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The End of Ownership

Personal Property in the Digital Economy

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3 Copies, Clouds, and Streams

In little more than a decade, the way we acquire copyrighted content has been transformed three times. Until the early 2000s, we mostly interacted with books, music, and movies as physical objects we could hold in our hands. Sure, we watched movies in theaters and listened to music on the radio, but copyright holders were primarily in the business of selling tangible copies, and legal digital downloads were still mostly hypothetical. It wasn't until Apple's iTunes Music Store launched in 2003 that a viable authorized digital distribution system emerged. This shift from tangible copies to digital ones posed major challenges for copyright law that it hasn't yet fully resolved.

But the plodding evolution of the law didn't stifle new technologies and business models. As copyright law struggled to accommodate digital downloads, developers and the consuming public migrated to the cloud. Rather than downloading purchases to our local hard drives, we accessed music, books, and movies stored remotely, aided by ubiquitous high-speed network connections. Today, a third major shift is underway as subscription streaming services are poised to overtake hard copies, downloads, and the cloud. Services like Netflix and Spotify give subscribers access to massive libraries of material for low monthly fees, prompting droves of viewers and listeners to give up on the idea of buying content altogether.

For consumers, these developments offer obvious benefits. Price, convenience, and selection have improved in the digital era. The widespread embrace of the subscription streaming model, for example, signals a growing demand for low-cost, temporary access to digital media. And since subscriptions offer both flexibility and clarity, they are a welcome addition to the marketplace. But other new ways of acquiring media introduce uncertainty that muddies the waters for people trying to navigate the digital market.

In part, that's because the exhaustion principle and by extension consumer property rights are built around the idea of the tangible copy. But as these new distribution technologies have evolved, the distance between the marketplace as it exists and the marketplace as it is imagined by our copyright laws widens. Each of these shifts in distribution technology has taken us another step away from the copy-centric vision at the heart of copyright law. The failure of the legal system to respond to this disconnect is a major factor in the erosion of consumer property rights, a development that could harm both the public and creators in the long run.

The Hard Copy Era

Since its earliest days, copyright law has evolved, albeit slowly, in response to changes in the ways we copy and share creative works. And for much of copyright history, those changes involved hard copies. This focus on tangible copies influenced the development of the law in a number of ways. Perhaps most important, it enshrined a sharp distinction between the work—the intangible creation of an author—and the copy—the tangible artifact in which the work is recorded. That copy/work distinction is a fundamental assumption of our copyright system. In a world populated with copies, that assumption made sense. But in a market that radically deemphasizes the copy, the utility of the copy/work framework is far less clear.

From its embryonic stages, copyright law focused on tangible copies. With Gutenberg's introduction of the printing press in 1450,¹ control over copying became an imperative for both publishers and governments.² Regulations like the Venetian and English printing privileges, which gave exclusive rights to make books to trusted printers, sprung up in the wake of the printing press.³ Later, the proto-copyrights issued by the Stationers Company—a group of London printers who enjoyed a royal monopoly—also focused on making and selling tangible copies.⁴ And the first U.S. Copyright Act in 1790—like its English predecessor, the Statute of Anne—provided exclusive rights to print, publish, and sell books as physical artifacts.

In the twentieth century, copyright law expanded to include not only books, maps, and charts but also dramatic works like plays, musical compositions, visual art, photographs, motion pictures, and later recorded music, architecture, and computer software. At the same time, in addition to making and selling copies, the statutory rights of authors grew to embrace publicly performing and displaying a work, and creating derivative works like sequels and translations.⁵ This expansion reflected the technological advances of the day. Live performances of musical and dramatic works

had long been economically crucial to some creators. But motion pictures, radio, and television enabled valuable new uses of works that didn't depend on the distribution of physical copies. Copyright holders predictably called for new legal protections to help them profit from those uses.

But throughout this period, the sale of copies remained the core focus of most creative industries, and of copyright law. The fortunes of publishers were tied to the sale of hardcover and paperback books. The music industry enjoyed revenue from radio, but made the lion's share of its profits by selling copies—first sheet music, and later records, tapes, and CDs. And up until the last few years, the software and video game industries were primarily in the business of distributing tangible copies to the public. Even the film industry shifted toward selling home videos, despite its frantic objections to the VCR. Television, because of business models premised on advertising and cable subscriptions, was less concerned with selling tangible copies. But toward the end of the hard copy era, even TV studios profited from DVD and Blu-ray sets. In the early years of the twenty-first century, the copyright industries largely revolved around the economic value of the copy.

This focus on copies is reflected in the fixation requirement. Remember, to be protected at all, a work needs to be fixed in some stable, tangible form. Copyright doesn't protect a poem stored in your memory, but it does once you scribble it on a napkin. Conceptually, the law distinguishes between two forms a work can take—first, the intangible expression in the mind of its creator; and second, a tangible object containing that expression. But the fact that works exist in these two related but distinct forms complicates questions of ownership. As early as 1741, English courts recognized that the copyright in a work was distinct from ownership of any particular copy of it.⁶ So the owner of a number of letters written by Alexander Pope, for example, wasn't entitled to publish their contents. Ownership of the physical artifact did not give the would-be publisher the right to copy the underlying work. The U.S. Supreme Court embraced the same principle in 1860 in *Stephens v. Cady*.⁷ There the Court held that the owner of a copperplate could not reproduce the map engraved on it. Again, ownership of the work and ownership of the copy were separate questions. Occasionally, courts forgot this lesson and decided that by delivering a physical copy like a book manuscript, an author necessarily transferred their copyright interest.⁸ In an effort to underscore the distinction between the work and the copy, Congress provided in the Copyright Act of 1976 that “ownership of a copyright ... is distinct from ownership of any material object in which the work is embodied.”⁹

This copy/work distinction has helped resolve disputes over transfers of copyright ownership. But even more important, it has shaped copyright law's exhaustion rules in profound ways. The distinction provided the conceptual framework and vocabulary copyright law uses today to think about the relationship between the rights of consumers and creators. Relying on the copy/work distinction, exhaustion rules have drawn an easily understood line separating those respective rights. Creators own their intangible works; but purchasers own the copies they buy. Of course, putting exhaustion in these terms oversimplifies things a bit. "Ownership" is not a self-defining term. Exactly what rights a copy owner enjoys depends on what rights copyright holders retain in the works. So if Congress insisted that copyright holders get to control public displays of their works even after a sale, owning a copy of a painting would mean something quite different from what it does today. Nonetheless, by articulating the exhaustion principle in terms of copies and works, copyright law takes advantage of our built-in understanding of personal property. Our experiences with tuxedos, cars, and microwave ovens translate reasonably well to the rules surrounding physical books, records, and paintings. By linking consumer rights to tangible objects, copyright law has helped the public embrace exhaustion and accept its limits.

Because our exhaustion rules developed during the era of the hard copy, the way copyright law talks about and conceptualizes consumer property rights is deeply tied to tangible copies. The equilibrium that exhaustion established has worked so well over time because the way works were distributed and sold remained largely unchanged. But an exhaustion principle rooted in the copy/work distinction only makes sense if we are still dealing in things we recognize as copies. Since Gutenberg, copies have been a fact of life. But their place in our digital future is increasingly uncertain.

The Trouble with Downloads

Format changes are nothing new. We used to listen to music on vinyl records, then eight-track and cassette tapes, and most recently CDs. In many ways, the rise of digital downloads looks like just another in a long line of new and improved formats. CD players joined the turntables collecting dust in our collective cultural garages as we marveled over our shiny new iPods. Like earlier format shifts, this one touted many benefits for music fans—increases in portability, convenience, and selection, reductions in price, carbon footprint, and clutter. But digital had downsides too. The

browsing experience couldn't compete with a good record store. Digital thumbnail artwork was no replacement for gatefold sleeves or even CD booklets. One factor most of us probably failed to take into account in this trade-off was the impact the move to digital could have on our ownership of the music we buy.

Despite that fact, or perhaps because of it, digital downloads quickly gained market share. Apple launched the iTunes Music Store in 2003. At the time, its catalog was a mere 200,000 songs. Within a decade, iTunes boasted a library of forty-three million tracks collectively downloaded thirty-five billion times, making Apple the largest music retailer in the world.¹⁰ As CD sales dropped and digital sales rocketed upward, paid music downloads surpassed physical media sales. This trend extended to other media, with digital downloads poised to replace hard copies as the primary way we acquire copyrighted material. Paid software and video game downloads rivaled or surpassed brick and mortar sales. And once Amazon released the Kindle, annual ebook sales increased from 10 million units in 2008 to 510 million in 2014.¹¹ More recently, ebook sales have plateaued, partly in reaction to price increases imposed by publishers.¹² But they remain a major component of the book market.

This shift to digital copies signaled an important shift in the distribution chain for creative works. For physical copies, an author or musician creates a work, often in concert with a large institutional copyright holder. They hand that work off to a manufacturer to produce lots of copies. Records are pressed, books are printed, and video cassettes are manufactured. Those copies get loaded into trucks, shipped around the world, and stocked on retail store shelves. When you buy one of those products, you come home with a new physical artifact containing the work of your choice. Under the digital model, things look quite different. For one, the traditional roles of publishers, labels, and studios are less crucial. Artists can release their own music, authors can self-publish, and independent film makers can find an audience more easily and more reliably than ever before. That's because the digital distribution chain has so successfully reduced barriers to entry. Rather than sending a master copy off to some factory for costly mass reproduction, copyright holders can submit digital files directly to digital retailers. There are no manufacturing costs, no shipping costs, and constraints on shelf space are effectively eliminated. Digital retailers store those files on their servers and make them available to a worldwide audience. When a customer presses the ubiquitous *Buy Now* button, the retailer initiates a transfer of data over the Internet that is then stored on the customer's device.

If that device has a hard drive, the file is stored magnetically on a disc. If it has a solid-state or flash drive, the file is stored electronically in a series of transistors. In either case, the result is the same. A physical object is altered, resulting in a new copy of the work. In this sense, digital distribution isn't all that different from the printing press. Both produce a tangible artifact—a hard disc, flash drive, or printed page—containing the work. And in some ways, copyright law treats stored digital copies the same way it treats more immediately recognizable physical copies. They count for fixation purposes. A novel typed on your laptop is just as fixed as one typed on an antique IBM Selectric typewriter. And they count for infringement purposes. Making unauthorized digital copies of that novel can be just as infringing as an unlicensed print run.

But digital copies differ from earlier physical copies in significant ways. Consider how digital files change the way we transfer copies between people. Imagine you just finished a novel that you are sure your best friend would love. If it's a hardcover or paperback, you simply hand it to them the next time you see each other. If they live across the country, maybe you mail it instead. What if instead, you bought an ebook? Assuming your ebook isn't one of the few titles that qualify for Amazon's licensed digital "lending" program, how do you let your friend borrow your copy? That depends on what you mean by "your copy." If the copy is the physical embodiment stored in your Kindle's memory, you could lend them your device. Of course, that means handing over your entire digital library and an expensive piece of hardware. It would be like if lending a friend one hardcover meant giving up the entire contents of your bookshelf. And if your device also contains your personal email, documents, and photos, lending out your copy is even more problematic.

The other, more reasonable option is to keep your device and just send your friend the file. You could email it, save it to a cheap flash drive, share it via Dropbox, or use one of the dozens of other ways we move data between people. The problem is that each of those methods of sharing your ebook requires making one or more new copies of the file. And that's precisely what copyright law would seem to prohibit. The first sale doctrine gives owners the right to transfer their copies, to pass one object from person to person, but it remains unclear how courts will view the creation of new copies to facilitate transfers.

The same is true if you want to resell your digital purchases. The orthodox understanding of copyright law says that making a new copy, even as part of the process of transferring a file to a new owner, is copyright infringement. ReDigi, a company that launched the first online resale

marketplace for digital music late in 2011, found that out the hard way. Assume—hypothetically of course—that you bought a copy of “The Sign” by Swedish pop group Ace of Base from the iTunes Music Store in a fit of 1990s nostalgia. And let’s say you later regretted that impulse purchase. ReDigi allows you to resell that track to another equally nostalgic buyer and recover some of the 99 cents you paid for it in much the same way you can still sell used CDs and records.

ReDigi, well aware of the legal risks, designed its system to ensure that only one copy of the file existed at any particular time. So you decide to unload your copy of “The Sign.” That copy lives on your laptop’s hard disc, encoded in the language of magnetic charges. To sell your copy, the file has to be uploaded to ReDigi’s server, where it waits for its lucky new owner. If ReDigi’s software simply uploaded the file, two copies would exist—one on your hard drive and another on the ReDigi server. ReDigi wanted to recreate as closely as possible the mechanics of a traditional used sale, one where a single copy moves from one owner to another. To achieve that, as each of the thousands of packets of data that make up the file were sent over the Internet, ReDigi deleted that data from your hard drive. So your local copy disintegrated piece by piece as it was being reconstructed on the ReDigi server. That way, two complete copies never existed at any one time. ReDigi argued its process simply migrated a copy from point A to point B, just like mailing your hardcover book or taking an unwanted CD to the used record store. As in a traditional sale, the seller starts out with one copy and ends up with none. And the buyer starts out with no copies and ends up with one.

Unlike a traditional used record store, ReDigi took great effort to make sure the seller wasn’t keeping an extra copy for themselves. But neither copyright holders nor the courts saw it that way. Capital Records sued ReDigi for reproducing copies of its tracks.¹³ The question for the court was whether ReDigi’s software succeeded in moving the file from one location to another, or if it simply made a new unauthorized copy. The court sided with Capital. Because the process resulted in the work being encoded on a new material object—ReDigi’s server—a new copy was made. And that was true even if ReDigi destroyed the original as part of the upload process. The lesson from *ReDigi* is that even if you delete your copy after transferring a file, you’ve likely violated copyright law by reproducing the work.¹⁴ If that’s true, the application of our legal rules to digital copies is inconsistent with the expectations about lending and reselling developed in the hard copy era.

This isn’t the first time copyright law has encountered this sort of mismatch. Congress recognized the same problem when it expanded copyright to protect computer software. Then, end users faced similar problems.

They couldn't run their software, create backups, resell, or transfer their purchases without potentially running afoul of the law. As Congress recognized, that outcome would be at odds with the idea that users owned the software they bought. So it enacted a new provision, section 117 of the Copyright Act, to address the situation.¹⁵ That section guarantees users the rights to reproduce copies of software they own for preservation purposes, to adapt them to run in new software or hardware environments, and to transfer copies of the software they purchase so long as they delete the copies in their possession. So users could, for example, resell their software even if it meant making additional copies in the process.

Section 117 was an explicit attempt to extend the longstanding commitment to exhaustion to digital copies. But as we explain in chapter 4, its practical effectiveness has been undermined by license agreements that redefine software sales. Equally important, Congress has never extended the kinds of rights recognized in section 117 to other forms of media, even as digital downloads displaced hard copies. But even if it had, the digital download looks more and more like a transitional technology.

The Cloud of Uncertainty

Even if you don't understand exactly how the "cloud" works, you're probably familiar with the term. Cloud computing allows users to remotely access resources like data, programs, processing power, and storage from a variety of devices. Rather than keeping all of your software and data on your local desktop or laptop, you can use phones, tablets, or other network-connected devices to access files or run programs stored on remote servers. When it comes to the distribution of copyrighted content, the cloud allows companies to sell you music, movies, and books without requiring you to download them. Your files are stored in your Apple iCloud account or Amazon Cloud Locker. When you want to hear a song or watch a video, they can be streamed to your device anywhere you have a data connection.

Like new forms of distribution that came before, the cloud was driven by the technology of the day. Digital downloads made sense when people wanted dedicated media playback devices with large storage capacities. They would download music and movies to their home computers, which functioned as central hubs for their devices, and sync those files to their media players. You could buy a 160GB iPod and cram your entire digital library onto it.

But iPods soon gave way to smartphones, tablets, and other multi-purpose, mobile computing devices. These devices jettisoned cheap,

high-storage capacity hard drives in favor of more expensive, lower-capacity flash memory to conserve space, weight, and battery life. So there was no longer enough room to lug around your entire media collection on a device's internal memory. Even if there had been, people were tiring of the hassle of syncing devices through their home computers. The cloud took advantage of increasingly ubiquitous, reasonably affordable, high-speed mobile data networks to solve the storage and syncing problem. All of your digital stuff could be available all the time through the wonders of the cloud, without the need to download a single copy.

The cloud is not without its drawbacks, however, most of which are byproducts of the lack of physical possession implicit in cloud-based distribution. In the hard copy and digital download eras, you literally possessed your copies. They were stored on shelves, in attics, and on hard discs. But if you possess copies in the cloud, you do so only virtually. They aren't actually on your device; that's the whole point. For one, the cloud creates some real concerns about privacy. Since a digital record is created every time you access a file, your reading, listening, and viewing habits are being closely tracked.

The lack of physical possession also means your ability to access your purchases depends on the cloud service provider keeping up their end of the bargain. The provider might suffer an outage, or the title you purchased—like *1984*—might be pulled from the service. Apple's iTunes terms specifically address this possibility: "Apple and its licensors reserve the right to change, suspend, remove, or disable access to any iTunes Products, content, or other materials comprising a part of the iTunes Service at any time without notice. In no event will Apple be liable for making these changes."¹⁶

So if you buy a movie or album and store it on Apple's cloud server, your purchase can disappear if Apple or the copyright holder decides for any reason to remove it. Instead, retailers might simply stop supporting their cloud offerings if they are no longer profitable, or they might go under altogether. A future without Apple and Amazon is hard to imagine, but so was one without Lehman Brothers, Enron, and Woolworth's. And the fortunes of even the most highly valued technology companies are volatile. Just ask Yahoo, Myspace, or Apple circa 1997.

So what does the cloud mean for consumer property rights? Without physical possession, consumers can't be entirely confident in their ability to access their purchases in the future. Their rights to lend, resell, or otherwise transfer those purchases are even more uncertain. Exhaustion, as we've seen, traditionally has been premised on ownership of a copy. But

the cloud, it turns out, doesn't result in a single identifiable copy. Instead, it creates a tangled web of potential copies. It's not clear who owns them or whether they even count as copies for copyright purposes.

At the risk of oversimplification, we can think about two distinct sets of copies in a cloud system. Some copies are stored on the cloud server, and some copies are stored—potentially—on the user's device. Let's start with the server copies. They are stored long-term and are certainly fixed for copyright purposes. But who owns them? Before turning to how a court might answer that question, let's consider three analogies to more familiar examples.

First, we could think of the cloud server copy like a film reel at your local movie theater. The reel is owned and possessed by the theater.¹⁷ You pay to see the movie, but never possess, much less own, the reel. With the cloud, you pay to listen to a song or watch a program, but the cloud provider owns the copy—literally, the hard drive in its server. Any rights you have would be rooted in contract, not property. Second, maybe the cloud copy is more like a library book. The server, like the library, is full of copies of works. When you want to access your purchase, the work is plucked from the shelves and transmitted to your device in much the same way you can select a library book and take it home. But again, you don't own the copy on the cloud server any more than you own a book from the library. Third, perhaps the cloud copy is more like a family heirloom in a safe deposit box. You pay for a movie, and it waits for you on the cloud server until you are ready to access it. Just like grandpa's stamp collection at the local bank, you own it even if you don't currently possess it.

Copyright law can easily make sense of these first two analogies because they fit into the copy/work dichotomy. For the film reel, control over a tangible copy regulates access to the intangible work shown on the screen. For the library book, a tangible copy changes hands, but not permanently. But from the perspective of the purchaser of cloud content, both of these analogies are unsatisfying. Surely, you might think, "buying" *Upstream Color* for \$12.99 gets you something more durable for your money. But identifying what that something is—in terms copyright law can comprehend—is a challenge. Its vocabulary is limited to tangible copies and intangible works. Unlike your personal property interest in Grandpa's stamps, you don't literally own part of Apple's server. Your property right relates to something less concrete. But at the same time, it isn't the intellectual property interest in the movie. A \$12.99 purchase doesn't make you the copyright holder in *Upstream Color*. Conceptually, it makes much more sense to talk about an intangible property right in the file—the collection of bits that encodes the

movie—detached from any particular physical copy. In much the same way you can own and transfer stock—an intangible interest in a corporation—you can own and transfer rights in your cloud purchase.

From a technical perspective, those are rights the cloud provider could easily accommodate. Let's say you wanted to lend the movie you bought to a friend. Amazon, for example, could easily transfer rights to the file by associating it with your friend's user account rather than yours. When your friend logs in to their account, the file would be there for them to access. But under your account, the file would be disabled. This is how Amazon's existing Kindle ebook "lending" program works.

Of course, the precise scope of consumer intangible property rights would be determined by the rules of exhaustion, just as our personal property rights are today. And the division of rights between creators and consumers might look different for intangible property, but the key is that your rights would be determined by default property rules, not the minutiae of a EULA. By calling it property, the law would shift the balance of power from sellers to buyers and responsibility for defining our rights from lawyers at Amazon and Apple to courts and legislators.

To be clear, U.S. law hasn't yet recognized intangible property interests in digital media. So the question of how courts today would think about cloud copies remains. Courts have adopted two very different ways of evaluating new technologies that challenge embedded assumptions of copyright law. One approach—familiar from *ReDigi*—closely examines the design and operation of a technology. There the court focused on maintaining a careful ledger of copies, rather than evaluating those technologies from the perspective of the end user.

In a recent case called *ABC v. Aereo*, the Supreme Court took the opposite tack. Aereo offered its subscribers access to broadcast television programming over the Internet by constructing an elaborate system of thousands of dime-sized antennae, each assigned to an individual subscriber. When a subscriber chose a program, their antenna would tune to the appropriate station, and the show would be recorded by a server to hard drive space dedicated to that subscriber. Aereo's system was designed with the law in mind. By making sure each antenna and each recording corresponded to a single subscriber, it hoped to design around copyright's public performance right. In holding Aereo liable for infringement, the Court emphasized the "viewing experience of Aereo's subscribers" and discounted the importance of "behind-the-scenes" details about the operation of the technology.¹⁸

Both of these approaches have merit, and we don't mean to suggest that either is inappropriate. Developers shouldn't be penalized for designing

systems that comply with the letter of copyright law. But when it comes to cloud copies, there are two reasons we think it makes more sense to focus on end user experience rather than technical design choices. First, we have been trained to ignore what happens under the hood. The engineers behind cloud services have done a remarkable job of shielding us from their complexity. Those services are intuitive. True to Apple's philosophy, they just work. The downside of such high usability is that it obfuscates details about precisely how these services operate.

Second, an approach that emphasizes technical details misunderstands what is valuable about the cloud. Back when individual copies were valuable, long-lasting artifacts, keeping a running ledger of copies made sense. But this preoccupation with counting copies is outdated. Copies today are cheap, disposable things. We are awash in a sea of copies that flit into and out of existence all the time. They are created, used, and discarded constantly. What matters to consumers are reliable rights to access and use a work. And those rights, as property theory makes clear, don't have to be tied to any particular tangible object. But until copyright law rethinks the central role of the copy, ownership of cloud purchases will remain a challenging question with no obvious answer.

What about the copies on your own device? There the tough question isn't so much about ownership, but whether we have a copy at all. Here we need to distinguish between downloading and streaming content. If a cloud customer saves a file to their device—one that they can access during a long flight without Internet access, for example—that looks like a standard download. There's a stable, lasting copy stored to the memory of their phone or tablet. Streaming, in contrast, allows the customer to listen to music or watch a video without permanently saving a file to their device. It isn't intended to result in a lasting copy.

Nonetheless, some courts have held that data stored even temporarily in the random access memory (RAM) of a device can count as a copy for copyright purposes. If so, using a digital file—reading a book or playing a song—means creating new copies. When you open a file on your laptop or your mobile phone, your device is accessing data in long-term storage, on a hard disc or flash drive, and recreating it in its RAM, the short-term storage used to display and manipulate data. But the rules for precisely how long such data can be in RAM before a fixed copy is created are far from clear. So despite the emphasis copyright law places on keeping track of copies, it has a surprisingly difficult time figuring out whether a copy even exists.

Although this problem has become more pronounced in recent years, it turns out that it is hardly a new challenge. Copyright law, in fact, has

been struggling to answer that question for more than a century. When the player piano hit the market in the late nineteenth century, composers and music publishers were in the business of selling sheet music that people took home to play on their pianos. But by combining a pneumatic mechanism and perforated paper rolls, player pianos enabled people to listen to music at home without a musician on the premises. Music publishers argued that piano rolls were infringing copies of their compositions. But after years of litigation, the Supreme Court in *White-Smith v. Apollo* unanimously rejected that argument.¹⁹ According to the Court, piano rolls weren't copies at all since no one, including the makers of piano rolls, could look at a series of tiny perforations and discern the music it contained. Copies, the Court explained, are limited to those forms in which a work can be seen, read, or understood by the human eye. Today we have a much broader notion of the copy, but *White-Smith* shows how new technology can frustrate efforts to apply laws written for an earlier era. That's just as true today as it was a century ago. In fact, the cloud has given rise to its own existential crisis over copies.

Cablevision is a large cable television provider. In 2006 it launched a cloud-based Remote Storage Digital Video Recorder (RS-DVR) for its subscribers. Most DVRs come equipped with a large hard drive to store recorded programs. Cablevision's product stored recordings made by subscribers on remote servers in a central data center instead. In that data center, Cablevision used a device called the Broadband Multimedia Router (BMR) to send the constant stream of video for each cable channel to the servers that stored recorded programs. As it did so, the BMR briefly loaded the video into temporary memory buffers for a period of a second or so.

Cartoon Network sued Cablevision for copyright infringement, alleging that these buffers created infringing copies of its television programs.²⁰ The case turned on whether or not the programs were stored long enough to count as copies. How long must a work be stored before it counts as fixed? One influential early case, *MAI v. Peak*, held that Peak created copies when it turned on MAI's computers and loaded MAI programs into memory. According to the *MAI* court, if information stored in the memory of a computer could be perceived or reproduced, it was fixed regardless of how long it was stored.²¹ If that were true, Cablevision made copies in its buffers. But the *Cablevision* court disagreed. It held that the data must last for more than a "transitory duration" before it counts as a copy. The court was convinced that 1.2 seconds wasn't long enough to create a copy, but beyond that, it didn't offer much guidance. So when you use a cloud service to stream a movie or song to your device, copyright law has no clear answer as to whether you even possess a copy.

The *Cartoon Network* case, much like *ReDigi*, demonstrates how copyright law struggles to consistently and clearly identify copies in the digital environment. That fact puts consumer property rights at risk so long as exhaustion rules are tied to ownership of a copy. Without copies, under current law, there's simply nothing to own. The next major shift in distribution, however, suggests that ownership isn't important to everyone.

Crossing the Stream

All of this talk about ownership assumes that we will still be buying music, movies, and books in the near future. If current trends hold, however, à la carte purchases could soon be the exception rather than the rule. Every day, more people are choosing digital subscription services over individual purchases. Although we call them subscriptions, these services don't have much in common with analog magazine or newspaper subscriptions. If you decide not to renew your *National Geographic* subscription after a year or a decade, you still own the stack of issues they've sent you. If you cancel your Spotify subscription, you don't keep anything. Instead, the digital subscription model allows you to pay a flat monthly rate—or patiently endure advertisements—in exchange for access to large libraries of streaming content. And for many of us, that's an attractive proposition.

Netflix and Hulu led the way, launching online video services in 2007. Since then, Netflix has become one of the most popular content providers on the Internet. The service boasts roughly sixty-nine million subscribers and accounts for as much of a third of all Internet traffic.²² In 2014, its revenue exceeded \$5.5 billion. On the music side of things, Spotify claims seventy-five million active users, about twenty million of whom are paying subscribers.²³ It recently broke the billion-dollar revenue barrier for the first time.²⁴ Not surprisingly, this subscription model is being applied to other forms of content as well. In 2014, Amazon launched Kindle Unlimited, which gives subscribers access to a growing ebook library. Meanwhile, services like PlayStation Now, EA Access, and Gametap offer subscriptions for online video game libraries.

Rapid gains in market share by these services point toward a future in which subscriptions, not purchases, will be the primary way we access copyrighted works. By 2016, revenue from digital distribution of movies—including subscriptions and purchases—will eclipse physical sales.²⁵ The bulk of that money will come from subscriptions. Even today, subscriptions account for nearly three times as much revenue as digital downloads.

A similar story is playing out in the music industry. In 2014, as CD sales continued to plummet and paid downloads dropped by roughly 10 percent, streaming music services like Spotify grew by a staggering 54 percent as users streamed 164 billion songs.²⁶ By 2018, streaming services are projected to account for nearly 40 percent of music industry revenue. Already in Europe, Spotify's revenues are overtaking Apple's music download figures. Given these trends, Apple spent \$3.2 billion to acquire Beats Electronics, driven at least as much by its interest in the successful Beats Music subscription service as it was by the company's better-known headphones. Apple launched its own subscription streaming service in 2015.²⁷

The public seems to be sold as well, and for good reason. Subscription services make a compelling case in terms of price, selection, and flexibility. All-you-can-eat subscriptions for Netflix, Spotify, and Kindle Unlimited cost less than \$10 per month. For that price, you might be able to buy a single ebook, digital album, or movie. Instead, subscription services offer unlimited access to massive collections of works. Spotify boasts thirty million tracks; the Netflix streaming library tops out at over sixty thousand movie and television titles; and the Kindle Unlimited collection includes over a million books.²⁸ These services don't include every new blockbuster or bestseller, and music fans enjoy access to a much more complete library than movie buffs or bibliophiles. Nonetheless, users seem generally satisfied with both the quantity and quality of options.

Netflix has used its massive success as a springboard to becoming a leading content producer, with exclusive programming like *House of Cards*, *Master of None*, and the resurrected *Wet Hot American Summer*. Others like Amazon and Hulu are pursuing a similar strategy with varying degrees of success. Another key selling point for subscription services is their compatibility with nearly the full range of media devices. You can stream Netflix to your laptop, tablet, smartphone, television, or game console. The same is true for Spotify and most other competitors in this space. That allows users the degree of portability the cloud helped teach them to expect.

You might look at the basic business model of the subscription streaming service and wonder how different it is from familiar twentieth-century approaches to distribution. Consumers pay, either by ponying up a monthly fee or by sitting through advertisements, in exchange for the ability to enjoy a curated collection of programming. That sounds like a reasonably accurate description of broadcast or cable TV, or even terrestrial radio. So what sets services like Netflix and Spotify apart? And what explains their massive explosion in popularity in recent years?

In part, the answer is control. Radio and television have always been fundamentally passive media. You sit back and hope the DJ plays your favorite song. Television required viewers to wait until their program of choice aired each week. But streaming services allow users to browse their libraries and watch whatever movie or hear whatever song they want. Right now. And if you want to watch thirteen hours of *House of Cards* without leaving your couch, Netflix is more than happy to oblige you. That degree of choice and immediacy distinguishes subscription services from cable and broadcast. It also makes those services a much closer substitute for purchases, and at a lower price point.

Interest in these services is easy enough to explain, but service providers and content producers have reasons to favor the subscription model aside from simply satisfying consumer demand. Strategically, it offers a number of benefits. Compared to sales-based models that wax and wane depending on a host of factors, subscriptions generate relatively predictable and reliable revenue streams. They also yield mountains of valuable data about subscribers, their viewing habits, and preferences that can be used to tailor the service and produce new programming, as Netflix did when it ordered a full season of *House of Cards* without the once-obligatory pilot episode. For some subscription video providers like HBO, ESPN, and Nickelodeon, launching a standalone digital subscription service allows them to reduce their reliance on the cable company to play the role of middleman. It also provides them an avenue for reaching the increasing number of cord cutters without cable subscriptions. Streaming services also allow movie and television studios to bundle large libraries of old and relatively low-value content with some new, high-value programming. By doing so, they can squeeze additional revenue out of movies and shows that would otherwise be collecting dust in a vault.²⁹

Subscription services are also an effective strategy for reducing the effects of widespread copyright infringement on the Internet. By setting the price point so low, Netflix and Spotify can attract subscribers who might otherwise get their movies and music from the Pirate Bay. More fundamentally, by shifting from selling an easily copied product to selling a hard-to-copy service, Netflix and its cohort trade on the value of convenience, curation, and recommendation. By doing so, they insulate themselves from the harsh reality of the Internet—that copies are free for the taking.

Finally, by moving away from the sale of copies, producers get the added benefit of reducing resale. In the era of physical media, used copies competed with new ones, reducing sales and driving down prices. Since Netflix doesn't distribute copies, physical or digital, secondary markets have

no chance to develop. There's no small amount of irony in this fact. Netflix originally rose to prominence as a DVD-by-mail company. In that line of business, the first sale doctrine and resale markets were crucial to its success. Although Netflix bought the majority of its DVDs in bulk directly from movie studios at discounted rates, those negotiations took place against a backdrop of widespread availability of DVDs on the open market and the legal right to lend them. And in at least one instance, after the Weinstein Company signed an exclusive distribution agreement with Blockbuster, Netflix resorted to buying DVDs at retail to meet subscriber demand.³⁰

The impact of subscription services on individual creators is much trickier to untangle. First, there's the question of revenue. Do subscription services put money in the pockets of creators? It's too early to tell whether or not Amazon's experiment with Kindle Unlimited will be a boon for authors. Some report significant boosts in readership and revenue, while others allege that their sales are shrinking since the service's launch. For movie makers, the answer is more certain. Netflix was once seen as an extra unforeseen revenue source by Hollywood, but today streaming revenue is part of the calculus that makes or breaks a potential project. Films and TV shows get produced based in part on their likely value in the subscription market. There has certainly been plenty of squabbling over how much Netflix should pay for streaming rights, and sometimes titles get pulled, occasionally by the thousand. But there's been no massive outcry against subscription services from studios, producers, or directors.

The same can't be said for music. From well-established performers like Thom Yorke, David Byrne, and Beck to lesser-known artists like Jason Isbell and Phil Elverum, musicians have voiced concerns about the paltry sums they say performers and songwriters receive from streaming services. Spotify pays just fractions of a penny each time a song is streamed, an amount many find not only insufficient, but insulting. In part, the size of these streaming royalty checks reflects a simple economic reality: people are not willing to pay as much for a product that is less valuable. Recording artists make significantly more money from CD sales because they give owners something of enduring value. If you own a CD you can play it as many times as you want; you can lend it to a friend; you can resell it. Despite what Garth Brooks may have thought, when we eliminate ownership in favor of temporary access, we get Spotify—not some artist-friendly utopia.

Spotify counters its critics by noting that all those microroyalties add up. The service has paid out over \$2 billion—70 percent of its revenue—to copyright holders for the rights to its streaming catalog.³¹ That's not to say Spotify couldn't pay more, at least in theory. If the market would bear it,

they could increase subscription fees or their advertising rates. Or perhaps they should hand over an even higher percentage of their revenue. But those efforts wouldn't solve the problem. Ultimately, Spotify has only so much control over how much money makes its way into the pockets of artists. Those payments are filtered through record labels, music publishers, and collecting societies, each of which takes its own cut. It turns out that most of the \$2 billion paid by Spotify has replenished the coffers of record labels, while very little has gone to artists. But that fact is a function of the contracts between recording artists and their labels, not the real or perceived stinginess of streaming services.

Of course, no one is forcing copyright holders to license their music to Spotify. If they don't like the deal being offered, they can refuse it. And many artists have, including AC/DC, The Beatles, Garth Brooks, Led Zeppelin, and Radiohead. But no opt-out was met with the Internet-wide hue and cry heard when Taylor Swift broke up with Spotify in 2014. After her record *1989* sold nearly 1.3 million copies in its first week, the strongest debut in over a decade, Swift decided to pull her catalog from Spotify. Many people slammed her decision as a rich pop star's attempt to boost her already singularly strong record sales by cutting off free access to her songs. Swift, it was argued, was simply pursuing her own short-term economic interests—interests that, given her position in the music industry, were poorly aligned with all but the tiniest circle of ultra-popular recording artists.

No doubt, the economics of record sales motivated Taylor Swift. But there's good reason to think her decision was about something more than maximizing sales of her current record, one that needed little help in that regard. More than most musicians with her level of success, Swift seems interested in building—and publicizing—a close connection with her listeners. She dances with them in her music videos, buys them lunch, comments on their Instagram photos, sends them Christmas gifts, and shows up for their bridal showers. Taylor Swift doesn't want to rack up plays, she wants to cultivate fans.

Casual listeners might play her current hit for free on Spotify, and they might even sing along. But loyal fans will not only buy Taylor Swift records, they will shell out for concert tickets, t-shirts, and all manner of This Sick Beat® merchandise.³² They will establish connections that span a career, or even a lifetime. That's the level of commitment Taylor Swift wants from her fans. Months before the release of *1989* and her self-imposed Spotify exile, Swift penned an editorial in the *Wall Street Journal*. She wrote in part: "People are still buying albums, but now they're buying just a few of them. ... The way I see it, fans view music the way they view their relationships.

Some music is just for fun, a passing fling. ... However, some artists will be like finding 'the one.' We will cherish every album they put out until they retire and we will play their music for our children and grandchildren. As an artist, this is the dream bond we hope to establish with our fans."³³

Here's where ownership comes back into the picture. Listeners who choose to spend ten dollars on a particular record by a particular artist, rather than on a subscription to an undifferentiated mass of content, are more likely to feel invested in those artists. So meaningful personal property rights could benefit not only consumers, but creators as well. If we own a Taylor Swift record—as opposed to merely listening to it on the radio or streaming it online—it means more to us. Because the things we own can help define who we are, buying *1989* identifies you, both to others and to yourself, as a Taylor Swift fan in a way that a Spotify playlist might not. That, in turn, helps transform casual listeners into the sort of fans who can sustain an artist's career.

The value we place on ownership also finds support from the field of behavioral economics. Over the past twenty-five years, dozens of experiments have established what researchers call the endowment effect—the widespread tendency of people to assign greater value to things they own. In one well-known example, researchers gave some participants coffee mugs. When presented the opportunity to sell or trade their mugs to other participants, mug owners demanded nearly twice as much compensation as nonowners were willing to pay.³⁴ Subjectively, they valued the mugs they owned well above the market rate.

What explains these vastly different assessments of the value of an otherwise ordinary mug? Some have suggested that the endowment effect is the result of loss aversion—the idea that people are more motivated by the fear or regret associated with loss of an item than the enjoyment of gaining it. But more recent research shows that we place greater value on the things we own *because* we own them.³⁵ The association between an item and its owner means that we value things we own far more than things we simply use. And as that sense of ownership grows stronger, so does the value we place on the item. Recent research has also shown that the endowment effect is no less pronounced for digital goods than it is for physical ones.³⁶ So if a Taylor Swift fan owns her *1989* mp3s, we should expect her to value them in much the same way owners of *1989* CDs or vinyl do.

The psychological value of ownership might also suggest one reason for the flagging sales of digital downloads. We are used to getting reliable property rights in exchange for the money we spend on music. In the past, if we wanted fleeting access, we'd listen to the radio for free. But when we spent

money on music, we got something lasting and transferable. As we detail in chapter 5, many consumers misunderstand precisely what rights their digital download dollars are buying them. But as more people understand the limited value that downloads offer, we shouldn't be surprised to see steeper decreases in digital sales revenue. If digital sales were sales in the true sense of the word—if they were transactions that gave users property rights—we might see very different consumer behavior.

In fact, some of us are still willing to pay a premium for property rights. The only format that can rival the growth rate of streaming subscriptions in recent years is vinyl. In 2014, vinyl record sales increased more than 50 percent over the prior year.³⁷ In absolute terms, the number was a relatively modest 9.2 million units, but it was the largest vinyl tally in decades. That upward trend continued in 2015.³⁸ Even though vinyl is generally the most expensive way to get new music, there are plenty of reasons to prefer it. Aside from the appeal of higher fidelity and better packaging, when you buy a record you are bargaining for the full range of property interests associated with a purchase, rights that are not contingent on license terms, digital permissions, or even an Internet connection.

The rise in these two very different approaches to consuming music—subscription services and vinyl records—highlights the importance of consumer choice. Not everyone wants to rent their music, and not everyone wants to own it either. These choices aren't right or wrong. They are preferences that vary between individuals and over time for a host of reasons. Luckily for most works today, we have options. But both consumer behavior and industry strategy are limiting the choices available to those of us who prefer property to conditional access. Bookstores and record stores across the country, both big and small, have shuttered. For many of us, that means the immediacy of an in-person retail purchase has been replaced by online ordering, shipping costs, and days of waiting. That makes it hard for analog copies to compete with instant access to digital content, especially when the two formats are offered on the same Amazon product page.

Equally troubling, some content is available exclusively in one format or from one service. For years, a handful of big-name recording artists refused to sell music through iTunes. Others made music you could only buy from Apple. Amazon boasts over half a million titles exclusively available on its Kindle Store. Many works that were once available in a variety of physical formats are moving to digital-only distribution. Fox recently announced, for example, that it would no longer sell new seasons of *The Simpsons* on DVD or Blu-ray in favor of streaming delivery.³⁹ When works are available only as digital downloads, it limits consumer choice. For libraries, it can

interfere with their core function. Apple and Amazon licenses prohibit lending, and they won't—or more accurately, can't—negotiate individual terms for libraries and educational institutions committed to preservation and patron access. Since those works aren't available in a property-friendly format, they are effectively excluded from library collections.⁴⁰

Other works are available only through subscription. You can't buy the digital version of the *Compact Oxford English Dictionary*; you can only access it through a monthly subscription that requires an Internet connection.⁴¹ Adobe's latest creative applications like Photoshop and Illustrator are now available exclusively through the company's Creative Cloud, a monthly subscription service.⁴² Unless it reverses course, Adobe will never sell a new copy of Photoshop, effectively suffocating the used market. The shift to digital distribution is so pronounced that Microsoft made headlines when it made the decision to release Windows 10 in a decidedly retro format: on a disc, in a box, sold at brick-and-mortar retail locations.⁴³

The copy, at least for the time being, is out of fashion. But as a legal concept, the copy remains as important as ever. Even as copies escape our possession and disappear from our experience, copyright law continues to insist that without them, we only have the rights copyright holders are kind enough to grant us. As we discuss in chapter 4, those rights are often impermanent, nontransferable, and conditioned on ongoing permission. In short, they are not property rights.

