ALA American Library Association

DIGITAL RIGHTS MANAGEMENT AND BOOKS

Mirela Roncevic

Library Technology Reports
Expert Guides to Library Systems and Services

JANUARY 2020
Vol. 56 / No. 1
ISSN 0024-2586

Library Technology
REPORTS
Expert Guides to Library Systems and Services

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ALA TechSource
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Library Technology
REPORTS

ALA TechSource purchases fund advocacy, awareness, and accreditation programs for library professionals worldwide.

Volume 56, Number 1
Blockchain in Libraries
ISBN: 978-0-8389-4672-5
DOI: https://doi.org/10.5860/ltr.56n1

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Library Technology Reports (ISSN 0024-2586) is published eight times a year (January, March, April, June, July, September, October, and December) by American Library Association, 50 E. Huron St., Chicago, IL 60611. It is managed by ALA TechSource, a unit of the publishing department of ALA. Periodical postage paid at Chicago, Illinois, and at additional mailing offices. POSTMASTER: Send address changes to Library Technology Reports, 50 E. Huron St., Chicago, IL 60611.

About the Author

Mirela Roncevic is a writer, journalist, editor, content developer, and publishing and library consultant. Over the course of her long career—print and digital, trade and academic publishing—she has worked with a range of publishers and libraries and partnered with global companies, creating new opportunities for publishers, authors, readers, educators, researchers, and librarians. She has also contributed articles, reports, features, reviews, and stories to a range of publications and has served as managing editor of several book series. Mirela is the author of a number of books and reports on e-books and digital content, published by ALA, and her doctoral research explores the impact on DRM, Open Access, Open Educational Resources, and open libraries.

Abstract

Digital rights management. Anyone who has in any way dealt with digital content in the past two decades has come across this term. It is talked about and written about in the context of all content disseminated digitally—books, films, music, and video games. It is the topic at every library and digital publishing conference and the subject of countless scholarly articles dedicated to trying to understand its impact. This issue of *Library Technology Reports* (vol. 56, no. 1), "Digital Rights Management and Books," discusses digital rights management (DRM) in the context of books—popular and academic—and all who are part of the publishing ecosystem, including authors, readers, publishers, educators, researchers, librarians, and information scientists. Its aim is to provide a thorough analysis of what DRM is, what its main purpose is, what its legal implications are, who it affects, how it works, why it matters, why some believe it has done more harm than good for books and authors as well as libraries, what its challenges remain to this day, what may be possible solutions to those challenges, and what the future holds for DRM, including both those who support it (usually publishers) and those who vehemently oppose it (usually readers and librarians). Lastly, this report points to new ways in which DRM can be approached in the future and ways in which piracy and illegal online activities can be overcome more successfully.

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Chapter 1

Introduction

Definition of DRM

What exactly is digital rights management (DRM)? Put simply, it is a way to protect digital books (and digital content in general) made available for consumption online to people who wish to buy e-versions of books (or other content) on various sites or access them through library platforms. The most basic definition of DRM is that it is a code—or a set of codes—used to control access to digital content and the ways in which those who access it may use the content. The aim is to encourage users to use e-book files lawfully, moving them away from illegal activities, such as online piracy. The term first appeared in the 1990s, when it was used to represent new technologies that were utilized to enforce the rights of content owners. And these technologies were encouraged by the companies in the business of selling intellectual property. First DRM was applied to the performing arts—film, TV, and music (since they were the first to face problems with illegal downloading activities online)—then audio CDs, then internet music, then computer games, then academic journals, and, finally, e-books.[1]

In the world of digital publishing and e-books, it helps to think of DRM in terms of the core difference between what it means to buy a physical copy of a book and what it means to buy (or access) an e-book. When consumers buy a print book, they are buying the actual physical object, which belongs to them in perpetuity. When consumers buy an e-book, however, they are purchasing a license granting certain rights of access. The purchaser of an e-book does not buy it to own it in perpetuity and cannot do with it what they want. For example, the purchaser cannot lend it to a friend by sending it to the friend's device or move it from one device to another. Often, the purchaser cannot even use functions such as Print or Copy. These restrictions are put in place by DRM technologies. DRM can, therefore, also be described as encryption applied to an e-book in order to control what users do with it, all in an effort to give authors, publishers, and copyright holders peace of mind that their intellectual property will not be infringed online.

Key goals of DRM are to ensure continued revenue streams for publishers and authors, to protect books from piracy (which many have feared would dent print sales), to enable tracking of those engaging in illegal copying or downloading, and to limit what users can do with content beyond merely reading it. Almost anyone in the business of producing, packaging, distributing, or selling e-books is affected by the presence (or absence) of DRM, in either positive or negative ways, including, among others, the following:[2]

- content creators (Authors want to protect their intellectual property and limit damage that may be associated with piracy.)
- the content industry (Publishers want to protect intellectual property. They prefer and encourage government regulation and do not support laws associated with fair use. Their incentive is not to lose sales due to piracy.)
- consumers (Those who read e-books do not want to be restricted in how they use them; readers advocate fair use and do not want to be treated as potential criminals.)
- the hardware industry (Companies that produce devices for use of digital content—such as tablets, laptops, and mobile phones—want to balance privacy, fair use, and copyright protection and prefer market-driven rather than government-driven solutions.)
- the software industry (Companies whose products are used for the production and distribution of digital content want to balance copyright protection, privacy, and fair use; their perspectives are similar to those of authors and publishers.)
- retailers (Online stores that sell digital content must balance interests of content providers on the one side and their customers on the other.)
- public interest groups (Groups such as Electronic Frontier Foundation and Electronic Privacy Information Center are against government regulations

and combat technology solutions restricting users and threatening user rights.)
- libraries (Libraries' main mission is to provide free access to information and encourage reading and literacy. Libraries are concerned with protecting the privacy of patrons and tend to be against excessive technological and legal control while also wanting to respect the rights of content creators. Further, libraries want to consider the concerns of both their patrons and content owners).

How DRM Works

There are many options available to authors, publishers, and retailers looking to protect e-books and other content before selling them in digital format. DRM controls how uploading and downloading of books happens online, how they are accessed and purchased, and how they may be lent through libraries. In whatever shape or form e-books are found and consumed—whether bought through online retailers, accessed through various subscription services, or read via local libraries—DRM can always be used to protect the content inside the files from leaking out and being vulnerable to illegal sharing and reselling.

Technically speaking, DRM is implemented to control three things related to e-books: (1) access, (2) use, and (3) distribution. "Access" refers to how users or readers obtain the content inside an e-book file (e.g., PDF, ePub file); "use" refers to what users can do with content once they have accessed it; "distribution" refers to how that content may be shared or passed on to others. Restriction of access is usually the first step. Even if a user can access a file without much hassle by either downloading or simply opening it, there is usually a second layer of protection, which is where the control of use comes into play. One can access a digital file but may not be able to do a lot with it other than to read it. (This is usually the case with e-books found in subscription platforms like Scribd or accessed through library platforms like OverDrive.)

It is precisely the use and distribution parts of DRM that have been the central point of discussions, confusion, frustration, and even new legislation in recent years. This is mostly because DRM can accomplish far more than users realize—all in an ongoing effort by publishers and content providers to keep people interested in buying e-books and to discourage them from sharing files, which modern-day technologies make remarkably easy to do. For these reasons, DRM does not just control what users can do while using content, it can also retroactively restrict privileges after purchase. This fact points to what is perhaps the key difference between print books and digital books in the context of ownership: once purchased, print books belong to the owner forever. E-books, on the other hand, do not. DRM ensures that digital content is only licensed to the user, so there is no such thing as an outright purchase of an e-book. This is why e-books can also expire. (This is usually the case with e-book lending services in public libraries.) They can also suddenly disappear from a device even after being purchased, as in the now-infamous 2009 case of Amazon remotely deleting purchased copies of George Orwell's *1984* and *Animal Farm* for thousands of Kindle customers because, as reported by the *New York Times*, those books were added to the Kindle store by a company that did not have rights to them, using a self-service function, so Amazon was forced to remove them to avoid potential legal problems.[3]

Books with DRM often cannot be printed or copied in any way, or, in some cases, a user may copy a text a limited number of times. (A good example is the use of academic titles in libraries, where publishers allow more flexibility for students and researchers for educational purposes.) E-books also cannot be formatted or reformatted (i.e., converted to different files) or altered. Specific features can sometimes be removed, too, without readers being notified in advance. A good example was Amazon's 2009 removal (or blocking) of text-to-speech (TTS) privileges for certain e-books purchased on the Kindle 2 owing to the pressure of the Authors Guild.[4] At the time, the Authors Guild argued that Amazon could not sell an e-book as "an ebook and an audio book rolled into one," which is what the TTS features enabled Amazon to do without paying extra for audio rights. The Authors Guild insisted that audio rights for a book were different from reading rights, "even if the audio is provided by a software robot."[5] Amazon eventually caved to the pressure and criticism by the book industry and removed the feature for the titles for any publisher that opposed to it, again leaving readers who purchased those titles the last to know and with no say in the matter.

DRM can also track user activities, including viewing, browsing, reading, and listening. Thanks to DRM encryption, companies that distribute e-books or make them available for consumption know with great precision how users consume them, which can help the companies gain valuable insights into user behavior in various markets. This, of course, immediately raises concerns related to reader privacy and the Big Brother traits of DRM. The argument for tracking here is that such information can be collected in aggregate so that it is beneficial to publishers and content providers without the identity of users being revealed. Recent legislation, particularly the passing of the GDPR law in the European Union, have made it more difficult for companies to use user information irresponsibly and without users' consent.

DRM systems can therefore secure e-books in two ways: the first is containment (discussed thus far), and the second is marking—the practice of placing a

watermark, flag, or XrML (eXtensible rights Markup Language) tag on content as a signal to a device that the content is protected. Some systems combine the two approaches.[6]

DRM systems can also be perceived as ranging from active to passive. "Active" DRM refers to, for example, tying e-books to specific e-readers, such as Amazon tying its e-books to Kindle, thus forcing readers to buy e-books from the same company that sells them the reading device. "Passive" DRM includes, for example, "watermarking" a digital file with the purchaser's name and address so that if content owners come across pirated versions of e-books online, they are able to track them back to the original purchasers. When a watermark is detected, companies that specialize in tracking it (e.g., Digimarc, Booxtream) provide the unique identifier to the publisher (which works with such companies to protect e-books) to match it against transaction records. In other words, the watermark can be tracked back to the exact copy that was used to create the illegal copy. This type of passive DRM is called "social DRM," and the most famous example of its use is the digital versions of J. K. Rowling's Harry Potter books (published by Pottermore).

Watermarking can be used not only to prove legitimate ownership, but also to ensure that the integrity of the original work is preserved so that proper attribution is given where it is due. In other words, watermarking is also used to attach the right author to the right work permanently. Owing to DRM encryption, any e-book can be recognized or persistently identified, even if ownership changes. One way to accomplish this is by embedding numbering schemes, such as ISBNs (for books) and ISSNs (for journals), into files. It is common to see watermarks on PDF files downloaded from licensed databases, for example, or rights information may be embedded in the file's metadata.

* * *

There are three key players in the market of selling and distributing e-books: Amazon, Apple, and Adobe. Amazon and Apple have very brand-centric approaches to DRM. Amazon for Kindle locks all e-books sold on its website to Kindle devices or apps using Amazon's own DRM. When buying an e-book from Amazon, users are buying the license to read a digital version of the title on Amazon's Kindle. To ensure the e-book is read by only one reader, Amazon's DRM code matches the user's Kindle device (or the Kindle app). Apple's DRM system is called FairPlay, and it applies only to e-books sold in Apple Books (formerly iBooks). Adobe's DRM scheme, called Adobe Digital Experience Protection Technology (ADEPT), is used on many third-party readers, such as various Android devices, but not Kindles. E-books with ADEPT can also be accessed through Adobe's own Adobe Digital Editions (ADE). ADEPT requires a person to install ADE on different devices. The user can then read an e-book on all of these devices if they log in with the ID connected to the book.

Benefits and Drawbacks

As with any technology, there are noteworthy benefits as well as unfortunate drawbacks to implementing DRM in digital books and other content. As a result, DRM has been under constant scrutiny by academics and industry insiders for years, increasingly pointing to its ineffectiveness. Many have suggested that the various restrictions imposed by DRM on use have led to the stagnation of the popularity of e-books in the consumer market. Apart from the fact that users still prefer print books over e-books when reading for pleasure (versus when conducting research), various DRM-related limits placed on e-books have contributed further to the overall decline in e-book sales in recent years and a disappointing user experience all around. According to a survey conducted by the Pew Research Center in January 2018, only 7 percent of Americans read digital books exclusively, while 39 percent read print books, and 29 percent read both print and digital.[7]

Despite declining e-book sales in the consumer market and frustrations of users, most publishers still maintain that DRM is vital to protect the rights granted to them by law to control how content is sold, copied, repurposed, modified, and publicly performed.[8] Therefore, they continue to support it and implement it. Generally speaking, the main benefits of DRM are as follows:

- It fights (or is supposed to fight) copyright infringement (or piracy).
- It enables content owners to track each pirated file to the original source that was used for illegal copying.
- It helps the copyright holder maintain the integrity of the original work. (DRM'd works cannot be edited or altered.)
- It ensures that proper attribution is assigned to each work (so that regardless of who owns the file, it is encrypted with correct information about the work's author).
- It can accurately track reading activities (without invading reader privacy), thus giving valuable insight into how books are consumed. (Selling print copies has never given publishers insight into how much the books they publish are read, where, and what parts exactly.)

- It can help geo-locate content (so that, for example, if a book is open for free reading only in certain territories, DRM can restrict availability of the book in other territories by relying on the precision of GPS coordinates or IP addresses).

Despite these advantages, the adverse effects of DRM have been the topic of countless studies in the past decade, many of which have stated that DRM has failed not only the publishing industry, but also all others in the book ecosystem, including authors, scholars, educators, and, most of all, readers, and why so many have advocated against it. Some of those drawbacks include the following:

- the unfair treatment of legitimate readers (those who purchase e-books through online retailers or access e-books through libraries)
- draconian measures that forbid users from doing anything other than read the files, which they don't own to begin with
- the Big Brother effect of DRM, which allows various companies to know exactly who reads what, where, and how and to manipulate what can be done with files without a user's consent (e.g., deletion of files, removal of certain features, watermarking files with purchaser's names, etc.)
- perhaps most relevant, the growing evidence that DRM has not been able to combat piracy to any significant extent (Combatting piracy, ironically, was the main reason for DRM's existence. DRM may have, in fact, led to its upsurge.)

To better understand why DRM has not lived up to early expectations—to prevent piracy so that the publishing industry would not go through the same problems faced by the music industry with illegal file sharing services like Napster in the 1990s—it helps to take a closer look at the DRM narrative from various angles, not only from the angle of concerned authors and publishers. These include the viewpoints of the following:

- legitimate consumers (how DRM restrictions have affected their overall experience of reading files digitally) and consumers who continue to pirate e-books (how and why they continue to do it in staggering numbers)
- publishers and authors who do not support the use of DRM (and why they offer their books to the public with no DRM protection)
- libraries (whose main mission is to promote reading and literacy, which are concerned with protecting privacy of patrons, which tend to be against excessive technological and legal control while also wanting to respect the rights of content creators, and which, usually being stuck in the middle, want to consider the concerns of both content owners and patrons)
- industry leaders and organizations that advocate DRM-free content and have encouraged the book industry to move beyond DRM by suggesting initiatives, products, and new ways of thinking about e-books

Only when we can better understand DRM from various perspectives and gather enough evidence that points to its ineffectiveness in combating piracy can we propose new ways of ensuring that books can still be published in a way that does not harm those who produce them (authors and publishers), while at the same time not sabotaging the experience of those who consume them (readers and researchers).

Book publishers continue to implement DRM in their e-books and other digital files primarily because they do not want to go through the well-documented struggles of the music industry, which, back in the 1990s, produced CDs without coating them with DRM and allowed people to burn their own CDs (make copies), resulting in serious loss of sales revenue, which has taken a lot of time, effort, and creativity to recoup. According to Priti Trivedi, three major lessons have been learned from the music industry's DRM struggles: the importance of content providers (1) communicating with consumers to manage their expectations, (2) providing content that can be used on various devices; and (3) being willing to adapt to new models of dissemination and content control.[9] Although book publishers remain cautious about new models and new ways of thinking, and many remain uncooperative when it comes to loosening DRM restriction looking back to the beginnings of e-books two decades ago, book publishers have made great strides in regard to all three of these lessons, and despite the bumpy ride and the fact that much work remains to be done, progress has been made.

Notes

1. Mir Mohammad Azad, Abu Hasnat Shohel Ahmed, and Asadul Alam, "Digital Rights Management," *IJCSNS International Journal of Computer Science and Network Society* 10, no. 11 (2010): 24–33.
2. Truls Fretland, Lothar Fritsch, and Arne-Kristian Groven, *State of the Art in Digital Rights Management*, MARIAGE Project Report 1018 (Oslo: Norsk Regnesentral [Norwegian Computing Center], 2008).
3. Brad Stone, "Amazon Erases Orwell Books from Kindle," *New York Times*, July 17, 2009, https://www.nytimes.com/2009/07/18/technology/companies/18amazon.html.
4. Amber Sami Kubesch and Stephen Wicker, "Digital Rights Management: The Cost to Consumers," *Proceedings of the IEEE* 103, no. 5 (May 2015): 726–33, https://doi.org/10.1109/JPROC.2015.2418457.

5. Jack Schofield, "Amazon Caves to Authors Guild over Kindle's Text-to-Speech Reading," *Technology Blog, Guardian*, March 1, 2009, https://www.theguardian.com/technology/blog/2009/mar/01/authors-guild-blocks-kindle-voice.
6. Chris Jay Hoofnagle, "Digital Rights Management: Many Technical Controls on Digital Content Distribution Can Create a Surveillance Society," *Columbia Science and Technology Law Review* 5 (2004): 1–8, http://www.stlr.org/cite.cgi?volume=5&article=6.
7. Andrew Perrin, "Nearly One-in-Five Americans Now Listen to Audiobooks," Fact Tank, Pew Research Center, March 8, 2018, updated September 25, 2019, www.pewresearch.org/fact-tank/2018/03/08/nearly-one-in-five-americans-now-listen-to-audiobooks.
8. Frederick W. Dingledy and Alex Berrio Matamoros, "What Is Digital Rights Management?" in *Digital Rights Management: The Librarian's Guide*, ed. Catherine A. Lemmer and Carla P. Wale (Lanham, MD: Rowman & Littlefield, 2016), 1–25.
9. Priti Trivedi, "Writing the Wrong: What the E-book Industry Can Learn from Digital Music's Mistakes with DRM," *Journal of Law and Policy* 18, no. 2 (2010), article 10, https://brooklynworks.brooklaw.edu/jlp/vol18/iss2/10.

Chapter 2

DRM and the Law

DRM Is Not Copyright

DRM is many things, but it is *not* copyright. Many still confuse the two. It isn't uncommon to hear people ask—and this was especially the case in the early days of e-books and online piracy—why DRM is needed if we have copyright laws protecting the rights of authors and publishers. Don't copyright laws prevent users from making unlawful copies? The simple answer is no, they don't. If people want to make unlawful copies in digital environments and participate in spreading piracy online, they can. Technologies available to them make it easy to do. DRM is there to ensure that they can't, even if they want to.

Although DRM is often discussed in the context of technology, to be fully understood, DRM must be looked at from a multidisciplinary perspective, including not just business implications and the publishers' bottom line, but also legal implications. The fact is, DRM systems pose all kinds of complex legal problems, and the law, in many ways, has had to catch up with technology all over the world. This is owing largely to the fact that the internet has challenged the notion of rights in various fields—including literary, artistic, and scientific—from the start, and it has greatly influenced the management of intellectual property rights. It is also necessary to remember here that e-books do not recreate the printed book in digital format; they remove three key rights granted to owners of purchased print books by law: first sale, personal archival storage, and annotation rights.[1]

Although it is often confused with copyright, DRM itself is not about protecting rights of content owners. Instead, it is a vehicle by which those rights can be protected online. Copyright, on the other hand, is a form of an intellectual property right. (Intellectual property rights also include trademarks, patents, and industrial designs.) Copyright protection usually lasts for a number of years, depending on the country. In the United States and the European Union, for example, copyright protection usually lasts until seventy years after the author's death, after which their work goes into the public domain and anyone can do what they want with it, with hardly any restrictions, including the selling, reselling, and even modifying.

So, while DRM is not copyright, DRM systems are modeled on copyright. Like DRM, copyright has always served several roles: to protect the author's reputation (by not allowing anyone else to claim another person's work); to preserve the document's integrity (by ensuring the document isn't altered or changed); and to properly preserve and archive documents and books for use by future generations.

DRM is therefore not an implementation of copyright laws, but a system for the protection of digital works, which explains why creators of DRM systems usually avoid references to copyright law in their products. A way to distinguish copyright law from DRM may be as follows: "Where copyright law is an expression of 'everything that is not forbidden is permitted,' DRM takes the approach of 'everything that is not permitted is forbidden.'"[2] It is also unwise and inaccurate to think of DRM as a digital expression of copyright law. Instead, DRM is a digital expression of a license and thus "a specific agreement between named parties for particular, identified resources."[3] Another way to understand this is "DRM is the 'digital management of rights' and not the 'management of digital rights.'"[4]

As we delve deeper into the matter of DRM and how it intersects with the law and government regulation, we uncover a contradiction in the very notion of rights of users, which has contributed to creating more frustration and tension in various DRM-related controversies and led many to object to DRM-related laws worldwide. As Camp explained, "Ownership of the fruit of intellectual labor is now widely regarded as a human or cultural right. Freedom to access information and privacy rights are also human rights."[5] And as Zittrain pointed out in 2003, "We live today under two copyright regimes: the law on the one hand and the reality as experienced by the public on the other."[6] Various laws have been passed to protect the

rights of content owners in digital spaces. Some have succeeded and some have failed in their efforts to help remedy the situation and the ongoing tension between what content owners want and what the public wants.

Key Legislation

As Bechtold observed, "[T]here is a danger of overprotection: questions of fair use and other limitations to traditional copyright law have to be addressed. If competition is not able to solve this tension between the interests of content providers and the interests of users or the society at large . . . it is the law that has to provide a solution."[7] And these solutions must be new, as protection by traditional copyright law plays only a minor role as a safety net in the world of digital content.[8] Indeed, copyright laws have always been enforced to address the concerns of publishers and authors. Copyright law, specifically, gives the creator the exclusive right to publish a work, reproduce it, and approve derivative works (e.g., movies, translations, etc.). These rights are given to the author, not to the printer or seller. These rights always have a finite term. And violations of copyright law are treated as civil, not criminal, violations.[9]

To address the changing climate in digital environments and after a great deal of lobbying by rights holders in the music, software, and entertainment industries—who have had significant influence in encouraging more restrictive legislation—various countries around the world have passed legislation in favor of copyright holders, reaffirming their full rights to their intellectual property. In 1998, the US Congress passed the Digital Millennium Copyright Act (DMCA), which makes circumvention of measures like DRM a civil offense, but when the circumvention is done for commercial purposes, it is a federal crime. This means that any copyright holder can sue anyone who violates DMCA. If, for example, an author or publisher comes across an illegal copy of their work, they may submit a DMCA takedown notice (often with help from a skilled lawyer).

Publishers have generally perceived DMCA as a major moral victory and a necessary step toward ensuring that users would think twice before engaging in illegal downloading activities. Others have warned, however, that "one effect of the DMCA has been to narrow *fair use* rights further than the provisions made in law by copyright holders."[10]

One of the problems with DMCA has been that those who support it have failed to see that old rules applied to printed works would not work in the new age of digital sharing and access to information. This fact explains why DMCA has gone through some modifications since it passed. In November 2006, for example, it was revised to "exempt education, outmoded technology, and literary works distributed in e-books when all existing e-book editions of the work contain access controls that prevent the enabling either of the book's read-aloud function or of screen readers that render the text into a specialized format."[11] Copyright lawyers have also expressed frustration with the difficult tasks of having to deal with parties in different jurisdictions when working on DMCA takedown notices, since the sites they are trying to shut down pop up under different names, with new providers, in different geographic locations, producing a whack-a-mole effect.

"The current legal environment in the United States is perceived by many to be skewed unfairly in favor of copyright holders. In addition to code-based restrictions imposed on users by DRM technology, further rights can be taken away through licenses and contracts, such as End User License Agreements (EULAs)."[12] The European Union has made more progress than the United States in this regard, establishing some fundamental consumer rights and acting "against companies that require EULAs with 'unconscionable' terms."[13]

In 2001, the European Union Copyright Directive required member states to enact provisions preventing the circumvention of technical protection measures. In 2009, some countries (led by France and the United Kingdom) passed the so-called "three-strikes anti-piracy" law (known as HADOPI), which authorized suspending the internet access of pirates who ignored two warnings to quit.[14] Several studies that examined the effects of the HADOPI law found conflicting results. One study found that the law caused a 22 to 25 percent increase in music sales in France,[15] but the study by Arnold and colleagues from the same year found that the law was ineffective both in preventing digital piracy and in reducing the interest of users to practice piracy.[16] The HADOPI law was revoked in 2013 when France's Constitutional Council declared access to the internet a basic human right.[17]

In addition to copyright, Europeans also have something referred to as "moral rights." Unlike copyright, which can be transferred from a person to a person, moral rights cannot. They always belong to the original creator and are divided into three groups: "(1) *the right of attribution* (the right to be recognized as the work's creator); (2) *the right of disclosure* (the right to decide when and how a work is released); and (3) *the right of integrity* (the right to prevent a work from being changed without the creator's approval)."[18]

The EU's Copyright Directive (also known as Information Society Directive) came into force to ensure "a well-functioning marketplace for the exploitation of works and other subject-matters, taking into account in particular digital and cross-border uses of protected content."[19] Its purpose is to extend existing European Union copyright law and is a component of the EU's

Digital Single Market project. According to a Wikipedia article, "the European Council (EC) describes their key goals with the Directive as protecting press publications; reducing the 'value gap' between the profits made by Internet platforms and by content creators; encouraging collaboration between these two groups, and creating copyright exceptions for text- and data- mining."[20] The directive has been supported by publishers and media groups, but, as expected, it was fiercely opposed by major tech companies, internet users, and human rights advocates.

As the current legal landscape shows, legislative efforts have not been able to strike an acceptable-for-all balance between protecting the rights of copyright holders and the rights of internet users. Tensions continue to exist between those who want strict regulation protecting copyright holders and those who insist that such legislation, in both the United States and Europe, serves to protect the interests of the few and continues to infringe human rights, which have clearly evolved in the era of digital information. Further, such legislation sometimes goes against technological advances and stifles progress of the companies that have introduced major innovations in a range of industries across the globe, helping them grow their businesses in ways they could not have imagined two decades ago.

It helps to remember here that content providers can protect themselves by the means of implementing DRM, but the protection of consumers and society at large still depends on the law. Therefore, copyright law may need to be transformed from legislation that protects creators to a consumer-protection statute. As Lawrence Lessig put it: "The problem will center not on copy-right but on copy-duty—the duty of owners of protected property to make that property accessible."[21] This, of course, raises questions: Has intellectual property, such as books and other "containers" holding human knowledge, been accessible to users online in adequate measure and in line with the demands of the society we live in? Have users been given a fair number of options and choices? What should their rights—legal and moral—be moving forward? Just how much information should be given to them with no restriction? These and similar questions lead to no easy answers, certainly not in ways that please every side of the DRM and digital piracy debate.

Notes

1. L. Jean Camp, "DRM: Doesn't Really Mean Digital Copyright Management," KSG Working Paper Series RWP02-034, August 2002, https://doi.org/10.2139/ssrn.348941.
2. Karen Coyle, "The Technology or Rights: Digital Rights Management," Part 4, under "DRM and the Law" (based on a talk originally given at the Library of Congress, November 19, 2003), https://www.kcoyle.net/drm_basics4.html.
3. Karen Coyle, "Rights Management and Digital Library Requirements," *Ariadne*, no. 40 (July 30, 2004), www.ariadne.ac.uk/issue40/coyle.
4. Renato Iannella, "Digital Rights Management (DRM) Architectures," *D-Lib Magazine* 7, no. 6 (June 2001), http://dlib.org/dlib/june01/iannella/06iannella.html.
5. Camp, "DRM," 83.
6. Jonathan Zittrain, "The Copyright Cage," *Legal Affairs*, July/August 2003, http://www.legalaffairs.org/issues/July-August-2003/feature_zittrain_julaug03.msp.
7. Stefan Bechtold, "From Copyright to Information Law: Implications of Digital Rights Management," in *Security and Privacy in Digital Rights Management,* Lecture Notes in Computer Science, vol. 2320, ed. Tomas Sander (Berlin, Heidelberg: Springer, 2002), 213.
8. Bechtold, "From Copyright to Information Law."
9. Camp, "DRM."
10. Amber Sami Kubesch and Stephen Wicker, "Digital Rights Management: The Cost to Consumers," *Proceedings of the IEEE* 103, no. 5 (May 2015): 729, https://doi.org/10.1109/JPROC.2015.2418457.
11. Priti Trivedi, "Writing the Wrong: What the E-book Industry Can Learn from Digital Music's Mistakes with DRM," *Journal of Law and Policy* 18, no. 2 (2010), article 10, p. 935, https://brooklynworks.brooklaw.edu/jlp/vol18/iss2/10.
12. Kubesch and Wicker, "Digital Rights Management," 730.
13. Kubesch and Wicker, "Digital Rights Management," 730.
14. Paul Belleflamme and Martin Peitz, "Digital Piracy: An Update," in *Encyclopedia of Law and Economics,* ed. Jürgen Georg Backhaus (New York: Springer, 2014), 7.
15. Brett Danaher, Michael D. Smith, Rahul Telang, and Siwen Chen, "The Effect of Graduated Response Anti-piracy Laws on Music Sales: Evidence from an Event Study in France," *Journal of Industrial Economics* 62, no. 3 (2014): 541–53.
16. Michael Arnold, Eric Darmon, Sylvain Dejean, and Thierry Penard, "Graduated Response Policy and the Behavior of Digital Pirates: Evidence from the French Three-Strike (Hadopi) Law," unpublished paper, May 28, 2014, https://pdfs.semanticscholar.org/2450/d913ae4ec30ec46cf0bc7dce8f33daebdb94.pdf.
17. Belleflamme and Peitz, "Digital Piracy."
18. Frederick W. Dingledy and Alex Berrio Matamoros, "What Is Digital Rights Management?" in *Digital Rights Management: The Librarian's Guide*, ed. Catherine A. Lemmer and Carla P. Wale (Lanham, MD: Rowman & Littlefield, 2016), 3.
19. "Proposal for a Directive of the European Parliament and of the Council on Copyright in the Digital Single Market," document 52016PC0593, European Commission, September 14, 2016, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016PC0593.
20. "Directive on Copyright in the Digital Single Market," Wikipedia, accessed October 28, 2019, https://en.wikipedia.org/wiki/Directive_on_Copyright_in_the_Digital_Single_Market.
21. Lawrence Lessig, quoted in Bechtold, "From Copyright to Information Law," 225.

Chapter 3

DRM and Consumers

Early Frustrations

Since the very beginnings of DRM and digital protection of e-books, users have expressed frustrations with their experience reading and navigating digital files. Many have been publicly vocal about why DRM has in many ways challenged their human right to access information online. The list of reasons why users have been frustrated with DRM and anti-piracy measures is long and has been covered in many academic studies over the years. Key frustrations include, among others:

- Lack of interoperability and standards among dedicated players (owing to proprietary DRM technologies by companies such as Amazon and Apple)
- Confusion as to what users can and cannot do with digital files
- Lack of transparency on the part of content providers who do not make users aware when they need to make changes, remove features, and so on
- Inability to use digital books effectively for research (as limits are placed on activities such as copying and printing, which frustrates both students and faculty)
- Inability to copy files for backup purposes (in case a user wants to switch devices)
- Loss of privacy (DRM technologies can collect, store, and share user data, including user's location, timing (i.e. when a user accesses content), gender, age, and IP address. Although analytics companies often insist that they do not collect personal information, "the practice of collecting a device's unique identifier means that they are able to track users over time. Unlike cookies, this is built into the device and cannot be cleared."[1] Further, implementation of DRM could lead to a society in which access to information is conditioned upon revealing one's identity.[2])
- Disrespect for users with disabilities (This refers to the text-to-speech function, which many publishers won't always allow sellers of e-books to embed in e-book files.)
- No guarantee of access to content in perpetuity (e.g., Amazon reserves the right in its license agreement with users to change the Kindle terms of service at any time, and it has certainly done so on more than one occasion.)
- Inability to ever own any digital content (Files may only be accessed but never owned in perpetuity.)
- IP measures that are not good for users in less developed countries (Academics in those countries don't have access to expensive academic books via their libraries and institutions and, as a result, end up creating less marketable knowledge and content overall.[3])
- Users feeling that they are being treated as criminals even when they legitimately purchase an e-book (Indeed, at the core of DRM implementation lies the troubling notion that the reader may be a potential criminal.)
- Discomfort with living in a surveillance society and a world in which all facts are owned (By limiting common assets, "we might soon enter a world in which all facts, and all collections of facts, are presumptively *owned*."[4])

For these and many other reasons, users worldwide have expressed dissatisfaction with how publishers and content providers have made e-books available to them. But not all publishers and industry leaders disagreed with them. A handful of forward-thinking publishers as early as the 2000s did not think piracy and file sharing would present the problems that most other publishers anticipated. In fact, some trade publishers (now seen as early adopters) have been embracing the concept of DRM-free e-books from the very beginning, including some technology publishers, such as O'Reilly Media, Microsoft Press, and Manning; some romance fiction publishers, such as Carina Press and Ellora's Cave; and some science fiction and fantasy publishers,

such as ChiZine, Tor Books, and Baen Books. Such publishers were aware of piracy early on but did not think it posed serious threat, so they did not invest their time and resources in trying to combat it (like most others).

In his now-seminal essay, "Piracy Is Progressive Taxation, and Other Thoughts on the Evolution of Online Distribution,"—published in 2002 but still relevant today and often quoted by innovators and scholars alike—publisher and innovator Tim O'Reilly offered several key thoughts related to piracy that still resonate eighteen years later, including, among others, the following:[5]

- "Obscurity is a far greater threat to authors and creative artists than piracy." ("More than 100,000 books are published each year . . . yet fewer than 10,000 of those new books have any significant sales, and only a hundred thousand or so of all the books in print are carried in even the largest stores." This hasn't changed in 2019; if anything, the marketplace has grown and made it even more difficult for authors' work to get noticed in the sea of literature published each year.)
- "Piracy is progressive taxation." ("For all of these creative artists, most laboring in obscurity, being well enough known to be pirated would be a crowning achievement." Piracy "may shave a few percentage points off the sales of well-known artists . . . in exchange for massive benefits to the far greater number for whom exposure may lead to increased revenues." Here O'Reilly refers to very few books and authors receiving all the promotion, as publishers' PR budgets are not and have never been distributed evenly.)
- "Customers want to do the right thing, if they can." ("We've found little or no abatement of sales of printed books that are also available online." Those who don't respond to requests to take down content tend to be on servers in countries where "books are not available for sale or are far too expensive for local consumers to buy." Here, O'Reilly refers to the books from his own publishing company, O'Reilly Media, which specializes in computer and technology books.)
- "Shoplifting is a bigger threat than piracy." ("Those who are putting up CDs for sale on eBay containing PDF or HTML copies of dozens of books are in fact practicing piracy—organized copying of content for resale. . . . We see no need for stronger copyright laws, or strong Digital Rights Management software, because existing law allows us to prosecute the few deliberate pirates." Here O'Reilly reminds publishing colleagues to keep a healthy perspective on the actual impact of "real" piracy, which should refer only to those reselling unlawful copies.)
- "File sharing networks don't threaten book, music, or film publishing. They threaten existing publishers." ("The question before us is not whether technologies such as peer-to-peer file sharing will undermine the role of the creative artist or the publisher, but how creative artists can leverage new technologies to increase the visibility of their work. For publishers, the question is whether they will understand how to perform their role in the new medium before someone else does." Here O'Reilly is inviting existing publishers to think outside the box before new kinds of publishers do it for them.)

Two years later, in 2004, writer Cory Doctorow gave an entertaining speech about DRM to Microsoft's Research Group at its Redmond offices, in which he stated he was on a mission to convince everyone the following:[6]

- DRM doesn't work (because all DRM systems "share a common vulnerability: they provide their attackers with ciphertext, the cipher and the key. At this point, the secret isn't a secret anymore.")
- DRM is bad for society. ("Keeping an honest user honest is like keeping a tall user tall. DRM vendors tell us that their technology is meant to be proof against average users, not organized crime gangs like the Ukrainian pirates who stamp out millions of high-quality counterfeits. At the end of the day, the user DRM is meant to defend against is the most unsophisticated and least capable among us.")
- DRM is bad for artists (because it robs them of new possibilities. "Technology that disrupts copyright does so because it simplifies and cheapens creation, reproduction and distribution. The existing copyright businesses exploit inefficiencies in the old production, reproduction and distribution system, and they'll be weakened by the new technology. But the new technology always gives us more art with a wider reach: that's what tech is *for*. . . . Tech gives us bigger pies that more artists can get a bite out of.")

Both O'Reilly and Doctorow invited the industry—at a time when most publishers seemed paralyzed by fear of what piracy would do to their bottom lines—to start questioning whether piracy posed a major threat and whether it would indeed cripple sales, as many continue to claim to this day. They invited their peers to give more credit to users and ask if DRM was the solution to a problem or was another problem. This raised many other questions that the industry has tried to find answers to in recent years, including, for example: Will books be pirated regardless of whether DRM is used? Is the risk of a potential lawsuit of customer dissatisfaction worth it? Will draconian DRM

policies drive users of e-books away? Is the amount of money lost due to piracy worth the steep cost of DRM technology? Will DRM always be vulnerable to hacking and piracy? What exactly have been the effects of piracy since the turn of the century, when visionaries like O'Reilly and Doctorow foresaw that DRM would not be the solution to a problem but a new problem? And what should those who produce and publish content—authors—ultimately fear the most in a world that sees millions of new books published each year. (According to UNESCO's 2017 statistics, 2.2 million books are now published each year worldwide.[7])

Effects of Piracy

According to several articles, e-book piracy continues to rise as we near the end of the second decade of the twenty-first century, and it's been on the rise for the past decade.[8] One explanation for the rise of piracy is how easy it is to pirate e-books. They are relatively small digital files (compared to videos), so they can be quickly and easily downloaded, shared, and reproduced. In addition, the high quality of digitally produced works makes it easy to make copies without quality being compromised. Pirated works are of the same quality as originals, so they could be said to be perfect digital reproductions.

Prior to e-books, widespread copying of pirated books required a considerable investment of time and money. And the outcome was always a subpar version of the original. Today it is remarkably easy for e-book pirates to purchase a retail copy and use programs such as Calibre to strip the Adobe DRM and make the book available on Torrent sites or underground subscription services. Therein lies the real problem of piracy: that "it takes only a small fraction of users who are capable of dissociating licenses from content to make managed content available to a significant fraction of users in unmanaged form."[9]

Even legitimate e-book platforms such as Scribd and Wattpad faced criticism in the beginning phases of their development because illegal copies of popular titles appeared on their platforms (since they invited users to upload documents, college theses, and self-published novels). The inappropriate behavior of those users quickly led these companies to install various filters to easily identify copyrighted work when it was uploaded. So, although their intentions were not to break copyright laws but to encourage and promote self-publishing on such platforms, as soon as Scribd and Wattpad invited users to participate in the sharing of knowledge, copyright laws were broken and the two companies found themselves in the midst of combating piracy.

In a 2009 *New York Times* article, publishers such as Hachette were quoted as saying that their legal departments spend a significant amount of time policing sites where copyrighted material may be available for free downloading. Publisher John Wiley & Sons confirmed at the time that it had sent notices on more than five thousand of its titles (throughout the year) asking various sites to take down illegal copies of their books.[10]

According to a survey conducted by Digimarc and Nielsen in 2017, 41 percent of all adult e-book pirates were between eighteen and twenty-nine years old, and 47 percent fell into the thirty-to-forty-four-year-old bracket. The remaining 13 percent were forty-five years old or older. The study also revealed that, contrary to popular belief, those who downloaded files illegally were not low-income consumers but members of the upper middle class.[11] Various other studies have shown that piracy was, indeed, most commonplace among younger people (ages eighteen to twenty-nine), including a 2013 study by Joe Karaganis and Lennart Renkema.[12]

The Digimarc and Nielson study revealed that 31 percent of people who downloaded illegally did so via open torrent sites such as Pirate Bay, 31 percent got the books via open cyberlockers like 4shared.com, and 30 percent got them from a friend via IM, email, or flash drive. The study also revealed that 44 percent of pirates also bought e-books legally. Perhaps the most interesting part of the study was the top answers pirates gave when asked why they downloaded e-books illegally: 58 percent said because it was easy, 51 percent said because it was free, 38 percent said it was because those same titles could not be found in bookstores, and 17 percent said because they did not think they should pay for content online. When asked what would deter them from pirating e-books, pirates gave a number of reasons, notably the following: (1) if they knew their computer was at risk; (2) if they believed they would be caught downloading; and (3) if it would harm the author, as they did not think it did. The report, however, estimated that illegal downloading cost the publishing market in the US alone $315 million.[13]

In 2017, the UK government's Intellectual Property Office's study of online copyright infringement found that 17 percent of e-books were consumed illegally in the UK.[14] That's about four million books. Organizations such as the Publishers Association in the UK see this as "4m books that authors and publishers aren't getting paid for,"[15] even after such thinking faced backlash and has not been supported by any study that yielded specific results. According to research by Dutch firm GfK, only 10 percent of all German e-books on devices were purchased legally, with most being pirated.[16] Further, "an e-reader in the Netherlands holds an average of 117 titles"; of those, only "11 were bought on legitimate websites." In Russia, numbers are even higher: a whopping 92 percent

of Russian e-book readers "obtained their books illegally downloading the materials."[17]

When the *Guardian* conducted a survey of its readers about piracy (ages twenty through seventy) in 2019, most users admitted they "regularly downloaded books illegally and while some felt guilty . . . the majority saw nothing wrong in the practice." One user was quoted as saying, "Reading an author's work is a greater compliment than ignoring it," and others said that "it was part of a greater ethos of equality that 'culture should be free to all.'" According to the same *Guardian* article, many respondents reported starting to pirate books during university years, when faced with bills for expensive textbooks. One reader said: "It's not much different from buying from a secondhand bookstore. . . . Either way, the writer gets no money."[18]

Further, overwhelmingly, most respondents to the *Guardian* survey owned up to pirating books not because of cost, but for ease. Doctors, accountants, and professionals who described themselves as well-off said they pirated books to "pre-read" them because they often felt dissatisfied with a book after a purchase. In other words, thanks to piracy they could read first, then buy. An eighteen-year-old who downloads e-book illegally was quoted in the same article as saying that paying for food and clothes made sense because they were physical things, which is different from e-books, adding, "I believe real life and the internet differ."[19] This thinking certainly points to a visible generational divide. Younger people perceive intellectual property found online as a right, not a privilege that needs to be purchased the same way physical objects are purchased. Digital natives (those born into technology), unlike digital immigrants (those who had to learn it as it came later in their lives), tend to view content online as belonging to everyone, regardless of its origin.

Similarly, when Good e-Reader polled 1,800 readers from around the world in 2018, asking them where they got their e-books, nearly 21 percent said from piracy. Other top sources included Amazon, iBooks, and Google Play Books, but the largest source was piracy. Good e-Reader also reported that was an increase of 12 percent from the study conducted only a year earlier.[20]

What these studies have in common is that they point to several facts about piracy that seem obvious and self-evident: online piracy of e-books is rampant all over the world, not just in developing countries; it is definitely on the rise despite DRM measures by publishers and content distributors in the most developed countries, which have not been able to stop it from spreading; it includes people from varied backgrounds, even higher-income professionals; and it is most common among younger people (ages eighteen through twenty-nine), whose perceptions of access to information differ from those of previous generations. The International Publishers Association has claimed that "over one billion dollars is lost worldwide to ebook piracy."[21] This is, of course, an estimate, as it has been difficult to pinpoint exactly how and if piracy translates into lost sales. The only thing that everyone seems to agree with is that piracy cannot be stopped.

* * *

The central question surrounding piracy, of course, has been: How much does piracy hurt sales of print books and of legitimate online copies overall? In recent years, however, some have been reformulating this question to ask: Does piracy hurt sales at all, and if it does, what are the real, not perceived, reasons? Is it possible that it is helping more than hurting certain authors and titles, increasing their visibility worldwide and possibly even leading to increased sales? The fact remains, not enough research has been done to lead us toward definitive answers.

So far, the results of the studies focusing on music sales have been somewhat conflicting but leaning toward concluding that piracy did not have significant impact on physical sales. Some studies indicated that there was no significant effect, while others tried to show piracy as the enemy.[22] On the book side, more studies are needed to gain a deeper insight into the matter, but the majority seem to indicate that piracy has no significant negative impact on sales of print books, or at least there is no solid proof that piracy and lack of DRM measures were directly responsible for a decline in print sales.[23]

Reimers's study, published in the *Journal of Law and Economics* in 2016, showed a 14 percent increase in e-book sales with certain anti-piracy measures in place, but the study did not cover watermarking (the most common form of DRM). It covered only searching for unauthorized copies of e-books on the internet based on metadata, such as filenames and book titles. In other words, the study did not really examine the effects of DRM but of very specific measures (such as delinking). In Reimers's own words, "I estimate the effect of . . . private antipiracy effort on legal book sales. [In this case, "private" means that it involves the efforts of publishers, not public officials.] I use a novel data set consisting of monthly electronic 'e-book' sales of titles that are offered exclusively in electronic format by one publisher (RosettaBooks) and those titles' weekly physical sales from January 2010 to December 2013. The data set includes the intensity level and success rate of protection from piracy over the same time period through Digimarc, a large piracy protection company."[24]

A 2008 study "done by consulting group Magellan Media Partners and a graduate student at New York University . . . which focused on titles from O'Reilly Media, found that it took an average of 20 weeks before a newly released title appeared on file-sharing networks" and that by then it had already found its way through the retail system. Magellan's study "also found fewer pirated titles than expected."[25]

In her 2013 PhD dissertation, "Intellectual Property Strategy and the Long Tail: Evidence from the Recorded Music Industry," Laurina Zhang found that removing DRM increased music sales by 10 percent but noted that "relaxing sharing restrictions" did not impact all albums equally and that removing DRM from albums increased the sales of lower-selling albums but did not benefit top-selling albums.[26] This leads one to ask: Could the same logic be applied to e-books? Could relaxing DRM on e-books increase the interest in backlist titles, which aren't being sold anyway, at least not in any significant numbers? Science fiction publisher Tor/Forge, an imprint of Macmillan and Momentum, stated on its site in 2014 that removing DRM from its e-books did not hurt the business.[27] Tor editor Crisp noted in a post: "The move has been a hugely positive one for us, it's helped establish Tor and Tor UK as an imprint that listens to its readers and authors when they approach us with a mutual concern—and for that we've gained an amazing amount of support and loyalty from the community."[28] Crisp here was alluding to one major benefit of removing DRM from Tor's e-books—it helped the publisher improve its reputation among readers and turned them into loyal supporters.

Likewise, when pirated copies of bestselling author Dan Brown's *The Lost Symbol* appeared online soon after the book's official release, the publisher did not seem anxious to launch a digital store for the book, seemingly because it did not believe that piracy would be a significant issue.[29] Dan Brown is, of course, one of the most popular fiction authors in the world, and his loyal following of fans would (and did, in fact) purchase print copies of his books.

* * *

In 2013, the European Commission ordered a study (costing €360,000) on how piracy affects sales of various content, including books, music, movies, and games, in the European Union. As reported on Engadget in late 2017, the EU never showed it to the public "except for one cherry-picked section." The author speculated that it was because the study, which was conducted by Dutch organization Ecorys, concluded that except for recently released blockbuster movies, there was no evidence that piracy affected sales of copyrighted materials or that online infringement displaced sales.[30] In fact, the study showed that in the case of video games, piracy helped sales. The study was eventually made public (as a 300-page report) owing to efforts of EU parliamentarian Julia Reda, who filed a freedom of information request (under the EU's Freedom of Information law). EU Commissioners used the results of the study to support claims that piracy impacts cinema ticket sales (4.4 percent on average), but it wasn't until after the information request by Reda that the EU released the study to the public.[31]

Reda asked in her 2017 blog post, "Why did the Commission, after having spent a significant amount of money on it, choose not to publish this study for almost two years?"[32] She tied this fact to the commission's controversial proposal of requiring hosting providers to install content filters to surveil all user-uploaded content and challenged the commission's claims this was necessary because of a "value gap," a supposed displacement of value from licensed music-streaming services to hosting services like YouTube.

In their 2003 study, Haber and colleagues investigated to what extent DRM combated piracy and whether it could live up to expectations, concluding that DRM measures were, in fact, not effective at combating piracy. One reason was that if even a small fraction of users could transform content from a protected to an unprotected form, then illegitimate distribution networks were likely "to make that content available ubiquitously."[33] Haber and colleagues identified two ways in which piracy can occur: (1) unauthorized acquisition (which occurs when a consumer obtains copyrighted content illegitimately, e.g., via peer-to-peer file-sharing services) and (2) unauthorized use (when a consumer obtains copyrighted content legally and then attempts to use it in illegal ways). As Haber and colleagues explained, a fundamental flaw in the debate around DRM has been that "it is often assumed that a solution to the second problem will solve the first as well."[34]

Haber and colleagues concluded that ordinary DRM was not able to prevent piracy and that legal attacks would probably never provide lasting relief because as soon as one pirate site is shut down, another one seems to pop up.[35] Indeed, many pirate websites cannot be shut down permanently because after one domain site is closed, another site just like it will appear under a different domain name. It is also not uncommon for such sites to post threatening legal language of their own directed at publishers and authors who try to stop them, showing no fear of possible consequences. This has been very frustrating for publishers investing significant resources in making sure those who engage in illegal activities online are held accountable legally. Former Google and EMI executive Douglas C. Merrill said during his keynote

address at 2011's CA Expo in Sydney, Australia that trying to sue people who download illegally from pirate sites was like "trying to sell soap by throwing dirt on your customers."[36]

Clearly, investing in enforcing DRM practices and pursuing those who do not obey the law comes with a high price for publishers. "There is the cost of building, deploying and maintaining a DRM infrastructure, which will eat into whatever unrealized revenues are recovered." Further, DRM-protected content is economically less valuable than unprotected content as it doesn't reach nearly as many people as DRM-free content. In other words, "Deploying DRM will result in fewer sales of legitimate content, which also might offset some of the revenues gained by decreasing piracy."[37]

In short, implementation of DRM in e-books sold to consumers worldwide has led to two unfortunate outcomes: piracy has continued to spread, and legitimate users have been discouraged and disappointed in the user experience.[38]

* * *

On the academic side of the publishing industry, the most notable influence on publishers' willingness to reconsider their DRM practices has been the spread of illegal downloading of academic articles, book chapters, and journals and the omnipresence of one site in particular: Sci-Hub. The self-proclaimed "first pirate website in the world,"[39] Sci-Hub provides mass and public access to tens of millions of research papers. In 2015, Elsevier filed a legal complaint in the US District Court for the Southern District of New York against Sci-Hub and its founder, Alexandra Elbakyan, naming sci-hub.org, the Library Genesis Project, and Elbakyan as defendants in a civil action seeking damages for copyright infringement and for violation of the Computer Fraud and Abuse Act. In October 2015, the court ruled in favor of Elsevier (but Elbakyan remains in hiding).[40] Sci-Hub has since gone through several domains, some of which have been blocked, but it remains the go-to place for research all over the world, even in the most affluent countries with the most comprehensive library collections.

Sci-Hub and its affiliated sites are not motived by commercial gain, according to Elbakyan on the Sci-Hub homepage, but rather to remove all barriers in the way of science (and Sci-Hub does that by hacking actual university collections around the world). Here are some mind-boggling stats that get us to rethink DRM's power in combating piracy: the heaviest use of Sci-Hub apparently takes place on US and European campuses; the United States is the fifth-largest downloader; more and more academics donate papers to Sci-Hub voluntarily; and hundreds of thousands of download requests are placed every day from millions of unique IP addresses.[41]

According to biodata scientist Daniel Himmelstein (University of Pennsylvania) and his colleagues, who investigated the impact of Sci-Hub, the pirate site currently provides access to more than two-thirds of all scholarly articles in the world. When asked what publishers could do to stop new papers from being added to Sci-Hub, Himmelstein said, "There are things they could do but they can really backfire terribly. The issue is, the more protective the publishers are, the more difficult they make legitimate access, and that could drive people to use Sci-Hub."[42]

* * *

If we closely examine how users who practice online piracy have been responding to attacks by publishers and content providers, we can get clues as to not only why they continue to engage in illegal activities but also why users—and, increasingly, even authors—believe they may, in fact, be doing more good than harm. Indeed, while piracy is omnipresent in the world of entertainment, the number of legal viewers is at a high as well. A good case in point: *Game of Thrones*.[43] While it was one of the most heavily pirated TV shows in history, it was also one of the most legally watched. When asked about piracy, David Petrarca, a director of *Game of Thrones*, pointed to piracy feeding the cultural buzz and allowing that kind of programing to survive in the first place.[44]

Other positive effects of piracy include "sampling" (users like to sample books before deciding if they want to own them; Zhang's 2013 study confirmed this[45]) and indirect appropriation (creating other opportunities for content creators as a result of massive exposure). Piracy has been shown to increase the demand for goods that are complementary to the pirated content.[46]

In his online article "E-book Piracy Is Rampant and Impossible to Stop," author Derek Haines, who has published nearly twenty books, confirmed that every one of them had been pirated in some way, but admitted that pirate sites give him promotion: "I get extra Google Search listings, name and title recognition and occasionally, perhaps even real ebook sales as a result." He also makes a valid point about understanding that people who use peer-to-peer sharing to access free e-books are "hard-nosed, addicted chasers and collectors of anything and everything that is free," so they are highly unlikely ever to pay for anything.[47] This, of course, is a counterargument to the argument that piracy is a great tool for sampling before buying. There simply are people out there who

have never been purchasers and will continue to pursue books when and only when the books are available to them free of charge.

Author Viewpoints

Authors' reactions to DRM and piracy have been mixed. Some presumably favor DRM and require it as a condition for licensing their books to retailers. Others have fought to electronically publish and license their work through online e-book readers without DRM protection. Some of these authors are concerned that DRM is driving readers away while others object to DRM on legal and moral grounds. Some very well-known names are in this group of authors. To start, good examples are Cory Doctorow and Lawrence Lessig. Lessig wrote an entire book about his views on DRM, *Free Culture*, which he distributed under a Creative Commons license. Doctorow, whose young adult novel *Little Brother* spent seven weeks on the *New York Times* children's chapter books bestseller list, offers free electronic versions of his books on the same day they are published in hardcover. His belief has remained, and he has reiterated it time and again, that free versions of books, even unauthorized ones, entice new readers and that the writer's biggest fear should, in fact, be obscurity.[48]

New York Times bestselling author Joanna Penn has identified three reasons why authors shouldn't worry about piracy: (1) serious readers prefer to buy books rather than download stolen copies ("Those who download from pirate sites are not likely to be your target market anyway."); (2) some authors use piracy as a marketing strategy (Paolo Coelho is a good example); and (3) there is nothing to be afraid of ("If you're not writing or publishing because you're afraid someone will pirate your books or your ideas, you might need to consider other issues." The question to ask here is: What are writers really afraid of?).[49]

Doctorow has tirelessly campaigned for copyright liberalization and against governments' attempts to monitor the internet and has claimed that "corporate dinosaurs, big, dying institutions" use copyright to try to regulate technology, to criminalize all the peer-to-peer file sharing that is the "Internet's greatest achievement: lowering the cost of mass collaboration."[50]

Literary giant Paolo Coehlo has also perceived piracy as having more positives than negatives back when online piracy was in its infancy. After he deliberately leaked e-book versions of *The Alchemist* in Russia on piracy networks in 1999, sales of his print books went from one thousand to over one million per year. When *The Alchemist* was first published in Russia, it sold about a thousand copies out of its initial print run of three thousand, which made Coehlo's Russian publisher drop the deal with the author. Coehlo then found an unauthorized digital copy of *The Alchemist* and posted it on his own website. A year later his book sold 10,000 copies in Russia. By 2002, sales hit one million. Today, according to *Forbes Magazine*, Coelho's sales in Russia are over 12 million. In an interview with *Forbes* in 2011, Coelho famously proclaimed: "The more people 'pirate' a book, the better. If the reader likes the excerpt of a book that he saw on the internet, he will most likely want to buy it the next day, as there's nothing more boring than reading from a computer screen."[51] He once tweeted: "Some call this 'piracy.' I call it a medal to any writer who understands that there is no better reward than being read."[52]

Coelho went so far in defending online piracy as to create the website Pirate Coelho, which to this day includes download links to his books (as of September 2019, the site included links to seven of Coehlo's books). The famous author later claimed that as a result of the site's creation, his books continued to be sold more, not less, worldwide. When confronted by some critics who said that the tactics he's used have helped him but not struggling writers who had not yet made a name for themselves in the literary world, Coehlo responded: "The truth is: a good story doesn't need to be protected. The rest is greed or ignorance."[53]Author Hugh Howey has also shared similar sentiments, inviting the industry at a BookExpo America conference in New York to see the good in what is otherwise unstoppable evil, adding that readers left good reviews of his books after stealing pirated copies, some even sending him PayPal and Starbucks gift cards.[54] And science fiction author Neil Gaiman has described piracy as a modern-day version of lending of physical book "because broader distribution means a broader audience and a broader audience means more sales."[55]

Author of the mega-popular Harry Potter series, J. K. Rowling, has taken a completely different approach and had initially refused to make any of her Harry Potter books available digitally in any way because of piracy fears.[56] Rowling's refusal to make e-book copies available online didn't stop piracy. In fact, it may have encouraged it more, "because those who want a digital copy now only have the option of using an authorized copy."[57] Later Rowling's publisher did start offering e-versions of Harry Potter e-books, as mentioned in chapter 1, by coating them with heavy DRM (and using the watermarking method, which allows the publisher to track the copy of each pirated e-book copy to the source).

It is worth noting that not all authors can benefit from the positive effects of piracy. There is a vulnerable-to-piracy group among them, and they include authors of series of genre fiction. As reported in the *Guardian*, book one in a series does well, but book two is heavily pirated, "book three could end up dead in the water," and the authors have reported losing

contracts as a result. So it could well be argued that if piracy hurts anyone, it is the midlist authors and those who can barely make a living as authors, not bestselling ones, according to Guest's article in the *Guardian*.[58]

No Easy Solution

As this issue of *Library Technology Reports* has shown, the strategies copyright owners have used thus far to combat piracy have, in many ways, failed. Pursuing those who break the law (by filing lawsuits and trying to shut down pirate sites) has not stopped new illegal sites from popping up all over the world (usually under a different URL). Likewise, using digital technologies via DRM schemes to restrict access has angered users worldwide and led to more frustrations, and possibly even more piracy. Lastly, lobbying for more restrictive laws also did not prove effective, as even the legislation passed in the United States (DMCA) and in the European Union (EU Directive) faced significant criticism and had to undergo revisions and modifications along the way as they faced their own internal contradictions.

In fact, what scholars and industry insiders have pointed to and uncovered over the last few years of studying piracy and the effects of DRM to combat it is that the more restrictions are put in place, the more piracy seems to spread. Some have also started to point to the positive effects of DRM-free content and even piracy, such as helping authors market their work, creating cultural buzz surrounding their work and reputation, leading authors to more opportunities in countries where they have little to no visibility, and, to a lesser extent, possibly even increasing sales. (This remains to be investigated further as very few studies have offered concrete examples and evidence.) That said, most agree that piracy should still be combated, but in sensible, logical ways that do not go against the current since the book industry has had time to learn its lessons during the past two decades.

So how does the industry catering to the masses who want to read online move forward? In 2003, Haber and collogues proposed—and other scholars echoed the same conclusions after them, including Sudler in 2013—that the real solution to the piracy problem is largely nontechnical and that the most effective way to defeat piracy may be to compete with it, rather than to waste time and resources trying to shut down other websites.[59] Haber and colleagues proposed several ways in which the content and IT industries might extend their offerings to compete with (rather than combat) piracy, which still matter today:[60]

- Quality of distribution (Legitimate distributors can offer consumers higher quality service.)
- Quality of content (Content on pirate sites is often poorly sampled, and there is a real threat of viruses present.)
- Infrastructure (Legitimate content distributors might arrange new partnerships with infrastructure providers, e.g., with mobile phone providers, to ensure cheap and easy access to content.)

Others have also argued that if the public were given an easier way to obtain files, piracy would be discouraged.[61] In other words, Masnick, too, alluded to fighting piracy by focusing on what is broken in it: pirate sites are usually vulnerable to virus attacks, quality of files is not always good, and quality of user experience is inferior. Masnick expanded this argument further in 2009 when focusing on the industry's response to piracy, versus piracy itself, as the real problem: "The best way to fight piracy? Get e-book shoppers accustomed to buying from legitimate sources before it's too late. That means easy downloading, fair prices and the ability to move content easily from machine to machine within a household. Use of the standard ePub format and the end of traditional DRM could go a long way in that regard."[62]

In his 2012 paper, Sudler explained this argument as follows: "Online piracy solutions under the new ecosystem involve finding methods and technologies that increase the value of legitimate assets compared with their pirated copies."[63] Sudler pointed to several models as possible solutions that would benefit industries in the face of piracy, all requiring a shift in perception on the part of publishers, which must step into uncharted waters to learn the outcomes of experimenting with new approaches. "The solution to piracy lies neither in imposing draconian methods that seek to eradicate the problem altogether, nor simply resigning ourselves to runaway conditions. Rather, the answer rests in combining appropriate technologies with new business models designed for the new supply chain ecosystems."[64]

Indeed, the changes that have been implemented (such as laxer DRM) by some publishers and content providers have gone a long way. In recent years, a wide range of alternative business models have been introduced to the market, as well as new methods for charging for access to content, including affordable subscription services (like Scribd) and a plethora of affordable e-books for purchase in various online stores (including Amazon). The user experience, too, has improved, as publishers and content providers started to look for new ways to give users easy access without forcing them to crack the DRM so that they could use e-books on various devices. There has certainly been more flexibility in that regard. Although companies such as Amazon and Apple remain loyal to their proprietary approaches, they, too, have modified their ways in some respects.

The fact remains, however, that piracy is still widespread and DRM systems are still and may always be vulnerable to hacking. According to Kozlowski, the only uncrackable e-book format is from Amazon (KFX), since Amazon makes it impossible to read its books in any other reader (and this includes free books that previously had no DRM, such as those out of copyright).[65] Piracy has proven to be a greater problem for publishers than expected and solutions will require more than using DRM.[66]

Another fact: it is the publishers, first and foremost, that need the most encouragement and convincing (even more than bookstores and online retailers) that DRM is doing more harm than good to their businesses. "In order to succeed as a thriving industry, publishers and retailers should not try to control customer actions, but rather adapt and adopt policies that work with current and emerging technologies."[67] It has been their fear of the fall of traditional publishing that has driven them to negotiate higher prices for their e-books (in many cases as high as their print counterparts) and implement DRM, and it is therefore the publishers that may be to blame the most for keeping the industry stagnant on the e-book front. The key to a way forward is to continue taking a proactive, rather than a reactive, approach to using current technologies in a way that "balances rights and needs of both consumers and authors."[68]

And, according to copyright watchdog company Attributor, pirate sites shouldn't be the only ones blamed either, but also the various advertising networks that "most of these sites use to make money by showing ads on the downloaded pages of ripped books," proposing that the so-called ad network, which includes giants like Google and Yahoo, "should withhold a percentage of the money they would pay to the site's operator and give it to the book's copyright holder instead."[69]

All these revelations show, in fact, that we have created the monster together and that it will take a village to propel the book and content industry forward in ways that harm no one, especially not those without whose creation and labor (authors and publishers) there would be no reason for DRM or pirate sites to exist. As Zimerman pointed out in 2011, "When all you have is a hammer, everything starts to look like a nail."[70] And this has often been the rhetoric behind the publishers', retailers', and users' actions. If DRM is indeed not the solution moving forward—at least not to the extent that publishers are willing to put down their hammers—is piracy the problem or perhaps the catalyst that will lead to a new world of possibilities? In his 2011 paper, Zimerman took us back to medieval times and reminded us that Gutenberg's invention, the movable type printing press, was first perceived by the monks (who produced books manually in monasteries) as a "devil's engine."[71] Today, Gutenberg's invention printing press is considered one of the greatest inventions of the history of mankind.

Notes

1. Amber Sami Kubesch and Stephen Wicker, "Digital Rights Management: The Cost to Consumers," *Proceedings of the IEEE* 103, no. 5 (May 2015): 728, https://doi.org/10.1109/JPROC.2015.2418457.
2. Chris Jay Hoofnagle, "Digital Rights Management: Many Technical Controls on Digital Content Distribution Can Create a Surveillance Society," *Columbia Science and Technology Law Review* 5 (2004): 1–8, http://www.stlr.org/cite.cgi?volume=5&article=6.
3. Natali Helberger, Nicole Dufft, Margreet Groenenboom, Kristóf Kerényi, Carsten Orwat, and Ulrich Riehm, *Digital Rights Management and Consumer Acceptability: A Multi-disciplinary Discussion of Consumer Concerns and Expectations: State of the Art Report—First Supplement*, (INDICARE, May 2005).
4. Mike Godwin, *Cyber Rights: Defending Free Speech in the Digital Age* (Cambridge, MA: MIT Press, 2003), 192 (emphasis in original).
5. Tim O'Reilly, "Piracy Is Progressive Taxation, and Other Thoughts on the Evolution of Online Distribution," O'Reilly, 2002, https://www.oreilly.com/ideas/piracy-is-progressive-taxation-and-other-thoughts-on-the-evolution-of-online-distribution.
6. Cory Doctorow, "Audio Version of Cory Doctorow's DRM Talk," talk to Microsoft Research Group at its Redmond offices on June 17, 2004, mp3 audio, 39:47, https://kottke.org/04/06/cory-drm-talk.
7. "Books Published Per Country Per Year," Wikipedia, accessed October 28, 2019, https://en.wikipedia.org/wiki/Books_published_per_country_per_year.
8. Michael Kozlowski, "eBook Piracy Is on the Rise in 2019," *E-Book News* (blog), Good E-Reader, August 13, 2019, https://goodereader.com/blog/e-book-news/ebook-piracy-is-on-the-rise-in-2019; Michael Kozlowski, "eBook Piracy is on the Rise in 2018," *Digital Publishing News* (blog), Good E-Reader, April 3, 2018, https://goodereader.com/blog/e-book-news/ebook-piracy-is-on-the-rise-in-2018; Andrew Savikas, "Ebook Piracy Is Up Because Ebook Demand Is Up," Transforming Publishing, Tools of Change, O'Reilly, May 12, 2009, http://toc.oreilly.com/2009/05/ebook-piracy-is-up-because-ebo.html; Motoko Rich, "Print Books Are Target of Pirates on the Web," *New York Times*. May 11, 2009, https://nytimes.com/2009/05/12/technology/internet/12digital.html.
9. Stuart Haber, Bill Horne, Joe Pato, Tomas Sander, and Robert Endre Tarjan, "If Piracy Is the Problem, Is DRM the Answer?" in *Digital Rights Management,* Lecture Notes in Computer Science, vol. 2770, ed. Eberhard Becker, Willms Buhse, Dirk Günnewig, and Niels Rump (Berlin, Heidelberg: Springer-Verlag, 2003), 230.
10. Rich, "Print Books Are Target of Pirates on the Web."
11. Digimarc, *Inside the Mind of a Book Pirate*, study, (Beaverton, OR: Digimarc, 2017), https://www.digimarc.com/docs/default-source/default-document-library/inside-the-mind-of-a-book-pirate.

12. Joe Karaganis and Lennart Renkema, *Copy Culture in the US and Germany* (New York: American Assembly, 2013).
13. Digimarc, *Inside the Mind of a Book Pirate*.
14. Intellectual Property Office, *Online Copyright Infringement Tracker Survey: Latest Wave of Research (March 2017): Overview and Key Findings* (Newport, UK: Intellectual Property Office, July 2017), as paraphrased in Kozlowski, "eBook Piracy Is on the Rise in 2018."
15. Stephen Lotinga, quoted in Kozlowski, "eBook Piracy Is on the Rise in 2018."
16. Kozlowski, "eBook Piracy Is on the Rise in 2018."
17. Kozlowski, "eBook Piracy Is on the Rise in 2018."
18. Katy Guest, "'I Can Get Any Novel I Want in 30 Seconds': Can Book Piracy Be Stopped?" *Guardian*, March 6, 2019, https://www.theguardian.com/books/2019/mar/06/i-can-get-any-novel-i-want-in-30-seconds-can-book-piracy-be-stopped.
19. Guest, "I Can Get Any Novel I Want."
20. Kozlowski, "eBook Piracy Is on the Rise in 2018."
21. Kozlowski, "eBook Piracy Is on the Rise in 2019."
22. Felix Oberholzer-Gee and Koleman Strumpf, "The Effect of File Sharing on Record Sales: An Empirical Analysis," *Journal of Political Economy* 115, no. 1 (2007): 1–42, https://doi.org/10.1086/511995; Alejandro Zentner, "Measuring the Effect of File Sharing on Music Purchases," *Journal of Law and Economics* 49, no. 1 (2006): 63–90; Rafael Rob and Joel Waldfogel, "Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students," *Journal of Law and Economics* 49 (2006): 29–62; Joel Waldfogel, "Music File Sharing and Sales Displacement in the iTunes Era," *Information Economics and Policy* 22, no. 4 (2010): 306–14.
23. Hasshi Sudler, "Effectiveness of Anti-piracy Technology: Finding Appropriate Solutions for Evolving Online Piracy," *Business Horizons* 56 (2013): 149–57.
24. Imke Reimers, "Can Private Copyright Protection Be Effective? Evidence from Book Publishing," *Journal of Law and Economics* 59, no. 2 (May 2016): 412.
25. Kurt Schiller, "A Happy Medium: Ebooks, Licensing, and DRM," *Information Today* 27, no. 2 (February 2010), www.infotoday.com/it/feb10/Schiller.shtml.
26. Laurina Zhang, "Intellectual Property Strategy and the Long Tail: Evidence from the Recorded Music Industry" (PhD diss., Univ. of Toronto, 2013); Jolanda-Pieta Van Arnhem and Lindsay Barnett, "Is Digital Rights Management (DRM) Impacting E-book Adoption in Academic Libraries," *Charleston Advisor* 15, no. 3 (January 2014): 63–65.
27. Julie Crisp, "One Year Later, the Results of Tor Books UK Going DRM-Free," Tor, April 29, 2013, https://www.tor.com/2013/04/29/tor-books-uk-drm-free-one-year-later.
28. Crisp, "One Year Later."
29. Richard Wray, "Old Media Wins Battle in Ebook War as Amazon Raises Prices to Match Apple," *Guardian*, February 1, 2010, https://www.theguardian.com/books/2010/feb/01/amazon-macmillan-ebooks-apple.
30. Steve Dent, "EU Withheld a Study that Shows Piracy Doesn't Hurt Sales," Engadget, September 22, 2017, https://www.engadget.com/2017/09/22/eu-suppressed-study-piracy-no-sales-impact/?guccounter=1.
31. Martin Van der Ende, Joost Poort, Robert Haffner, Patrick de Bas, Anastasia Yagafarova, Sophie Rohlfs, and Harry van Til, *Estimating Displacement Rates of Copyrighted Content in the EU: Final Report* (Brussels: European Commission, May 2015), https://cdn.netzpolitik.org/wp-upload/2017/09/displacement_study.pdf.
32. Julia Reda, "What the Commission Found Out about Copyright Infringement but 'Forgot' to Tell Us," Julia Reda website, September 20, 2017, https://juliareda.eu/2017/09/secret-copyright-infringement-study.
33. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?" 224.
34. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?" 225.
35. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?"
36. Douglas C. Merrill, quoted in Anderson Antunes, "'Pirate My Books,' Urges the Wizard (Not Harry Potter!)," *Forbes Magazine*, July 29, 2011, https://www.forbes.com/sites/andersonantunes/2011/07/29/pirate-my-books-urges-the-wizard-not-harry-potter/#74460e526821.
37. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?" 231.
38. Sudler, "Effectiveness of Anti-piracy Technology."
39. Mirela Roncevic, "How Enormous Is Sci-Hub? And Does Its Formidable Size Signal the End of Paywalled Research?" No Shelf Required, July 28, 2017, www.noshelfrequired.com/how-enormous-is-sci-hub-and-does-its-formidable-size-signal-the-beginning-of-the-end-for-paywalled-research.
40. "Sci-Hub," Wikipedia, accessed October 28, 2019, https://en.wikipedia.org/wiki/Sci-Hub.
41. Mirela Roncevic, "A Necessary Reminder: Sci-Hub Continues to Grow and More and More of Its Users Attend Affluent Universities," No Shelf Required, March 10, 2017, http://www.noshelfrequired.com/a-necessary-reminder-sci-hub-continues-to-grow-and-more-and-more-of-its-users-attend-affluent-universities/.
42. Daniel Himmelstein, quoted in Roncevic, "How Enormous Is Sci-Hub?"
43. Ernesto, "Game of Thrones Piracy Peaks after Season Finale," TorrentFreak, August 28, 2017, https://torrentfreak.com/game-of-thrones-piracy-peaks-after-season-finale-170828.
44. Ernesto, "Piracy Doesn't Hurt Game of Thrones, Director Says," February 27, 2013, https://torrentfreak.com/piracy-doesnt-hurt-game-of-thrones-director-says-130227/.
45. Zhang, "Intellectual Property Strategy."
46. Paul Belleflamme and Martin Peitz, "Digital Piracy: An Update," in *Encyclopedia of Law and Economics,* ed. Jürgen Georg Backhaus (New York: Springer, 2014).
47. 47. Derek Haines, "Ebook Piracy Is Rampant and Impossible to Stop," Just Publishing Advice, October 12, 2019, https://justpublishingadvice.com/ebook-piracy-is-rampant-and-impossible-to-stop.
48. Damien Walter, "Piracy Is Yesterday's Worry for Today's 'Artisan Authors,'" January 25, 2013, https://www.theguardian.com/books/booksblog/2013/jan/25/piracy-yesterdays-worry-artisan-authors.
49. Joanna Penn, "3 Reasons Authors Shouldn't Worry about Piracy but How to Protect Yourself Anyway,"

Jerry Jenkins (blog), accessed October 18, 2019, https://jerryjenkins.com/3-reasons-authors-shouldnt-worry-piracy-protect-anyway/.

50. Cory Doctorow, quoted in Martin Zimerman, "E-books and Piracy: Implications/Issues for Academic Libraries," *New Library World* 112, no. 1/2 (2011): 72.
51. Paolo Coehlo, quoted in Antunes, "'Pirate My Books.'"
52. This quote is from a tweet from Paulo Coelho (@paulocoelho), Twitter, November 6, 2016, https://twitter.com/paulocoelho/status/795429831030829056.
53. Paolo Coehlo, quoted in Antunes, "'Pirate My Books.'"
54. Mercy Pilkington, "Turns Out Priacy ISN'T Good for Authors…OR Readers," Good EReader, November 7, 2017, https://goodereader.com/blog/indie-author-news/turns-out-piracy-isnt-good-for-authors-or-readers.
55. Penn, "3 Reasons."
56. Zimerman, "E-books and Piracy."
57. Zimerman, "E-books and Piracy," 57;
58. Guest, "I Can Get any Novel I Want."
59. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?"; Sudler, "Effectiveness of Anti-piracy Technology."
60. Haber et al., "If Piracy Is the Problem, Is DRM the Answer?"
61. Zimerman, "E-books and Piracy."
62. Mike Masnick, "Publishers Getting the Wrong Message over eBook Piracy," TechDirt, November 24, 2009, https://www.techdirt.com/articles/20091124/0256097067.shtml.
63. Sudler, "Effectiveness of Anti-Piracy Technology," 154.
64. Sudler, "Effectiveness of Anti-Piracy Technology." 156.
65. Kozlowski, "eBook Piracy Is on the Rise in 2018."
66. Sudler, "Effectiveness of Anti-piracy Technology," 156.
67. Priti Trivedi, "Writing the Wrong: What the E-book Industry Can Learn from Digital Music's Mistakes With DRM," *Journal of Law and Policy* 18, no. 2 (2010), article 10, p. 964, https://brooklynworks.brooklaw.edu/jlp/vol18/iss2/10.
68. Trivedi, "Writing the Wrong," 928–29.
69. Antunes, "'Pirate My Books.'"
70. Zimerman, "E-books and Piracy," 69.
71. Zimerman, "E-books and Piracy," 72.

Chapter 4

DRM and Libraries

Library Challenges

Like consumers who purchase e-books directly from online stores, libraries, too, encounter DRM when building their digital collections. Unlike individual consumers, however, libraries involve institutional approaches and require a special set of usage restrictions and limitations, which depend on the types of deals libraries negotiate with vendors (i.e., companies that license e-books to them so that libraries may make them available for free to users). There are, of course, significant differences in the way DRM is used in public and academic libraries.

If users borrow e-books from public libraries, for example, DRM coding embedded into e-books helps control access to a title, how long a patron can read an e-book before it disappears from their device, and how many users can read an e-book at the same time. DRM can also be used to enforce various other business models that do not replicate the traditional way of loaning materials for a certain amount of time, such as pay-per-use models, which allow libraries to make large amounts of content available to patrons but to pay only for the titles accessed or read by patrons. It is precisely the use of DRM that helps vendors track usage, which in turn helps them determine how to bill libraries based on patrons' usage.

When library patrons check out an e-book using an e-book distributor such as, for example, OverDrive, the e-book will disappear from the patron's account after a certain period of time (usually about three weeks), and that same user cannot read that title again unless they renew access to it. Vendors can also use DRM to delete files from a patron's reading device after a loan period has ended. In other words, DRM allows e-books to self-destruct. Major trade publishers such as Penguin Random, HarperCollins, and Macmillan use DRM to enforce their fifty-two-loan cap for two years. This means that, owing to DRM, the publisher knows when a library has loaned a title fifty-two times within a two-year period (the imposed limit), after which the library will no longer be able to loan that title to its patrons unless it renews its license with the publisher (i.e., pays more).

In the world of academic and university libraries, where e-books and other digital materials are used for research and advancement of knowledge—particularly in the areas of science, technology, and business—DRM is present to limit what researchers can do with the content they usually access via large databases or via digital resources supplied to libraries by various aggregators and publishers. DRM can, for example, limit downloading, sharing, and printing options for students and researchers.

An *ALA DCWG Tip Sheet*, "Digital Rights Management," first issued by the American Library Association (ALA) in 2012, was written to help librarians in the United States navigate the intricacies of DRM and digital content, stating: "DRM systems are designed both to enable access and use of digital materials and to restrict copying, sharing, reformatting or otherwise changing electronic media. These restrictions can range from 'active' DRM, which marries ebooks to a brand of e-reader to more 'passive' DRM, like watermarking a digital file with the purchaser's name and email address. A familiar example of DRM employed in libraries is the patron library card that uniquely identifies a library user authorized to check out a book [or e-book]."[1] The *Tip Sheet* goes on to add that DRM can be used to enforce various pay-per-use models of access or limit libraries' ability to archive or access items.

However, the *Tip Sheet* also points to disadvantages of DRM: "Fair use and other exceptions to copyright law that libraries have relied on could be blocked by DRM. For example, people with print disabilities may be unable to use the text-to-speech (TTS) function of their e-reader if that function is disabled or the ebook is coded to prevent TTS."[2] The *Tip Sheet* also warns that adding identifying marks to an electronic loan could potentially violate patron privacy, which the library profession has a long history of protecting and defending.

In fact, researchers have pointed to DRM as the main reason why libraries have trailed behind the rest of the web in moving to a more mobile-friendly model for search and discovery of information, arguing that DRM has not only made e-books difficult to use but also has devalued e-books.[3]

* * *

ALA and digital civil liberties advocacy group Electronic Frontier Foundation have advocated against DRM for several key reasons. They include the following:

- fair use (which makes it legally acceptable to quote from copyrighted works and use excerpts for the sake of the advancement of knowledge, education, and science)
- limited user options (Students and researchers get frustrated when draconian DRM does not allow them to use works freely.)
- cumbersome user experience (The more e-books are coated with DRM, the more difficult they are to use and navigate.)
- lack of real ownership (DRM prevents users from every really owning a copy of what they purchased, as they would if the object was physical. This includes libraries.)[4]

Public and academic librarians have in recent years been very vocal about their concerns over the negative effects of DRM and its use in libraries, drawing attention to their own challenging role of middlemen in the process, as they must figure out how to meet the demands of the patrons on the one end while obeying copyright laws that protect publishers and authors on the other. Karen Coyle has pointed to three significant challenges that DRM poses for libraries:

- local control (DRM systems are not always affordable to libraries, and the control remains in the hands of the vendors that supply content to libraries, which track activities to ensure the library regularly renews its license.)
- contracts (Libraries may need to negotiate rights for each publisher, and in some cases on a title-by-title basis. This is both time-consuming and complex.)
- archiving (How will books be archived and made available for use by future generations?)[5]

If DRM must be used in libraries, according to Coyle, different materials may need different levels of controls (e.g., popular materials may need more protection than research materials, as research materials simply must allow for more flexibility in how they are used). Coyle's conclusions echo the sentiments of many librarians: "The most strict control of rights management should only be applied to those materials that absolutely need it. And this means that there may not be a single rights management solution that is appropriate for all materials."[6] Indeed, DRM can in some cases be used productively in libraries. A good example is the British Library, which has used DRM "in its secure electronic delivery service to permit worldwide access to substantial numbers of rare documents which, for legal reasons, were previously only available to authorized individuals actually visiting the Library's document centre."[7]

* * *

Although most scholarly e-books continue to be distributed to libraries with DRM encryption, publishers including Oxford University Press, Cambridge University Press, SAGE, Springer/Palgrave, Elsevier, Wiley, De Gruyter, Brill, and Emerald have been providing DRM-free titles to libraries via their own platforms. Even aggregators like EBSCO, ProQuest, JSTOR, and Project MUSE now provide DRM-free titles on their own platforms, which amass and provide access to large amounts of content by a wide range of publishers.

Academic publishers are starting to pay closer attention to the feedback provided to librarians by end users, including students and faculty, who have expressed their concerns over DRM in various surveys. A 2018 *Library Journal* survey—whose goal was to investigate academic student e-book experience in four-year colleges, universities, and graduate programs, as well as two-year or community colleges—found that 74 percent of students accessing e-books through libraries believe there should be no restrictions placed on how e-books are used; 66 percent prefer to use e-books with no restrictions; and, perhaps the most interesting and revealing part of the survey, the revelation that 37 percent of students have taken a principled stand and use only e-books that have no restrictions when conducting research. In other words, if over one-third of students do not want to even use e-books with DRM encryption, a large percentage of literature available in academic libraries is not consumed by researchers at all.[8]

On the public library side, mainstream publishers (i.e., those that usually cater to public libraries and that license e-book and other digital content to libraries) have gone in the opposite direction, imposing more, rather than fewer, restrictions on e-book lending. In the summer of 2019, Macmillan announced that it would impose an eight-week embargo on

library e-books across all its imprints. This means that libraries that want to lend Macmillan's brand-new titles to patrons (and this applies only to new titles) may buy perpetual access to a single e-book during the first eight weeks of publication at half price. After the eight-week period, additional copies may be purchased at full library price (which is usually $60 for a new release). In other words, eight weeks after the release of a new title, libraries may be able to buy as many copies as they want, but not before. And, of course, those purchased copies would allow them to lend e-books to patrons for two years on a fifty-two-loan cap (as explained above). After two years, the license must be renewed.[9]

In its public statement, Macmillan claims in defense of its new embargo experiment: "What we were seeing was really reaching a tipping point, where we'd have to explain to our authors that while your readership is growing, your royalty statement will be getting smaller and smaller."[10] Pitting authors against libraries is always a questionable tactic, especially when lacking data to support claims of sales cannibalization—data that's almost impossible to gather without serious inquiry and research. The Macmillan statement offered no concrete evidence to support such a claim. ALA immediately showed concern about this decision, calling on publishers to reconsider and warning them that the embargo will set a problematic new standard for the rest of publishing. Any embargo policy has, in fact, been contradictory to what libraries want to achieve: equitable access to knowledge and information.

* * *

The story of DRM in libraries can best be described as a two steps forward, one step back process. Progress has certainly been made on both public and academic library fronts, but not without controversy and challenges, and not without some pushback by the publishing industry. In public libraries, the user experience has improved tremendously over the years, which is precisely why Macmillan has decided to reinforce its embargo policies (fearing, yet again, that users will not buy books if they can access them through libraries without hassle). On the academic library side, most of the publishing industry has been steadily embracing the idea of DRM-free, led in part by the advent of the open access movement and the libraries' willingness to fund it.

The open access movement, along with pressures put on publishers by librarians, can certainly be credited with having positive influence. What once began as an initiative of nonprofit organizations like Knowledge Unlatched and Unglue.it has spread across academic publishing and led to major players now embracing the concept of open access and DRM-free e-books (first with e-journals, then e-books). A white paper published by Springer Nature in November 2017 revealed, among other findings, that open access books enjoyed, on average, seven times more downloads, 50 percent more citations, and ten times more online mentions than paywalled titles.[11] Such findings have been just the encouragement the publishing industry needed to reconsider its draconian DRM policies. Major academic publishers (including the big three: Elsevier, Wiley, and Springer) all have thriving OA programs, and OA is now widely considered to be the fastest growing segment of academic publishing.

Although faced with their daily challenges, libraries can exert great influence on how the story of DRM unfolds. Library information scientists have proposed several recommendations for librarians:

- Embrace DRM technology with an open mind. ("The number one recommendation for library managers: embrace the technology. Digital rights management technology is a friend to libraries and the communities they serve." [12])
- Protect privacy as vehemently as before. ("Bricks and mortar transactions allow individuals to purchase media with cash without leaving any personally identifiable record. . . . Similarly, many libraries have developed circulation systems that retain no transaction record once the borrowed media is returned."[13])
- Educate users about what is available to them and how. (One effective way in which libraries can discourage use of illegal pirate sites like Sci-Hub is to actively help with compliance with funders' open access policies and educate users in the discovery of freely available research materials in open access repositories.[14])
- Support open access actively rather than passively. ("How do we [libraries] reconcile our belief in equitable access with our own self-interests and our sympathy with the Robin Hood hackers of the world?" asked Sanchez and Russell.[15] One clear way has been the support of the open access movement. By providing financial support for various open access initiatives worldwide—which only continue to grow and expand—libraries are helping to make more content open access legally and, most important, they are helping to accelerate the sharing and advancement of knowledge and science, which hits at the core of their purpose.)

The Role of Open Access

The story of open access (OA) in academic and scholarly publishing begins at the turn of the century. With the support from Open Society Foundations (formerly Open Society Institute), an international grant-making network founded by George Soros, a group of advocates met in Budapest in 2001 to write the Budapest Open Access Initiative (BOAI), which helped define OA publishing. That same year, science writer Lawrence Lessig established the Creative Commons organization, which provides licenses to books and other literature that facilitate open sharing. This encouraged institutions worldwide, including libraries, to promote the importance of OA institutional repositories to their faculty and to encourage researchers to self-archive works in those repositories.[16]

Peter Suber has given a good definition of "open access," describing it as content that is "digital, online, free of charge, and free of most copyright and licensing restrictions."[17] OA works generally fall into two categories: gratis and libre. Suber describes "gratis" as "free of charge, but not more free than that." It removes price barriers, but not permission barriers. We can access the work and read it, and that's all we can do with it. For all else, we must seek the permission of the copyright holder. Readers may read a gratis OA work, but not reproduce, redistribute, or repurpose it in any way. "Libre," on the other hand, means that the work is "free of charge and also free of some copyright and licensing restrictions."[18] Libre OA gives the user permission to do more than just access the work, including the right to republish it on a public site. Users may even be allowed to alter parts of content. Libre OA is less common than gratis OA.

Open access first made strides with scholarly journals, but it has in recent years spread to monograph and book publishing, not only academic, but also, although to a much lesser extent, popular and trade literature. Two types of OA emerge in journal publishing: gold and green open access. "Gold" refers to content published by an author in an online open access journal. This can be described as 'born open access content.' In contrast, "green open access" refers to content published by an author in a journal and then self-archived in his or her institution's OA repository.

To better understand libre OA, it helps to understand the types of Creative Commons (CC) licenses available for such works. CC licenses allow authors and copyright holders to grant a range of permissions to users. Most CC licenses have an attribution (BY) requirement, which ensures the work's author gets proper credit. CC licenses range from the most open (CC0—Creative Commons Zero—Public Domain Declaration) to the most restrictive (BY-NC-ND; "NC" stands for "noncommercial" and "ND" for "no derivatives allowed").[19] This is where DRM comes in.

Open access and DRM may at first seem contradictory in nature and purpose, but after examining each closely, we can see how the two, in fact, complement rather than compete with one another. It is, in fact, DRM technology that can ensure that the various Creative Commons licenses are easy to understand and that it is clear to users what they may do with free content beyond reading it. As Keele and Odell see it, OA is really about the appropriate DRM, not necessarily no DRM (although some advocates believe it should also be the latter).[20] In some cases, DRM does make sense and should be adopted (for attribution perhaps above all else), and in others, one is led to conclude, it should be resisted (particularly when limiting basic user rights like the ability to print, copy, share, etc.).

Keele and Odell see libraries as playing a crucial role in the complex OA-DRM relationship. According to Keele and Odell, librarians need to use DRM to better manage rights in OA works. Their ongoing role should be to persuade authors and publishers to make a work OA with appropriate DRM (turning librarians into license advisors) as well as to recognize when DRM may negate access to an OA work (turning them into DRM-free advocates). "The author of a work published OA could select a CC license, register that license in blockchain, embed rights information in the file's metadata and apply a watermark with rights info or a link to that info. . . . Through these uses DRM is furthering OA and open licenses by making rights information about OA works more available and facilitating proper use and attribution."[21] Sanchez and Russell urged librarians to "promote efforts to fix or replace the current scholarly publishing system by supporting and promoting open access at the local, regional, and national levels."[22]

In other words, DRM can make an OA work freely readable but prevent uses such as downloading, copying and pasting text, or breaking the work into pieces. This is where some OA advocates find DRM to be the enemy of OA, arguing that it goes against the idea of open research, which should include freedom and flexibility to share knowledge without restriction. This brings us back to the key questions libraries must answer: How do they honor the limitations imposed by authors or publishers in order to protect the integrity of their works, while at the same time providing patrons with a satisfactory reading and research experience? How do they respect copyright laws while fully embracing their mission to promote literacy and spread knowledge with no barriers? This, in turn, also brings us to the key question publishers must answer: How do they move forward in a way that meets their ambitious business goals while allowing libraries to fulfill their missions and build sustainable and affordable collections for their students, researchers, and patrons?

In conclusion, the idea of DRM runs counter to the idea of open access because DRM is all about

limiting access and what users may do with published content. On the other hand, DRM helps manage CC licenses. As Suber puts it, "the most widely used DRM approach in OA publishing is the Creative Commons license."[23] In other words, the CC license is an actual DRM approach. It could be convincingly argued that when it comes to open access, DRM shows how useful it can be for authors and publishers, despite its major flaws and its apparent failure to combat piracy.

Notes

1. "Digital Rights Management," *ALA/DCWG Tip Sheet*, no. 1 (July 2012): 1, http://www.districtdispatch.org/wp-content/uploads/2012/07/drm_tip_sheet.pdf.
2. "Digital Rights Management," 2.
3. Jolanda-Pieta Van Arnhem and Lindsay Barnett, "Is Digital Rights Management (DRM) Impacting E-book Adoption in Academic Libraries," *Charleston Advisor* 15, no. 3 (January 2014): 63–65.
4. Karen Coyle, "Rights Management and Digital Library Requirements," *Ariadne,* no. 40 (July 30, 2004), www.ariadne.ac.uk/issue40/coyle.
5. Coyle, "Rights Management."
6. Coyle, "Rights Management."
7. Mir Mohammad Azad, Abu Hasnat Shohel Ahmed, and Asadul Alam, "Digital Rights Management," *IJCSNS International Journal of Computer Science and Network Society* 10, no. 11 (2010): 24.
8. Mirela Roncevic, "The Long and Winding Road to DRM-Free E-books in Academic Libraries," in *No Shelf Required 3: New Era for E-books and Digital Content*, ed. Mirela Roncevic and Peyton Stafford (Chicago: ALA Editions, forthcoming).
9. John Sargent, news release to Macmillan Authors, Macmillan Illustrators, and Agents, Infodocket, July 2019, https://www.infodocket.com/wp-content/uploads/2019/07/John-Sargent-Letter-Changes-to-Library-Lending-Terms.pdf.
10. Sargent, news release.
11. Christina Emery, Mithu Lucraft, Agata Morka, and Ros Pine, *The OA Effect: How Does Open Access Affect the Usage of Scholarly Books?* (Springer Nature, November 2017, updated January 2018), 4.
12. Denise M. Davis and Tim Lafferty, "Digital Rights Management: Implications for Libraries," *Bottom Line* 15, no. 1 (March 2002): 23.
13. Chris Jay Hoofnagle, "Digital Rights Management: Many Technical Controls on Digital Content Distribution Can Create a Surveillance Society," *Columbia Science and Technology Law Review* 5 (2004): 1–2.
14. Edward Sanchez and Carrie Russell, "Sci-Hub Unmasked: Piracy, Information Policy, and Your Library," *College and Research Libraries News* 77, no. 3 (2016): 122–25.
15. Sanchez and Russell, "Sci-Hub Unmasked," 122.
16. Benjamin J. Keele and Jere D. Odell, "Managing Digital Rights in Open Access Works," in *Digital Rights Management: The Librarian's Guide*, ed. Catherine A. Lemmer and Carla P. Wale (Lanham, MD: Rowman & Littlefield, 2016), 103–17.
17. Peter Suber, "Open Access Overview: Focusing on Open Access to Peer-Reviewed Research Articles and Their Preprints," unpublished paper, June 21, 2004, last revised December 5, 2015, http://legacy.earlham.edu/~peters/fos/overview.htm.
18. Suber, "Open Access Overview."
19. "About the Licenses," Creative Commons, https://creativecommons.org/licenses/.
20. Keele and Odell, "Managing Digital Rights."
21. Keele and Odell, "Managing Digital Rights," 109.
22. Sanchez and Russell, "Sci-Hub Unmasked," 125.
23. Peter Suber, quoted in Keele and Odell, "Managing Digital Rights," 114.

Lessons Learned

In the words of Bruce Schneier, "[DRM] is an impossible task"[1] and "trying to make digital files uncopiable is like trying to make water not wet."[2] Since the advent of the internet and digital file sharing, many lessons have been learned, and various media industries, not just publishing, have witnessed the adverse effects of DRM. These have been the key takeaways for publishers and libraries:

- There is no DRM scheme that cannot be hacked. According to available literature on the subject, DRM can always be hacked.[3]
- More DRM can lead to fewer (not more) readers. This is particularly true for self-published authors or those trying to break into publishing, whose primary goal is to expose their work to as many as readers as possible before they can afford the luxury making a living as a published author and being in a position to enforce strict DRM measures (as has been the case with J. K. Rowling, as discussed in chapters 1 and 3).
- There is no DRM technology that can eliminate piracy. Those who choose to break the law by engaging in illegal downloading will do so even if the content is free already.[4] Piracy is more rampant two decades into the twenty-first century than ever before.
- The current generation of digital media consumers has always had access to free content and does not want to pay for it. "Retailers are trying to sell content to a consumer base that is not in the habit of paying for digital media and does not necessarily equate digital piracy with theft."[5] New generations of readers are more likely to view DRM as an obstacle that will move them away from the desire to consume content in the first place. (The *Library Journal* survey mentioned in chapter 4 confirmed this for college students in the United States.[6])
- The most sensible way to move forward with DRM for publishers, authors, and libraries is to strike a balance with security, utility, and accessibility.[7] Indeed, piracy can become less attractive "not through restrictive DRM, but through features and benefits that cannot be found on P2P [peer-to-peer] sites."[8]

It remains to be seen what the future holds for digital content and DRM. More investigation is needed into the impact of DRM-free books, as well as those with light DRM. Likewise, more investigation is needed into the impact of e-books available through libraries. A simple Google Scholar search for "digital rights management and e-books" and "piracy and e-books" yields very few articles, and those that pop up were published in the first decade of the twenty-first century, not the second. Those articles that are available rarely, if at all, discuss piracy in the context of libraries. (The references in this paper reflects that as well.) As of fall 2019, the author of this paper was not able to locate a single study tracking the effect of free e-books available through libraries on the sales of those books in local or online bookstores. Without such knowledge, claims made by publishers like Macmillan about cannibalization of sales remain unjustified.

Perhaps the most logical way to proceed is to take clues from the lessons learned thus far, and those lessons point to the desirability of less DRM and more flexibility for users. They also point to libraries as being uniquely positioned to tackle the problem of digital piracy by competing with pirate sites. Library platforms give users what pirate sites do not: online safety, no advertising that distracts from reading and research, no vulnerability to virus attacks, and a higher quality of digital files. That said, the book industry cannot overlook the obvious problem of free content. "Free content is a popular solution to the DRM problem. Yet free information removes the monetary incentive for creating content, relying entirely on enhanced reputation for the creator's reward."[9] Indeed, in order to continue creating and publishing

high-quality content, authors and publishers will need assurance moving forward that they will be able to receive just compensation.

Which leads the conclusion: there is no one-size-fits-all solution to the conundrum that is DRM and digital piracy, but there are many sensible solutions that together give the book and library industry more clarity as to what works and what doesn't. We can all agree that too much of anything backfires, even when it comes to protecting copyrighted materials.

Additional Resources

Hauser, Tobias, and Christian Wenz. "DRM Under Attack: Weaknesses in Existing Systems." In *Digital Rights Management,* Lecture Notes in Computer Science, vol. 2770. Edited by Eberhard Becker, Willms Buhse, Dirk Günnewig, and Niels Rump, 206–23. Berlin, Heidelberg: Springer-Verlag, 2003.

Kotobee. "Ebook DRM and Security: What Is It and How It Works." *Kotobee* (blog), January 17, 2017. www.kotobee.com/blog/ebook-drm-security-what-how.

Ku, William, and Chi-Hung Chi. "Survey on the Technological Aspects of Digital Rights Management." In *Information Security: 7th International Conference, ISC 2004, Palo Alto, CA, USA, September 27–29, 2004: Proceedings.* Lecture Notes in Computer Science, vol. 3225. Edited by Kan Zhang and Yuliang Zheng, 391–403. Berlin, Heidelberg: Springer, 2004.

Minow, Mary. "Library Patron Internet Records and Freedom of Information Laws." *California Libraries*, April 4, 1999: 8–9.

Notes

1. Bruce Schneier, "The Futility of Digital Copy Prevention," *Crypto-Gram* (newsletter), May 15, 2001, https://www.schneier.com/crypto-gram/archives/2001/0515.html#3.
2. Bruce Schneier, "Quickest Patch *Ever*," *Wired*, September 7, 2006, https://www.schneier.com/essays/archives/2006/09/quickest_patch_ever.html.
3. See, for example, Ed Felten, "Why Unbreakable Codes Don't Make Unbreakable DRM," *Freedom to Tinker* (blog), December 3, 2002, https://freedom-to-tinker.com/2002/12/03/why-unbreakable-codes-dont-make-unbreakable-drm.
4. Priti Trivedi, "Writing the Wrong: What the E-book Industry Can Learn from Digital Music's Mistakes With DRM," *Journal of Law and Policy* 18, no. 2 (2010), article 10, https://brooklynworks.brooklaw.edu/jlp/vol18/iss2/10.
5. Trivedi, "Writing the Wrong," 956.
6. Mirela Roncevic, "The Long and Winding Road to DRM-Free E-books in Academic Libraries," in *No Shelf Required 3: New Era for E-books and Digital Content*, ed. Mirela Roncevic and Peyton Stafford (Chicago: ALA Editions, forthcoming).
7. Kurt Schiller, "A Happy Medium: Ebooks, Licensing, and DRM," *Information Today* 27, no. 2 (February 2010), www.infotoday.com/it/feb10/Schiller.shtml.
8. Trivedi, "Writing the Wrong," 965.
9. L. Jean Camp, "First Principles of Copyright for DRM Design," *Internet Computing, IEEE* 7, no. 3 (May–June 2003): 64, https://doi.org/10.1109/MIC.2003.1200302.

Notes

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