Death of a Cracker

The Failure of the DMCA and How Digital Copyright Can Be Saved

By Brian Keegan

Imagine operating a business that required you to access a bank vault every night after the bank was closed. Because your business is valuable to the bank, you establish a contract with the bank's owner so that you would possess a key to access the vault as you needed. Your intent is not to steal or otherwise undermine the security of the other patron's property, but rather, to be able to efficiently access your property during non-business hours. However, the bank changes hands and the new management institutes a strict policy of vault-access only during business hours. This is upsetting to your routine and business model, but you continue your nightly routine because you still possess the key and a valid contract to the vault. One night, despite your benign intentions and demonstrably legal right to be there, you are apprehended and accused of breaking-and-entering the bank.

This situation is analogous to the problems raised by a recent amendment to United States copyright law. The Digital Millennium Copyright Act (DMCA) criminalizes technology capable of circumventing copyright protections and increases penalties for copyright infringement on the Internet. In the bank analogy, the contract and key represents decades of legal precedent on the right to fair use of copyrighted material protected like the bank vault. The DMCA is the new owner whose policy criminalizes the step of accessing the property even if it previously was within your right to do so. Legal and economically beneficial fair use activities like reverse engineering, decryption, or emulating are now being stifled by the threat of severe criminal charges or expensive civil litigation under the DMCA. Concurrently, the growing scope and length of copyright protections combined with the restrictive anti-circumventive measures of the DMCA have the potential to completely eliminate the original intent of copyrights "to promote the Progress of Science and useful Art" for "limited times."

Fair use has been a component of British common law since the early 18th century. The core of "fair use" is the ability to use copyrighted material without permission or a license under certain conditions. Fair use is specifically codified in the United States under the sweeping Copyright Act of 1976 as "reproductions… for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research."[1] Using copyrighted materials for the aforementioned purposes cannot be construed as infringement because the social, political, and economic importance of these activities. It would be inefficient and deleterious to the founding Constitutional intent of copyright "to promote progress" if every teacher, researcher, or reporter had to submit to the process of obtaining a license. However, these exemptions cannot be structured so broadly as to render copyright ineffective. A four-step test developed in a 1841 federal court (Folsom v. Marsh, 9 F.Cas. 342) case was incorporated into the 1976 legislation[2] that considered the potential commercial purpose of the fair use claims relative to the nature, amount, and effect of the copied work.

The DMCA represents the United States' obligation under the World Intellectual Property Organization (WIPO) and Berne Convention to legislatively implement the WIPO Copyright Treaty. The act has several provisions, but the most important changes concern the criminalization of technology that can circumvent the protective measures placed on copyrighted materials. Section 1201 of the revised statue added by the DMCA now states, "No person shall circumvent a technological measure that effectively controls

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[1] Title 17. Chapter 1. § 107. Limitations on exclusive rights: Fair use.

[2] *Ibid*: In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. the nature of the copyrighted work;
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. the effect of the use upon the potential market for or value of the copyrighted work.

The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors

access to a work protected under this title."[3] DMCA defines circumvention as to "descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner." The DMCA was intended to criminalize the act of breaking the anti-piracy protections built into copyrighted materials like CDs and DVDs. However, the manner in which it is written criminalizes any act of circumvention, even those which are necessary to use copyrighted materials under fair use.

This is a significant development for both copyright holders and members of society who rely upon fair use to conduct their business. The fundamental disparity between the intent of the legislation and the manner in which it is implemented gives copyright holders broad legal powers to control who and how their copyrighted works can be accessed. Moreover, anyone who uses electronically protected copyrighted work without a license, even if they are acting under fair use, can be subject to criminal or civil charges under the DMCA. The pervasiveness of electronic media and the ease with which it can be copied has resulted in many of them being protected by anti-piracy protections. Using these protected materials without a license can now be classified as circumventive under the DMCA. This is akin being arrested for entering the vault in the bank example above. The rights previously granted to you have not changed, but the actions necessary to use them have been criminalized. Copyright holders can now limit access to their copyrights, not on the grounds of infringement[4], but under the anti-circumvention protections of the DMCA.

Case Studies

The DMCA's overly broad conception of circumvention has allowed companies to pursue legal action against individuals and companies well beyond the original anti-piracy scope of the protections. Companies engage in lawsuits using the anti-circumvention protections of the DMCA to stifle competition which, in turn, chills

[3] Title 17, Chapter 12. § 1201(a)(1)(A). Circumvention of copyright protection systems.
[4] The DMCA does not modify any part of Section 107 concerning Fair Use.

innovation. Because anti-piracy and copyright protection systems obviously affect electronic media the most, the DMCA affects digital media and software users the most. Many computer users choose to modify existing software they own for their own personal uses. In breaking the encryption protecting the copyrighted material, reverse engineering the software, or emulating its behavior, these users "circumvent" the methods used to control access to the copyrighted material. However, while their intent is not infringement, their fair use claims are undermined by the mere fact that their circumventive step was illegal under the DMCA. Let us briefly explore four cases in which the individuals and companies have been accused of circumvention far beyond the scope of what was intended when the DMCA was passed.

Dmitri Sklyarov and AEBRP

Let us review a case of a well-respected programmer who was detained by the US government and falsely accused of violating the DMCA. Dmitry Sklyarov is a Russian programmer who developed a program that could convert Adobe electronic books (eBooks) into the less restrictive Portable Document Format (pdf). After giving a 2001 conference presentation on his program, he was arrested by the FBI and charged with distributing a product designed to circumvent copyright protection measures[5]. His Advanced eBook Processor (AEBPR), impinged on no copyright of Adobe's software. However, because it "circumvented" Adobe's restrictions, it had the potential to allow pirates to access protected documents, but it also allowed legitimate owners and licensees to use the documents in a more accepted format. Even though Sklyarov committed no act of circumvention in the United States and Russia does not abide by the DMCA, he was detained for five months in the US, including several weeks in jail, because his Russian employer, ElcomSoft, had distributed his software. He was allowed to return home and a jury later acquitted Elcomsoft of all charges of circumvention[6]. On the surface, this appears to be a legitimate use of the DMCA as the AEBPR fell in a grey area. However, the DMCA facilitated the extreme action of arresting and detaining a foreign national, a

[5] "Dmitry Sklyarov." Wikipedia. <http://en.wikipedia.org/wiki/Sklyarov>
[6] "Dmitry Sklarov Arrested." Electronic Frontier Foundation. <http://www.eff.org/IP/DMCA/?f=unintended_consequences.html>

punishment usually reserved for the most serious international criminals not an innovative software programmer.

Mod-chips

In another David and Goliath battle, Sony used the DMCA to pursue legal action against distributors of "mod chips" for its PlayStation video gaming system. Sony has a copy-protection regime that prevents video game software purchased in one region of the world from being used on PlayStation systems bought in a different region. A thriving market of "mod chips" eliminates these restrictions and allows players to use all their software, regardless of where it is purchased. Like the AEBPR, these chips have the potential to be used for software piracy, but they have legitimate purpose for a user with different region discs. Sony sued a distributor of these "mod chips" and won an injunction against them under the DMCA despite the fact that the distributor did not infringe Sony's copyright[7]. Their crime was circumvention, misnomer that has facilitated a gross abuse of copyright protections to shore up the fortunes of a multi-billion dollar media conglomerates at the expense of end users' choice and control over their property.

Lexmark

The next case involves Lexmark, a printer manufacturer who used the DMCA to obtain an injunction against Static Control Components, a manufacturer whose Smartek chips are used by aftermarket toner manufacturers. Lexmark printers and their toner cartridges can authenticate each other to provide additional features, an element that less-expensive after-market toner companies cannot provide. SCC reverse engineered the hardware that enables the authentication to allow the aftermarket cartridges to interoperate with the Lexmark printers. Lexmark brought suit under the DMCA, again not claiming copyright infringement, but circumvention of its "Toner Loading Program and Printer Engine

[7] "Sony Attacks Playstation Mod Chips." Electronic Frontier Foundation. <http://www.eff.org/IP/DMCA/?f=unintended_consequences.html>

Program."[8] Lexmark clearly has an economic motivation to secure a market for the replacement cartridges it sells and intended to use the DMCA to eliminate competitors. The 9th Circuit found that copyright does not protect such monopolistic behavior in an earlier case[9]. The 6th Circuit remanded the Lexmark case and the Supreme Court rejected Lexmark's petition for certiorari, because "Lexmark failed to establish a likelihood of success on any of its claims, whether under the general copyright statute or under the DMCA"[10] Clearly, securing the market for printer toner cartridges was not the original intent of Congress when passing the DMCA.

Bnetd

The final case pits a large computer game maker, Blizzard Software, against its customers who developed an emulator of its online gaming service. The multiplayer gaming feature in many of Blizzard's software titles require that players use its gratis proprietary battle.net online gaming service. A small group of players disappointed with the scope and stability of this service modified existing open-source software and reverse engineered the battle.net software to produce bnetd which allows users to operate their own servers. However, bnetd did not incorporate Blizzard's copy protection schemes which would prevent pirated copies from being played online. Blizzard filed suit and received an injunction against bnetd under the anti-circumvention clauses of the DMCA. Just as in the Lexmark case, bnetd provides a legitimate alternative to the current service. However the 8th Circuit granted Blizzard summary judgment on the grounds that the "bnetd.org emulator enabled users of Blizzard games to access Battle.net mode features without a valid [authentication]. As a result, unauthorized copies of the Blizzard games

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[8] McCullagh, Declan. "Lexmark invokes DMCA in toner suit." C|net news. <http://news.com.com/2100-1023-979791.html>

[9] Sony v. Connectix (9th Circuit, February 2000). In a case between Sony and a software developer who reverse engineered the Sony PlayStation to allow its software to emulate, or mimic, the Sony PlayStation, the Court found that Conntectix's use of Sony code was protected as fair use. Moreover, the Court recognized that while "Sony understandably seeks control over the market for devices that play games Sony produces or licenses. The copyright law, however, does not confer such a monopoly."

[10] Lexmark v. Static Control (6th Circuit, October 2004)

were freely played on bnetd.org servers."[11] This decision suggests that authentication and authorization of activities takes precedence over enabling innovation and the ability to freely use one's property.

Trends

One can imagine how a typewriter can facilitate copyright infringement even though it does not circumvent copy-protection technology. Not only are typewriters permissible to own, it is preposterous to suggest that they should be regulated or controlled because of their capability to infringe copyright. Yet in other fields of technology, the threat of DMCA litigation is dampening innovation because individuals and businesses who had legitimately modified software for their personal use are now criminals under this perverse statue. While these modifications in the previous examples had the potential to be used for piracy, they did not infringe the copyrights of big corporations like Adobe and Sony. These new forms of useful software and hardware were produced by reverse engineering intentionally rudimentary of copy protection schemes. If media companies truly wanted complete control over their copyrights, it would demand a system so inflexible and complex so as to dissuade any rational consumer from purchasing their products. It is this essential concept of legitimate end-user freedom that has been lost on the media companies and even the courts.

The current trend under the DMCA would protect copyrights even after their protection had expired. If we can imagine *The DaVinci Code* passing into the public realm in the distant future (2076 if Dan Brown died tomorrow), the inevitable pervasiveness of electronic media and the copy protection systems on this book at that time would prevent anyone from ever being able to "freely" access the book. In effect, the DMCA ensures that copyrights can be "locked up" eternally if the owner can package the protected content with a system that "can control access." Professor Lawrence Lessig alluded to this fundamental dichotomy speaking to the Sklyarov case, "Using software code to

[11] *Davidson & Associates (Blizzard Entertainment) v. Jung*. 8th Circuit Court of Appeals. 1 September 2005.

enforce law is controversial enough. Making it a crime to crack that technology, whether or not the use of that ability would be a copyright violation, is to delegate lawmaking to code writers."[12]

While fair use and digital rights management schemas occupy a gray area in legal understanding worthy of clarification, such examinations are generally prevented by virtue of the threat of expensive litigation that leads defendants to settle rather than air these concerns before a court of law. There exists a distinct possibility for the act of circumventing to pre-empt any intention that might would be considered non-infringing or fair use. In other words, the DMCA threatens to kill fair use if it becomes illegal to modify content that is no longer protected by copyright simple because it possesses anti-piracy features. In many such areas, the prospect of facing severe criminal and civil penalties against well-funded corporate interests has become a sufficient deterrent for many programmers and researchers to cease their "circumventive" activity.

Proposal

While the DMCA does recognize a limited number of legitimate uses in §1201(d) and (f), theses are constructed so narrowly relative to both the legal understanding of fair use and the sweeping criminalization of circumvention as to be moot. When considered in the context that the copyright system lacks any formal registration system even though copyright terms are increasing to as much as 70 years after the death of the author, the DMCA is another burden for innovators and entrepreneurs trying to stake a claim in a saturated market of intellectual property.

Congressmen Rick Boucher (Virginia's 9th Congressional District) introduced the Digital Media Consumers' Rights Act (DMCRA) to restore "the historical balance in copyright law and ensuring the proper labeling of 'copy-protected compact discs.'"[13] Boucher recommends that "the only conduct that should be declared criminal is circumvention for

[12] Lessig, Lawrence. "Jail Time in the Digital Age." Electronic Frontier Foundation. <http://www.eff.org/IP/DMCA/US_v_Elcomsoft/20010730_lessig_oped.html>
[13] DMCRA. Wikipedia. <http://en.wikipedia.org/wiki/DMCRA>

the purpose of infringing a copyright."[14] This broadly-defined legislation alters the construction of what forms of circumvention are illegal, but it probably would not stem the chilling tide of cease and desist letters by companies who are misconstruing the existing legistation.

Professor Pamela Samuelson has a more narrow view that the exemptions within the DMCA should be expanded. This approach would specifically enumerate the activities and behavior allowed under fair use would remove much of the impetus for case-by-case lawsuits to be decided by courts. However, specific exemptions would need to be continually updated to reflect the evolution of technological systems which would in turn open them up to modifications by concentrated corporate interests.

A superior solution involves revising the DMCA and building up specific protections for copyright holders to pursue action against infringers. Circumvention is not a sufficiently definable concept in the complex world of software, networks, and electronics that copyright law now occupies. I propose a registry of copy-protection schemes enumerating and describing the works protected. In this way, plaintiffs are held to a higher standard for defining circumvention. Moreover, the amendment provides for Boucher's conception of "intent to infringe" rather than "capacity to infringe." The latter is the current standard under the DMCA as I developed in the arguments of the case studies above. While a large-scale reform of the copyright system is necessary to fully attend to the challenges of copyright in the "digital millennium," a more limited reform addressing copyright holders' concerns and protecting legitimate fair uses is proposed below.

[14] Cnet article

Amendment to Title 17 Chapter 12 of U.S. Code on Circumvention of Copyright Protection and Management Systems

Amended §1201: Circumvention of Copy Protection schemes

(a) **Violations Regarding Circumvention of Technological Measures.**
   (1) It shall be unlawful to circumvent a duly registered copy-protection system controlling access to a work protected under this title with the intent to infringe upon the exclusive rights of works of authorship described in Chapter 1 of this Title
   (2) No person shall manufacture, import, market, distribute, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that is designed or produced with the sole intent and purpose of circumventing a technology described under this title

(b) **Creation of a Registry of Copy-Protection Systems**
   (1) The Librarian of Congress, in consultation with the Register or Copyrights and with the Assistant Secretary for Communications and Information of the Department of Commerce, shall create and maintain a registry of copy-protection systems –
      (A) describing the protocols, algorithms, procedures, services, components, or other features embodied within the system that constitute control of access over the copyrighted material
      (B) identifying the owner of the copy-protection system identified in (b)(1)(A) including contact address
      (C) naming the works protected by the system, copyright management information defined in §1202(c), and other information deemed relevant by the Librarian
      (D) identifying the authors of the works identified in (b)(1)(C) including contact address
      (E) possessing the means to be searched, indexed, or otherwise publicly accessed in its entirety
   (2) The Librarian shall have the authority to determine and render fees necessary to operate this registry to be charged to owners of copy-protection systems

(c) This subsection shall not be construed to deny, prevent, or inhibit those rights retained and expressed in §106 - §112 governing limitations on exclusive rights of this Title

Amended §1203: Civil Remedies

(a) **Civil Actions.—** Only those works and accompanying copy-protection systems duly registered with the Librarian of Congress may bring a civil action in an appropriate United States district court for such violation described in §1201 and §1202

This registry is a limited reform in the current jungle of copyright jurisprudence. It would resemble the current patent system in that the protections claimed are identifiable and publicly searchable. Moreover, the legislation offers considerable protections and incentives to copyright holders who are willing to register their protection systems and associated authored works. However, the limited scope also compels these holders to specifically define what constitutes their system as well as what compromises "control of access." In this more narrow formulation of circumvention or infringement, plaintiffs cannot broadly assert that the potential or capability for a circumventive act is illegal, but rather that a specific action compromising their specifically defined "control of access" is the act of circumvention. In this way, potential plaintiffs bear a far heavier burden of proof, but also have far stronger grounds upon which to bring a complaint if their system and protected works are specifically enumerated.

It is important to note that this legislation is narrowly tailored to copyright-protection systems not every instance or occurrence of a copyrighted work. In this way, much of the body of copyright jurisprudence on fair use remains untouched, unlike the current DMCA implementation. Only the limited subset of copyrighted works with copy-protection systems are impacted by this system rather than any "original works of authorship fixed in any tangible medium of expression."[15] The legislation does not develop any metric for defining intent to circumvent, but that is a matter for the common law to develop. While motivation or intent is important in determining the outcomes of criminal charges like murder or assault, legislators cannot anticipate every instance or occurrence in advance. Similarly, one's civil responsibility should extend as far as he or she is able to voluntarily submit to the act of circumvention and infringement. With this narrow construction of circumvention rather than the current narrow understanding of fair use, plaintiffs should be able to identify the specific act of illegal circumvention from this enumerated body of actions, rather than being able to broadly assert that any activity is circumventive. It then falls within the courts' traditional realm of discretion to determine the merit of the charges against these specific definitions of circumvention in the registry.

[15] US Code Title 17. §102: Subject Matter of Copyright: In General

While this proposal imposes a serious burden of proof on the copyright holder to seek an injunction, compensation, or other remedies from the alleged infringer, it is reasonable given the considerable protections now afforded to copyrights. Copyright infringement is a serious offense, not the legal means to eliminate competitors or legitimate uses of a product. While the law should not implicitly protect pirates by requiring an onerous burden of proof from the plaintiffs, it should not burden the masses by allowing copyright holders to file suit against competitors and individuals without the means to defend themselves. The four cases presented are examples of how genuine legislative intent, protecting copyrights in the face of new technology, can be hijacked by special interests. A more limited and specific construction of illegal circumvention is required and the rights of fair use retained by the people should be specifically and broadly enumerated. Copyrights are meant disseminate knowledge, not to be digitized and locked up for eternity.

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- **Fair use is using copyrighted materials without a license**
  - Copyright Act of 1976: "reproductions… for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research."
  - Inefficient and deleterious to intent of copyright "to promote progress" if every teacher, researcher, or reporter had to submit to the process of obtaining a license.
- **Digital Millenium Copyright Act (DMCA) intended to criminalize the act of breaking the anti-piracy protections built into copyrighted materials like CDs and DVDs.**
  - "No person shall circumvent a technological measure that effectively controls access to a work protected under this title."
  - Criminalizes any act of circumvention, even those which are necessary to use copyrighted materials under fair use.
- **Four cases of the DMCA gone awry**
  - Dmitry Sklyarov
    - Developed Advanced eBook Processor (AEBPR) to convert Adobe electronic books (eBooks) into less restrictive Portable Document Format (pdf)
    - **No actual infringment of Adobe's software** but "circumvention" could potentially allow pirates to access protected documents despite legitimate uses
    - Detained in US for five months, including several weeks in jail, despite Russian citizenship over code
  - Mod-chips
    - Sony copy-protection prevents video game software purchased in one region of the world from being used on PlayStation systems bought in a different region.
    - "Mod chips" eliminates these restrictions and allows players to use all their software, regardless of where it is purchased.
    - Potential capacity for piracy more important than legitimate use, Sony granted injunction despite **no infringement of Sony copyright by the manufacturer**
  - Lexmark
    - Lexmark printers and toner cartridges authenticate each other excluding competing after-market toner manufacturers
    - SCC reverse engineered the authentication software/hardware to allow its chips to interoperate with the Lexmark printers.
    - Lexmark files DMCA suit, **not claiming copyright infringement**, but circumvention of its toner/printer system
    - 9th Circuit finds that DMCA/copyright does not protect monopolistic behavior
  - Bnetd
    - Emulator allows players to play multiplayer games of licensed on their own servers without using unstable Blizzard battle.net online service
    - Blizzard files suit claiming reverse engineering circumvented authentication system, but **no copyright infringement** of battle.net software by bnetd
    - 8th Circuit issues judgment against bnetd ruling that it enabled access to features without valid authentication, thus facilitating piracy despite legitimate uses
- **Proposal**
  - Shift burden of proof on circumvention to copyright holder, force definition of the protection system and protected works, and better protect these rights
  - Create Registry of Copy-Protection Systems that includes description of the protection system, copyrighted works, means of contacting owners/authors, and searchable index
  - Rewrite DMCA to protect **registered** holders of copy-protection systems from "circumvention with ***intent*** to infringe copyright"