Peer-to-Peer Combat: The Entertainment Industry's Arsenal in Its War on Digital Piracy

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PEER-TO-PEER COMBAT:
THE ENTERTAINMENT INDUSTRY'S ARSENAL
IN ITS WAR ON DIGITAL PIRACY

"[T]he battle against file sharing has become the entertainment industry's version of the War on Drugs, an expensive, protracted, apparently ineffective and seemingly misguided battle against a contraband that many suggest does little harm."1

I. INTRODUCTION

Digital piracy is not a new problem.2 The ongoing discussion surrounding it is, however, continually renewed as emerging technologies are employed in both piracy and anti-piracy efforts.3 The entertainment industry has employed, is employing and is looking to employ various methods to protect more efficiently its intellectual property rights in a world that is largely tolerant of copyright infringement.4

2. See BLACK'S LAW DICTIONARY 1169 (7th ed. 1999) (defining piracy as "[t]he unauthorized and illegal reproduction or distribution of materials protected by copyright, patent, or trademark law"). Digital piracy, as discussed in this Note, is the piracy of digital content, i.e., software, digital music and digital motion pictures.

   New Internet-based technologies appear to threaten the ability of copyright owners to collect revenues for their intellectual creations . . . result[ing] in new legislation against pirating and . . . giv[ing] rise to new technologies to protect intellectual products. Both the new technologies and the counter-technologies that have followed them have attracted attention and analysis, sometimes bordering on the apocalyptic, from competing camps.

   Id.
4. See Hiawatha Bray, Tech Industry Issues Warning on Antipiracy, BOSTON GLOBE, July 16, 2002, at D2 (reporting that information technology (IT) industry executives are working with Hollywood to find technical ways to limit piracy); Company Town: Hollywood Boosts Campaign Donations: Politics, L.A. TIMES, June 14, 2000, at C5 ("Hollywood has been lobbying in Washington to seek ways to fight growing piracy of movies and music on the Internet."); Kay Larsen, Napster May Have Reformed, But Web Music Piracy Thrives, WALL ST. J. EUR., June 12, 2002, at M2 (explaining that recording industry is developing anti-piracy tactics based on technology being developed by motion picture industry); Todd Shields, Techno Phobias: Media Execs Fear Piracy of Digital Content But Are Split Over How to Stifle It, MEDIAWK, April 1, 2002, at 11 (reporting that film, computer and consumer-electronics industries have formed Copy Protection Technical Working Group to discuss ways of stifling digital piracy); Lisa M. Bowman, File-traders in the Crosshairs (July 15, 2002), at
These anti-piracy methods can be divided into three general approaches: legal, social and market.\(^5\) Analysis of the current state of each of these categories reveals that legal approaches, while popular with the recording and motion picture industries, provide only limited success and threaten to backfire as they become increasingly insular in their protection of copyright owners.\(^6\) Theoretically, social approaches offer the most effective means of addressing digital piracy, but ultimately remain largely ideological with little hope of ever being reduced to practice.\(^7\) Market approaches prove to be effective immediate remedies, but ultimately depend upon constant evolution and innovation to sustain anything beyond an ephemeral solution.\(^8\)

This Note discusses, categorizes and analyzes the different approaches already employed and those being developed to combat the piracy of copyrighted digital material in the United States.\(^9\) Part II discusses the problems and challenges digital piracy poses to the industries it affects the most: the software, recording and motion picture industries.\(^10\) Part III summarizes the relevant history of copyright law in the United States, providing a background for how copyright infringement is defined and contemplated in this country.\(^11\) Part IV reviews the most recent legislation enacted to update copyright law in response to the modern threat of digital piracy.\(^12\) Part V categorizes and analyzes current and developing approaches to digital piracy.\(^13\)


5. For a further discussion of the categorization of approaches to digital piracy, see infra notes 104-96 and accompanying text.

6. For a further discussion of legal approaches to digital piracy, see infra notes 107-30 and accompanying text.

7. For a further discussion of social approaches to digital piracy, see infra notes 131-48 and accompanying text.

8. For a further discussion of market approaches to digital piracy, see infra notes 149-96 and accompanying text.

9. For a further discussion of approaches to digital piracy, see infra notes 104-96 and accompanying text.

10. For a further discussion of challenges faced by the entertainment industry, see infra notes 14-56 and accompanying text.

11. For a further discussion of fundamental United States copyright law, see infra notes 57-79 and accompanying text.

12. For a further discussion of recently enacted copyright law, see infra notes 80-103 and accompanying text.

13. For a further discussion of categories of approaches to digital piracy, see infra notes 104-96 and accompanying text.
II. Problems and Challenges Posed by Digital Piracy

A. The Software Industry

Piracy has long been a bane to the software industry.\textsuperscript{14} Even before the Internet, piracy in the form of sophisticated counterfeiting operations and casual workplace copying threatened the viability and creativity of software publishers.\textsuperscript{15} Since the Internet has become ubiquitous, however, software piracy has become pandemic.\textsuperscript{16}

The Business Software Alliance (BSA)\textsuperscript{17} estimates that in 2001 the worldwide business software piracy rate was forty percent, costing the industry $10.97 billion in lost revenues.\textsuperscript{18} This figure is consistent with an increasing trend from thirty-six percent in 1999 and thirty-seven percent in 2000.\textsuperscript{19} Although the piracy rate was the lowest worldwide at twenty-five percent, companies in the U.S. lost revenues totaling $1.81 billion, more than any other country.\textsuperscript{20} Furthermore, although monetary losses due to piracy declined both worldwide and in the United States since 2000, the

\begin{enumerate}
\item See Business Software Alliance, Internet Software Piracy: Enforcement 1 (2002), at http://www.bsa.org/usa/policyres/admin/InternetPiracy-Enforcement.pdf ("Software publishers have long suffered from the impact that traditional forms of piracy have had on their markets, their economic viability and their ability to create new products.").
\item See id. ("Copying in the workplace, counterfeiting and various forms of illegal distribution cost the industry billions and billions of dollars each year.").
\item See id. ("Unauthorized electronic distribution and sale of copyrighted works over the Internet threatens [sic] to make [traditional software piracy methods] seem almost quaint by comparison."). The Internet has affected software piracy in at least three significant ways. See id. (positing three ways Internet has affected software piracy). First, it provides a "vast, borderless, sleepless marketplace for . . . pirated software." Id. Second, its increasing ease of access and faster connection speeds allow even the least sophisticated computer users to obtain pirated software with little difficulty. See id. ("Today, even the most novice of computer users can easily find his or her way to pirated software."). Third, its anonymous nature provides a lower risk of detection than traditional modes of unauthorized distribution. See id. (describing nature of Internet as "unrestricted, self-regulated and largely anonymous").
\item See Business Software Alliance, About BSA, at http://www.bsa.org/usa/about/ (last visited Jan. 7, 2003) (stating that Business Software Alliance is international consortium of companies in software, hardware and Internet industries). Established in 1988, the BSA's mission is to promote "a safe and legal online world" by educating consumers on software copyrights and cyber security, advocating public policy that encourages innovation and trade opportunities and fighting software piracy. Id.
\item See Business Software Alliance, Seventh Annual BSA Global Software Piracy Study 2 (June 2002), at http://www.bsa.org/resources/2002-06-10.130.pdf ("The purpose of the study is to review the available data and utilize a systematic methodology to determine the worldwide business software piracy rates and the associated dollar losses."). The "reported rate" is the percentage of all business application software installed without a license. See id. (defining research methods).
\item See id. (reporting worldwide piracy rates for last six years).
\item See id. at 6 (reporting piracy rate and lost revenues for United States).
\end{enumerate}
BSA attributes this decline not to less piracy, but to currency fluctuations, lower software prices and a sluggish economy.  

In a more detailed study of software piracy in the United States, the BSA estimated that, in 2000, publishers lost a total of $8.31 billion in revenues, $2.63 billion of which was attributed to the piracy of business application software.  

Typically, the publishers hit hardest are those that produce industry standard applications whose licenses are often relatively expensive. For example, Autodesk, publisher of the professional standard design program AutoCAD, estimates that only one in five computers running its program has a legal copy. Considering a legal license for one copy of the program costs $3,750, that proportion translates to a significant loss. Beyond the losses sustained by the software industry, the BSA reported that piracy cost the U.S. economy 118,000 lost jobs, $5.67 billion in lost wages and $1.59 billion in lost tax revenue in 2000.

B. The Recording Industry

Digital piracy began to afflict the recording industry in the late 1990s with the popularization of MP3, a technology that allows digital audio recordings to be compressed to manageable file sizes. These compressed music files were first distributed somewhat inefficiently on the Internet through web pages, newsgroups, chat rooms and email. Although a large amount of material was available at various places on the Internet,

21. See id. at 2 (explaining decreasing losses despite increasing piracy rates).


24. See id. (providing specific examples of software publishers most affected by piracy).

25. See id. (quoting Autodesk’s Director of Piracy Prevention).

26. See STATE PIRACY STUDY, supra note 22, at 7 (reporting effects of software piracy on United States economy).


Enter Napster, the peer-to-peer (P2P) network that revolutionized Internet file-sharing by streamlining the process of finding and downloading music. \(^{30}\) Napster’s ease of use and explosive popularity created a limitless MP3 free-for-all; at its peak, Napster estimated that seventy-five million users were downloading approximately ten thousand songs per second. \(^{31}\) Because the bulk of the music on its network was copyrighted material, all five major recording labels brought suit against Napster for contributory and vicarious copyright infringement. \(^{32}\) The labels were successful in forcing the company to stop offering copyrighted material on its network, causing the network to lose popularity just as quickly as it had arisen. \(^{33}\)

Despite the fall of Napster at the beginning of the millennium, the Recording Industry Association of America (RIAA) reported that its industry lost \$4.2\) billion in 2001. \(^{34}\) One reason for this loss is that in the wake of Napster, several alternative P2P networks became popular among MP3 users generally had to be more familiar with less mainstream venues to find and download the music they wanted. \(^{29}\)

29. See id. at 273 (“Before Napster, music and other content were only available if someone posted the content to a web page or newsgroup or attached it to an e-mail.”).

30. See id. (“Peer-to-peer networking dramatically expands the universe of available music[,] . . . streamlin[ing] the publishing process by making information residing on a user’s computer hard drive directly available to other users of the network.”).


32. See id. (citing Napster, 114 F. Supp. 2d at 900) (indicating plaintiffs’ causes of action). Contributory infringement occurs when one knowingly induces or contributes to the infringement of another. Paul Goldstein, Copyright § 1.5 (2d ed. 1996) (defining and explaining contributory infringement). Vicarious liability occurs when defendant’s “right and ability to supervise infringing activity coalesce with an obvious and direct financial interest in the exploitation of copy-righted materials—even in the absence of actual knowledge that the copyright monopoly is being impaired.” Shapiro, Bernstein & Co. v. H.L. Green Co., 316 F.2d 304, 307 (2d Cir. 1963) (imposing liability “upon the beneficiary of that exploitation”).

33. See A & M Records, Inc. v. Napster, Inc., 114 F. Supp. 2d 896, 927 (N.D. Cal. 2000) (enjoining Napster from “engaging in, or facilitating others in copying, downloading, uploading, transmitting, or distributing plaintiffs’ copyrighted musical compositions and sound recordings, protected by either federal or state law, without express permission of the rights owner”), aff’d in relevant part, 239 F.3d 1004, 1027 (9th Cir. 2001) (upholding preliminary injunction forcing Napster to stop offering copyrighted material on its network); see also Reid Kanaley & Patrick Kerkstra, Ruling Could Doom Napster: An Appeals Court Agreed the Internet Service Broke Copyright Laws, Phila. Inquirer, Feb. 13, 2001, at A1 (summarizing history of Napster service and litigation).

34. See Warren Cohen, Special Report: Copy-Protected CDs, Rolling Stone, June 7, 2002, at http://www.rollingstone.com/news/newsarticle.asp?nid=15990 (reporting estimated losses to recording industry). In a \$33.7\) billion market, this figure represents more than a ten percent loss. See id. (framing estimated losses as proportion of total market).
traders.35 These networks, many of which are derivatives of the open-source Gnutella network, have no central server coordinating communications between their users.36 Consequently, while the recording industry has had some success in getting copyrighted material off centralized P2P networks by threatening to sue central servers, the non-centralized aspect of the most popular current networks makes filing a lawsuit against a central server impossible.37

C. The Motion Picture Industry

Digital piracy is a relatively new threat to the motion picture industry, but based on the losses sustained by the software and recording industries, this threat is no less dangerous.38 Until recently, widespread piracy of motion pictures was limited by a number of factors.39 First, file sizes of movie recordings on computers were unmanageable; without compression protocols, movie files were too large to be put on compact discs (CDs) or to transfer conveniently over the Internet.40 Second, even for computer

35. See Manjoo, supra note 1 (noting variety of alternative P2P networks currently handle bulk of file sharing).


37. See Audiogalaxy Settles Music Piracy Lawsuit, WALL ST. J., June 18, 2002, at D6 (reporting that Audiogalaxy P2P network service settled lawsuit brought by recording industry companies for “a substantial sum”). Recording industry companies have brought similar suits against Streamcast Networks, Inc., Kazaa BV and Grokker Ltd. See id. (discussing P2P network litigation). Audiogalaxy has since contracted with Listen.com to become a distributor of its Rhapsody subscription service. See Brian Garrity, Audiogalaxy Pacts with Listen.com: Deal Brings Rhapsody Music Subscription Service to New Galaxy of Listeners, BILLBD., Sept. 21, 2002, at 6 (explaining that “[t]he deal between Audiogalaxy and Listen marks the first commercial deployment of a major-label-sanctioned subscription service through a P2P network”).

38. See Lee Gomes, Now, the ‘Napsterisation’ of Movies, WALL ST. J., July 17, 2000, at B1 (quoting Motion Picture Association of America (MPAA) president and CEO Jack Valenti as saying, “[T]he technology is moving extremely fast. I worry about the possibility that what happened to music will soon be happening to movies.”).


40. See Pantages, supra note 39, at 161-62 (discussing file size barrier to digital piracy of motion pictures); Gomes, supra note 38, at B1 (“[I]n contrast to MP3 music files, DVD movie files are extremely large . . . .”).
users with hard drives large enough to accommodate massive movie files, the fastest existing Internet connection speeds were still too slow to make wide dissemination of movies practical. Third, unlike CDs, digital versatile discs (DVDs) containing movie files were encrypted. By incorporating Content Scrambling System (CSS) encryption technology, DVDs allowed users to play, but not copy content. Finally, due to the difficulties in copying and disseminating digital movie files, most pirated movies available were analog recordings made by pirates smuggling camcorders into cinemas. These recordings were often of very low quality, far inferior to the digital quality of a DVD.

Recently, however, all of these barriers to digital piracy of movies have collapsed. The MP3 analogue to motion pictures, DivX, made it possible to compress a five gigabyte DVD file to 700 megabytes, roughly the capacity of a blank CD. Cable and Digital Subscriber Line (DSL) broadband connections have become increasingly available and more affordable to private homes across the country, making the transfer of such files much more convenient and less time-consuming. In 1999, a Norwegian teen reverse-engineered the CSS encryption technology used on most DVDs to create a utility, DeCSS, which was capable of decrypting DVD files, allowing them to be copied. With the ability to decrypt DVDs and

41. See Pantages, supra note 39, at 161-62 (explaining that even on fastest existing broadband connections transmitting one movie file required several hours of uninterrupted transfer); Gomes, supra note 38, at B1 ("[I]n contrast to MP3 music files, DVD movie files . . . require many hours, even days, to download.").

42. See Pantages, supra note 39, at 162 (discussing DVD encryption as barrier to digital piracy of motion pictures).

43. See id. at 165 (explaining CSS encryption of DVD movies). For a further discussion of CSS encryption technology on DVDs, see infra notes 152-55 and accompanying text.

44. See id. at 162 (explaining that piracy of motion pictures in theaters involved videotaping movie screen).

45. See id. (comparing quality of analog recordings to digital copies); Gomes, supra note 38, at B1 (highlighting sharp contrast between DVD quality digital motion pictures and "grainy pirated [analog] movies . . . created by camcorder-equipped movie pirates who sneaked into theaters").

46. See Pantages, supra note 39, at 163 ("[S]ince 1996, several radical developments destabilized the [motion picture] copyright holders' ability to control their products.").

47. See id. at 164 (indicating capabilities of DivX protocol); Gomes, supra note 38, at B1 (noting development of DivX protocol). DivX is a variant of Microsoft's version of MPEG-4, a standard video-compression protocol. See id. at B1 (discussing DivX compression protocol). The protocol was the product of a collaboration between a French video engineer and a German computer hacker. See id. (explaining that creators officially dubbed protocol "DivX ;-)" in mocking reference to earlier protocol named "DivX" that stressed anti-piracy features).


49. See id. at 163 (tracing development of DeCSS program to Jon Johansen and two friends); see also Universal City Studios, Inc. v. Reimerdes, 111 F. Supp. 2d 294, 311 (S.D.N.Y. 2000) (providing detailed history of DeCSS development).
compress large files down to manageable sizes without loss in quality, digital piracy began to replace analog piracy, encouraging more and more casual computer users to dabble in "ripping" and trading movies.  

Today, research suggests that anywhere from 300,000 to 350,000 pirated movies are downloaded on the Internet each day. The Motion Picture Association of America (MPAA) suggests that those estimates should be even higher. Augmented further by a loss of three to four billion dollars per year to analog piracy, the net loss sustained by the motion picture industry due to piracy is staggering.

The effect of digital piracy on the software, recording and motion picture industries is undeniable. Faced with this serious threat to their economic viability, these industries have a clear interest in vigorously protecting the legal rights to their products. As tangible forms of expression of intellectual property, these products find legal protection under copyright law.  


51. See Macrovision and Websense Announce New Partnership to Prevent Unauthorised Digital Material in the Workplace, M2 PRESSWIRE, Oct. 8, 2002, available at 2002 WL 26804117 ("[One] research firm, Viant of Boston, estimated in June 2001 that more than 300,000 to 350,000 pirated movies are downloaded from the Internet worldwide every day.").

52. See Hiawatha Bray, Bills Would Weaken Digital Antipiracy Law: Aim is to Legalize Bypass Software, BOSTON GLOBE, Oct. 3, 2002, at E4 ("We're already an industry that's seen 400,000 to 600,000 movies illegally downloaded every day . . . .") (quoting MPAA Vice President of Public Affairs Richard Taylor). The recent emergence of digital motion picture piracy has been compared to that of digital audio piracy when MP3 technology had just been introduced to the Internet. See Gomes, supra note 38, at B1 ("Right now, DivX is where MP3s were when they first came out. It took a while for people to catch on, but it's gaining fast."). (quoting video software web site operator Jan Devos).


54. For a further discussion of the effect of digital piracy on the software, recording and motion picture industries, see supra notes 14-56 and accompanying text.

55. For a further discussion of the economic impact of digital piracy on the software, recording and motion picture industries, see supra notes 22-26, 34 and 51-53 and accompanying text.

56. See David S. Fleming & Laura Beth Miller, Copyright Law in the Digital Age, in 1 ILL. INST. FOR CONTINUING LEGAL EDUC., BUSINESS, LAW, AND THE INTERNET HANDBOOK § 6.1 (Mar. 2002) ("Copyright law protects tangible forms of expression of intellectual property.").
III. SUMMARY OF COPYRIGHT LAW IN THE UNITED STATES

American copyright law begins with the Constitution: "The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." Congress has exercised this power several times since these words were written, enacting, amending and otherwise modernizing legislation when emerging technologies challenged existing protections and raised novel infringement issues. Current copyright law under the Copyright Act of 1976 is codified in Title 17 of the United States Code.

With the enactment of the Copyright Act of 1976, Congress established a standard federal structure for copyrights on both published and unpublished works, preempts most state common law and statutory protections. This structure provides for the protection of an author's rights of reproduction, adaptation, distribution, performance and display in all

60. See Fleming & Miller, supra note 56, § 6.2 (discussing federal preemption of state copyright law with Copyright Act of 1976). The relevant section of the United States Code provides:

On and after January 1, 1978, all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope of copyright as specified by section 106 in works of authorship that are fixed in a tangible medium of expression and come within the subject matter of copyright as specified by sections 102 and 103, whether created before or after that date and whether published or unpublished are governed exclusively by this title. Thereafter, no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State.

61. See 17 U.S.C. § 106 (2001) (listing specific rights granted to copyright owner). This section grants a copyright owner the exclusive rights:

1. to reproduce the copyrighted work in copies or phonorecords;
2. to prepare derivative works based upon the copyrighted work;
3. 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;
4. in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;
5. 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
6. in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.

Id.
original works "fixed in any tangible medium of expression." A work is so fixed when "its embodiment in a copy or phonorecord, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." Copyright protection automatically begins when a work is created (i.e., fixed in a tangible form), and, for works created on or after January 1, 1978, this protection generally endures until seventy years after the author's death. Consistent with the constitutional language providing protection "for limited Times," these terms ensure that "modern works will be copyrighted for at least as long as they are commercially viable." After the period of copyright protection for a work expires, the public may use the work freely as part of the public domain.

62. 17 U.S.C. § 102(a) (2001) (extending copyright protection to "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device"). This section further provides:

Works of authorship include the following categories:
(1) literary works;
(2) musical works, including any accompanying words;
(3) dramatic works, including any accompanying music;
(4) pantomimes and choreographic works;
(5) pictorial, graphic, and sculptural works;
(6) motion pictures and other audiovisual works;
(7) sound recordings; and
(8) architectural works.


64. See 17 U.S.C. § 302(a) (2001) ("Copyright in a work created on or after January 1, 1978, subsists from its creation and... endures for a term consisting of the life of the author and 70 years after the author's death."). For works made for hire, copyright protection lasts for the shorter of 120 years from the year of creation or ninety-five years from the year of first publication. See 17 U.S.C. § 302(c) ("In the case of... a work made for hire, the copyright endures for a term of 95 years from the year of its first publication, or a term of 120 years from the year of its creation, whichever expires first."). A work made for hire is defined as:
(1) work prepared by an employee within the scope of his or her employment; or
(2) a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.

65. U.S. Const. art. 1, § 8, cl. 8.

66. Fleming & Miller, supra note 56, § 6.10 (providing time limitations on copyrights).

67. See id. (explaining that works such as Shakespeare's writings, Bach's symphonies, Michelangelo's artwork and Homer's epic poems are examples of works in public domain).
Authors have three principal measures for effectively protecting their copyrighted material: notice, registration and litigation. Notice, the easiest and least expensive protection method, consists of formal notice printed on the material itself and written notice sent to potential or actual infringers. Registration, another relatively easy and inexpensive protection method, consists of sending a form, copies of the work and a filing fee to the Copyright Office at the Library of Congress. Lastly, authors may protect their works through litigation.

A copyright owner may bring an infringement action for another's unauthorized exercise of any of the exclusive rights comprising a copyright. A prima facie case of infringement requires that the copyright owner prove: (1) ownership of the right allegedly infringed and (2) actual infringement by defendant of original portions of the work. Remedies for a successful copyright infringement action include injunctive relief, impounding or destruction of infringing articles, monetary damages and criminal penalties. To balance an author's private interests with the

68. See id. § 6.15 (discussing three ways to protect copyrighted material).
69. See id. § 6.16 (“The easiest and least expensive way to protect copyrights is through notice. This includes formal notice printed on the materials as well as notifying potential or actual infringers in writing.”). Formal printed notice on a protected material should take the form “© [year of first publication] [copyright owner’s name] All rights reserved.” See id. (providing suggested form of formal notice). Requirements for formal notice under United States law are found in 17 U.S.C. §§ 401-06. The symbol © may be replaced by the word “Copyright,” or the abbreviation “Copr.” 17 U.S.C. § 401(b)(1) (2001). The year of the current publication may be written right after the year of first publication, if the years are different. See Fleming & Miller, supra note 56, § 6.16 (explaining that year of current publication placed after year of first publication may be single year or range of years). The phrase “all rights reserved,” while not required by United States copyright law, generally provides international protection. See id. (discussing utility of phrase “all rights reserved”).
70. See Fleming & Miller, supra note 56, § 6.17 (describing registration as “easy yet powerful way to protect copyright”). Registration is a necessary requirement for most infringement actions and for certain remedies. See 17 U.S.C. § 411 (2001) (requiring registration before institution of most infringement actions); 17 U.S.C. § 412 (2001) (requiring registration for awards of statutory damages or attorney's fees).
71. See Fleming & Miller, supra note 56, § 6.18 (discussing general issues that may arise in copyright litigation).
75. See 17 U.S.C. § 503 (providing for impounding or destruction of infringing articles).
76. See 17 U.S.C. § 504 (allowing damages to be calculated as copyright owner’s actual damages, including lost profits or statutory damages).
public interest, the Copyright Act limits the rights granted to a copyright owner.78 Among some narrow limitations, broader limitations include fair use, first sale and duration of rights.79

IV. RECENT LEGISLATION ENACTED TO COMBAT DIGITAL PIRACY

Since the Copyright Act of 1976, at least two significant pieces of legislation amending the Act have specifically addressed digital piracy issues.80 The No Electronic Theft (NET) Act and, to a much greater extent, the Digital Millennium Copyright Act (DMCA) have been used frequently and successfully in recent actions brought by companies in the entertainment industry to combat digital piracy.81

A. The No Electronic Theft (NET) Act

Enacted on December 16, 1997, the NET Act amended two sections of the Copyright Act to make it easier to criminally convict digital copyright infringers.82 Prior to these amendments, copyright infringers who did not realize commercial advantage or private financial gain could not be found criminally liable.83 This Act extended liability to the majority of

79. See 17 U.S.C. § 107 (providing for fair use limitations); 17 U.S.C. § 109 (discussing limitation of first sale, which allows purchaser of copyrighted item to dispose of it as he wishes); 17 U.S.C. § 302(a) (2001) (limiting duration in copyright to author’s life plus seventy years if work was created during or after 1978).
80. See Pantages, supra note 39, at 169 (explaining that while most proposed legislation in Congress addressing digital piracy and Internet regulation has failed to be ratified, No Electronic Theft (NET) Act and Digital Millennium Copyright Act (DMCA) are most notable acts amending Copyright Act to deal with copyright infringement on Internet).
81. See 17 U.S.C. § 506(a) (codifying NET Act); Pub. L. No. 105-504, 1122 Stat. 2680 (Oct. 28, 1998) (codifying DMCA); Pantages, supra note 99, at 169 (remarking that NET Act and DMCA have been used most frequently and most successfully in actions brought by music and motion picture industries).
82. See 17 U.S.C. § 506(a) (providing criminal liability for specific categories of copyright infringement); D. Jean Veta & Rochelle E. Rubin, Network and Information Security: Domestic and International Initiatives to Combat Cybercrime, in PRACTISING LAW INSTITUTE PATENT, COPYRIGHTS, TRADEMARKS, AND LITERARY PROPERTY COURSE HANDBOOK SERIES 955, 983-84 (July 2002) (“The intended consequence [of the NET Act] was to make it easier to convict hackers for criminal copyright offenses.”). As amended, this provision states:
   Any person who infringes a copyright willfully either—
   (1) for purposes of commercial advantage or private financial gain, or
   (2) by the reproduction or distribution, including by electronic means, during any 180-day period, of 1 or more copies or phonorecords of 1 or more copyrighted works, which have a total retail value of more than $1,000, shall be punished as provided under [the relevant sentencing provision].

Id.
83. See 17 U.S.C. § 506(a) (1996) (reciting infringement provision prior to amendment). The amendment to this section was the addition of § 506(a)(2), which does not require commercial advantage or private financial gain, as pro-
digital pirates: people who do not attempt to profit from their infringing activities, but rather provide their services for free to build their reputations as pirates.\textsuperscript{84}

B. \textit{The Digital Millennium Copyright Act (DMCA)}

Enacted on October 28, 1998, the DMCA implemented two international intellectual property treaties signed by the United States in 1996, as well as other provisions addressing copyright infringement on the Internet.\textsuperscript{85} The DMCA, which comprises five titles, extends greater copyright protection to more works, limits the liability of Internet Service Providers (ISPs) as intermediaries in the transmission of copyrighted material and provides stiff penalties for the circumvention of copyright protection systems.\textsuperscript{86}

The anti-circumvention sections of the DMCA are, perhaps, the most significant provisions affecting the entertainment industry’s anti-piracy efforts.\textsuperscript{87} One of these provisions makes it illegal to “circumvent a technological measure that effectively controls access to a work protected [by United States copyright law].”\textsuperscript{88} A second provision makes it illegal to “manufacture, import, offer to the public, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that [circumvents technological measures controlling access to a protected work].”\textsuperscript{89} The penalties for violating these provisions can reach up to $1 million in fines and/or a prison sentence of up to ten years for second and subsequent offenses.\textsuperscript{90}

\begin{itemize}
\item \textsuperscript{84} \textit{See} Pantages, \textit{supra} note 39, at 171-72 (explaining that most pirates give away pirated material for free, rather than selling it, to build their reputations as pirates). \textit{See generally} United States v. LaMacchia, 871 F. Supp. 535 (D. Mass. 1994) (highlighting inadequacy of previous copyright provisions that required financial gain for liability). Defendant LaMacchia set up a bulletin board system to disseminate pirated software. \textit{Id}. Prosecution was unsuccessful because defendant did not seek “or derive any personal benefit from the scheme to defraud.” \textit{Id}. at 537.
\item \textsuperscript{86} \textit{See} Fleming & Miller, \textit{supra} note 56, § 6.3 (discussing sections of DMCA); Pantages, \textit{supra} note 39, at 171 (discussing effects of DMCA).
\item \textsuperscript{87} \textit{See} 17 U.S.C. § 1201 (2001) (providing anti-circumvention provisions of DMCA).
\item \textsuperscript{88} 17 U.S.C. § 1201(a)(1)(A).
\item \textsuperscript{89} 17 U.S.C. § 1201(a)(2).
\item \textsuperscript{90} \textit{See} 17 U.S.C. § 1204(a) (2001) (noting criminal penalties for violations of anti-circumvention provisions of DMCA).
\end{itemize}
The motion picture industry has recently used these provisions in actions against users and traffickers in programs employed to circumvent the CSS technology protecting copyrighted motion pictures on DVDs. In *Universal City Studios, Inc. v. Reimerdes,* for example, eight motion picture studios filed suit against the publishers of a print magazine and online web site for violating the anti-trafficking provision of the DMCA. Defendant Eric Corley, publisher of *2600: The Hacker Quarterly* and operator of 2600.com, wrote and published an online article containing copies of and links to the object and source codes for DeCSS. After granting plaintiffs a preliminary injunction barring defendants from posting the DeCSS code, the district court found that defendants' posting of and linking to DeCSS violated the anti-trafficking provisions of the DMCA. The court further concluded that enjoining the posting of and linking to the code did not violate defendants' First Amendment rights. The Second Circuit affirmed, upholding the district court's injunctions on the posting of and linking to the code. Similar suits involving enjoining the publication of DeCSS have been brought under different theories.

Although it has provided the entertainment industry with a fairly effective tool for combating digital piracy, the DMCA has received a signifi-

91. For a further discussion of CSS encryption technology, see infra notes 152-55 and accompanying text.
93. See 17 U.S.C. § 1201(a)(2) ("No person shall . . . offer to the public, provide, or otherwise traffic in any technology [that] is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work protected under [United States copyright law].").
95. See Reimerdes, 111 F. Supp. 2d at 308-09 (noting that in addition to posting code for DeCSS, *The Hacker Quarterly* has included articles explaining how to steal Internet domain names, access other people's email and break into computer systems). For a further discussion of DeCSS, see supra note 49 and accompanying text.
96. See Reimerdes, 111 F. Supp. 2d at 316-24 (finding violation of anti-trafficking provision and that defendant's activities did not fall under several DMCA exceptions).
97. See id. at 333, 341 (posting clear and convincing standard, which was met in this case, to overcome general rule against enjoining site containing circumvention technology).
98. See Universal City Studios, Inc. v. Corley, 273 F.3d 429, 458 (2d Cir. 2001) (finding that District Court's injunction "is consistent with the limitations of the First Amendment").
cantomount of criticism by commentators. Consumer groups such as the Electronic Frontier Foundation (EFF) and DigitalConsumer.org openly oppose the DMCA and are lobbying for changes. These organizations argue that the DMCA’s anti-circumvention and anti-trafficking provisions severely undermine consumers’ fair use rights, rights that have historically been protected by common law and even codified in the Copyright Act. United States Representative Richard Boucher joins these groups in denouncing the DMCA and supporting a Digital Consumers’ Bill of Rights that would reaffirm fair use rights.

V. APPROACHES TO COMBATING DIGITAL PIRACY

Despite the entertainment industry’s success in enforcing legal rights to products under the above-mentioned amendments to copyright law, the continuing threat of digital piracy has prompted the industry to look for protection beyond existing law. Indeed, the current threat of digital piracy to the economic vitality of the industry has resulted in a diverse panoply of strategies and approaches in the entertainment industry’s “War on Digital Piracy.” These approaches can be divided into three categories: legal, social, and market.

100. See generally Brian Bolinger, Comment, Focusing on Infringement: Why Limitations on Decryption Technology Are Not the Solution to Policing Copyright, 52 Case W. Res. L. Rev. 1091, 1110 (2002) (arguing that DMCA is inefficient vehicle for policing use of copyright of digital media); Ryan L. Van Den Elzen, Note, Decrypting the DMCA: Fair Use as a Defense to the Distribution of DeCSS, 77 Notre Dame L. Rev. 673, 704 (2002) (arguing that DMCA’s anti-circumvention provisions frustrate Constitution’s purpose and eliminate users’ fair use rights).


103. See generally Rick Boucher, Congressman Rick Boucher Urges Reaffirmation of Fair Use Rights (2002), at http://www.house.gov/boucher/docs/fairuse.htm (discussing problems with DMCA and urging reaffirmation of fair use rights by Congress); Rick Boucher, Congressman Boucher’s New American Foundation Speech on Fair Use Rights (May 10, 2002), at http://www.house.gov/boucher/docs/fairusespeech.htm (proposing Congress adopt consumers’ bill of rights to clearly establish fair use as fundamental American right); Rick Boucher, Statement of Congressman Rick Boucher: “Pay-Per-Use” Society One Step Closer (Oct. 26, 2000), at http://www.house.gov/boucher/docs/payperuse.htm (arguing that enforcement of new legislation will lead to society where use of all intellectual property is paid for on per use basis).

104. For a further discussion of alternative approaches to combating digital piracy, see infra notes 110-96 and accompanying text.

105. For a further discussion of the economic effects of digital piracy on the software, recording and motion picture industries, see supra notes 22-26, 34 and 51-53 and accompanying text.

106. For a further discussion of the categorization of approaches to digital piracy, see infra notes 106-96 and accompanying text.
A. Legal Approaches

Legal approaches to combating digital piracy include both the creation of new legislation and the enforcement of existing laws.\textsuperscript{107} The goal of these approaches is to curtail copyright infringement by giving copyright owners more effective means to protect their intellectual property rights.\textsuperscript{108} As discussed above, the enactments of the DMCA and NET Act have already proved to be useful, albeit controversial, weapons in the entertainment industry’s legal arsenal.\textsuperscript{109} Beyond these recent amendments to the Copyright Act, however, proposed legislation pending in Congress seeks to expand the entertainment industry’s ability to enforce existing copyright law with radical technological measures.\textsuperscript{110}

One bill now being considered in Congress, Senator Hollings’ Consumer Broadband and Digital Television Promotion Act (CBDTPA),\textsuperscript{111} would require all new hardware and software to have embedded copy-protection schemes approved by the Federal Government and regulated by the Federal Communications Commission (FCC).\textsuperscript{112} To achieve this goal in a timely manner, the bill forces content, consumer electronics and information technology industries to join with consumer groups to develop viable standards, technologies and encoding rules within one year.\textsuperscript{113} If these negotiations fail, the FCC is to take over.\textsuperscript{114}

In the House of Representatives, Representative Berman has introduced the Peer-to-Peer Piracy Prevention Act (PPPPA),\textsuperscript{115} which would

\textsuperscript{107} For a further discussion of existing, recently amended copyright law, see supra notes 80-103 and accompanying text.

\textsuperscript{108} See U.S. Rep. Howard L. Berman, Just Deserts for Scofflaws (July 9, 2002), at http://news.com.com/2010-1078-942325.html (“There are solutions [to P2P piracy], and Congress has a constitutional obligation to create or facilitate them.”); Hollings, supra note 53 (“Current digital rights management solutions are insufficient to rectify th[e] problem [of digital piracy]. . . . [A] solution to this problem . . . will require government action, including a mandate to ensure its swift and universal adoption.”).

\textsuperscript{109} For a further discussion of the impact of the DMCA and NET Act on digital piracy, see supra notes 82-103 and accompanying text.

\textsuperscript{110} See Berman, supra note 108 (“Under my bill, copyright owners would be freed to use technology to impair P2P piracy . . . .”); Hollings, supra note 53 (“[S]trong technological protections need to be layered on top of the copyright laws, to complement the law as it exists today.”).

\textsuperscript{111} Consumer Broadband and Digital Television Promotion Act, S. 2048, 107th Cong. (2002).

\textsuperscript{112} See Hollings, supra note 53 (summarizing goal of CBDTPA).

\textsuperscript{113} See id. (describing timed negotiations required by Act); see also John Bolland, Anti-piracy Bill Finally Sees Senate (March 21, 2002), at http://news.com.com/2100-1023-866537.html (“The [CBDTPA] would require that the content, technology and consumer-electronics industries work with consumer groups for a year to set a standard technological means for protecting against digital piracy.”).

\textsuperscript{114} See Hollings, supra note 53 (explaining that because FCC is to work in consultation with private sector, ultimate solution should be initiated by government and developed by private sector).

\textsuperscript{115} Peer-to-Peer Piracy Prevention Act, H.R. 5211, 107th Cong. (2002).
allow entertainment industry companies to disable, interfere with, block, divert or otherwise impair peer-to-peer file-sharing networks to protect copyrighted material being traded on those networks. Although the bill does not specify what techniques would be available to companies authorized to attack peer-to-peer networks, it does require companies to communicate to the Attorney General “specific technologies the copyright holder intends to use to impair.” The copyright holder may not delete files, but if files are accidentally erased, a suit to recover damages must be approved by the Attorney General and allowed only if the injury caused monetary loss of more than $250.

While the RIAA and MPAA have announced their approval and support of both bills, a variety of other organizations and interested parties have decried them. In a joint press release, the BSA, Computer Systems Policy Project (CSPP) and Information Technology Industry Council (ITI) all condemned the CBDTPA. Ken Kay, Executive Director of the CSPP,

116. See Manjoo, supra note 1 (summarizing PPPPA).
117. See id. (quoting PPPPA).
119. See Manjoo, supra note 1 (quoting RIAA CEO Hilary Rosen as calling Berman PPPPA an “innovative approach to combating the serious problem of Internet piracy”). MPAA Senior Vice President for Government Relations Fritz Attaway has endorsed the PPPPA. See McCullagh, supra note 118 (noting that MPAA stresses that law-abiding Internet users should not be concerned). Hilary Rosen has heralded the CBDTPA as “an unmistakable signal about the importance of protecting digital music and other content from piracy.” Press Release, Hilary Rosen, On Introduction of Consumer Broadband Act (March 21, 2002), at http://www.politechbot.com/docs/cbdtpa/riaa.cbdtpa.release.032102.html. MPAA President and CEO Jack Valenti has called the CBDTPA “a measure that will serve the long-term interests of consumers . . . .” Press Release, Jack Valenti, On S. 2048 (Mar. 21, 2002), at http://www.politechbot.com/docs/cbdtpa/mpaa.cbdtpa.release.032102.html. But see Borland, supra note 113 (“The [CBDTPA] marks the meeting point of several twisted political strands, each of which has drawn its own political firestorm.”); Brad King, Howling Mad Over Hollings’ Bill (Mar. 28, 2002), at http://www.wired.com/news/print/0,1294,51337,00.html (stating that “[s]everal consumer groups and electronics companies aligned themselves against Hollings’[s CBDTPA]”); Declan McCullagh, Anti-Copy Bill Slams Coders (Mar. 22, 2002), at http://www.wired.com/news/print/0,1294,51274,00.html (explaining that “the electronics industry, computer makers, chip makers and nonprofit advocacy groups have slammed [the CBDTPA] as unworkable and preposterous”).
predicted that the bill would "decrease consumer choice, degrade product performance, stifle innovation, and reduce global competitiveness for US IT products." All of these organizations have argued that government intervention is inappropriate and that digital piracy solutions should ultimately come from the market. The Home Recording Rights Coalition (HRRC) shares these views, criticizing the bill for lacking a clear objective, ultimate goal or regulatory guidelines. Jonathan Zuck, President of the Association for Competitive Technology (ACT), has denounced the bill as "simply wrongheaded," suggesting a more accurate title would be the "Content Owners Market Promotion Act."


121. CBDTPA opposition, supra note 120.

122. See id. ("The best solution to protecting digital content is a marketplace-driven solution.") (quoting CSPP Executive Director Ken Kay). BSA President and CEO Robert Holleyman maintained that "voluntary multi-industry efforts currently underway should be permitted to continue in order to identify effective, workable market solutions." Id. ITI President Rhett Dawson argued that the CBDTPA "could stand in the way of consumers enjoying the benefits of innovation by having the government make decisions that are best left to the marketplace." Id.


124. See Press Release, HRRC, Home Recording Rights Coalition Criticizes Hollings/Stevens Bill for Inviting Undefined and Unlimited Regulation of Digital Consumer Devices (Mar. 22, 2002), at http://www.politechbot.com/docs/cbdtpa/hrcc.cbdtpa.032202.html ("[The CBDTPA] lacks a clear objective for all of the regulation that it mandates and any defined goal for the process it would start.") (quoting HRRC Chairman Gary Shapiro). Shapiro went on to argue that the bill represented a "particularly dangerous delegation of broad, unfettered regulatory authority, which could have severe, adverse, long-term consequences for American consumers. Indeed, this is a breathtaking delegation of authority to a regulatory agency that is ill-equipped to perform such a monumental task." Id.

125. See Association for Competitive Technology, About Us, at http://www.actonline.org/about/ (last visited Jan. 7, 2003) (explaining that Association for Competitive Technology (ACT) is national education and advocacy group for technology industry). ACT is comprised of businesses in software, hardware, consulting and Internet industries. Id.

126. Press Release, Association for Competitive Technology, Hollings' Digital Rights Management is "Wrongheaded" (Mar. 22, 2002), at http://www.politechbot.com/docs/cbdtpa/act.cbdtpa.032202.html. ACT President Jonathan Zuck also opposed the bill, characterizing it as "government interference in a process best handled by the market." Id.
DigitalConsumer.org, an online consumer group dedicated to preserving fair use rights in the use of digital consumer electronics,\textsuperscript{127} describes the CBDTPA as anti-consumer and contrary to fair use rights, contending that it will undermine innovation and ultimately be unsuccessful.\textsuperscript{128} The organization's principal argument is that any technological copy-protection scheme the public or private sectors devise can and will be reverse-engineered by expert hackers, resulting in a system that does nothing to hinder piracy and instead only deprives legitimate consumers of control and flexibility over legally obtained content.\textsuperscript{129} This argument is supported by a number of respected computer security experts.\textsuperscript{130}

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\textsuperscript{127} See DigitalConsumer.org, \textit{Overview: What We're All About}, at http://www.digitalconsumer.org/overview.html (last visited Jan. 7, 2003) (explaining that goal of DigitalConsumer.org is "to restore the balance of copyright law so that artists and creators can prosper while citizens have reasonable flexibility to use content in fair and legal ways").
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\textsuperscript{128} See DigitalConsumer.org, \textit{Help Stop the CBDTPA}, at http://www.digitalconsumer.org/cbdtpa/ (last visited Jan. 7, 2003) (identifying four major problems with CBDTPA). DigitalConsumer.org argues that the CBDTPA's personal use exemption is substantially narrower than the fair use rights consumers have enjoyed in the past. See id. (discussing section 3(e)(2) of CBDTPA). The organization also points out that the justification for the bill, that better protection of digital works will encourage content creators to make more works available, is the same justification for the DMCA, which has been in effect for four years without increasing noticeably the volume of digital material on the Internet. See id. (maintaining that Hollywood has not offered volume of legal, downloadable digital movies or music promised after enactment of DMCA). Furthermore, the CBDTPA will stifle innovation by defeating digital playing and recording devices before they are invented. See id. (arguing that CBDTPA will hinder discovering and imagining unanticipated uses of technology).
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\textsuperscript{129} See id. ([C]opy protection isn't breakable by the average citizen, but it is very breakable by software experts. A government mandated technology standard will not be any more effective at preventing piracy. Instead, the consumer will lose \ldots\).
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\textsuperscript{130} See id. ("The most respected computer security experts agree that this approach to preventing piracy won't work."). Edward Felten, Associate Professor of Computer Science at Princeton University and Director of the Secure Internet Programming Laboratory, has testified to this claim at a Senate Judiciary Committee Hearing on digital copyright:
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\begin{quote}
[E]very copy protection scheme for general-purpose computers that has undergone serious public scrutiny has been found to be ineffective.
\end{quote}

\begin{quote}
Consider what will happen if a government-mandated protection measure turns out not to work. Such a measure would do many things: it would inconvenience honest consumers; it would raise the price of media players; it would lengthen product development cycles; it would impede the development of new and better standards. Everyone would suffer, except the pirates. The industry that devised the measure would look technically inept, and the government that mandated its use would look worse.
\end{quote}

B. Social Approaches

Social approaches to combating digital piracy fundamentally involve changing the way society views intellectual property rights. The goal of these approaches is to reconcile the values of a society that largely tolerates copyright infringement and copyright owners who do not. To this end, one approach is to condition society to be less tolerant of copyright infringement while another approach proposes to do away with copyright (and, therefore, infringement) of certain works altogether.

To make society less tolerant of copyright infringement, the entertainment industry has invested in education programs designed to reinforce consumers' value of intellectual property. A government task force in the United Kingdom has proposed that consumer intellectual property education should begin in grade school to teach children the importance of respecting copyright. By implementing intellectual property education into the standard curricula of twelve- to eighteen-year-olds, the government hopes to achieve a “...[g]reater recognition by the public of the role and importance of intellectual property rights ...” The Director of Copyright at the government’s Patent Office categorizes this educational method as a social approach stating “...By bringing aware-

131. For a further discussion of social approaches to digital piracy, see infra notes 132-48 and accompanying text.
132. See Alan Docherty, Why Can’t Johnny Respect Copyrights? (July 16, 2001), at http://www.salon.com/tech/feature/2001/07/16/abc_ip/print.html (“The idea that counterfeiting and piracy are victimless crimes is an all too common perception.”) (quoting Anthony Murphy, Director of Copyright at Great Britain’s Patent Office); Manjoo, supra note 1 (“[i]t’s obvious that music buyers don’t have any qualms about stealing music—and what business person wouldn’t want to stop the outright theft of a product?”) (quoting independent music industry analyst Aram Sinnreich). One commentator observes that “[y]oung people, and other people, believe in a version of copyright law that is different from the one now on the books. Many of them believe, for example, that if you buy a CD, you buy the right to share it.” See Docherty, supra (quoting Professor Jessica Litman). Professor Stan Liebowitz points out that the conflict between the values of copyright owners and consumers is the fundamental driving force of copyright law. See Liebowitz, supra note 3, at 3 (“The issue at the heart of copyright, indeed of all intellectual property law, is the degree to which copyright owners can appropriate the value produced by the consumption, or appreciation, of their works by others.”).
133. See generally Ku, supra note 28, at 263 (arguing that copyright protection for certain digital works is no longer justified); Docherty, supra note 132 (describing educational program designed to increase society’s value of intellectual property rights).
134. See Washington, supra note 23, at 11C (noting that nation’s largest software makers have instituted education programs for consumers); Manjoo, supra note 1 (“[E]ducating people about the reasons why unauthorized file sharing hurts the music they care about in the long run ...[i]s a key component of any long-term effort to change people’s behavior.”) (quoting RIAA spokesman Jonathan Lamy).
135. See Docherty, supra note 132 (describing program developed by United Kingdom’s Creative Industries Task Force).
136. See id. (quoting Chris Smith, former Secretary of State for Culture, Media and Sport).
ness of the importance of copyright into our schools, tomorrow’s consumers can take their place in a community which understands, values and respects intellectual property.”

At least one scholar has argued for a completely opposite approach: removing copyright protection for digital works altogether. This argument posits that “the economics of digital technology undercuts prior assumptions about the efficacy of a private property regime for information, a public good.” Traditionally, copyright protection was founded on the principle that copyright was needed to compensate publishers for the high costs of distribution and to provide authors with an incentive to create content. In the digital age, however, the Internet has lowered the cost of content distribution such that anyone with a computer, Internet access and electricity can become a distributor. Because consumers can internalize this low cost of distribution, the traditional copyright scheme is now little more than “an argument for protecting content distributors in a world in which middlemen are obsolete.”

Both of these social approaches to digital piracy, while polar in theory, are burdened with the mutual problem of reduction to practice. Citing the failure of other education-based programs, critics of the educa-

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137. See id. (quoting Anthony Murphy, Patent Office’s Director of Copyright).
138. See Ku, supra note 28, at 263 (arguing against copyright protection for digital works).
139. Id.
140. See id. at 266-67 (“Copyright was necessary to provide financial incentives for both creation and distribution.”).
141. See id. at 271-72 (“The only costs of becoming a global distributor (or pirate) of digital content are the price of a computer, Internet access, and electricity.”).
142. Id. at 263. Professor Ku further argues that granting copyrights to authors is no longer as important of an incentive to encourage content creation because sufficient incentives can be found in other, secondary markets. See id. (arguing that, at least with respect to digital music, “exclusive rights to reproduce and distribute copies provide little if any incentive for creation, and that digital technology makes it possible to compensate artists without control of content distribution”). For example, because the majority of professional musicians earn most of their income through ticket sales of live performances, “free, noncommercial distribution of music should have little or no impact on the incentives for creating music.” Id. at 308. The motion picture industry can also derive alternative incentives from secondary markets. See id. at 323 (“Arguably, the creation of television programming and motion pictures, like music, may not require additional funding, because it is already adequately funded through advertising revenue, programming subscriptions, and box office ticket sales.”). Furthermore, as long as artists retain the right to license derivative works and trademarks and to endorse products and services, substantial incentives can be derived from markets for derivatives of original content. See id. at 309 (“[P]opular artists will still be able to earn significant income from the licensing and sales of tie-in products . . . [as well as] from endorsements, advertising, and public appearances.”).
143. See generally id. at 324 (raising rhetorical questions concerning problems with implementing creative destruction of copyright); Docherty, supra note 132 (discussing pragmatic obstacles to implementing intellectual property education programs).
tional approach argue that “[m]oral education programs have little or no positive effect upon moral behavior, achievement or anything else.”\textsuperscript{144} Another criticism of the educational approach is that its teachings would be based on laws that are not only controversial, but also constantly changing.\textsuperscript{145}

The “creative destruction” approach to copyright is clearly controversial.\textsuperscript{146} Implementation of this approach would essentially destroy the distribution functions of the software, recording and motion picture industries.\textsuperscript{147} Considering implementation of this approach would involve fundamental legislative changes, the immense lobbying power of these industries is an insurmountable obstacle.\textsuperscript{148}

\textsuperscript{144} See Docherty, \textit{supra} note 132 (quoting professor James Davison Hunter). The Drug Abuse Resistance Education (DARE) program is one example of a failed moral education program. \textit{See id.} (commenting on ineffectiveness of DARE program). In 2001, DARE administrators admitted that the nation’s largest and most expensive drug prevention program was ineffective. \textit{See} Dawn MacKeen, \textit{Just Say No to DARE} (Feb. 16, 2001), at http://archive.salon.com/mwt/feature/2001/02/16/dare/print.html (discussing failure of DARE program). Furthermore, research indicates that the program actually contributed to increasing drug use by high school students. \textit{See id.} (indicating past research has found DARE program may have played role in increasing rates of drug use by high school students).

\textsuperscript{145} See Docherty, \textit{supra} note 132 (noting that intellectual property education in schools may be inappropriate because laws are in flux and hotly contested). As one student commentator aptly put it, “[o]ver-arching laws such as the DMCA are prone to challenge and change, and a lesson plan written today could be incorrect a year from now, making it difficult to compose a static curriculum.” Pantages, \textit{supra} note 39, at 183 (citing Docherty, \textit{supra} note 132).

\textsuperscript{146} See Ku, \textit{supra} note 28, at 324 (“There will of course be opposition to this vision.”).

\textsuperscript{147} \textit{See id.} (“Just as Gutenberg’s printing press threatened the dominance of scribes, peer-to-peer networking and MP3s clearly threaten the recording industry, whose business depends upon manufacturing and distributing old bottles.”). Professor Ku uses the following analogy to demonstrate the obsolescence of middlemen in digital content distribution:

\textit{[D]igital representation frees content from the need for a tangible medium to distribute it. In the past, content could be conveyed to the public only through physical media such as film, paper, plastic, etc., and the physical media limited its distribution and copying. Distributing copyrighted works in the form of books, CDs, and videos was similar to the distribution of wine. In order to distribute wine to the public, one needed bottles. Even if wine was plentiful, bottles were not. In contrast, the data representing a recent hit song, a newborn’s picture, or a scholar’s work in progress no longer need to be carried in plastic or on paper. Digital information can be conveyed without the need for a bottle. Reduced to ones and zeros, digital information can be transmitted through the radio waves of the electromagnetic spectrum, as electrical impulses through telephone and cable wires, and as light across fiber optic networks with the information alone traveling to the recipient.}

\textit{Id.} at 270-71.

\textsuperscript{148} See generally Jessica Litman, \textit{Digital Copyright} 22-32 (Prometheus 2001) (discussing lobbying power of entertainment industry with respect to copyright law).
C. Market Approaches

Market approaches to combating digital piracy involve technological and content-oriented methods. These approaches derive their methodology from principles of economics and the nature of consumer behavior in the private sector.

One common market approach to digital piracy is copy-protection technology. As discussed above, the motion picture industry has had limited success with this approach in the implementation of CSS technology on DVDs. This encryption technology was designed to regulate access to and prevent copying of content on DVDs. The technology "requires the use of appropriately configured hardware such as a DVD player or a computer DVD drive to decrypt, unscramble and play back, but not copy, motion pictures on DVDs." Because only DVD players containing appropriate keys can decrypt and play CSS-protected DVDs, manufacturers must license the technology to make their players compatible with commercial DVDs.

149. For a further discussion of market approaches to digital piracy, see infra notes 150-96 and accompanying text.

150. See Manjoo, supra note 1 (recognizing that justification for market-based solutions to digital piracy derive from principle that "consumers set the tone for the marketplace") (quoting music industry analyst Aram Sinnreich).


152. For a further discussion of CSS technology, see supra note 43 and infra notes 153-55 and accompanying text.

153. See Universal City Studios, Inc. v. Reimerdes, 111 F. Supp. 2d 294, 309 (S.D.N.Y. 2000) (stating that motion picture studios required such technology to stem high risk of DVD piracy). The motion picture studios realized that the risk of DVD piracy was very high because the digital nature of the content allowed for easy copying without degradation. See id. (discussing need for copy-protection system on DVDs). Consequently, CSS was developed by Matsushita Electric Industrial Company and Toshiba Corporation in 1996, one year prior to the initial release of DVDs containing motion pictures in digital format. See id. at 309-10 (explaining development and use of CSS technology).

154. Id. at 308. Specifically, a DVD player decrypts a CSS-protected DVD with a decryption algorithm derived from a series of keys stored on the DVD and DVD player. See id. at 310 (describing functioning of CSS).

155. See id. at 310 (explaining that "manufacturers may not, consistent with their licenses, make equipment that would supply digital output that could be used in copying protected DVDs"). To prevent the technology from becoming publicly available and used to copy content, CSS is licensed under strict security requirements. See id. (clarifying need for manufacturers to license technology). To maximize the ubiquity of CSS as the standard copy-protection system on commercial DVDs, the technology is licensed on a royalty-free basis. See id. (detailing licensing of CSS). Originally licensed by Matsushita and Toshiba, its creators, CSS is now licensed by the DVD Copy Control Association. See id. at 310 n.60 (explaining licensing of CSS).
Recognizing the effectiveness of copy-protection technology in securing content on DVDs, the recording industry is currently experimenting with copy-protection technology on CDs to prevent the copying of digital music.\(^ {156} \) Indeed, copy-protected CDs have already been released in European and Asian markets, but have had a slower introduction to the American market.\(^ {157} \) Part of the reason why the technology has not seen widespread deployment in the United States is because it has not been completely successful in foreign markets.\(^ {158} \) When copy-protected CDs were initially released by BMG, a major record label, in Germany, three to four percent of the 100,000 sold were returned because they would not play in several types of CD players, including car CD players.\(^ {159} \) The incompatibility of the CDs with standard players was a surprise to the company, having successfully tested the CDs on a thousand different players prior to release.\(^ {160} \) The company also experienced similar problems in Great Britain.\(^ {161} \) Despite these compatibility problems, BMG planned to work with Midbar, the Israeli software firm that had developed the copy-protection system, to improve the technology.\(^ {162} \) Ideally, the record company would like to implement a copy-protection system that allows for a single copy of a CD, made for a consumer's personal use, but would otherwise not allow repeat copying.\(^ {163} \)

\(^ {156} \) See Cohen, supra note 34 ("Each of the five major [record] labels is now experimenting with anti-piracy technology that prevents computer CD-ROM drives from playing or ripping music in the popular MP3 format.").

\(^ {157} \) See id. (explaining that copy-protected CDs have spread rapidly in Europe and Asia, but have moved more slowly in America). As of June 2002, only four copy-protected CDs had been officially released in the United States: The More Fast and Furious soundtrack on Universal, hip-hop artist Pretty Willis's debut Enter the Life of Suelia on Universal and releases by country artists Charley Pride and Len Doolin on Nashville indie labels. See id. (providing list of copy-protected releases in United States).

\(^ {158} \) See Chris Oakes, Copy-Protected CDs Taken Back (Feb. 3, 2000), at http://www.wired.com/news/print/0,1294,33921,00.html (reporting problems with trial release of copy-protected CDs in Germany).

\(^ {159} \) See id. (describing incompatibility of new CDs with CD players). The copy-protection technology was initially implemented on January 24, 2000 with the release of two rock CDs, one, made by the popular Finnish band Him, immediately became the number one seller in Germany. See id. (detailing original release of copy-protected CDs in Germany). By the end of the first week after the release, the record company had to ship additional orders of CDs without the copy-protection to salvage sales. See id. (explaining that company was mindful of consumer frustration with incompatible CDs).

\(^ {160} \) See id. (stating that CDs had been tested for compatibility prior to release).

\(^ {161} \) See Cohen, supra note 34 (describing BMG's recall of copy-protected CDs in Britain when Natalie Imbruglia's White Lilies Island would not play in regular CD players).

\(^ {162} \) See Oakes, supra note 158 (reporting plans to improve compatibility of Midbar's Cactus Data Shield technology).

\(^ {163} \) See Cohen, supra note 34 ("Record companies say new CDs may allow for a single copy to be made, but will be in a locked format to prevent repeat copying and burning."). Record labels believe such a system is needed to provide a mini-
A newer, more creative market approach to digital music piracy is MP3 “spoofing.” As discussed above, the non-centralized nature of today’s most popular P2P networks makes regulation of copyright infringement extremely difficult. Without central servers to threaten with legal action, the recording industry is currently trying to fight digital music piracy by flooding P2P networks with spoofed MP3s. Record labels contract with firms like New York’s Overpeer to create and inundate P2P networks with looped, silent and distorted versions of the labels’ most popularly traded files. The strategy is to make obtaining a decent copy of a file so frustrating that network users will give up and buy a legitimate copy of the music.

While this spoofing strategy has undoubtedly achieved some success, it will most likely be transient as P2P networks are already promising that new upgrades will have anti-spoof features. This tactic is also criticized for its potential to anger both artists, who suffer the corruption of their work, and music fans, who comprise the consumers that keep record labels in business.

Another commonly suggested market approach to digital music piracy is the creation of commercial P2P networks that offer legal MP3s of copyrighted material at a reasonable cost. Proponents of this approach
argue that consumers are getting increasingly frustrated with using current free P2P networks due to such hassles as unreliable connections to other network users, unpredictable quality of MP3s, prevalence of spoofed MP3s and annoying ad- and spy-ware bundled with P2P applications. Furthermore, research suggests that consumers are willing to pay for digital music services, provided such services offer all of the benefits with none of the frustrations of a free network.

As a result, some recording industry companies have initiated subscription services. These services, however, have not been seriously competitive with free networks because they lack "the range and flexibility of the free file traders." At least one music industry analyst has argued that a successful subscription service needs to offer four features: music from all five major record labels, the capacity to play songs from multiple computers, CD burning and unlimited access to songs. Although some of the subscription services are beginning to offer these features, rules and

be extraordinarily successful in offering more efficient downloading of legitimate MP3s at reasonable cost.)

173. See id. ("The process [of downloading music from free P2P networks] is fraught with the usual hassles of trading—the songs are there but the downloads hang, terminate inexplicably or, if they come through, sound as if they were recorded on wax cylinders."). Manjoo describes "adware, spyware, Trojan software, and even possible security holes" as "increasing, and increasingly annoying, concerns posed by the file-trading applications themselves." Id. See generally Damien Cave, The Parasite Economy (Aug. 2, 2001), at http://archive.salon.com/tech/feature/2001/08/02/parasite_capital/print.html (last visited Jan. 7, 2003) (discussing problems associated with software bundled with P2P network applications).

174. See Manjoo, supra note 1 (arguing that subscription P2P networks could be commercially viable if they offered enough to consumers). Independent music industry analyst Aram Sinnreich maintains that there is "overwhelming year-over-year survey data" to show that people will pay for a subscription service that has all the perks, and none of the hassles, of a free system." Id.


176. Manjoo, supra note 1 (reporting that less than five million people have tried subscription services).

177. See id. (quoting Aram Sinnreich, independent music industry analyst in Los Angeles).
licensing complications have crippled their initial effectiveness in enticing users away from free P2P networks.\textsuperscript{178}

A fairly recent market approach to software piracy is the implementation of activation schemes.\textsuperscript{179} Under an activation scheme, shortly after installing software on a computer, the user must contact the publisher for an activation number to continue using the software.\textsuperscript{180} This method is most notably incorporated in Microsoft's Office XP and Windows XP titles.\textsuperscript{181} Microsoft's scheme allows one to use Windows XP for thirty days or Office XP for fifty days after installation before the software requires an activation number to continue functioning.\textsuperscript{182} Multiple activations of one copy of a program indicate potential piracy.\textsuperscript{183} At this stage, the newness of activation schemes makes evaluating their effectiveness in preventing software piracy difficult.\textsuperscript{184} Microsoft has reported, however, that despite initial complaints from users and the press, customers have generally accepted the activation process.\textsuperscript{185}

Finally, a logical and effective market approach to all forms of digital piracy is to increase the product value of legitimate forms of copyrighted content by offering consumers an element or feature that cannot be pirated and distributed with primary content.\textsuperscript{186} One way to increase the value of legitimate versions of content is to issue limited editions or otherwise make the content collectable.\textsuperscript{187} Another way is to bundle mercha-

\textsuperscript{178} See id. (stating that services' limitations are result of “different labels releas[ing] different catalogs to different services, with varying restrictions and at confusing price scales”).

\textsuperscript{179} See Washington, supra note 23, at 1IC (reporting that nation's largest software makers have recently developed activation schemes to curtail software piracy).

\textsuperscript{180} See id. (explaining operation of activation scheme).

\textsuperscript{181} See id. (describing Microsoft's use of activation schemes in XP series).

\textsuperscript{182} See id. (discussing operation of Microsoft's activation schemes).

\textsuperscript{183} See id. (elucidating operation of activation scheme).

\textsuperscript{184} See id. (explaining that activation scheme's success in stemming piracy is "hard to evaluate" at this point) (quoting Microsoft attorney Tim Cranton).

\textsuperscript{185} See id. (reporting that activation scheme has generally been accepted by customers despite early criticism).

\textsuperscript{186} See David Kushner, The Digital Beat: Eminem's Sorry MP3 Show, ROLLING STONE, June 10, 2002, available at http://www.rollingstone.com/news/newsarticle.asp?nid=16081 (arguing that faced with rampant piracy, digital music producers need to "cop to the Internet and pursue more forward-thinking strategies—such as finding new ways to make people want to buy CDs"). Kushner posits that increased legitimate product value is "the oldest trick in the book, but it works like gold: Toss something in that makes the consumers feel like he's [sic] getting something cool for free." Id. This reasoning also underlies Aram Sinnreich's requirements for a successful digital music subscription service: "[Y]ou [content providers] have to make them [consumers] feel like they're getting a lot." Manjoo, supra note 1.

\textsuperscript{187} See Kushner, supra note 186 (applauding Interscope's inclusion of free DVD with first 2 million copies of Eminem's The Eminem Show).
dise with the primary content.\footnote{\textsuperscript{188} See id. (encouraging record companies’ inclusion of extra merchandise with CDs and providing example of Interscope’s inclusion of complimentary DVD with Eminem’s \textit{The Eminem Show}, which featured bonus performances and interviews).} Interscope Records recently combined both of these methods in the marketing of Eminem’s \textit{The Eminem Show} by including a complimentary DVD containing live performances and interviews with the first two million copies sold.\footnote{\textsuperscript{189} See id. (discussing strategic marketing of Eminem’s \textit{The Eminem Show} to maximize effect of pre-release piracy).} Indeed, the release of \textit{The Eminem Show} is the perfect example of how record labels can successfully utilize market approaches to combat the effects of digital piracy.\footnote{\textsuperscript{190} See generally \textsuperscript{\textit{Id}. (describing success of \textit{The Eminem Show}).} Prior to the release of the album, Interscope had taken unprecedented steps to keep music from the album off P2P networks, to maximize initial record sales.\footnote{\textsuperscript{191} See \textsuperscript{\textit{Id}. (explaining that rather than sending out advance copies, Interscope assembled reviewers for listening parties).} The label wanted to avoid what had happened to Madonna’s \textit{Music}, Oasis’s \textit{Heathen Chemistry} and Korn’s \textit{Untouchables}, all of which suffered leaks to P2P networks prior to their official releases. See id. (discussing effect of leaks of other albums to P2P networks prior to official release).}\footnote{\textsuperscript{192} See \textsuperscript{\textit{Id}. (explaining that DJs Opie and Anthony broadcast parts of album and taunted Interscope by reading on air cease-and-desist letter sent by label).} Despite efforts to control access to the album prior to release, music was eventually leaked and played on a nationally broadcast radio program.\footnote{\textsuperscript{193} See \textsuperscript{\textit{Id}. (“Fed up, Eminem decided to toss the multimillion-dollar marketing plan out the window and release the album six days early, on May 28th.”).} Consequently, the label scrapped its multimillion-dollar marketing plan and released the album six days early.\footnote{\textsuperscript{194} See \textsuperscript{\textit{Id}. (reporting success of album’s release).} The reason the album did so well despite leaks to P2P networks is simple: Music fans still want authentic CDs.\footnote{\textsuperscript{195} \textit{Id}.} See \textsuperscript{\textit{Id}. (rationalizing album’s success).} Kushnern explains:} 

Ironically, Eminem’s MP3 show has only underscored the importance of peer-to-peer sites in the new economy. Listen up Interscope et al: Music fans want the CDs! They want the packaging! They want the versatility of discs—the ease of play, of popping the music into car stereos, portable players, home entertainment centers. Walk into the room of any fourteen-year-old Eminem fan and you’ll see just how much disposable income she blows on merchandise. If she’s willing to spend ten bucks on a poster, believe me, she’s going to own a copy of the disc.

\textit{Id}. One reason Professor Stan Liebowitz suggests why the recording industry is not suffering as much as it should be from digital piracy on P2P networks is that consumers like the tangibility of CDs. See Damien Cave, \textit{File Sharing: Innocent Until Proven Guilty} (June 13, 2002), \textit{at http://www.salon.com/tech/feature/2002/06/}
VI. Conclusion

Digital piracy is clearly a constant menace to the entertainment industry.\textsuperscript{197} Rivaled with piracy efforts that grow more sophisticated as new technologies emerge, the entertainment industry has struggled to devise enduring anti-piracy methods.\textsuperscript{198} Legal approaches, while popular with the recording and motion picture industries, provide only limited success and threaten to backfire as they become more insular in their protection of copyright owners.\textsuperscript{199} Social approaches, by changing society's attitude toward copyright either through education or elimination, propose a very effective means of minimizing digital piracy, but remain largely ideological and, consequently, face overwhelming obstacles in reduction to practice.\textsuperscript{200} Ultimately, it appears that market approaches offer the most successful immediate remedies, but depend upon constant evolution and innovation to sustain anything beyond an ephemeral solution.\textsuperscript{201} For long-term success, the entertainment industry must utilize its complete arsenal in its war on digital piracy. Only by balancing prudent legal approaches, feasible social approaches and adaptable market approaches can the software, recording and motion picture industries hope to gain ground in their epic battle against digital copyright infringement.

\textit{Matthew C. Mousley}

\begin{footnotesize}
\begin{enumerate}
  \item \textsuperscript{197} For a further discussion of the effects of digital piracy on the entertainment industry, see \textit{supra} notes 14-56 and accompanying text.
  \item \textsuperscript{198} For a further discussion of approaches to digital piracy, see \textit{supra} notes 104-96 and accompanying text.
  \item \textsuperscript{199} For a further discussion of legal approaches to digital piracy, see \textit{supra} notes 107-30 and accompanying text.
  \item \textsuperscript{200} For a further discussion of social approaches to digital piracy, see \textit{supra} notes 131-48 and accompanying text.
  \item \textsuperscript{201} For a further discussion of market approaches to digital piracy, see \textit{supra} notes 149-96 and accompanying text.
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