB
Optical storage	CD-ROM	DVD-CD-RW combo drive
CPU	Pentium	Pentium
Average selling price	$1,100–$1,400	$1,489

Source: Gartner Dataquest, April 2003

The underlying truth of the PC technology evolution is that functionality increases while end-user prices remain flat or decline. This price-performance progression is fixed in the consumer's mind and has arguably given rise to an important set of expectations: that with a mid-range PC and an Internet connection, virtually any type of digital content is available.

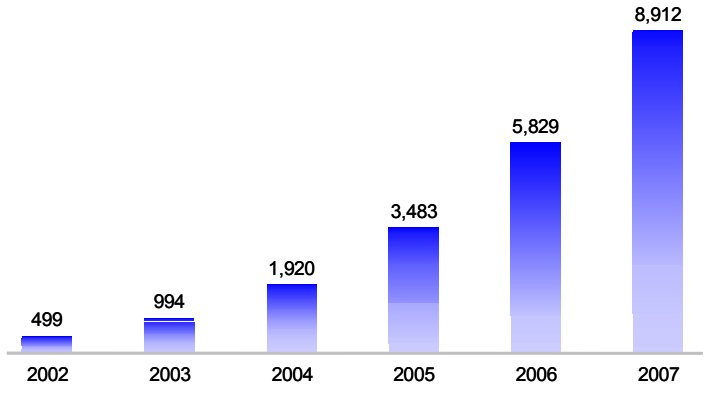
Current behavior and future possibilities

The digital transition is not a *fait accompli*—yet. Yes, more than 95% of online consumers, representing more than 200 million U.S. consumers, say they own a CD player—50% with DVD players and nearly 50% with CD burners. The transition is in the early stages toward owning digital-only media libraries.

The technology base is there, thanks to the relentless innovation of consumer electronics and PC companies. Consumer behavior is just starting to catch up; the biggest jump remains for consumers to shift the majority of their media purchases from physical media (CDs, DVDs, newspapers, books) to digital files.

In early 2003, the transition of the music industry is still more about early experimentation than about broad-scale deployment. GartnerG2 estimates that approximately 500,000 Americans subscribe to online music services (see Figure 1).

Figure 1: Online music subscriber forecast, U.S., 2003-2007 (total subscribers, forecast in thousands)



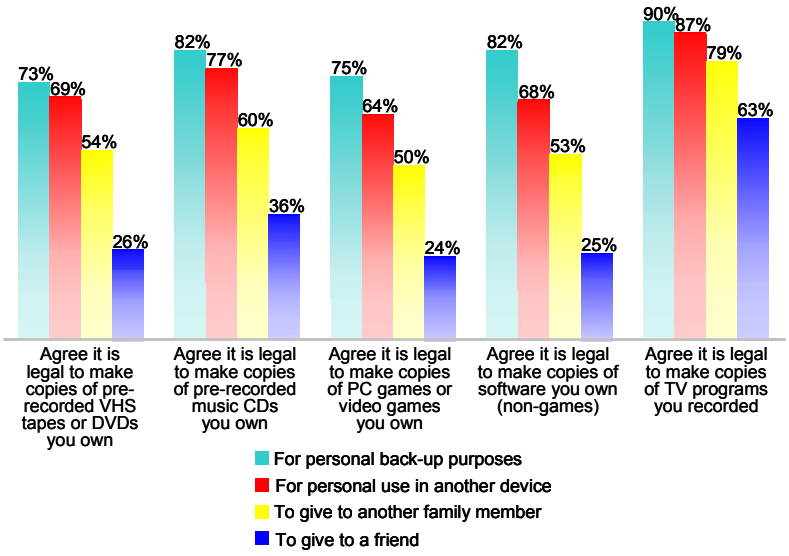
Source: GartnerG2, April 2003

Consumption, copying and sharing

Consumer use of digital media is growing and with it, a significant amount of copying for personal use and to share with friends. Use of online file-sharing programs is fairly well established for some consumers, but is still not in widespread use.

U.S. consumers view media, including digital media, as a household resource, rather than an individual one. When asked whether they believed it is legal to make copies of digital content for personal use, back-up or to share with a member of the household, the vast majority of consumers replied that they thought it was legal (see Figure 2). Obviously, most consumers expect to have some degree of "portability" with the digital media they own.

Figure 2: Consumer attitudes about copying by media type



Source: GartnerG2, September 2002

Yet these consumers express an inherent understanding of the limitations of fair use, if not a comprehensive knowledge of where the boundary lies between fair use and copyright violation. When asked if they thought it was legal to make a copy of pre-recorded content to give to a friend, the vast majority said they believed this was illegal. (The only media format that consumers believe was legal to make copies of and distribute to friends outside of the home was TV content.)

PC technology meets the modern network

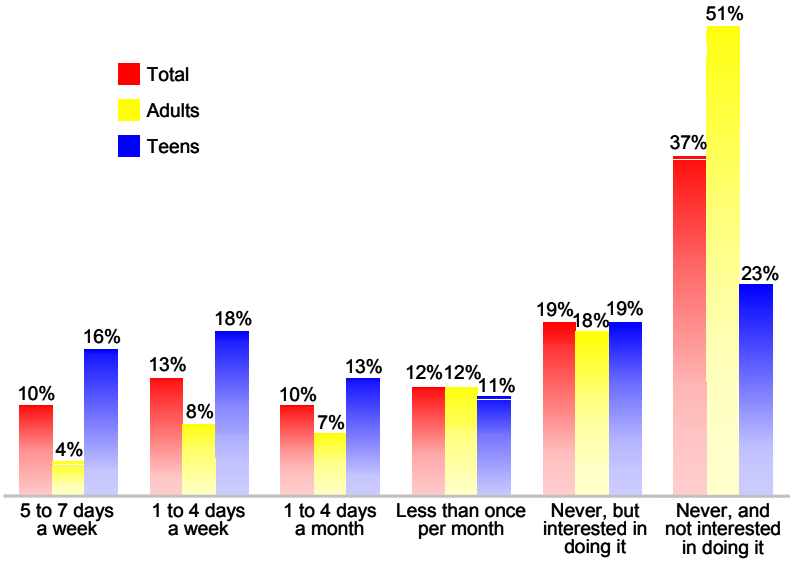
When the price-performance curves of the PC meet up with the Internet and modern networking technology, a truly empowered consumer is born. The popularity of P2P file-sharing in 2000 and 2001 was a wake-up call to the music industry, which recognized that it was losing the ability to control its future through control of the physical distribution of the product. As bandwidth to homes and offices grew through the mid-1990s and into 2002, the perception grew that P2P networks represented a serious threat.

With the fall of Napster, attention focused on more decentralized P2P networks, which maintained no central Web site or server, making them less vulnerable to legal challenge.

Gnutella, released in March 1999 by Nullsoft, was the progenitor of these decentralized networks. With the Gnutella protocol, users connected to each other and search requests passed from one user to another, throughout the network. No company owns Gnutella, although many people have created programs to interface with the network. Individuals can choose to use the service anonymously, through a masked ID. Unlike Napster, Gnutella would be very difficult, if not impossible, to shut down. While popular, the user experience with these P2P network clients—the clients reside on the consumer's PC—is far from easy. Users have to learn how to use the system and locating and downloading content can take a few minutes or hours, depending on the content.

Despite the hype and rhetoric surrounding P2P networks, no true accounting of the financial impact of file-sharing exists. In fact, the MPAA has placed a disclaimer on its Web site noting that its current piracy estimates do not include Internet-based file-sharing. A robust file-sharing community exists worldwide—by March 2003, more than 200 million copies of KaZaA had been downloaded—but consumer surveys indicate more restrained usage. A GartnerG2 survey of U.S.-based Internet users paints a somewhat more restrained picture of file-sharing services (see Figure 3).

Figure 3: Consumer use of file-trading sites



Source: GartnerG2, July 2002

While the number of respondents using file-sharing services is not trivial, admitted U.S. file-sharers constitute a small percentage of the overall Internet user base. Notably, the most popular response among respondents in all categories was “never and not interested.” Responses skew higher for adults and lower for teens. Yet even among the teens—the group most often cited by the music and film industries as the biggest offenders—“never and not interested” was still the dominant response.

What is important to take from this data is that while there is the potential for P2P usage to increase, a significant number of respondents—teens and adults—are not interested in using these networks. The message to music companies and movie studios is that there remains a significant number of citizens who are likely to be open to a “legal” alternative to illegal P2P sites.

3. Relevant Cases and Developments

In this section, we consider the legal cases and decisions that form the background for today's conflicts over copyright and digital media, beginning with relevant U.S. case law and exploring cases with international and jurisdictional aspects. The cases are grouped under five headings: adjudicating fair use; enforcing the DMCA; copyright and the Constitution; electronic publishing rights; and beyond copyright, which discusses other laws used to protect creative control or distribution. Notable regulatory and legislative developments in the United States and abroad are also briefly discussed.

Adjudicating fair use

Decided by the Supreme Court in 1984, ***Sony Corp.* v. *Universal City Studios***[29]—the *Betamax* case—remains the fair use benchmark for the Copyright Act and consumer technological applications. The Court found that Sony's VCR, though capable of infringing uses, had "substantial non-infringing uses" and therefore Sony could not be held liable for users' copyright infringement. Specifically, "time shifting" copyrighted TV programming for later personal, non-commercial viewing was determined to constitute fair use under the Copyright Act. Although the "substantial non-infringing use" standard for fair use has since protected other manufacturers from liability, the DMCA may now limit its application. Several tests of fair use with more recent technological developments are discussed below.

In ***Recording Industry Association of America (RIAA)* v. *Diamond Multimedia Systems***,[30] the Ninth Circuit Court of Appeals determined that Diamond Multimedia Systems, maker of a portable MP3 player called the Diamond Rio, was not liable for contributory copyright infringement under the AHRA. The AHRA was enacted "to ensure the right of consumers to make analog or digital audio recordings of copyrighted music for their private, non-commercial use."[31] The RIAA argued that the device could encourage piracy, but the Ninth Circuit agreed with the defendants, finding the Rio device was legal because it could not record or redistribute music. Specifically, the court stated: "The Rio merely makes copies in order to render portable, or 'space-shift,' those files that already reside on a user's hard drive."[32]

At the time, the case was heralded as a digital *Betamax*, with the potential to protect manufacturers of digital devices that enable users to exercise fair use rights, regardless of the potential for unlawful uses. Whether this holds true because of the language used in the statute, the court's ruling is significant because of its impact on digital device manufacturers and because it enabled

[29] *464 U.S. 417 (1984).*
[30] *180 F.3d 1072 (9th Cir. 1999).*
[31] *Id. at 1079.*
[32] *Id. at 1079; see http://laws.lp.findlaw.com/9th/9856727.html (9th Cir. opinion).*

the emergence of companies that distribute MP3 music files over the Internet, including MP3.com, eMusic and Musicmatch.

The boundaries of the *Betamax* defense of "substantial non-infringing uses" have been tested by new Internet-based technologies. In 2000, the Ninth Circuit found Napster, the first popular Internet file-sharing service, liable for contributory and vicarious copyright infringement, rejecting the company's defense of "substantial non-infringing uses." In ***RIAA* v. *Napster***,[33] the court found that, regardless of whether the centralized file-sharing system could be used for non-infringing uses, Napster's "knowledge" of the infringing activity and its material contribution to infringement by providing the site and central indexing services constituted a basis for contributory liability. The court further found vicarious liability due to Napster's ability to "control" and supervise use, failure to "purge" infringing uses and financial benefit from infringing activity.

The decision did not sound the death knell for all P2P file-sharing systems, however. On 25 April 2003, decentralized P2P services, operating under the names Grokster and Morpheus, were found not liable for contributory or vicarious copyright infringement by a Los Angeles federal court, with significant emphasis placed on the technical architecture and operation of the system. The ruling denied the studios' allegations of contributory and vicarious infringement, finding that the P2P services delivered technology with "substantial non-infringing uses," just as the trial court ruled in the *Betamax* decision. This ruling is unlikely to be accepted quietly by the MPAA, RIAA and related entertainment organizations. An appeal is near-certain due to the potential impact of the case. Many other programs are capable of file-sharing, such as AOL Instant Messenger or Microsoft Outlook, which could be at risk as well if the ruling were thrown out on appeal.

In this file-sharing case, filed in October 2001, 28 of the largest music and entertainment companies sued Grokster, StreamCast Networks and Sharman Networks for operating the P2P file-sharing services Grokster, Morpheus and KaZaA, respectively (***MGM et al.* v. *Grokster et al.***).[34] The entertainment industry argued that distributing software to enable P2P sharing of copyrighted content is Napster all over again. The defendant software companies maintained—and the court agreed—that their services and the FastTrack technology they used[35] does not function like Napster's service. These technological distinctions between the services won the defendants' case. **Contributory liability** turns on the notion that the defendant had knowledge of the infringement and made a material contribution to it. **Vicarious liability** is found where the defendant has a financial interest in the infringement and has the ability to control users' activities. In this case, instead of indexing files in a central

[33] *For further analysis, see: http://www.eff.org/IP/P2P/Napster/20010226_rgross_nap_essay.html and http://news.findlaw.com/legalnews/lit/napster.*
[34] *Oral arguments took place on 2 December 2002, before U.S. Federal District Court Judge Stephen Wilson in Los Angeles.*
[35] *Morpheus no longer uses this technology; it uses Gnutella.*

server (like Napster), Grokster and other P2P users connect and upload their file lists to "SuperNodes"—other users on the network who have fast connections. The software companies maintained and the court agreed that they do not have control over users sufficient to warrant liability for users' copyright infringement, as the services could continue even if the companies shut down.[36] The court also agreed that the defendants did not materially contribute to users' infringement, finding "substantial non-infringing uses" of the file-sharing software. Although finding for the defendants, the court did agree with the entertainment companies that the file-sharing services did have sufficient knowledge of and profited from the users' infringing activities through their services.[37] (The district court's ruling does not affect KaZaA or its parent Sharman Networks because, at the time of the hearing, the court had not determined whether the international company could be sued in a U.S. federal court. It has since ruled that KaZaA is fairly subject to U.S. jurisdiction.)

Still pending are the consolidated cases of ***Paramount* v. *ReplayTV*** and ***Newmark* v. *Turner Broadcasting System, Inc.,*** concerning digital video recorders (DVRs) or PVRs, which record and store many hours of TV programs directly onto a hard drive. With the right technology and a good Internet connection, DVR recordings can be transferred to a computer and then sent to others over the Internet. Most DVRs record commercials, but during playback users can fast-forward through them (like TiVo) or skip them entirely (like ReplayTV).

Responding to this technological development, a group of major entertainment industry players sued SONICblue in October 2001, arguing that skipping commercials and downloading copyrighted programming constitutes infringement, and that the ability to make and share digital copies of TV programs facilitates piracy. In June 2002, the Electronic Frontier Foundation helped a group of ReplayTV users countersue the studios to secure a declaratory judgment that personal use of ReplayTV technology is legal, including the consumers in the debate for the first time. Consumers argue that ReplayTV is similar to the VCR and that ReplayTV's "Commercial Advance" and the "send-show" feature are fair uses under the 1976 Copyright Act and the *Betamax* ruling.

In March and April 2003, SONICblue filed for Chapter 11 and sold its ReplayTV business division to a Japanese company, events that may complicate the settlement of the case.

Despite or because of the published decisions in *Napster* and *Grokster*, the file-sharing legal battle continues. Immediately following its success in *Napster*, the RIAA sought and won a preliminary injunction in ***RIAA* v. *Madster***

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[36] The parties obviously disagree on the issue of control, among others. KaZaA demonstrated some degree of control when it shut Morpheus out of the network in March 2002, forcing users to upgrade to a new version of KaZaA to continue using the service; see http://news.com.com/2100-1023-851330.html.

[37] See http://www.riaa.com/PR_Story.cfm?id=556

(formerly Aimster) [38] in an Illinois federal court. Madster's service enabled AOL Instant Messenger users to share music files over the Internet. Although Madster worked to come up with an effective means to block infringing uses, the court nevertheless ordered the service be shut down in December 2002. Madster just launched its appeal of the injunction,[39] using "substantial non-infringing uses" defense and distinguishing its service from Napster's. In this context, the *Grokster* ruling might be a useful precedent for Madster's appeal.

Enforcing the DMCA

The DMCA provides another method for copyright holders to protect their interests by prohibiting a range of activities related to breaking copy-protection technology and distributing technology that can break copy-locks. In ***Universal* v. *Reimerdes***,[40] the Second Circuit Court of Appeals affirmed the constitutionality of the DMCA's anti-trafficking provision and rejected the fair use defense on these facts: In 1999, Norwegian teenager Jon Johansen cracked the content scramble system (CSS), the principal DVD encryption format. Johansen's stated goal in creating his program, called DeCSS, was to provide the means to play DVDs on Linux computers, which did not have a CSS-licensed player. The MPAA member organizations sued *Website 2600 Magazine* for publishing and linking to DeCSS, claiming that publishing the code was a violation of the DMCA's ban on distributing technology that breaks digital locks on copyrighted content. The defendants claimed that DeCSS has substantial fair uses and that the First Amendment protects the publication of and linking to the DeCSS code. A U.S. District Court and the Second Circuit held that, while the DeCSS computer code is protected under the First Amendment, the DMCA's anti-trafficking provision does not violate the First Amendment. Several similar cases concluded with the same result.

Another victory for the entertainment industry came in a case in which a company created programs that allow conversion of Real Media files into other formats, circumventing the encryption Real Networks used on its proprietary software. In early January 2000, in ***RealNetworks* v. *Streambox,***[41] RealNetworks obtained an injunction against Streambox's distribution of the Streambox VCR program. The program "tricked" RealMedia servers into recognizing Streambox as the proprietary RealPlayer program. It also allowed users to keep permanent copies of content delivered through it, even if the content was intended only for streaming. A U.S. District Court found that the VCR program was likely to violate the access and anti-circumvention provisions of the DMCA, and on 8 September 2000, the two parties settled.[42] Streambox agreed not to distribute the VCR program and the

[38] *See http://news.com.com/2100-1023-956644.html.*
[39] *See the appeal: http://www.musicpundit.com/download/Aimster%20Appeal%20ReplyBrief_1.pdf.*
[40] *See discussion above at pg. 10; see also http://laws.lp.findlaw.com/2nd/009185.html.*
[41] *See http://www.law.uh.edu/faculty/cjoyce/copyright/release10/Real.html*
[42] *See http://news.com.com/2100-1023-245482.html?legacy=cnet*

Streambox “Ripper” as well. (The Ripper allowed people to convert RealMedia files into other formats.)

As a result of the DMCA, very different rules apply to digital media than to media in other formats. Although in some instances a person can legally tape songs broadcast on the radio, recording digitally streamed media is a different story. The creator of the open source program Streamripper X, for example, was forced to disable its recording features for the Internet radio Web site Live365.com after Live365 threatened to sue.[43]

In April 2002, ***321 Studios* v. *MGM*** took a pre-emptive strike against the MPAA to protect its new technology. 321 Studios sought to distribute its DVD Copy Plus software product, which allows users to make (arguably) reduced-quality backup copies of DVDs on CDs.[44] Later that year, 321 included its latest product, DVD X Copy, in its complaint—a product that makes perfect copies of DVDs. The suit questions the constitutionality of the DMCA and claims that the First Amendment and fair use protect the sale of both products. Further, the company argues that the products are geared not toward piracy but toward personal, limited copying. Finally, 321 argues that the products do not violate the DMCA.[45] In July 2002, the movie studios filed a motion to dismiss the complaint and, in December, submitted a counterclaim regarding both products. Hearings were scheduled for April 2003, but the judge had not issued a ruling as of this writing.

Earlier, in ***U.S.* v. *ElcomSoft***[46], the U.S. government brought criminal charges first against Russian programmer Dmitry Sklyarov, and then his employer ElcomSoft, for violation of the DMCA’s anti-circumvention provisions. Sklyarov was arrested while attending a U.S. conference to present a paper on a program to disable the encryption on Adobe’s eBook files. The program, called the Advanced eBook Processor, allows people to convert Adobe eBooks to Adobe PDF, thus circumventing eBook’s usage and copy controls—controls that arguably unlawfully restrict the user’s fair use rights.[47]

As in ***Universal v. Reimerdes***, the plaintiffs argued that the program posed the risk of facilitating piracy, while the defendants argued that the software allowed for otherwise unavailable fair

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[43] See http://www.chillingeffects.org/anticircumvention/notice.cgi?NoticeID=83 and http://streamripper.sourceforge.net/index.php

[44] See http://www.321studios.com/PR_complaint.html.

[45] See http://www.pcworld.com/news/article/0,aid,107637,tk,dn120302X,00.asp (“Instead, 321 Studio intercepts the video and audio stream after a DVD player has decrypted the CSS code. Moore argues that all DVD players decrypt the CSS code when they play a protected DVD.”)

Still, though the DVD Copy Plus complaint asserts it is not violating the DMCA either, it is unclear whether it breaks CSS. See: http://www.examiner.com/business/default.jsp?story=b.dvdsuit.0425w (“Moore said he isn’t exactly sure what his company’s software does to duplicate DVDs, or if it contains the hotly debated DeCSS code. He said his company does not know if DVD Copy Plus circumvents CSS or merely somehow captures a video stream from the DVD.”)

[46] http://www.eff.org/IP/DMCA/US_v_Elcomsoft/

[47] Using AEBPR, users can copy eBooks onto other personal devices, make back-up copies, and excerpt parts of books for legitimate uses. Just like DeCSS, AEBPR helps people using alternative operating systems like Linux, as Adobe’s eBook Reader only works on Macs and computers running Windows. Additional examples at http://www.eff.org/IP/DMCA/US_v_Elcomsoft/us_v_elcomsoft_faq.html#HowDoesElcomSoftWork

uses. ElcomSoft initially sought and lost a motion to dismiss the criminal case on the grounds that the DMCA's ban was unconstitutional and that the eBook Reader permitted Adobe and the publisher to exert excessive control over the eBook, overriding consumers' first sale and fair use rights. A federal grand jury ultimately acquitted ElcomSoft, ruling that the company lacked the necessary willful intent for liability.[48]

Felten* v. *RIAA is a case the content industry seems to have brought on itself. In November 2000, Princeton professor Edward Felten defeated the encryption scheme created by the Secure Digital Music Initiative (SDMI), a group of companies seeking to develop a new digital security standard for music. SDMI had invited researchers and hackers to try to crack the technology and offered a reward for their success. When Felten and his team opted to publish their results rather than receive the reward, the RIAA threatened to sue, claiming that the research paper constituted a "circumvention device" in violation of the DMCA.[49]

Instead, the Electronic Frontier Foundation (EFF), on behalf of Professor Felten and his team, filed suit against the RIAA, SDMI and the U.S. government on 6 June 2001, seeking a judicial declaration that the First Amendment protected Felten's right to discuss and publish his work.[50] The RIAA backed off and said it would "never again" threaten Felten, as scientists attempting to study access control technologies are not subject to the DMCA. The case was dismissed in November 2002, leaving unanswered the question of the DMCA's limiting effects on scientific research.[51]

ISPs are a new target for the entertainment industry, and the case of ***RIAA* v. *Verizon*** broke new ground. In August 2002, the RIAA asked a federal court to compel Verizon Communications to reveal the name of a customer accused of illegal file trading through the KaZaA network, and for whom Verizon provided Internet service.[52] Pursuant to the DMCA, there is an expedited process for subpoenas such as the RIAA had procured and served on Verizon, which dispense with the normal legal proceedings. This expedited process requires that, upon presentation of the subpoena, an ISP must take down the alleged infringing material and identify the alleged infringer to the complaining party—if the ISP wishes to remain immune from liability for its customers' infringing acts under the so-called "safe harbor" provision of the DMCA. Few ISPs want to risk liability to protect their users and will be reluctant to turn down "notice-and-

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[48] *http://news.com.com/2102-1023-978176.html.*
[49] *Frequently Asked Questions About Felten v. RIAA, http://www.eff.org/IP/DMCA/Felten_v_RIAA/faq_felten.html.*
[50] *http://www.eff.org/IP/DMCA/Felten_v_RIAA/faq_felten.html.*
[51] *Felten Drops RIAA Case: Security Researchers Drop Scientific Censorship Case - Government, Industry Claim DMCA Not a Threat to Science, http://www.eff.org/IP/DMCA/Felten_v_RIAA/20020206_eff_felten_pr.html.*
[52] *Music body presses anti-piracy case, http://news.com.com/2100-1023-954658.html.*

takedown" requests from copyright holders. Users can submit a "counter-notice and put-back," but few have the legal savvy.[53]

Verizon fought back. It did not question the RIAA's right to obtain the customer's identity, but argued that formal legal proceedings are required before a customer's identity can be released. Verizon also claimed that it is only a conduit of information, does not "control or operate" the service, and so the DMCA subpoena process did not apply.[54] A federal court disagreed. On 21 January 2003, it ordered Verizon to comply with the order, calling Verizon's reading of the DMCA's subpoena and safe harbor provisions "strained."[55] The court also declined to rule on the constitutionality of the DMCA's expedited subpoena provision, as *amicus* briefs in the case had challenged it to do. (Verizon did not make any such constitutional challenge.)

While the RIAA has rarely challenged ISPs, this may mark a new trend in its anti-piracy strategy. It is likely that this court's ruling will prove burdensome to ISPs, as the RIAA and MPAA are free to issue subpoenas at will, without proof of copyright infringement (the applicable DMCA provisions require only a valid subpoena, which may be obtained on allegation of infringement alone). The ruling is also likely to lessen Internet users' privacy and may lead to more prosecutions of individual file-traders—or at the minimum, it enables such prosecution. Verizon is appealing the ruling, but may face the challenge, after *Eldred* (see below), of courts inclined to defer to legislative acts of Congress.

Copyright and the Constitution

In ***Eldred* v. *Ashcroft***, the Supreme Court affirmed the constitutionality of the Sonny Bono Copyright Term Extension Act of 1998 (CTEA) as well as, some argue, affirming Congress' right to continually extend copyrights.[56] The case arose when online publisher Eric Eldred, who put public domain works online when copyright terms expired, found that the CTEA placed works he had intended to publish on the Web outside the public domain for another 20 years.

Eldred argued that the CTEA violates the Constitution's "limited times" clause, citing nearly a dozen extensions of the clause and that the extensions violated the First Amendment. The Supreme Court disagreed, ruling that the CTEA's 20-year extension of copyright is technically a "limited time." Further, the Court said examining the policy implications of such extensions is a matter for Congress and that heightened First Amendment scrutiny should be pursued only when "Congress has … altered the traditional contours of copyright."[57]

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[53] *http://www.chillingeffects.org/dmca512/notice.cgi?NoticeID=98#FAQID226.*
[54] *See http://www.eff.org/Cases/RIAA_v_Verizon/20030121-riaa-v-verizon-order.pdf Order at 6.*
[55] *See http://news.com.com/2100-1023-981449.html; http://www.eff.org/Cases/RIAA_v_Verizon/20030121-riaa-v-verizon-order.pdf*
[56] *http://www.supremecourtus.gov/opinions/02pdf/01-618.pdf*
[57] *http://cyberlaw.stanford.edu/lessig/blog/archives/01-618o.pdf (Supreme Court majority opinion)*

The decision may hinder future court challenges to copyright law, as *Eldred* sets a strong precedent for judicial restraint in copyright cases. At the same time, it may be possible for future challengers in fair use cases to argue that a particular law—the DMCA, for example—has indeed altered copyright's "traditional contours," as the Court implied that fair use is critical to the balancing of copyright with the First Amendment.[58]

Electronic publishing rights

In ***New York Times, et al.* v. *Tasini, et al.***, the Supreme Court held that periodical publishers do not have the right to license and republish articles in electronic databases such as Lexis/Nexis without the author's permission. The lesson for publishers is that electronic rights, at least in the State of New York, must expressly be included in the publisher's contract with the author (in particular, freelancers who are not employees of the publication). If the contract does not specify a right to publish in the new format, the publisher does not have that right.

Following the *Tasini* decision, a federal court held in ***Random House* v. *Rosetta Books*** that the publisher's exclusive right to publish and sell the work "in book form" did not give the publisher the right to publish the work as an e-book. Rosetta Books published e-book versions of literary classics that Random House and others published in physical form; Random House subsequently sued. Random House lost the initial court decision, but the parties later settled, forging a mutually agreeable licensing arrangement.

The likely outcome of these decisions is that the publishing industry will now routinely demand blanket assignment of rights when negotiating the initial contracts with writers and freelancers, thus stemming later litigation over electronic publishing rights.

Beyond copyright

There are numerous legal vehicles for enforcing creative control rights outside of copyright law, including by entering a contract or seeking trade secret protection. These means can be used defensively or proactively.

While many consumers look to fair use to protect their use of copyrighted content, it is increasingly common for them to agree to or waive away any rights they choose by contract, even waiving fair use exemptions to copyright law. In ***Bowers* v. *Baystate Technologies, Inc.***, the Appellate Court affirmed a lower court's ruling that the Copyright Act does not pre-empt contract law and therefore the provisions of a "shrink-wrap" license agreement that prohibits reverse engineering are enforceable. The court also held that parties might agree to waive away any rights they choose by contract, even waiving fair use protections.

[58] *See discussion at http://balkin.blogspot.com/2003_01_12_balkin_archive.html#87596430*

Bowers follows the line of reasoning in ***ProCD, Inc.* v. *Zeidenberg***, finding that a patent holder's shrink-wrap license was not pre-empted by federal copyright law.[59] In *ProCD*, the court said: "A copyright is a right against the world. Contracts, by contrast, generally affect only their parties; strangers may do as they please, so contracts do not create 'exclusive rights.'"

Another development outside copyright enforcement is the claim that certain disclosures, such as posting decryption code, unlawfully reveal a company's trade secrets. While *Universal* v. *Reimerdes* dealt with circumvention technologies pertaining to copyright, the Pavlovich and Bunner cases involve trade secret law. Unauthorized sharing of trade secrets may be unlawful, regardless of whether the information shared is copyrighted. The DVD Copy Control Association (DVD CCA), the group that manages CSS licensing, sued several people who published DeCSS online, alleging divulgence of a trade secret (***DVD CCA* v. *Pavlovich*; *DVD CCA* v. *Bunner, et al.***).

As noted, the DVD CCA did not invoke the DMCA in these cases. Instead, it relied upon law protecting trade secrets. The outcomes could have significant effect on the legal landscape, even if the DMCA is eventually amended or eliminated. If the DVD CCA proves victorious on its trade secret claims, it may be illegal to publish information regarding the circumvention of DRM technology if that technology is found to be a trade secret, a standard that is governed by state rather than federal law.

So far, however, the California court system has not sided with the DVD CCA. In *DVD CCA* v. *Bunner*, the California Court of Appeals found that the DeCSS code was protected speech under the First Amendment. But in contrast to *Reimerdes*, it ruled that the preliminary injunction requested by the DVD CCA would constitute an unlawful prior restraint of that speech. In short, the DVD CCA would have to prove its trade secret case first, before the "speech" could be banned.

Oral arguments in the appeal to the Supreme Court in *DVD CCA* will be held sometime next year.[60] It remains to be seen what the next step will be in the *Pavlovich* case.

Online video-on-demand services allow consumers to download or stream licensed media content, such as feature-length films. To date, allegations of online movie piracy have been limited, yet so too has access to legitimate film content over the Internet. Now these services face another threat: ***Intertainer* v. *AOL Time Warner***, a lawsuit against the studio-backed Movielink. The suit, brought in September 2002 by video-on-demand provider Intertainer, accuses five major Hollywood studios of antitrust violations that give Movielink the upper hand in the

[59] *ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, at 1454 (7th Cir. 1996).*
[60] *http://www.eff.org/IP/DVDCCA_case/20020522_eff_pr.html.*

market.[61] Although the suit is pending, Intertainer shut down its service in October 2002, purportedly to focus on the lawsuit.[62]

Movielink allows consumers to download full-length movies from the Internet, with full authorization from content providers. The movies provided by Movielink are made available for a limited time and the technology prevents users from copying files, transferring them to another computer or viewing them on another platform.[63]

Some fair use advocates argue that Movielink's service is overly restrictive. However, the service is in such an early stage that it is difficult to draw conclusions about how it will develop. Currently, the service requires customers to watch full-length films on their PCs, an unusual format in and of itself. Competitive online services are also available, including CinemaNow.

International and jurisdictional cases

The digital distribution of content on the Internet has raised jurisdictional concerns for copyright holders, as well as questions about enforcement where state or national laws conflict. The following cases look at various aspects of an important question: Where should individuals and entities be tried for actions performed on the Internet?

In early 2000, the MPAA filed suit against iCraveTV (***MPAA* v. *iCraveTV***), a Canadian company streaming U.S. and Canadian programming online without the permission of the U.S. copyright holders.[64] A U.S. federal judge granted a temporary restraining order blocking iCraveTV from transmitting copyrighted material in the United States.[65] At issue was whether iCraveTV, which was operating in accord with Canadian law, was nevertheless obliged to cease operations because it was in violation of U.S. copyright law. Unfortunately, no conclusive answer was reached; citing legal pressures and costs, iCraveTV eventually shut down its services without further struggle.

More recently, in ***Dow Jones* v. *Gutnick***[66], Australia's High Court found that U.S.-based publisher Dow Jones & Co. could be sued in an Australian court for defamation in an article published on the Internet. Mining magnate Joseph Gutnick filed suit in the Australian state of Victoria after an allegedly defamatory article appeared in the online version of *Barron's,* a Dow Jones publication. Dow Jones responded with a series of motions arguing that proper jurisdiction for the suit is in New Jersey, where servers hosting the article are located. The High Court disagreed. Affirming a lower court's finding for the plaintiff, the Court ruled, "It is where [a person] downloads the material

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[61] *3 Movie Studios Hit With VoD Lawsuit, http://ecommerce.internet.com/news/news/article/0,,10375_1469311,00.html*
[62] *Film Site Halts Service Pending Lawsuit, http://news.com.com/2100-1023-962463.html*
[63] *Movielink's downloads may take time, but they are legal, http://www.usatoday.com/tech/news/techinnovations/2002-11-11-movielink-works_x.htm*
[64] *iCraveTV is Served Up a Lawsuit, http://www.wired.com/news/business/0,1367,33797,00.html.*
[65] *Broadcasters win battle against iCraveTV.com, http://news.com.com/2100-1033-236255.html.*
[66] *See http://www.austlii.edu.au/au/cases/cth/high_ct/2002/56.html.*

that the damage to reputation may be done. Ordinarily then, that will be the place where the tort of defamation is committed."

The implications of the Dow Jones ruling may be very broad, depending on whether other countries follow. If publishers risk being subject to laws in every jurisdiction in which their online publications may be accessed, they would have to consider local law for every publication. That might lead publishers to block access to online content by non-nationals and limit the truly global reach of the Internet.

DVD CCA* v. *Pavlovich involves issues of interstate rather than international jurisdiction. The DVD CCA controls the licensing of CSS encryption software. It sued Texas resident Matthew Pavlovich, accused of posting the DeCSS code on a Web site he partially controlled, claiming the posting divulged trade secrets. The DVD CCA attempted to have Pavlovich tried in the California court system, but Pavlovich evaded the attempt, arguing that California has no jurisdiction because he did not intend to interact with or do business within the state of California.[67] The California State Court agreed and, in November 2002, threw out the lawsuit on state jurisdictional grounds.

Unless or until a higher court says otherwise, it will be necessary to sue U.S. defendants in their home jurisdiction or place where defendants meet the "minimum contacts" standard of legal jurisdiction.

[67] *http://www.eff.org/IP/DVDCCA_case/20020115_eff_pr.html; http://www.eff.org/effector/HTML/effect15.27.html#II.*

4. Proposed and Pending Law

New laws proposed here and abroad provide a glimpse of the future. Various legislative efforts have been proposed that, if passed, could have a profound effect on the balance of interests among copyright holders, technology providers and consumers.

U.S. regulatory developments

The Internet provides a new vehicle for the radio-broadcast-like distribution of music. However, this development has been the subject of much negotiation among copyright holders (or their assignees) and Webcasters, which are often small and sometimes non-commercial entities. In June 2002, the Copyright Arbitration Royalty Panel set royalty rates[68] for Webcasting music. Recording industry representatives and Webcasters were dissatisfied. Webcasters argued that the rates were too high and would drive them out of business, especially since Webcasting is a nascent market with niche audiences. They also took issue with the fact that the rates did not take into account the "promotional value" and that the rates were decided without adequate supporting data. The RIAA claimed the rates were still well below fair market value.

U.S. legislative developments

To save small Webcasters, Congress passed the Small Webcaster Settlement Act[69] on 14 November 2002, allowing small Webcasters to negotiate revenue-based royalty rates with the recording industry's licensing organization. While commercial Webcasters have already reached an agreement, noncommercial broadcasters had until 31 May 2003 to do so.

Although the Act will ease the problems the arbitration panel created, some believe it will simply entrench a bad system. Small Webcasters that become more popular may feel it necessary to scale back their services in order to ensure that they do not garner enough revenue to become (legally) "large," and subject to higher rates.[70] This would clearly have a stifling effect on the industry.

Recently, the Digital Media Association (DiMA), which represents many large Webcasters, agreed with the RIAA to provide slightly altered rates for 2003–2004. DiMA said the agreement would not address the underlying failure of the royalty arbitration panel process.[71]

Although the parties are not wholly satisfied, what happened between the Webcasters and music industry representatives is

[68] *http://www.copyright.gov/carp/webcasting_rates.html.*
[69] *http://thomas.loc.gov/cgi-bin/query/z?c107:h5469.*
[70] *http://www.kurthanson.com/archive/news/013003/index.asp.*
[71] *http://rss.com.com/2100-1027-995470.html?type=pt&part=rss&tag=feed&subj=news.*

an example of how negotiation is frequently a more useful alternative to litigation, especially when several parties operating in a single market are better off addressing the challenges of new technology.

Regulatory developments abroad

In its first decision regarding the collective licensing of music for commercial use on the Internet, an antitrust exemption was recently granted to the International Federation of the Phonographic Industry (IFPI) in Europe, which represents a large portion of the international recording industry. IFPI members agreed to a new category of multi-territorial copyright licenses for the simultaneous broadcasting of music over traditional channels and the Internet. TV and radio broadcasters whose signals originate in a member state of the European Economic Area are now able to obtain a single license covering most European countries and selected countries outside Europe.

This move is intended to enhance competition in the music industry. Broadcasters may approach the licensing society of their choice to obtain a multi-territorial license and so increase price competition between these societies, ultimately resulting in lower copyright license fees. Even though the agreement is now exempt from antitrust scrutiny and does not include authors' rights administered by different collective rights societies, it affirms the European recording industry's intent to adapt its licensing scheme to the global reach of the Internet.

Other developments abroad

Although the Euro-DMCA Directive is not yet fully implemented by EU member nations, the European Commission (EC) in February 2003 proposed another directive purporting to ensure the enforcement of intellectual property rights. Aimed at reducing digital piracy, the proposal calls for new rules on evidence, procedure, damages and other remedies, as well as criminal sanctions for some abuses. The directive would significantly increase protection for intellectual property owners, but recording industry representatives say it does not go far enough. The main objection appears to be that the proposal does not criminalize the swapping of music files over a P2P network for private, non-commercial use. At this stage, the directive is just a proposal, and may not be adopted by the European Parliament and Council of Ministers.

As the EU refines its copyright laws and brings them into line with multiple distribution channels, and the United States does the same, content producers will have to chart new business models. In the next section, we examine recent and pending U.S. cases that may influence business model development and discuss key proposed legislation.

Proposed legislation

Peer-to-Peer Piracy Prevention Act[72] (HR 5211)
Introduced: 25 July 2002
Status: Referred to House subcommittee, likely to be redrafted

Rep. Howard Berman's bill would release copyright holders from liability when they take technological steps to stop copyright infringement on a P2P system. Supporters—mostly from the entertainment industry—claim that allowing copyright holders "self-help" against infringement is no different than allowing homeowners to protect themselves against burglars.[73] They argue that the bill is sufficiently limited to ensure that copyright holders will be capable of doing no more than is necessary to protect themselves and that P2P users who have been unfairly harmed will have legal recourse. Critics argue that attacks on alleged infringers may harm individual computers, P2P systems or even the Web as a whole. Some warn of a potential "technical arms race," as P2P services alter their programs to defend against these attacks. In February 2003, Berman said he would revise the bill and reintroduce it in 2003.

Benefit Authors without Limiting Advancement or Net Consumer Expectations Act of 2003 (BALANCE Act), formerly the Digital Choice and Freedom Act of 2002[74] (HR 5522)
Introduced: 4 March 2003
Status: Referred to House subcommittee

Rep. Zoe Lofgren's BALANCE Act of 2003 is a slightly updated version of the Digital Choice and Freedom Act of 2002, introduced near the end of the last Congress in 2002. Like its predecessor, the BALANCE Act proposes to modify the Copyright Act—particularly the DMCA—to better protect consumers. First, it would allow consumers to make fair use of digital media by circumventing technological restrictions. Second, it would re-establish the first sale doctrine, allowing consumers to resell digital media. Third, it would prohibit non-negotiable licenses that restrict fair use rights.

Digital Media Consumer's Rights Act[75] (DMCRA) (HR 107)
Introduced: 7 January 2003
Status: Referred to House subcommittee

This Act, proposed by Rep. Rick Boucher, is identical to the bill Boucher introduced at the end of the Congressional session in 2002. The DMCRA protects the distribution and use of tools that circumvent technological restrictions. Further, it explicitly protects circumvention when necessary for scientific research and mandates labels on copy-protected CDs. Some critics believe the last provision will unnecessarily increase CD production costs, thus hurting consumers. But consumer rights advocates

[72] *http://thomas.loc.gov/cgi-bin/bdquery/z?d107:h.r.05211:*
[73] *Example from: http://www.heritage.org/Research/InternetandTechnology/EM835.cfm*
[74] *http://thomas.loc.gov/cgi-bin/bdquery/z?d107:h.r.05522:*
[75] *http://www.house.gov/boucher/docs/BOUCHE_025.pdf*

widely support the bill, lauding it as a reaffirmation of the fair use doctrine.

The Broadcast Flag
Introduced to the Federal Communications Commission (FCC): 8 August 2002
Status: Comments for FCC "Notice of Proposed Rulemaking" were due 6 December 2002
Legislative Status: Rep. Tauzin draft available

The Broadcast Protection Discussion Group (BPDG) of the MPAA devised the "broadcast flag," a system to prevent the rebroadcast of digital copies of films broadcast on TV or other media.[76] The entertainment industry has separately approached the FCC to request that it consider making it mandatory for devices capable of playing digital programming to recognize the flag.[77] Rep. Tauzin, who worked closely with BPDG, drafted a bill to ensure that the FCC does indeed make the flag mandatory.[78]

Critics, the Electronic Frontier Foundation among them, point out that the BPDG is an entertainment industry-dominated group and argue that the flag would curtail fair uses such as making backup copies or playing copies on legacy devices, activities that are legal under current law. Critics have also noted there would be conflicts with open source software, as it is by definition not "tamper resistant."[79] Finally, they question the ultimate utility of the flag, arguing that most piracy today stems from analog broadcasts rather than original digital broadcasts.

Consumer Broadband and Digital Television Promotion Act
Introduced: 21 March 2002
Status: Referred to Senate Committee

Sen. Fritz Hollings introduced the Consumer Broadband and Digital Television Promotion Act (CBDTPA), a bill that would mandate copyright protection technologies in all digital media devices. If passed, the film industry, technology companies and consumer advocates would come together to form an inter-industry consensus on a standard in the same manner as the BPDG proceedings. Congress would then put the force of law behind the new standards.

Criticism aimed at the broadcast flag proposal might also apply to CBDTPA, but on a broader level. The protections in the Hollings bill could extend from TVs to cell phones, computers, digital hearing aids[80] and even refrigerators[81]—barring many fair use applications of existing consumer-electronics products.

When the CBDTPA was introduced, some industry observers theorized that it was simply a spur for the content industry and

[76] *http://www.eff.org/IP/Video/HDTV/bpdg-report/pdf/BPDG_Report.pdf*
[77] *http://bpdg.blogs.eff.org/archives/nprm.pdf*
[78] *http://bpdg.blogs.eff.org/archives/tauzin-bf-mandate.pdf*
[79] *http://bpdg.blogs.eff.org/archives/000121.html*
[80] *http://www.widexusa.com/senso_diva.html*
[81] *http://www.amana.com/sidebyside/messengersimulation.html*

technology companies to create a cooperative solution to illegal copying. This would appear to be the objective, as Hollings' press liaison said in early February 2003 that the senator is not currently considering reintroduction.

Music Online Competition Act[82] (HR 2724)
Introduced: 21 August 2001 (107th Congress)
Status: Referred to House subcommittee, but expired at the end of the 107th Congress. (Likely to be reintroduced in the current Congressional session).

Drafted by Rep. Rick Boucher, the Music Online Competition Act would mandate non-discriminatory licenses to online music vendors and would ease the royalty collection process for vendors and artists. The bill was created in lieu of antitrust investigations into MusicNet and Pressplay, two of the music industry's online distributors. Aides to Boucher have said he plans to reintroduce the bill during the 108th Congress, but there is no timetable.

Intellectual Property Protection Act of 2002 (HR 5057)
Introduced: 27 June 2002
Status: Referred to House subcommittee and expired at the conclusion of the 107th Congress.

Anti-Counterfeiting Amendments of 2002 (S 2395)
Introduced: 30 April 2002
Status: Approved by Senate Judiciary Committee on 18 July 2002 but expired at the end of the 107th Congress.

These two bills would criminalize trafficking of anything that alters or mimics "authentication" systems like watermarks, holograms or serial numbers. Rep. Lamar Smith, sponsor of the Intellectual Property Protection Act, plans to reintroduce the bill during the 108th Congress; however, there is not yet a schedule. Sen. Joe Biden, sponsor of the Anti-Counterfeiting Amendments, is also considering reintroducing the bill at some point during the 108th Congress.

[82] *http://www.house.gov/boucher/moca-page.htm*

5. DRM

The digital media paradox—efficient delivery countered by uncontrollable redistribution of content by end users—created the content-protection business virtually overnight. So far, content-protection solutions have proven it is very difficult to use technology to protect copyrighted material and maintain fair use protections for consumers—since fair use definitions shift with new technology introduction. These early attempts indicate that an overemphasis on copyright protection can lead to stifling innovation. Protecting digital content requires a multifaceted approach comprising technology, consumer education and the law. Using these vectors makes flexibility possible. Flexibility is very important in responding to hackers or changes in consumer behavior. The technological aspects of this multifaceted approach will be discussed here.

Content-protection schemes for broadly distributed digital media have been few, though the effects of commercially distributed unprotected digital content have been magnified in the music industry. By 2003, the movie industry's distribution of retail content, on DVDs, is still the most prominent example of broadly distributed digital content that was protected from the moment of its debut. The music industry is just beginning to experiment with copy-protected retail CDs and digital files distributed via online subscription services. Segments of the print publishing industry have used Adobe's PDF technology to control distribution and copying of content. However, the relatively light penetration of e-books, for example, and the differing types of content, especially in the news periodical sector, means consumer usage and experience with these controls is limited.

Content protection technology, such as DRM software, lets a content provider "wrap" a set of rules around content, to define how control can be manipulated and shared by the purchaser of the copyrighted or premium content. The rules can include how many copies of the original file a user may make, whether a back-up or archive file can be created or whether a user can move the content to another device. Typically, content is encrypted; to get the decryption key a user must act—pay money, provide an e-mail address or agree to use tracking, for example. DRM software vendors deliver the tools. It is up to content owners to set the conditions.

At the heart of all DRM technology is a rights model. Rights models are schemes for specifying rights to content that a user can obtain in return for some consideration, such as registering, payment or allowing his or her use to be tracked. DRM software can be used to define rights to content, according to some rights model and to enforce the granting of those rights. To function effectively, the DRM software has to

understand the core entities and the relationships between them. [83]

No single schema expresses rights models. Work in this area includes the framework and the Open Digital Rights Language (ODRL). In ODRL, if a right is not explicitly permitted, it has not been granted; that is, prohibited. For example, an agreement may say that a particular video can be played a maximum of 10 times (a count constraint) in any semester (that is, a temporal constraint) for a $10 fee (a requirement to pay).

- Digital watermarking embeds invisible markings into a digital object to track the use of and access to content.

- Digital signatures use public-key cryptography to provide user authentication, verifying the identity of a user.

    - Nonrepudiation: Digital signatures are a way of proving that a sender sent a message (think of an online subscription service wanting to prove it delivered requested content), and that a recipient received a message (the customer of the online subscription service).

- Secure content delivery guarantees electronic delivery using secure document hosting and e-mail notification (for example, to notify a recipient of a pending document and to notify the sender that the document was retrieved).

Controlling the distribution and consumption of media requires industry standards that deliver the interoperability needed for consumers and media companies to select and deliver content across multiple networks, services and devices. One language that is gaining ground is the extensible rights markup language (XrML). XrML is designed to be a universal way to securely specify and manage rights and other conditions for all kinds of resources including digital content and services. Supporters argue that the technology can help deliver the interoperability required to build so-called “end-to-end” DRM solutions.

Some of the de facto standards are:

Content scrambling system: CSS is the encryption standard used to “lock” all commercial DVDs containing copyrighted material, developed by various industry groups. The content is compressed and encrypted on a disc, with one set of “keys” embedded in the code. The other keys are located on DVD players. The disc looks for the keys on the machine and, once matched, plays the disc. Note: Johansen’s DeCSS program is shareware, just one of many decryption tools available on the Internet to unlock the code on a DVD, opening it to being copied.

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[83] *“Digital Rights Management Software: Perspective,” by Anthony Allen, Gartner, Inc., 3 October 2002. Report # DPRO-93479*

Adobe Systems PDF technology: For print content, Adobe's Acrobat is used to read content protected by Adobe's Acrobat authoring tools (PDF). The reading software is available for free download, but the authoring tools are not. As noted in the ElcomSoft section, the locks on PDF have been picked.

(Music and Video) Real Networks and Microsoft: Many content providers deliver much of their content through the products of these two companies and their media players. Microsoft has Windows DRM for the Windows Media Architecture; Real's DRM tool runs on its RealOne player and other media players. Apple's QuickTime is used heavily, but is not deployed as often as the other two. Apple has steadfastly declined to announce a DRM strategy. Its iTunes Music Store, a pay-per-download digital music service, distributes content in Advanced Audio Coding (AAC) format. DRM-like attributes include listening to purchased songs that are part of a shared playlist (the user would have to get the ID of the user who owns the purchased songs). And if the iTunes AAC files are burned to a CD (that apparently removes the DRM), and those files are ripped into MP3s, there will be a noticeable degradation in sound quality, which does happen when any audio file is compressed, decompressed or recompressed.

The current situation comes after the rise and fall of the Secure Digital Music Initiative (SDMI). The aim was to develop open standards to protect digital music. The consortium proposed a number of watermarking technologies and challenged cryptography engineers and others to break the code. The watermarks were quickly hacked; among those who discovered the weaknesses was Professor Felten.

This cycle of launch-and-crack will persist, according to many commentators and participants in the security business and digital content distribution industry, as well as Gartner, Inc. analysts. New copy control or DRM technologies will be launched and, if they are used to lock popular content such as software, computer games, music or movies, some individuals will spend time trying to break those locks. This technical reality requires, we believe, that media companies and copyright holders have less reliance on creating unbreakable locks and more on creating offerings that are flexible enough to provide a decent level of copy protection while also ensuring that a cracked copy protection or DRM technology can be easily replaced and upgraded. This reality also points to a longer-term requirement for media companies and copyright holders to shift away from a mindset of absolute control over every piece of content.

A new DRM offering, introduced in January 2003, could become the standard for the continued commercial distribution of CD-based pre-recorded music: Microsoft's Windows Media Data Session Toolkit is designed for developers, especially those working for content providers and copyright holders. It supports delivery of so-called "dual-session" or "second-session" CDs. The first session contains the work in a secure format. The second session is protected with a DRM tool, Windows Media

DRM. The second session version can have multiple rules or rights that enable a consumer to do some things, but not others. For example, consumers have complained that pre-recorded CDs they purchased do not play at all or deliver poor playback quality when played in a PC-based CD player and in some car stereo systems.

These problems are typically caused by copy control burned onto the disc to prevent copying or duplication, confining quality playback to conventional CD players.

Microsoft claims that the Windows Media Data Session Toolkit allows the creation of secure CDs and DVDs for PC playback, by setting specific rules or rights for each disc. For example, a disc might allow a user to play back a CD or DVD on a PC and allow the user to transfer content onto a portable music device or DVD player.

Another competitor in the race to create a copy protection scheme for pre-recorded CDs is Macrovision Corporation's CDS-300 platform, a multilevel system the company claims can inhibit unauthorized file-sharing and piracy while still allowing consumers to make a limited number of personal copies.

Important as these technologies are, however, the way they are applied is critical. If content control and copy protection remain top priorities for digital media publishers, DRM will be deployed. Given that, in order to avoid consumer alienation, DRM standards need to be flexible enough to protect the content, be replaced when they are hacked, and flexible enough to accommodate changes in consumer behaviors and the tenets of fair use, which can be disrupted by the introductions of new technologies.

This is problematic, considering two difficulties associated with DRM:

- The use of technology to enforce copyright rights. Technology or "code," as Professor Lawrence Lessig of Stanford University Law School has stated, can never accurately map fair use, particularly since fair use is an evolving doctrine.

- Protecting intellectual property with DRM comes at the price of innovation, either stifling it or penalizing it. This is another reason why the DMCA is contested by consumer rights and technology advocate groups. The DVD-Jon Johansen case illustrates "innovation" as well as "illegal conduct," depending on the reader's perspective.

One way to address the difficulties is for the media companies to adopt an overarching approach to content distribution that GartnerG2 calls "perfectly portable content." **Perfectly portable content** is a concept intended to balance the need for access versus control of digital content distributed on the Web. As envisioned by GartnerG2, perfectly portable content allows copyrighted content to move from device to device without

copying. It is content for which there is, at any point in time, only one instance (more than one instance is possible, it just depends on the rules established by the copyright holder or publisher), which can be viewed on a PC, PDA or any other device capable of being authenticated. In displaying the content and authenticating the digital certificates used by DRM technologies, content can be "locked." Perfectly portable content can meet publishers' needs to control unauthorized and uncompensated copies while allowing consumers a sense of ownership and the ability to engage in fair use manipulation of their legitimate digital content.

In practice, the perfectly portable content model might work like this:

a) A copyright holder/media company releases a new copyrighted work, in this case, a Patricia Barber CD. The company requires the manufacturer to include in the copy a basic set of rules for how the content can be used (using an XrML-based set of tools, for example). The core of the perfectly portable content concept is that, at any one time, there are a preset number of active instances of the content that is, a specific number of copies of a song or the entire CD can be made; a preset number of tracks—or the entire CD—can be ripped into MP3 files and moved onto a portable MP3 player.

b) A consumer who purchased the Patricia Barber CD (or a set of files representing each track of the music CD) decides to loan it to someone else, who listens to it.

c) While a friend of the CD owner has the CD either in physical or digital format, the owner can't listen to it unless the content's rules allowed him to burn a second CD for time- or location-shifting.

d) The borrower, who likes Patricia Barber, goes down to the store, buys a copy of the CD, returns the original to the owner. Or in a digital distribution model, the borrower samples the tracks that comprise the CD, returns the files or the CD to the original owner.

Theoretically, it will be easy to ascribe specific rules of ownership to digital content and inject them into the media itself. These same rules can be transferred to protect the "first sale" concept. A near-term real example of perfectly portable content is the dual-session CD (and possibly the DVD) that is designed to balance fair use copying and first sale rights with copyright holders' fears of improper compensation for their work.

From another perspective, the notion of perfectly portable content helps maintain a healthy balance in the relationship between consumer electronic device manufacturers and content providers. Content providers are dependent on having device manufacturers deliver products that are compatible with their content and deliver the best playback performance of that

content for end users. Technology providers must deliver products that are compatible with the most popular content.

In this instance, perfectly portable content and any other successful copy-protection/DRM scheme can be viewed as maintaining a reasonable balance between these two parties, preventing one from exerting a disproportionate influence over the other. An example of where this imbalance might become a problem is Sony, which manufactures devices, creates and delivers content (music and movies), and with its joint-ownership with Philips of Intertrust's DRM products and patents, now owns its own DRM solution.

6. What's Ahead

Digital technologies and digital media content—from entertainment to reference material—have become more portable in time, space and format.

Content providers have been slow to adapt to digital distribution for fear of crushing old business models before they devise new ones. By and large, industry players have implemented digital technology to protect old business and to aggressively pursue perceived abusers of copyrighted material. They have solicited and received assistance in these efforts from legislators in the form of the DMCA and other legislation aimed at preventing what they perceive as illegal copying or sharing of copyrighted content.

With copyrighted material, especially recorded music, movies and print, digital advancements have exacerbated the historic tension between copyright holders—generally the entertainment industry—technology providers and consumers.

The law

Laws to protect content providers and copyright holders have become progressively restrictive. Two examples are the "anti-circumvention tools" provisions of the DMCA and Congress' continued extension to the copyright term. The extraordinary control exerted by copyright holders/content providers extends along the digital media value chain, from creation and production to distribution and, with DRM tools, to playback.

One of the original objectives of the Constitution was to encourage innovation by providing creators exclusive rights for limited times. This objective has been subverted to the extent that the DMCA's anti-circumvention provision and copyright term extensions can stifle legitimate and desirable innovation and improvement or creation based on pre-existing works.

As digital media distribution schemes mature, the extraordinary amount of control within reach of the copyright holders and content companies is likely to be augmented from an unlikely legal quarter: contract law. Current case law and precedents hold that the law will generally honor a valid contract over an entitlement authorized by Congress under the Copyright Act. Therefore, companies providing content online may request consumers to agree to give up rights (such as copying for back-up purposes or other fair use exemptions to copyright law) in order to sign up for the provider's service. In a truly efficient, competitive market, this might work well enough, assuming consumers are informed, aware and agree with such terms. The potential for alienating consumers and snuffing out true digital distribution is very high, especially if the result is strict enforcement of an increasing number of online contracts that cannot be negotiated and are often never even read or viewed by the "agreeing" consumer.

The legislation

The legislative outlook at the federal level is decidedly mixed. Several pro-consumer and technology industry bills are pending that would expressly legitimize fair use for consumers using digital media and protect the manufacturers of products that permit such fair uses, and protect scientific research efforts on technology protection measures.

Ready to counter those measures are bills sponsored by the entertainment industry, including measures that would require manufacturers of products to incorporate technological measures into digital products to prevent copying, whether fair or unfair, and provide private causes of action and stiff penalties for violations, both criminal and civil.

It is hard to predict which, if any, of the bills will survive. Some were introduced in 2001, re-introduced in 2002, and may or may not be re-introduced in 2003. It appears likely that no action will be taken on many of these copyright matters until various international conflicts and economic matters are dealt with.

However, the entertainment industry's efforts have spread from Congress to the FCC for rulemaking on the broadcast flag to protect broadcast video programming. Content owners are concerned about unauthorized rebroadcast, copying and sharing of digital programming content. Technology manufacturing companies and consumer groups oppose any mandate of technology standards by the FCC that may deprive consumers of their fair use rights.

The business

The music industry is the first to face the potential benefits and terrors of digital distribution. First, the ability to deal directly with buyers without the expense of a physical distribution network; but then the uncertainty of competing with "free" content.

- Challenge: Securing digital transactions and, in light of KaZaA and other P2P networks, creating a more compelling alternative to decentralized file-sharing networks remain the key challenge.

- Benefits: The Internet and new technologies have proven extremely effective marketing tools for the music companies and musicians. Labels can use Web sites to promote new releases, provide samples and near-instantaneous access to an artist's back catalog.

In visual entertainment content, particularly TV broadcast programming, new technologies are threatening to destroy the ad-heavy business models of U.S. television broadcasters. PVR technology threatens existing TV network revenues, as well as back-catalog movies and other potential packages of older TV and film content, while at the same time offering new opportunities.

- Challenge: Time-shifting of TV programming will eventually make the notion of prime time and advertising rates obsolete.

- Opportunity: Advertising-dependent TV broadcasters must explore new advertising models, including sponsorship, product placement and targeted advertising, in order to sustain the revenues to produce new content.

Stop the rhetoric and start framing the future

It's time to stop the rhetoric and start to talk about practical solutions. We have identified a handful of scenarios as possible outcomes of technological, business, legislative and legal developments. They will be discussed and analyzed in a forthcoming publication as potential models for distribution of digital content.

- The first scenario predicts the future, roughly the next five years, based on the assumption that the status quo continues.

- The second scenario forecasts what may happen if owners of digital content are more successful in protecting their property against unauthorized use and copying, in a manner analogous to property rights.

- The third scenario imagines the effects on the entertainment industry if digital content is treated as a public utility, a model suggested by the similarity with other regulated oligopolisitic industries such as telephone companies.

- The fourth scenario forecasts a future based on a new compensatory mechanism in which digital content is treated as if it were a "public good" and with usage taxed via levies on devices and media.

- The fifth scenario proposes a model in which DRM tools are effective: CDs and DVDs are encrypted with a copy protection that secures the majority of content, and the music industry continues to focus on physical as well as digital distribution.

7. Contributors

For The Berkman Center

- Blythe Holden, team leader
- Renny Hwang
- Ron Lazebnik
- John Palfrey
- Cyril Rigamonti
- Derek Slater
- Donna Wentworth

For GartnerG2

- Mike McGuire, team leader
- Van Baker
- Paul-Jon McNealy

Questions or comments about this document can be sent to:

- John Palfrey, executive director, Berkman Center for Internet & Society at Harvard Law School: jpalfrey@cyber.law.harvard.edu
- Mike McGuire, research director, GartnerG2: michael.mcguire@gartner.com