With Blu-ray Disc ("BD") and HD-DVD poised to take over the $24.6 billion home video market, the issue of copy protection is the most significant obstacle to overcome before this new technological era can be fully ushered in. This comment proposes that impending Advanced Access Content System ("AACS") implementation and Digital Millennium Copyright Act ("DMCA") enforcement are not effective remedies for protecting copyrighted material and curbing rampant piracy in connection with BD and HD-DVD. Limiting the proposed scope of the DMCA, rejecting analog hole legislation, and creating low cost digital marketplace alternatives to illicit activity are the best ways to address this problem.
HOLLYWOOD VS. THE PEOPLE OF THE UNITED STATES OF AMERICA:
REGULATING HIGH-DEFINITION CONTENT AND ASSOCIATED ANTI-PIRACY
COPYRIGHT CONCERNS

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INTRODUCTION

"The Internet is a vector for piracy. . . . We'll never be able to win the battle against piracy. . . . It's an arms race."

Tom Munro, CEO of Verametrix, a San Diego company that focuses on IP content security.¹

"The movie studios boycotted TV because they thought it would clean out the movie theaters. Then they complained that the remote control would make it too easy to skip commercials. Then they freaked out over the VCR, saying it was the 'Boston Strangler' of the American film industry."

Cory Doctorow, Electronic Frontier Foundation.²

The next generation of high definition home entertainment is now upon us. The advent of Blu-ray Disc ("BD") and HD-DVD has ushered in a new era, destined to take over the $24.6 billion home video market.³ Although retailers have already released a number of BD and HD-DVD players, recorders, and movies to the consumer market, the issue of copy protection is the most significant obstacle in getting the technology to market.⁴ U.S. movie studios lose an estimated $6.1 billion

¹ J.D. Candidate, May 2008, THE JOHN MARSHALL LAW SCHOOL. B.S. Industrial Engineering, Northwestern University, August 2002. The author would like to thank his mother Wendy and father Danny in New York and the rest of his family and friends in Chicago, Los Angeles, and Korea for their love and support. He would also like to acknowledge Timothy Rechtien, Jennifer Gregory, and the staff of The John Marshall Review of Intellectual Property Law for their invaluable editorial assistance.


⁴ Rachel Abramowitz, A Blue Period for Hollywood? Studios Hope Blu-ray or High-Definition DVDs Will Boost Sales in a Sagging Market, L.A. TIMES, Aug. 29, 2006, at E1. available at http://www.latimes.com/entertainment/news/el-et-dvds29aug29,0,1291385.story?coll=la-home-entertainment. See generally Stephen Manes, Hot New Hi-Def DVD Players, FORBES, July 24, 2006, at 64 (noting that with the ability to store fifteen to thirty gigabytes of data in the HD-DVD format and twenty-five to fifty gigabytes in the BD format, home video will be capable of six times the resolution, improved audio, and other interactive features not currently available through the standard-definition DVD format).

annually in global wholesale revenue to piracy. To combat such widespread piracy concerns, industry giants adopted a mandatory access restriction scheme known as the Advanced Access Content System (“AACS”).

BD and HD-DVD adopted AACS as the digital rights management (“DRM”) standard enacted to prevent the unauthorized duplication of movies. The major AACS copy-protection features are managed copy, digital-only token (“DOT”), image-constraint token (“ICT”), and audio watermark. With consumers’ interests and “fair use” concerns in mind, many of the major studios resisted implementing or supporting these measures. Furthermore, the AACS Licensing Agency’s (“AACSLA”) prolonged inability to agree on final rules, conditions, and licensing details necessary to enact a final license for AACS added to the uncertainty of its implementation in upcoming next generation DVD systems. Meanwhile, both the Motion Picture Association of America (“MPAA”) and the Recording Industry Association of America (“RIAA”) have publicly trumpeted the virtues of the Digital Millennium Copyright Act (“DMCA”), which criminalizes the circumvention of copy-protection technology to deter piracy.

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6 See Junko Yoshida, BluRay, HD-DVD Rollouts Await AACS Licenses, ELECTRONIC ENGINEERING TIMES, Sept. 4, 2006, at 14 (discussing how Disney, Intel, Microsoft, Matsushita (Panasonic), Warner Brothers, IBM, Toshiba, and Sony have adopted AACS for both next-generation optical disc formats).
7 Block, supra note 4, at 20(5) (noting that AACS is similar to the original DVD's Content Scrambling System (“CSS”), which was notably descrambled and rendered useless by several European students); see also Universal City Studios, Inc. v. Reimerdes, 111 F. Supp. 2d 294, 311 (S.D.N.Y. 2000) (describing how Jon Johansen, a Norwegian fifteen-year old reverse engineered a licensed DVD player and discovered the CSS encryption algorithm and keys in late September 1999, with the help of two other teenagers he had “met” over the Internet).
8 Yoshida, supra note 6, at 14.
9 Block, supra note 4, at 20(5). The “fair use” doctrine states that use of copyrighted material “for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research” is not infringing. 17 U.S.C. § 107 (2006).
10 Yoshida, supra note 6, at 14. While there appears to be apparent indifference on both sides of the format war between BD and HD-DVD, the lingering delay in finalizing a license for AACS has added even more uncertainty to the equation. Id. Although AACS has stated that an interim license has allowed it to already incorporate the copy-protection features into chips installed inside the devices, Yoshida comments that it is “unclear whether consumers will be willing to pay more for copy-protected content whose transport from system to system is more restricted than ever before.” Id.
11 Digital Millennium Copyright Act, 17 U.S.C. § 1201 (1998). The Act was enacted in compliance with the World Intellectual Property Organization Copyright Treaty (“WIPO Treaty”). Id. See also Ken Fisher, RIAA et al. Says CD Ripping, Backups Not Fair Use, ARSTECHNICA, Feb. 15, 2006, http://arstechnica.com/news.ars/post/20060215/6196.html (hereinafter Fisher, Not Fair Use). Fisher states that as part of its mandatory triennial review of the effectiveness of the DMCA, major content owners, including the MPAA and RIAA, filed a joint reply with the U.S. Copyright Office celebrating the effectiveness of the Act. Id. The content owners dismiss arguments that the DMCA is bad law because it prevents users from making backups as “uncompelling” because “people do not need to back up anything that does not have a high failure rate” and even if discs do become damaged, “replacements are readily available at affordable prices.” Id. But see Recording Indus. Ass'n of Am. v. Diamond Multimedia Sys., 180 F.3d 1072, 1079 (9th Cir. 1999) (ruling unanimously
This comment proposes that stringent AACS implementation and DMCA enforcement are not effective remedies for fixing the problem of rampant piracy. Such measures primarily suffocate the fair use rights of consumers who legitimately obtained media content. Instead, the film and technological industries should focus their efforts and initiatives on bolstering the appeal of legitimate movie purchases by offering low-cost alternatives to illegal conduct.

Section I provides a background explaining the specifics of the AACS copy-protection technologies and chronicles the history of the ongoing dispute between the entertainment industry and the general consumer public. Section II provides an analysis of the stifling effect the security measures impose upon the general, law-abiding consumer. Section III proposes a way to limit the scope of the DMCA and to create incentives for movie studios to offer consumers low-cost alternatives to illicit activity. Finally, Section IV concludes with two recent examples of the industry taking steps in the right direction.

I. BACKGROUND

A. AACS Copy-Protection Technologies

The complexities and vast array of AACS copy-protection technologies require consumers to educate themselves about each and choose accordingly. Most consumers should be concerned with the issue of interoperability of copy-protected content among various home and mobile media devices.

The managed copy scheme was intended to allow copy-protected content to migrate seamlessly from medium to medium, without DRM concerns. However, the current managed copy scheme in place for HD-DVD requires a consumer to contact the content owner via the Internet to find out how much it costs to make a copy of the content in a certain resolution before obtaining permission to actually make a copy on an HD-DVD recorder.

consumers have a fair use right to make portable digital copies of their music recordings for their personal use, upholding the public's right to "space-shift" copyrighted music).

12 See generally David Killick, Small-Screen Revolution: What the Terms Mean, THE PRESS, Sept. 6, 2006, at 4 (advising consumers to check that their equipment is compatible with the HDCP copy protection format in the transition from analog to digital television). See also Digital Content Protection, LLC, High-bandwidth Digital Content Protection (HDCP), http://www.digital-cp.com (last visited Apr. 12, 2007) (describing HDCP as a specification developed by the Intel Corporation to protect digital entertainment content across the DVI/HDMI interface).

13 Yoshida, supra note 6, at 14. Yoshida comments "the industry hasn't done any plugfests to test how all the AACS copy-protection features actually work among various products in a home" as the term "managed copy" is intended to convey. Id.

14 E.g., id. (stating copy-protected content should be sufficiently enabled to be transported freely from home networks to portable devices).

15 Id. listing alternative managed-copy schemes offered to AACS LA, which include Microsoft’s Windows Media DRM, Sony’s MagicGate Content Protection for Recordable Media, and the Video Content Protection System. But cf. id. (stating it is questionable whether most BD and HD-DVD recorder manufacturers will be willing to invest the manpower and licensing fees associated with each of these technologies).
The image-constraint token ("ICT") flag is another proposed AACS technology, which automatically downgrades the resolution of high-definition content when transmitted over an analog connection.\textsuperscript{16} As a result, ICT will require consumers to purchase new televisions with a digital HDMI input to comply with the High-Bandwidth Digital Content Protection ("HDCP") standard.\textsuperscript{17} Although ICT is an optional flag easily implemented at the discretion of the content owner, most major studios have not yet "burdened" discs with the technology.\textsuperscript{18}

The digital-only token ("DOT") flag is a similar copy-protection technology, which completely blocks content from being streamed over an analog channel.\textsuperscript{19} Currently, its future use is dependent upon the completion of a final AACS license agreement.\textsuperscript{20}

\textbf{B. Methods of Defeating Digital Copy-Protection}

This section outlines the intended purpose of blocking the delivery of non-digital, copyrighted content, beginning with a discussion of the "analog hole" problem, followed by a recap of recent court decisions involving enforcement of the DMCA. This section concludes with a summary of recently proposed legislation revising the Act.

\textsuperscript{16} \textit{Id.} When an ICT-enabled device detects that content is being transmitted over an analog component video connection, as opposed to the digitally protected High-Definition Multimedia Interface ("HDMI") connection found on most higher-end televisions, it automatically degrades the picture from its native 1080p resolution to 540p (960 x 640 pixels), which is one-fourth of the original resolution. \textit{Id. See also Manes, supra note 3, at 64 (describing the "down-rezzing" degradation effect of ICT).}

\textsuperscript{17} Gerry Block, \textit{Hollywood Agrees to Postpone Image Constraint Token until 2012?: Sony, Microsoft, and others may have cut a secret deal. Is this the consumer victory we’ve been hoping for?}, IGN.COM, May 22, 2006, http://gear.ign.com/articles/709/709653p1.html [hereinafter Block, \textit{Hollywood Agrees to Postpone}].

\textsuperscript{18} Manes, \textit{supra} note 3, at 64. \textit{Compare Block, Next-Gen DVD Copy-Protection Debacle, IGN.COM, Feb. 24, 2006, http://gear.ign.com/articles/691/691408p1.html (decrying the decision to implement ICT and DOT, while eliminating “managed copy” in AACS’s early stages), with Gerry Block, \textit{Hollywood Backs Off AACS, at Least a Little: Sony and Universal Won’t Downsample Analog Connections}, IGN.COM, Mar. 27, 2006, http://gear.ign.com/articles/698/698656p1.html (reporting Sony and Universal have announced they will not implement ICT in their earlier models, although it is likely it will be implemented once digital connections are in “ubiquitous use”), and Block, \textit{Hollywood Agrees to Postpone, supra note 17} (confirming the speculation that movie studios have reached an agreement with major manufacturers, including Sony and Microsoft, to postpone ICT implementation “until 2010 or perhaps 2012”).}

\textsuperscript{19} Yoshida, \textit{supra} note 6, at 14 (noting the DOT flag may be optionally implemented by the content owner, and that it may potentially be useful in releasing high-definition previews of content before its theatrical release).

1. The Analog Hole Problem

The term “analog hole” refers to the process by which devices are used to convert analog content into digital content, which may then be distributed freely to others via the Internet.\(^{21}\) The “hole” opens up when analog television owners convert DRM-protected digital content to an analog form viewable on their televisions, thereby stripping the content of all its digital protections.\(^{22}\)

Content owners argue the analog hole harms consumers, threatens business, and enriches illegal enterprises because it creates a loophole that effectively blurs the legal boundaries that consumers understand and choose to comply with.\(^{23}\) The film and television industries reason that law-abiding consumers are not given sufficient and concrete guidance as to what is legally permitted because one can easily exploit the analog hole through the use of legitimate home equipment used in a permissible manner.\(^{24}\)

In 1996, a group of consumer electronics, computer, and motion pictures industries began meeting in an open forum known as the Content Protection Technical Working Group (“CPTWG”).\(^{25}\) The CPTWG explores voluntary agreements that protect digital content from unauthorized use.\(^{26}\) From this forum, several


\(\text{\^{22}}\) Copyright Protection and Innovation: Hearing on H.R. 4569 Before the Comm. on S. Judiciary, 109th Cong. 7 (2006) (statement of Dan Glickman, Chairman and CEO, MPAA) (declaring the analog content can be converted back to its digital form “in the clear,” minus the original DRM protection, and be easily compressed, copied, and redistributed with very little degradation of quality). Cf. Copyright Protection and Innovation: Hearing on H.R. 4569 Before the Comm. on S. Judiciary, 109th Cong. 2 (2006) (statement of Chris Cookson, President, Warner Bros. Technical Operations) (explaining that this quick and painless copying is possible because the analog output of a digital device cannot possibly “know” whether it has been plugged into an analog television for legitimate viewing or into a video capture card or computer for unauthorized re-digitization, duplication, and re-transmission over the Internet).


\(\text{\^{24}}\) Cookson, supra note 22 (stating that today’s digital products that retain analog inputs “completely blur the line of understanding” and make it confusing for consumers, necessitating a “bright-line” to the question “can I copy?” in order to properly inform the typical law-abiding citizen); see also Glickman, supra note 22 (concuring on Cookson’s belief that “[e]ven if hackers overcome [the copy-protection measures], this effort will be worthwhile whenever normal consumers recognize and respect the terms of the offers they accept” because “committed pirates will break any security measures we can [possibly] devise” and there will never be an absolute protection against unauthorized use of copyrighted movies).

\(\text{\^{25}}\) Cookson, supra note 22. Several agreements that have resulted from the forum include CSS, HDCP, and Digital Transport Content Protection (“DTCP”). Id. The agreements are deemed “voluntary” because manufacturers may themselves decide whether or not to implement them in their devices. Id. See also Copyright Protection and Innovation: Hearing on H.R. 4569 Before the Comm. on S. Judiciary, 109th Cong. 10 (2006) (statement of Matt Zimm, Senior Vice President, Gen. Counsel, and Chief Privacy Officer, TiVo Inc.) (stating that the CPTWG has both a proven track record and sufficient resources to productively examine content protection technologies, given its prior experience “vetting” CSS and the broadcast flag).

\(\text{\^{26}}\) Cookson, supra note 22.
industry groups convened a special study group called the Analog Reconversion Discussion Group ("ARDG") to investigate different methods of closing the analog hole.\(^27\) As a result of the ARDG's studies, House Judiciary Committee Chairman James Sensenbrenner, Jr. and Ranking Member John Conyers proposed the Digital Transition Content Security Act ("DTCSA") on December 16, 2005.\(^28\) If enacted, the Act would close the analog hole, mandating the use of the Analog Copy Generation Management System ("CGMS-A") and Video Encoded Invisible Light ("VEIL") Technologies Rights Assertion Mark in devices that re-digitize content.\(^29\)

However, device manufacturers argue staunchly against the bill, stating that it does little to stop piracy because the studios have not demonstrated they actually suffered any lost revenue due to the analog hole problem.\(^30\) The bill is also accused of infringing upon the principles of fair use by attempting to exercise too much control over consumers' use of lawfully-acquired content.\(^31\) Furthermore, the scope of the

\(^{27}\) \textit{Id.} See also Glickman, \textit{supra} note 22 (noting the ACWG received active participation from virtually every major consumer electronics and information technology company, in addition to a number of "consumer" groups including the Electronic Frontier Foundation ("EFF"), to reach an overarching consensus as to the desired attributes of a solution to the analog hole problem).


\(^{29}\) See Cookson, \textit{supra} note 22 (stating that CGMS-A and VEIL would effectively put the consumer on notice that unauthorized reproduction and redistribution is strictly prohibited by law); see also Glickman, \textit{supra} note 22 (emphasis that CGMS-A, coupled with VEIL, provides an unadulterated customer viewing experience that introduces a "practical degree of protection from unauthorized reproduction and redistribution"); \textit{Cf.} Press Release, Federal Communications Commission, FCC ADOPTS ANTI-PIRACY PROTECTION FOR DIGITAL TV (Nov. 4, 2003) (on file with author) (announcing that the FCC is adopting an anti-piracy mechanism known as the "broadcast flag," which is a digital code that can be embedded into a digital broadcasting stream, signaling the DTV reception equipment to limit the indiscriminate redistribution of digital broadcast content).

\(^{30}\) Zinn, \textit{supra} note 25. "The Digital Content Transition Security Act is a solution looking for a problem." \textit{Id.} Zinn declares that the "studios have not demonstrated that the analog hole is contributing in any way to the piracy problem" nor have they presented even a scintilla of evidence that they have "suffered even one dollar of lost revenue as a result of the sale of contraband copies of content made through analog-to-digital conversions." \textit{Id.} Zinn argues that without such proof of the "nature and economic impact" of a superficially-perceived problem, there is only mere speculation on the part of the consumer electronics industry, and this cannot be the basis for such far-reaching legislation. \textit{Id.} On behalf of Tivo, Zinn argues that the proposed analog hole legislation is unlikely to stop or even reduce piracy, because the analog hole is not the source of the overwhelming majority of piracy acts. \textit{Id.} See also Copyright Protection and Innovation: Hearing on H.R. 4569 Before the Comm. on S. Judiciary, 109th Cong. 8 (2006) (statement of Gary Shapiro, President and CEO, Consumer Elec. Ass'n). Shapiro concurs with Zinn's statements when he also declares that there is "little evidence that the 'analog hole' is [actually] contributing to the mass redistribution of content over the Internet, and even less [evidence] that it is contributing to such redistribution of HDTV content" either. \textit{Id.} He cites statistics pulled directly from the MPAA's website claiming that ninety-percent of all pirated copies actually originate from handheld camcorders in movie theaters, while an ATT Labs study also shows that seventy-seven percent of pirated movies on peer-to-peer networks were actually leaked by those who work in the film industry. \textit{Id.}

\(^{31}\) E.g., Zinn, \textit{supra} note 25 (reasoning that the bill would "impose substantial costs [upon] both manufacturers and consumers [in the form] of higher prices and reduced device functionality," while allowing the studios to reap all the benefits at no cost to them); see also, e.g., Shapiro, \textit{supra} note 30. Shapiro discusses the policy implications of hindering the "private, noncommercial, in-home conduct of the sort that consumers have been accustomed to for decades" (i.e. Time-shifting television programs through the use of a VCR). \textit{Id.} Shapiro expresses the CEA's desire to (1) establish "rules" applicable across all platforms, (2) protect consumers' fair use abilities to record, store, and playback
Anti-Piracy Copyright Concerns

legislation is overbroad in covering any component or piece of software code that can function as an analog to digital converter. Finally, the studios unilaterally selected the VEIL watermarking technology, a technology admittedly designed for toys, despite a failure to conduct adequate testing and to compare it to other potential solutions. Above all, opponents of the DTCSA state that there are far better alternatives for protecting digital content without “heavy-handed technology mandates.”

2. Circumvention

Although the exploitation of the analog hole can often be deemed “casual misuse” of intellectual property because of the readily available legitimate means of copying, the DTCSA does not intend to deter “conscious and willful use” of a circumvention device that defeats the technical protections on a digital work. In content for non-commercial purposes, and (3) avoid unusually harsh “impositions” on consumers, such as “downresolution” of analog outputs. Finally, Shapiro mentions the harmful effect such arbitrary legislation could have on impeding “technological progress and U.S. competitiveness” in the global market. Id. Shapiro, supra note 30 (reasoning that a large number of products having nothing to do with television fall under the scope of the bill including airplanes, automobiles, medical devices, PC’s, and measurement equipment, among many others); see also Zinn, supra note 25 (stating that the legislation proposed is merely a way for the studios to attempt to assert an unprecedented amount of control over consumers’ use of lawfully-acquired content, “all at the device manufacturer’s expense”). Zinn, supra note 25. Zinn asserts that VEIL watermarking technology is an entirely unproven technology that will impose substantial costs on device manufacturers. Id. Although the ARDG identified at least nine different technologies that may be relevant to addressing the analog hole problem, the studios unilaterally selected VEIL without any notice to the ARDG, relegating all potential risks and costs to the manufacturers. Id. Because CGMS-A and VEIL are not “robust or persistent signaling systems,” the manufacturers will likely be found in violation of robustness rules with no remuneration for the criminal penalties potentially assessed as a result of the resulting legislation. Id. Thus, manufacturers will likely be forced out of the market altogether. Id. See also Shapiro, supra, note 30 (agreeing that VEIL technology is a largely unknown entity in the consumer electronics industry).

Internet Content Protections: Hearing on H.R. 4861 and H.R. 1201 Before the Comm. on H. Energy and Commerce Subcomm. on Telecommunications and the Internet, 109th Cong. 1 (2006) (statement of Gigi Sohn, President, Public Knowledge). In response to the question of whether it is good policy to impose technological mandates that force consumers to replace their newly-purchased devices, Sohn offered the recent MGM v. Grokster, 545 U.S. 913 (2005) decision and passage of the Family Entertainment and Copyright Act (§ 102, 17 U.S.C. § 2319B) as reasonable alternatives to such burdensome mandates. Id. Glickman, supra note 22. The content owners themselves concede that determined commercial pirates will always be successful in defeating any security measure they could possibly enact. Id. See also Cookson, supra note 22. Compare Scott Crosby, Ian Goldberg, Robert Johnson, Dawn Song, & David Wagner, A Cryptanalysis of the High-bandwidth Digital Content Protection System, in 2320 LECTURE NOTES IN COMPUTER SCIENCE, REVISED PAPERS FROM THE ACM CCS’8 WORKSHOP ON SECURITY AND PRIVACY IN DIGITAL RIGHTS MANAGEMENT 192, 192–200 (Tomas Sander ed., 2001) (revealing in detail the inherent weakness in the HDCP security scheme that may lead to “practical attacks”), with Ed Felten, HDCP Could Have Been Better Apr. 17, 2006, http://www.freedom-to-tinker.com/?p=1006 [hereinafter Felten, HDCP Could Have Been Better] (declaring that the entire HDCP “handshake” system is virtually certain to be broken within a few years because the security of the design relies entirely on the secrecy of 1600 “special numbers” which form a 40-by-40 matrix whose disclosure would allow anyone to circumvent the content-
1998, Congress enacted the DMCA to “provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures” used by copyright holders.36

The DMCA contains three major provisions relating to circumvention.37 The first is the anti-circumvention provision contained in subsection 1201(a)(1)(A), which “prohibits a person from ‘circumventing a technological measure that effectively controls access to a work protected under [Title 17, governing copyright].’”38 The second and third provisions are the “anti-trafficking provisions” contained in subsections 1201(a)(2) and 1201(b)(1), which prohibit a person from trafficking in devices that can circumvent technologies that either entirely prevent access to a copyrighted work or simply prevent copying of a work.39

One of the first notable cases to seek enforcement of the DMCA was Universal City Studios, Inc. v. Reimerdes, where eight major U.S. motion picture studios filed suit and sought injunctive relief against computer hackers who posted and linked a computer program called “DeCSS,” which enabled circumvention of CSS encryption, on their websites.40 Although the defendants argued the DMCA was unconstitutional as applied to computer programs and there was no violation of the Act even if it was valid, the court held the DMCA as applied to the posting and

36 Universal City Studios, Inc. v. Corley, 273 F.3d 429, 440 (2d Cir. 2001). Eric Corley is viewed as a leader of the computer hacker community and publishes a magazine through his company, 2600 Enterprises, Inc., called 2600: The Hacker Quarterly, which is widely regarded as a bible to the hacker community. Universal City Studios v. Reimerdes, 111 F. Supp. 2d 294, 308 (S.D.N.Y. 2000). See also Fred von Lohmann, Symposium: Protecting Content in the Digital Environment: Measuring the Digital Millennium Copyright Act against the Darknet: Implications for the Regulation of Technological Protection Measures, 24 Loy. L.A. Ent. L. Rev. 635, 635–38 (2004) [hereinafter Von Lohmann, Darknet] (stating that the DMCA is intended to encourage copyright owners to implement DRM technologies to protect their work and to allow them legal recourse in the event circumvention devices are used or made available to consumers).

37 Digital Millennium Copyright Act, 17 U.S.C. § 1201 et seq. (2006); see also Universal, 273 F.3d at 440.

38 Universal, 273 F.3d at 440.

39 Id. at 440–41. The DMCA contains exceptions for certain research purposes, and also creates civil remedies and criminal sanctions, including the authorization for a court to grant temporary and permanent injunctions in some instances. Id. See also Robert Lemos, Security Workers: Copyright Law Stifles, NEWS.COM, Sept. 6, 2001, http://news.com.com/security-workers-copyrigh+law+stifles/2100-1001_3-272716.html (reporting that the threatened lawsuit of Princeton computer science professor Edward Felten, and the arrest and criminal indictment of Russian encryption expert Dmitry Sklyarov at the Def Con hacking conference, has caused numerous researchers to pull their work from websites in fear of criminal prosecution under the DMCA). See also Lisa M. Bowman, Researchers Weigh Publication, Prosecution, NEWS.COM, Aug. 15, 2001, http://news.com.com/2100-1023-271712.html (describing the trend of foreign science researchers shying away from attending DRM conferences in the United States due to recent copyright crackdowns under the DMCA).

linking did not contravene the First Amendment because the predominant functional character of computer code distinguishes it from the expressive conduct normally protected as free speech. Thus, the plaintiffs were entitled to injunctive and declaratory relief. The court's reasoning equated the defendants' posting and linking of the DeCSS code as one and the same, and held that the plaintiffs established by "clear and convincing evidence" the defendants linked to sites posting DeCSS, knowing it was a circumvention device and a "way to get free movies" in violation of the DMCA. Thus, an anti-linking injunction against plaintiffs did not violate the First Amendment.

Four years later, a movie studio filed a factually similar case in Paramount Pictures Corp. v. 321 Studios. In this case, Paramount sued the defendant software company, 321 Studios, under the anti-trafficking provisions of the DMCA for manufacturing and selling computer software that allowed users to decode CSS-encoded DVDs and thereby make identical copies of the discs. Comparing Paramount to Reimerdes, the U.S. District Court for the Southern District of New York stated Reimerdes offered his DeCSS software for free over the Internet, whereas in Paramount, the defendants offered the software for commercial sale. However, the court held that the rule applied equally in each case and that 321 Studios violated the anti-trafficking provisions of the DMCA because the software was "primarily designed and produced to circumvent CSS and was marketed to the public for use in circumventing CSS." The court rejected 321 Studios' "other diverse uses" argument and granted preliminary injunctive relief, prohibiting the manufacture or distribution of DeCSS software.

Four months later, in Comcast of Illinois X, LLC v. Hightech Electronics, Inc., the U.S. District Court for the Northern District of Illinois cited Reimerdes and held the defendants' maintenance of a website, which linked to other sites that sold illegal

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41 Id. at 328-29 (discussing how the Supreme Court has always distinguished between pure speech, which ordinarily receives the highest level of protection, and expressive conduct for First Amendment purposes); see also id. at 330 (stating that the Sixth Circuit has acknowledged the expressive nature of computer code to place it within the scope of the First Amendment, but it also recognized the functional aspect of source code in determining the governmental interest in regulating the form of speech); id. at 335 (stating that "some expressive content in the code should not obscure the fact of its predominant functional character—it is first and foremost a means of causing a machine with which it is used to perform particular tasks," making it sufficiently non-expressive).

42 Id. at 346.

43 Id. at 339, 341.

44 Id. at 346. The court also held that "the anti-trafficking provision of the DMCA as applied to the posting of computer code that circumvents [security] measures," which protects copyrighted works in digital form, is a valid exercise of Congress' authority. Id. at 332. In its analysis, it deemed the anti-trafficking provision a "content-neutral regulation in furtherance of important governmental interests that does not unduly restrict expressive activities." Id.


46 Id. at *2.

47 Id. at *3; see also Universal, 111 F. Supp. 2d at 315 (stating that "DeCSS is a free, effective and fast means of decrypting plaintiffs' DVDs and copying them to computer hard drives.").


49 Id. at *4-5. The court rejected 321's insistence that its software did not violate the DMCA because it had "other diverse uses" such as restoring and retrieving damaged DVDs. Id.
cable pirating devices and taught how to run an illegal pirating device business, was enough to sustain the plaintiff’s DMCA claim.50 Thus, since any person injured from a violation of the DMCA is permitted to bring suit pursuant to the DMCA, Comcast successfully brought its DMCA claim on the basis of its financial injury from the defendants’ actions.51

Two years later, in Macrovision v. Sima Products Corp., the U.S. District Court for the Southern District of New York found a violation of the DMCA when the defendant sold certain “video enhancer” products used to circumvent plaintiff’s Analog Copy Protection (“ACP”) technology.52 Although the court stated the DMCA does provide for a limited “fair use” exception for certain users, it reasoned the exception does not apply to manufacturers or traffickers of prohibited circumvention devices.53 Furthermore, the court rejected Sima’s contention that “fair use” includes the making of backup copies of copyrighted material because of a lack of authority citing such a proposition.54 Thus, since Sima’s devices only had “limited commercially significant purpose[s] or use[s] other than to circumvent the ACP,” the

50 Comcast of Ill. X v. Hightech Elec., Inc., No. 03 C 3231, 2004 U.S. Dist. LEXIS 14619, at *1–3, *20 (N.D. Ill. July 28, 2004). The court noted that this case is similar to CSC Holdings, Inc. v. Greenleaf Elecs., Inc., No. 99 C 7249, 2000 U.S. Dist. LEXIS 7675, at *6 (N.D. Ill. June 1, 2000), which also involved a situation where defendants linked to other websites that hosted illegal cable descrambling devices (unauthorized DeCSS software in Reimerdes, 111 F. Supp. 2d 294), and thus reasoned that a claim pursuant to the DMCA was appropriate in this case as well. Id. See also id. at *19. The court distinguished the case from Intellectual Reserve, Inc. v. Utah Lighthouse Ministry, Inc., 75 F. Supp. 2d 1290, 1293 (D. Utah 1999) by reasoning that Hightech indeed received compensation from the websites to which it linked. Id. Cf. id. at *17 (reasoning that although Comcast was not the copyright holder of the pirated programs on the network, the programs were copyrighted material and Comcast controlled access to the material via descrambling methods).

51 Id. at *3 (describing the financial injury to Comcast as an “adverse impact on Comcast’s ability to maintain a high quality of programming services for its subscribers, . . . increased risk of signal leakage [in potential violation of FCC regulations] . . . [and] decreased franchise fees” that Comcast would normally pay to the state of Illinois).

52 Macrovision v. Sima Prod. Corp., No. 05 Civ. 5587 (RO), 2006 U.S. Dist. LEXIS 22106, at *1–2, *12 (S.D.N.Y. Apr. 20, 2006). Defendants stated that the “video enhancer” products were purported to be used to make “fair use” backup copies of his or her DVD collection, or to transfer copyrighted VHS movies to DVD. Id. at *2–3.

53 Id. at *6. The court derided Sima’s defense that it only intends to enable “fair use” copying of copyrighted works as “no defense at all” because the DMCA exception does not apply to its prohibition of the manufacture of such circumvention devices. Id. at *7. “Fair use has never been held to be a guarantee of access to copyrighted material in order to copy it by the fair user’s preferred technique or in the format of the original.” Id. at *8.

54 Id. at *7–8; see Fisher, Not Fair Use, supra note 11. The RIAA categorically dismisses the argument that backing up legitimately purchased DVDs is fair use by stating that (1) there is no evidence that “any of the relevant media [is] “unusually subject to damage in the ordinary course of their use,” (2) the huge success of DVD sales in comparison to VHS demonstrates that any problems there may be with the media are not significant enough to affect consumer spending habits, because DVD sales are skyrocketing while VHS sales are not. Id. In addition to its argument that damaged discs can be easily replaced at “affordable prices,” the RIAA proceeds to disavow the notion that copying a purchased audio CD is fair use just because such permission has “often or even ‘routinely’ [been] granted.” Id. See also Robin D. Gross, Court Upholds Right to Digital Music: RIAA Loses Bid to Prevent Consumers from Using MP3 Music Players, THE ELECTRONIC FRONTIER FOUNDATION, http://www.imaginelaw.com/lawyer-attorney-1181196.html [hereinafter Gross, Court Upholds Right to Digital Music] (praising the Ninth Circuit’s landmark ruling in Recording Indus. Ass’n of Am. v. Diamond Multimedia Sys. Inc., 180 F.3d 1072 (9th Cir. 1999) that upheld the public’s right to “space-shift” copyrighted music under the fair use privilege for non-commercial personal use).
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court concluded that Sima violated the DMCA to Macrovision’s detriment and granted preliminary injunctive relief.\footnote{55}

### 3. Recent DMCA Developments

This subsection discusses two recent bills proposed within Congress concerning the DMCA. The first bill, entitled the Digital Media Consumers’ Rights Act (“DMCRA”), was originally introduced in 2003 and recently re-introduced in March 2005.\footnote{56} The DMCRA, if enacted, would narrow the scope of the DMCA and allow consumers to make copies of copyrighted works they legally obtained for personal use, in accordance with fair use principles.\footnote{57} In contrast, the second bill, entitled the Intellectual Property Protection Act (“IPPA”) of 2006, if enacted, drastically broadens the scope of the DMCA, prohibiting the mere attempt to infringe copyrighted material.\footnote{58} The IPPA expands the language prohibiting the distribution of circumvention tools, extends criminal enforcement of copyright violations to works not registered with the U.S. Copyright Office at the time of the violation, mandates asset forfeiture as a sanction for infringement, and doubles the term of imprisonment for offenses.\footnote{59}

\footnote{55} Macrovision, 2006 U.S. Dist. LEXIS 22106, at *7 (noting that the court arrived at its holding because Sima specifically marketed its products “for use in circumventing a [security] measure that effectively controls access to a work protected” under the DMCA, and boasted about the devices’ capability in circumventing copy protection on copyrighted works). Defendants further argued that the “fair use” backups were of lesser quality than the DVD itself and on par with VHS tapes, lacking additional features such as menu functions, but the court dismissed each of these assertions as irrelevant because the devices allowed “usable” copies to be produced by improper circumvention. \textit{Id. See also} MGM v. Grokster, 545 U.S. 913, 919.

One who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, going beyond mere distribution with knowledge of third-party action, is liable for the resulting acts of infringement by third parties using the device, regardless of the device’s lawful uses.

\textit{Id.}


\footnote{57} See Bangeman, \textit{Congress Gives Fair Use}, supra note 56 (stating that the bill has been met with opposition by members of Congress who assert that the failure to toughen current copyright laws will inevitably lead to widespread and large-scale piracy in the United States).


II. ANALYSIS

This section addresses three major issues that must be resolved over the next few years. First, this section discusses the inherent flaws of AACS. Then, it analyzes the effect of closing the analog hole on fair use rights. Finally, it is relevant to discuss Hollywood’s improper use of the DMCA and the resultant chilling effect created by such use.

A. Implementing AACS Copy-Protection Technologies Spells Trouble for Consumers

The conception of revolutionary entertainment technologies marked a recurring trend during the last century of audio and video entertainment. Content providers often lament breakthrough technologies that allegedly infringe upon their right to retain complete ownership and control over public content. Historically, the content providers sought refuge from Congress, pleading with the legislature to either curb the permitted uses of such technologies, or completely prohibit the sale and use of such technologies altogether. In reality, the content providers presented nothing more than baseless arguments for why they have an undisputed right to dominate control over their entertainment content even after sale or conveyance to the public.

and budgeting twenty million dollars for topics including creating “advanced tools of forensic science to investigate” copyright crimes, and (3) allowing copyright holders to impound “records documenting the manufacture, sale or receipt of items involved in” infringements. Id.

E.g., Birkmaier, supra note 2, at 14. Some notable examples include the television, the VCR, and the remote control. Id.

See id. (citing the recent “Sony BMG Rootkit Fiasco,” in which Sony BMG sold music CDs with DRM software that installed undisclosed hidden files onto users’ Windows computers, exposing them to malicious attacks by third parties, and also communicating back to Sony BMG about the customers’ computer use without proper notification). The EFF successfully sued Sony BMG, forcing them to withdraw the spyware technology from the market and compensate all affected consumers. Id.; see also Ed Felten, The DMCA Should Not Protect Spyware, Dec. 2, 2005, http://www.freedom-to-tinker.com/?p=938 (discussing Felten’s attempt to ask the Copyright Office to grant a DMCA exemption for the circumvention of CD copy protection technologies that have certain “spyware-ish features” or create security holes, despite the fact that the Copyright Office has always found excuses for not granting exemptions in the past). Cf. J. Alex Halderman, Hidden Feature in Sony DRM Uses Open Source Code to Aid Apple DRM, Dec. 5, 2005, http://www.freedom-to-tinker.com/?p=940 (arguing that Sony’s hidden XCP copy protection system deliberately copied Halderman’s “DRMS” program to convert unprotected audio files into proprietary Apple FairPlay files compatible with the iPod).

Birkmaier, supra note 2, at 14. “Each time emerging technologies threaten its dominance of the markets for the creation and distribution of entertainment for the masses, the group runs to Washington feigning the need for CPR.” Id.

Id. The controversial trend mentioned has humorously been termed the “Content Protection Racket” (“CPR”) by fair use pundits, referencing the manner in which the content providers “feign heart attacks and beg politicians for [cardiopulmonary resuscitation]” in order to remedy their allegedly dire situation. Id. See also Fred von Lohmann, AACS – More Useless DRM, THE ELECTRONIC FRONTIER FOUNDATION, Apr. 19, 2005, http://www.eff.org/deeplinks/archives/003513.php (hereinafter Von Lohmann, More Useless DRM (arguing that the film industry’s hunger for control and domination over the next-gen DVD player market led them to implement the AACS to pressure manufacturers into obedience).
The content providers assumed most everyday consumers could not be trusted any more than a common thief looking to profit from a loophole created by a new technology.  

The three enactments intended to deter consumers from copying digitally broadcasted signals are managed copy, ICT, and DOT, as mandated by AACS.

1. AACS's Version of Managed Copy Subversively Cripples Content

The concept of managed copy, which allows consumers to seamlessly transfer copy-protected content between media devices, is well-intentioned. However, the implementation of the managed copy feature does not retain its non-burdensome essence as originally conceived. Under managed copy, AACS grants the consumer the privilege to make at least one copy of content, subject to a convoluted authorization and monitoring procedure administered over a network connection. AACS's version of managed copy does not comport with the essence of interoperability among multiple devices, as the common fair use doctrine dictates.

The fair use exception normally includes the right to copy a lawfully obtained copyrighted work for one's own personal use. Therefore, as applied to managed copy, AACS's version of managed copy infringes consumers' fair use rights by improperly restricting the copying of purchased content. It mandates an "always-on" network, which polices what is copied through unreasonable charges on degraded or incomplete content.

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64 Birkmaier, supra note 2, at 14.
65 See generally Yoshida, supra note 6, at 14 (delineating the associated implications of the proposed managed copy, ICT, and DOT schemes).
66 See generally Yoshida, supra note 6, at 14 (describing how a consumer would obtain permission to copy copyrighted content through the managed copy scheme).
67 Talks Plod On Toward Final AACS License, Now Delayed to Nov., CONSUMER ELECTRONICS DAILY, July 31, 2006. Some content providers will only permit the copying of selected portions of the original, instead of the full version. Id.
68 See generally Yoshida, supra note 6, at 14 (describing how AACS's version of managed copy intends to operate); see also Robin D. Gross, Understanding Your Rights: The Public's Right of Fair Use, THE ELECTRONIC FRONTIER FOUNDATION, http://dvdscopy.afterdawn.com/thread_view.cfm/256296 [hereinafter Gross, Understanding Your Rights]. Fair use is a judicially-created exception created within copyright law, allowing consumers to "use copyrighted material in a reasonable manner without the consent of [the] copyright owner," as long as the use does not substantially deprive the copyright owner of income, or if the use is done for purposes of commentary and/or criticism. Id. See also Chapter 9. Fair Use, COPYRIGHT & FAIR USE: STANFORD UNIVERSITY LIBRARIES, 2003, http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/chapter9/index.html; A. What Is Fair Use?, COPYRIGHT & FAIR USE: STANFORD UNIVERSITY LIBRARIES, 2003, http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/chapter9/9-a.html (reasoning that since the judges and lawmakers who created the fair use exception did not intend for its definition to be limited, it is a subjective standard that is open to broad interpretation by the courts); B. Measuring Fair Use: The Four Factors, COPYRIGHT & FAIR USE: STANFORD UNIVERSITY LIBRARIES, 2003, http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/chapter9/9-b.html.
69 Gross, Understanding Your Rights, supra note 68.
70 Talks Plod On Toward Final AACS License, Now Delayed to Nov., CONSUMER ELECTRONICS DAILY, July 31, 2006.
2. The ICT and DOT Technologies Will Impede Widespread HDTV Adoption

The ICT and DOT technologies intend to close the analog hole by deliberately downgrading ("downrezzing") or eliminating the option to view digital content over analog connections. However, such technologies create unfair burdens upon general, law-abiding consumers. Unbeknownst to the three to six million Americans who own high-definition televisions ("HDTV") lacking an HDMI input, their televisions will be rendered inoperable with HDCP if technologies such as ICT or DOT are implemented in the near future. While Hollywood studios and consumer electronics manufacturers have publicly advertised their products as "future proof," they have neglected to properly inform potential HDTV buyers of the implications of future AACS implementation. Thus, while the majority of America has yet to adopt the HD standard by purchasing new HDTVs, they are in for an unpleasant surprise once they purchase their allegedly "future-proof" devices and find major obstacles in the form of HDCP and ICT incompatibility.

The forthcoming situation is a formula for disaster if or when AACS is implemented because early adopters initially purchased high-definition displays with the reasonable expectation of viewing full high-definition over the entire economic lifetime of the televisions. Those early adopters will be sorely disappointed and frustrated when they realize the crippling effects of ICT and DOT. Ironically, these consumers are the same early adopters that both BD and HD-DVD will need to gain favor with in order to survive as viable successors to the DVD in the near future. Thus, movie studios should not exercise their option to implement the AACS flags if they hope to maintain any consumer goodwill and support for the next-generation formats.

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71 Block, Hollywood Agrees to Postpone, supra note 17.
72 Id. (urging studios such as Sony and Universal to issue a definitive public statement on the future of HD-DVD and BD in reference to the use of the ICT if they hope for the new formats to be successful in the long run).
73 Id. (remarking how AACS encryption and HDCP hardware have been utterly "mismanaged, disjointed, and overtly anti-consumer" from their first inceptions).
75 Id. (estimating that an installed base of 6.6 million owners have spent a total of $16.5 billion on analog-input-only HD displays thus far).
76 Yoshida, supra note 6, at 14. Whether future AACS-enabled devices will be enabled to be backwards-compatible with previous versions of AACS, or the bigger issue of how the consumer market will react to increasingly restrictive copy-protection regimes are the major concerns because if the AACS system fails to garner support, Hollywood studios will not suffer as much as the consumer. Id. The studios are more than willing to take this risk because they have nothing to lose but the consumer goodwill, with the goal of apparently "protecting their content." Id. See also Kevin Coughlin, High def drama over new format for DVDs, THE TORONTO STAR, May 1, 2006, at C04 (citing remarkable statistics about how "one in four U.S. homes - 24 million households - currently owns an HDTV, according to the Consumer Electronics Association ("CEA")" and that it "anticipates 600,000 next-generation DVD players will be sold [in 2006], with sales of 4 million units by 2009").
B. The Analog Hole “Problem” Is Not The Real Problem

The “analog hole,” which the film industry attempted to stigmatize by proposing the DTSCA to Congress, is a legitimate means by which consumers may fully exercise their fair use rights to copy and time-shift digital content. In the same way the entertainment industry previously argued against legally affirmed uses of computer video and sound cards to capture outside sources by analog means, the industry now renews its attempt to enforce DRM against the same legitimate uses.

Dan Glickman, the chairman and CEO of the MPAA, argued against the analog hole by stating, “[p]irating DVD’s is more lucrative than selling heroin for many criminal gangs” and the implementation of DRM technologies “offer[s] consumers a wider array of choices for enjoying the content” the film industry produces. However, Mr. Glickman refuses to acknowledge that closing the analog hole will, in fact, affect far more legitimate end users who legally record video programming for their own personal or educational use, rather than illegal commercial pirates in “criminal gangs.”

Furthermore, the film industry fails to acknowledge that consumers might prefer fewer and simpler choices for enjoying content if it results in diminished concern over DRM restrictions that discourage interoperability between devices and force consumers to buy new HDCP-compliant equipment. Those DRM restrictions may compel consumers to make multiple purchases of a particular movie or song, with no guarantee the media will remain playable in the future if the customer does not retain a subscription, or if the provider decides to abandon the format.

Indeed, the film industry holds little regard for the fair use rights of its constituents, dismissively labeling such costs and concerns as “mere inconveniences” for the consumer.
In fact, it is reasonable to positively assert that DRM does not actually stop Internet piracy. Every form of DRM is inevitably hacked and although everyday consumers do not always know of these hacks, they are given incentive to seek and discover such “workarounds” when they realize their fair use is unreasonably restricted. Hollywood refuses to acknowledge that lost profits are predominantly a result of commercial piracy, rather than fair use copying, because it must justify its “compelling rationale” for burdening content with DRM.

For years, Hollywood refuted criticism of DRM’s negative effect on personal fair use rights by suggesting “the public can still use analog outputs to make slightly degraded copies of works for fair use purposes” while concurrently condemning such practices as a serious “analog hole” problem. These arguments are entirely hypocritical and undermine any semblance of concern for consumers’ personal fair use rights.

See also Glickman, supra note 22. Glickman himself states that “committed pirates will break any security measure we can devise” and follows it with the assertion that “the economic impact of a thousand otherwise law abiding citizens making an extra copy of a movie they purchased and [shared] with a friend [equals the] impact [of] a single commercial pirate selling a thousand copies of a movie on a street corner.” Id.

Fisher, Shocking Piracy Numbers, supra note 80 (reporting that the MPAA’s losses due to hard piracy, often involving organized crime and illegal distribution, were the greatest among all types of piracy, estimated at $2.4 billion):

see also Bruno, supra note 85 (stating that the film and music industry puts forth the notion that the DRMs will most benefit the artists or labels when instead, they force consumers to buy proprietary hardware that mostly benefits software companies). Implementing burdensome DRMs gives further incentive for an increasing number of frustrated consumers to seek out illegitimate means of exercising their legitimate rights. Id.

Microsoft Sells Out, supra note 78. “The same recording techniques that movie studios hailed as the protection for fair use were also stigmatized as an intolerable escape from the supposedly perfectly controlled world of DRM.” Id.

See id. Although the proposed CGMS-A compliance is still voluntary on the part of manufacturers, the movie studios have openly portrayed non-complying devices as banned by Congress, excluding such manufacturers from the Windows multimedia market. Id. These manufacturers find it incredibly difficult to turn a profit without participating in Microsoft’s compatibility and logo-branding programs. Id. It shows that Microsoft has sided with the studios in the war against end users. Id.
C. Hollywood’s Lucrative Litigation Tactics Are Enabled By Broad DMCA Provisions and Enforcement

Hollywood apparently insisted on implementing anti-piracy technology that is substantially harder to crack than the CSS system used in DVDs today. Recording studios chose AACS because manufacturers can easily revoke a device’s key rights when a select player is compromised. However, with such a system in place, individuals who distribute cracked media over peer-to-peer (“P2P”) networks are immune to detection, because it is impossible to determine a compromised device key from the compressed files normally posted to P2P networks. Thus, if AACS’s purpose was to slow “digital piracy” through P2P networks, it has completely failed.

Furthermore, the well-documented weakness in the HDCP cryptographic scheme allowing it to be cracked in the near future raises serious questions as to why its designers made the seemingly deliberate choice to implement such a weak system instead of a more secure one. Professor Ed Felten suggests that HDCP security technology was not chosen to disable pirates, but to enable lawsuits. This explanation is sensible in light of the film industry’s heavy litigation in the area of DMCA infringement violations, as evidenced by how the film industry attributes its declining DVD profit margins to the P2P Internet piracy market. The “earnings” from several lawsuit settlements or judgments could go a long way in recouping any alleged lost profit margins from declining DVD sales. Notably, spending slightly more to implement a superior cryptographic scheme is counter-intuitive with the litigation incentive because it reduces the amount of potential P2P infringement in the long run, leading to less profitable litigation to pursue.

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89 Don Labriola, Battle of the New DVDs: Next Generation DVD Technology has finally arrived. But which format will work better for you – Bluray or HD-DVD?, PCMAG.COM, Sept. 13, 2006, http://www.pcmag.com/article2/0,1895,2015177,00.asp.

90 Id.; see also Felten, Better, but Won’t Stop Filesharing, supra note 84 (revealing how the central licensing authority, which hands out DeviceIDs and keys in next-generation disc players, can control who can make players by maintaining a blacklist of “compromised” DeviceIDs).

91 Von Lohmann, More Useless DRM, supra note 63 (citing an example of how one smart hacker in Moldova could extract the key from a licensed player, use the key to rip movies from HD-DVDs, and post the resulting files to a P2P network, without fear of having his key deactivated because the licensing administrators have no way of figuring out what device key he used).

92 See id. (surmising that the real reason behind AACS is to give the “Hollywood Cartel more power over the market for next-gen DVD players” in case a manufacturer is in non-compliance or fails to pay AACS royalties).

93 Felten, Why So Weak?, supra note 35; see also Crosby, supra note 35 (estimating that a more secure copy-protection scheme would require about 20,000 more gates to build a digital chip incurring minimal cost, based on what the HDCP cost to make); Felten, HDCP Could Have Been Better, supra note 35 (stating the well-known “offline Diffie-Hellman algorithm” was the more logical choice given its higher level of security).

94 Felten, Why So Weak?, supra note 35. Felten notes that while “uncompressed super high-def (1080i) video blasts so much data so fast that there’s no affordable way for a would-be pirate to capture it” as of today, HDCP as a “temporary piracy prevention measure doesn’t seem like a good explanation” for sticking with it. Id.

95 See Fisher, Shocking Piracy Numbers, supra note 80 (stating that the MPAA deems Internet downloading to be the real threat to their profits).

96 Felten, Why So Weak?, supra note 35.
In accord with this theory, if HDCP encryption is indeed only a "hook on which to hang lawsuits," the DMCA is the engine powering the litigation wagon.\textsuperscript{97} Without the DMCA's broad anti-trafficking provisions, the MPAA is unlikely to succeed on the vast majority of its suits against DMCA infringers, such as Reimerdes and 321 Studios.\textsuperscript{98} Thus, it would then be wise to spend the extra money and effort required to implement the more secure cryptographic scheme, instead of offering HDCP as a token gesture disguised as a genuine effort to protect high-definition media from decryption and online piracy.

The DMCA's broad application also chills legitimate free expression and scientific research in the United States, as evidenced by legal threats to Professor Ed Felten's team of researchers and the prosecution of Russian programmer Dmitry Sklyarov.\textsuperscript{99} The DMCA-induced censorship caused American and foreign security experts to refrain from publishing details of their research at key U.S. conferences, stunting the continued prosperity of computer security within the United States.\textsuperscript{100} A fear of prosecution is not unfounded given the history of broad DMCA enforcement and prosecution by our courts and is thus a good reason to look to DMCA reform to mitigate the harsh effects it has wrought.\textsuperscript{101}

III. PROPOSAL

This section proposes several initiatives Congress and entertainment content owners must implement to remedy the digital piracy issue. First, the entertainment industry must establish a digital marketplace that provides consumers legitimate alternatives to illegal piracy. In addition, Congress must reject analog hole legislation that impermissibly encroaches upon consumers' fair use rights. Finally, the DMCA must be amended to enable lawful uses of legitimately acquired content.

A. The Digital Marketplace Solution

The implementation of AACS copy-protection technologies will not effectively stem the tide of digital piracy, but will instead infuriate scores of consumers who already own equipment that is not HDCP-compliant. Alternatively, the movie and music industry must completely shift its mentality and methodology by exerting its efforts (and dollars) to fully implement digital marketplace solutions, similar to

\textsuperscript{97} Id.
\textsuperscript{98} See Universal City Studios, Inc. v. Reimerdes, 111 F. Supp. 2d 294 (S.D.N.Y. 2000); Paramount Pictures Corp. v. 321 Studios, No. 03 CV-8970 (RO), 2004 U.S. Dist. LEXIS 3306 (S.D.N.Y. Mar. 5, 2004); see also Hollywood Versus The Analog Hole, supra note 77. If consumers were permitted to lawfully use DeCSS software to make legitimate copies of lawfully purchased movies, they would be able to transfer them onto their video iPods for personal use. Id
\textsuperscript{99} Id.
\textsuperscript{100} Unintended Consequences: Seven Years under the DMCA, THE ELECTRONIC FRONTIER FOUNDATION, Apr. 2006, http://www.eff.org/IP/DMCA/unintended_consequences.php[hereinafter Unintended Consequences].
\textsuperscript{101} Id.
Apple, Inc.’s “iTunes Music Store,” whereby consumers may freely purchase and fully own content via legitimate means.\footnote{Apple, Inc.’s iTunes Music Store (http://www.apple.com/itunes/store) debuted on April 28, 2003, as the first online music store to garner worldwide commercial success. Apple iTunes Store, APPLE.COM, 2007, http://www.apple.com/itunes/store/. After initially launching with about 200,000 songs available for download, the store now boasts more than 3.5 million songs available for purchase at ninety-nine cents per song, as well as 65,000 free podcasts, 20,000 audiobooks, 200 TV shows, and a large selection of movies and games. Id.}

Chris Cookson, President of Warner Bros. Technical Operations correctly stated that “most customers will respect copyrights when the content offered is perceived as fair and a good value, the content offered is easy to use, [and] the quality of service meets the consumer’s needs and expectations. . .”\footnote{Cookson, supra note 22. Cookson further declares that one of the movie studio’s primary goals is to offer its content in as many legitimate ways as possible “so that the consumer can choose when, where, and how to enjoy it.” Id.} However, Mr. Cookson incorrectly declared that “there is no marketplace solution.”\footnote{Id. (stating that the tech industry generally agrees that there is no marketplace solution available to combat exploitation of the analog hole, and thus far, none have been suggested).} One need look no further than the roaring success of the iTunes business model to acknowledge that if content providers make their catalogues available in an easily accessible, flexible, and reasonably priced manner, the digital marketplace model will succeed without governmental intervention.\footnote{Sohn, supra note 34. Sohn herself contends that the most effective means of preventing massive copyright infringement involves satisfying market demand by allowing consumers to enjoy fair and flexible access to content at reasonable prices. Id. She uses the DVD market as an example by illustrating how the fledgling DVD market grew from zero sales in 1997 to an astounding twenty-five billion dollars in sales and rentals by 2005, despite the fact that its CSS protection system was cracked long ago. Id. Finally, she states that government intervention in the free market is entirely unnecessary because of the emergence of new digital music and video distribution models in the market. Id.}

As of October 2006, legal downloads represented about eleven percent of total music sales, while total music sales declined four percent in the first half of 2006.\footnote{Kate Holton, Music industry in 8,000 new file-share lawsuits, THE NEW ZEALAND HERALD, Oct. 18, 2006, http://www.nzherald.co.nz/section/story.cfm?c-id=5&objectid=10406453.} However, John Kennedy, chairman and CEO of the International Federation of the Phonographic Industries (“IFPI”), expressed hope that digital music sales could potentially recoup the losses incurred in physical format sales by 2007.\footnote{See id. (labeling the goal of making up for declining CD sales through digital sales as the “holy grail” for the music industry). The IFPI represents the world’s music companies and has filed approximately 18,000 lawsuits in the United States, which is the largest market for music sales, and 13,000 suits in the rest of the world. Id. IFPI estimates that twenty billion songs were illegally downloaded worldwide last year, and more than 2,300 people have already settled the suits filed against them for about $3,034 each. Id. Kennedy believes that the proliferation of high-speed broadband, coupled with the threat of legal action and vulnerability to computer viruses, has caused more users to opt for legal online services instead of P2P networks. Id.} If Mr. Kennedy’s prediction comes to fruition within a year’s span, it should provide Hollywood with clear and convincing evidence that it needs to refocus its efforts on delivering legitimate content via digital means instead of concerning itself with the implementation of ineffective and expensive AACS technologies. Those technologies serve no long-term purpose other than to hamper
the growth of the high-definition consumer market under the pretense of content security measures.  

Furthermore, the content sold in the digital marketplace must be entirely interoperable with multiple devices because people dislike being restricted to one media device without the ability to transfer content to other playback devices. In this regard, the content should be offered without the burdens of DRM protection, which unjustly forces consumers to buy hardware with proprietary technologies and often prevents them from enjoying the content on incompatible devices. Also, if the marketplace hopes to garner initial interest from a skeptical public, it must guarantee high quality content at a relatively low price in order to compete with the fee-free offerings readily available on P2P networks. Essentially, the film industry needs to determine an optimal licensing model for the everyday consumer and provide content that consumers are willing to purchase on a subscription or pay-per-download basis. 

Although some argue that the electronic delivery of high definition content will effectively render all physical disc formats obsolete, there will always be a need to

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108 Cf. Zinn, supra note 25 (stating that although the DTCSA legislation is promoted as a tool to fight piracy, it only empowers television studios to encroach upon the consumers’ flexible and fair uses of lawfully-acquired content with no convincing justification).  
109 Symposium, Licensing in the Digital Age: The Future of Digital Rights Management, 15 Fordham Intel. Prop., Media & Ent. L.J. 1009 (2005) [hereinafter Licensing in the Digital Age]. Marybeth Peters, from the Register of Copyrights, states that users should not have to worry about incompatibilities of media based on the type of DRM assigned to it because it should all be fully interoperable. Id.  
106 See, e.g., Bruno, supra note 85. Bruno argues that if the music industry seeks any hope of loosening Apple’s “iron grip” on digital music sales, it must start selling its music without DRM protection. Id. Bruno offers the eMusic service as an example of a success story, because even though its entire music catalog was limited to predominantly independent labels, it sold more music downloads than any other service outside of iTunes because all of the music was offered as unprotected MP3s. Id. David Goldberg, the General Manager of Yahoo Music, argues that DRM really “does nothing to protect music” and although it can serve as a “speed bump” to discourage people from illegal behavior, DRM just makes it harder for “people who want to do the right thing to get the music they legitimately purchased on the devices and services they want.” Id. Thus, the difficulties caused by DRM often deter consumers from purchasing music legally, ironically keeping illegal P2P enterprises in business. Id. See also Von Lohmann, Darknet, supra note 36, at 635-38 (arguing that DRM is not only futile in a P2P world, but actually counterproductive because it drives otherwise legitimate customers to the “Darknet”); see also Von Lohmann, More Useless DRM, supra note 63 (arguing that content owners are using DRM to “punish the innocent in the hope of pressuring player makers into obedience, all the while doing nothing to slow file sharing”).  
110 See Licensing in the Digital Age, supra note 109, at 1017. Peters lists several qualms that most people have with digital marketplaces—namely, controls on e-books, being tied to one particular machine without the ability to move content to another machine, desirable features that are disabled, subscription models, and paying every time you download. Id. Peters then contrasts the millions of songs licensed by iTunes with the billions of songs that are illegally downloaded to show that the music industry is slowly making progress, but has a ways to go in determining what terms and conditions consumers are willing to accept. Id. Cf Gross, Court Upholds Right to Digital Music, supra note 54. Although the RIAA continues to operate under its self-important assumption that only it is capable of providing a “legitimate” marketplace for music on the Internet, the U.S. Court of Appeals for the Ninth Circuit balked at this notion in Recording Indus. Ass’n of Am. v. Diamond Multimedia Sys., 180 F.3d 1072 (9th Cir. 1999) when reasoning that the Internet “supports a burgeoning traffic in legitimate audio computer files” routinely sold or provided free of charge by independent and wholly Internet record labels, or by many unsigned artists. Id.
redundantly archive and backup media on disc-based optical formats because of the need to preserve the content for long-term home use.\textsuperscript{112}

As Cookson himself stated, “mandates on technology [such as AACS] should be a last resort and used only when a marketplace solution cannot be found.”\textsuperscript{113} It is readily apparent that a viable digital marketplace solution is ripe to be fully exploited by the movie studios.

\textbf{B. Closing the Analog Hole Eviscerates Fair Use Rights}

The fair use doctrine allows individuals to make a copy of legitimately obtained copyrighted work for their own personal use.\textsuperscript{114} However, there is little evidence the analog hole is actually contributing to the mass redistribution of content over the Internet, and even less evidence it contributes to the redistribution of HDTV content.\textsuperscript{115} Any legislation seeking to close the analog hole excessively encroaches upon the “private, noncommercial, in-home conduct” that consumers have legitimately exercised for decades.\textsuperscript{116} In its landmark \textit{Sony Corp. of America v. Universal City Studios} decision, the U.S. Supreme Court conclusively deemed “time-shifting” using a VCR a fair use.\textsuperscript{117} Thus, federal technology mandates such as the proposed DTSCA must be thwarted in order to protect consumers’ fair use rights.

\textsuperscript{112} Michael Heiss, \textit{Optical Discorama: Why Blue Laser Format Wars and Even Confusion Over “Red Laser” DVD Player Options are Good for Business}, \textit{RESIDENTIAL SYSTEMS}, Sept. 1, 2006, at 96. Even with the global proliferation of broadband, there are still places where physical media is the only means to carry and playback sound and images. \textit{Id.} Thus, DVDs and other forms of magnetic and solid state storage in both SD (red laser) and HD (blue laser) formats will undoubtedly be in widespread use for generations to come. \textit{Id.} Cf. Coughlin, supra note 76, at C04 (stating that BD and HD-DVD delays and complications may cause “baffled consumers” to instead download high-definition movies from cable, satellite, and Internet services, or even onto their cell phones).

\textsuperscript{113} Cookson, supra note 22.

\textsuperscript{114} Gross, \textit{Understanding Your Rights}, supra note 68. The fair use doctrine also allows an individual to make a backup copy of their discs in order to protect against loss in the event of a future media failure. \textit{Id.} Furthermore, “format shifting” is also permissible as a form of personal use, because it allows music fans to make compilations of their favorite songs from their own music collection or the radio. \textit{Id.} However, uploading and sharing one’s music or video collections over the Internet falls well outside the realm of fair use. \textit{Id.}

\textsuperscript{115} See Shapiro, supra note 30 (citing revealing evidence pulled directly from the MPAA’s own website, showing that the analog hole has not been a major source of pirated material).

\textsuperscript{116} \textit{Id.} Because it is likely that analog hole legislation does more harm than good, its supporters have the burden of tangibly demonstrating that it is truly imperative to combat piracy, in light of the high potential for negative and unintended consequences. \textit{Id.}

\textsuperscript{117} \textit{Sony Corp. of Am. v. Universal City Studios, Inc.}, 464 U.S. 417, 455 (2000). The U.S. Supreme Court weighed the fair use factors in an “equitable rule of reason” balancing test to hold that the use of Sony’s VCR to “time-shift” freely broadcast television programs was a fair use, reversing the U.S. Court of Appeals for the Ninth Circuit. \textit{Id.}
C. DMCA Reform to Enable Lawful Uses of Content

Since its ratification in 1998, the DMCA has notably chilled free expression and scientific research in the United States. Furthermore, in the context of the triennial DMCA rulemaking procedure, the Copyright Office has repeatedly refused to grant exemptions to the Act and improperly stymied fair use jurisprudence by arrogating to itself the power to define the metes and bounds of the fair use exception. Although Congress codified the fair use doctrine in 17 U.S.C. § 107, it was originally created by the courts as an equitable and flexible exception to the copyright monopoly. Therefore, if a new consumer activity potentially falls under the fair use exception, the Copyright Office must grant a three-year DMCA exemption, allowing the courts to fully develop the fair use doctrine in the twenty-first century.

To remedy the dilemma surrounding the DMCA, Congress must amend the Act to allow limited circumvention for non-infringing purposes. Furthermore, in order to grant consumers access to the tools necessary to exercise non-infringing uses of copy-protected digital media products, Congress must also reform the DMCA’s ban on the distribution of circumvention tools. A narrowly tailored law such as the DMCRA accomplishes both purposes and preserves fair use rights for the digital age. Such an amendment creates just enough leeway for consumers to engage in legal circumvention for the sole purpose of lawfully using the

118 Unintended Consequences, supra note 99.
119 Von Lohmann, Failing the Digital Consumer, supra note 83; see, e.g., id. In 2003, the Copyright Office opined that “space-shifting” (making personal use of an e-book, DVD, or CD in order to enjoy them on multiple devices) does not qualify as a fair use. Id. It also concluded that “making personal backup copies of DVDs would not qualify as a fair use” either because “such reproductions of convenience are infringing under the Copyright Act.” Id. But see Recording Indus. Ass’n of Am., 180 F.3d 1072, 1079 (9th Cir. 1999) (upholding the consumers’ right to “space-shift” copyrighted music for their personal use); Ed Felten, The DMCA Should Not Protect Spyware, Dec. 2, 2005, http://www.freedom-to-tinker.com/?p=938 (reasoning that the Copyright Office often tries so hard to find excuses not to grant exemptions that there is almost no point in asking for one in the first place).
120 Princeton Univ. Press v. Michigan Document Servs., 99 F.3d 1381, 1385 (6th Cir. 1996). “Fair use is one of the most unsettled areas of the law.” Id. at 1392. See also Time, Inc. v. Bernard Geis Assocs., 293 F. Supp. 130, 144 (S.D.N.Y. 1968) (stating that the fair use doctrine is “entirely equitable and is so flexible as virtually to defy definition); Dellar v. Samuel Goldwyn, Inc., 104 F.2d 661, 662 (2d Cir. 1939) (declaring the fair use issue as “the most troublesome in the whole law of copyright”).
121 Von Lohmann, Failing the Digital Consumer, supra note 83. In the context of DMCA rulemaking, the Copyright Office must liberally construe consumer fair use claims, erring on the side of approving exemptions, in order to allow the courts to fulfill their duty of interpreting fair use principles as applied to “new, noncommercial, personal-use consumer activities.” Id. Without such an exemption, digital consumers may be found liable for circumvention without due process, because they will be denied their “day in court” to present their fair use claims. Id.
123 Id.
124 Sohn, supra note 34. Sohn declares that “technology mandates... are misguided industrial policies that would constitute a radical expansion of the FCC’s powers while radically diminishing consumers’ rights.” Id. See also Digital Media Consumers’ Rights Act, H.R. 1201, 107th Cong. (2d Sess. 2005); Eric Bangeman, Congress Gives Fair Use, supra note 56.
content, such as transporting legitimately purchased content from one device to another.\textsuperscript{125}

Critics of the proposed legislation contend it constitutes an open invitation to engage in illegal piracy whenever one desires.\textsuperscript{126} However, commercial pirates do not need a fair use exception to engage in their illegal activity, and regardless of the state of the law, pirates will remain subject to the full penalties of U.S. copyright law.\textsuperscript{127} The DMCRA only tolerates lawful activity within the bounds of fair use. Thus, the DMCRA is narrowly focused on permitting only lawful personal uses of legitimately-acquired content, exclusive of illegal P2P file sharing.

IV. CONCLUSION

The gradual introduction of uncompressed, high definition video to the American public will dramatically accelerate over the next few years with the proliferation of the BD and HD-DVD formats, along with a slew of new HDCP-compliant devices. New technologies often lead to concerted efforts by copyright owners to petition Congress or enact “self-help” security measures in an attempt to retain full control over their copyrighted material.\textsuperscript{128} In the digital realm, AACS and the HDCP cryptographic system are the culprits, while in the analog realm, Macrovision’s ACP is the placeholder.

However, despite content owners’ open and contradictory statements, it is unreasonable to believe that any of these security measures are actually intended to combat piracy, given the well-documented flaws inherent in each of these systems.\textsuperscript{129} If one realizes the hypocrisy behind Hollywood’s deceptive statements, it is apparent that content owners seek to squelch consumers’ fair use rights for one reason alone:

\textsuperscript{125} See Licensing in the Digital Age, supra note 109, at 1016; see also Zinn, supra note 25. Zinn argues the DTCSA (H.R. 4569) only allows Tivo users to make a single copy of most content, and that they will no longer be authorized to copy a television program from a Tivo DVR in the living room to one in the bedroom, or to their laptops or portable devices for later viewing. \textit{Id}. All these actions are currently lawful and permissible under U.S. copyright law, and the studios have not provided any justification for proving otherwise. \textit{Id}.

\textsuperscript{126} Sohn, supra note 34.

\textsuperscript{127} \textit{Id}. Sohn argues that closing the analog hole will immediately restrict lawful uses of technology and make millions of consumer devices (i.e. Analog-to-digital converter boxes) obsolete. \textit{Id}. Instead, the industry must use “legal, technological, and marketplace tools” to combat illegal use of P2P networks. \textit{Id}.

\textsuperscript{128} See Birkmaier, supra note 2, at 14 (noting the trend of new technologies being met with acts of resistance and insecurity on the part of movie studios).

\textsuperscript{129} See Felten, Why So Weak?, supra note 35 (discussing the inherent weaknesses in the HDCP cryptographic scheme and theories on why it was “deliberately” chosen over a more secure scheme); see also Gerry Block, HD-DVD, Blu-ray AACS Copy Protection Broken: Exploit Developed Within 6-months of Launch. Hackers win, but for how Long? IGN.COM, Jan. 25, 2007, http://gear.ign.com/articles/758/758675pl.html. Within six months of the release of HD-DVD and BD into the U.S. marketplace, the hacking community has already managed to create software that effectively circumvents AACS, allowing 1080p rips of high-definition discs to be freely distributed over the Internet. \textit{Id}. Ironically, “[t]he process of ripping next-generational DVDs was not developed by Chinese-pirates with replicator facilities but by activist-enthusiasts who are more interested in being able to enjoy their media without restriction than in profit-making piracy.” \textit{Id}.
to exercise maximum control over what you watch, how you watch, and when you watch.130

Today, the music, film, and television industries assert a claim of entitlement to a royalty every time a consumer listens to one of their songs, or views one of their movies or television shows. For instance, Microsoft recently agreed to pay Universal Music a small royalty for every Zune music player it sells.131 At a certain point, both Congress and the courts must act to wrest the dominance of the fair use doctrine away from the Copyright Office in order to determine the correct balance between the competing rights of creators and the public interest.132 This is why narrowing of the DMCA through legislation such as the DMCRA is so important, in stark contrast to the DTCSA and IPPA propositions, which are primarily backed by those who stand to profit at the expense of the consumer.133

The real solution to the piracy issue is to offer consumers high quality content, unfettered with burdensome DRM, at reasonably low prices in a digital marketplace, giving them a simpler and safer alternative to illegal piracy over P2P networks.134 Apple’s iTunes model has garnered success, despite its use of proprietary DRM, and Microsoft has followed suit with its “Video Marketplace” recently launched over its

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131 Yinka Adegoke, *Microsoft to pay Universal for Every Zune Sold*, YAHOO! CANADA, Nov. 8, 2006, http://ca.news.finance.yahoo.com/09112006/6/finance-microsoft-pay-universal-zune-sold.html. Doug Morris, CEO of Universal Music, stated, “We felt that any business that’s built on the bedrock of music we should share in,” implying that they should be entitled to royalties from the sale of any music-playing device, regardless of whether the device ever plays a song recorded by Universal. *Id.*

Microsoft is willing to accept the absurdity of his comment, as long as they are able to garner favor with Universal over its direct rival, Apple Computer and its iPod. *Id.*

132 Gross, *Understanding Your Rights*, supra note 68. Copyright law must “balance the competing rights of creators to exploit their work, entrepreneurs to receive a return on their investment, and the public’s interest in gaining access to works.” *Id.* Ultimately, the goal of fair use is “to encourage citizens to fully and openly exchange and build upon information to increase the public’s knowledge.” *Id.*


The hackers that break HDCP are not the criminals in this sordid tale of consumer abuse. Technologically illiterate Hollywood executives and the equally uneducated politicians they finance are the felons here. Preying upon Americans’ lack of knowledge on the topic, these parties, and major industry players like Microsoft are steamrolling HDCP, even after its critical flaws were publicly announced five years ago. The train has already left the station, and we will live with this situation for a solid decade. Such is the price for obeying the law. *Id.*

Xbox Live online video game service.\textsuperscript{135} Of course, there are many questions to be answered regarding an appropriate licensing model, but the initiatives of Apple and Microsoft are partial steps in the right direction.

\textsuperscript{135} Erik Brudvig, \textit{Microsoft Unveils the Video Marketplace}, IGN.COM, Nov. 6, 2006, http://xbox360.ign.com/articles/744/744355p1.html (reporting that Microsoft launched its online video marketplace on Nov. 22, 2006, allowing Xbox 360 owners to download a variety of high and standard definition content to their consoles at competitive pricing); see also Tim Surette, \textit{XBL Getting On-Demand HDTV, Film}, GAMESPOT.COM, Nov. 6, 2006, http://www.gamespot.com/news/6161165.html (reporting that television programs will be sold on the buy-to-own basis, while movies will be delivered only on a rental basis – deleting itself twenty-four hours after first use). But see Steve Jobs, \textit{Thoughts on Music}, APPLE.COM, Feb. 6, 2007, http://www.apple.com/hotnews/thoughtsonmusic. Steve Jobs, the iconic co-founder and CEO of Apple Corp., himself states that Apple would wholeheartedly embrace the entire abolition of DRMs “in a heartbeat” because “DRMs haven’t [ever] worked, and may never work, to halt music piracy.” \textit{Id}. He argues that removing such DRM requirements from digitally-distributed music would benefit the music industry by creating an “influx of new companies willing to invest in innovative new stores and players” and thus, a “truly interoperable music marketplace.” \textit{Id}. 