

Routing

## *Peer-to-Peer Networking and Digital Rights Management How Market Tools Can Solve Copyright Problems*

by Michael A. Einhorn and Bill Rosenblatt

### Executive Summary

The term “peer to peer” (P2P) refers generally to software that enables a computer to locate a content file on another networked device and copy the encoded data to its own hard drive. P2P technology often attracts people who use it to reproduce or distribute copyrighted music and movies without authorization of rights owners. For that reason, the short history of P2P technology has been one of constant controversy and calls by many in the content industry to regulate or even ban P2P-based networks or software.

As a general preventive measure against copyright infringements through digital technologies including P2P, copyright owners often use digital rights management (DRM) techniques to encrypt content or otherwise restrict access. Depending on the access or compensation arrangement, content owners may differentiate prices and limit use by the number of plays, duration of access, temporary or partial uses, lending rights, and the number of devices on which the file may be accessed. The potential level of use control may go beyond the expectations of consumers accustomed to a broader range of uses enabled by analog technology. Consequently, many consumer advocates now

contend that DRM is harmful to consumers because it tilts the balance of control in favor of copyright holders. For their part, rights owners respond that DRM merely offsets grave dangers made possible by digitization and Internet distribution.

This study argues that the basic functions of DRM and P2P can be quite complementary and that innovative market mechanisms that can help alleviate many copyright concerns are currently blossoming. Government should protect the copyrights of content owners but simultaneously allow the free market to determine potential synergies, responses, and outcomes that tap different P2P and DRM business models. In particular, market operations are greatly preferable to government technology controls, on the one hand, or mandatory compulsory licensing schemes, on the other. Recent court decisions regarding the liability of P2P networks or software providers may force the Supreme Court to revisit its own precedents in this area. In the absence of an efficient resolution by the Court, Congress may pass legislation that may interfere with both technological evolution and free-market processes.

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## **Introduction**

This study examines how digital rights management (DRM) may complement peer-to-peer (P2P) technology and help solve many of the intellectual property problems now hotly contested in the current policy arena. From a popular vantage point, Napster—though not a pure P2P network (because it relied on a central server to direct users to sought content)—illustrated the mass appeal of P2P file sharing.<sup>1</sup> The Napster phenomenon gave rise to networks built on FastTrack, Gnutella, and other software, which have been designed without central servers and have so far avoided Napster’s legal fate.

P2P services are potentially beneficial for a number of reasons. They allow users to search for and download content files located anywhere in the network. That could make it much easier to find works in the public domain, assist new artists who can publicize their abilities, and widen the audience for political speech otherwise confined to a few listeners. However, the costs are sobering; most users simply engage the software in order to find music and movies that have been “ripped” and uploaded to network nodes for free taking by others.<sup>2</sup> That threatens the content industries by displacing unit sales and licensing opportunities, and thereby undermines their business models for delivering content.

Though the content industries prevailed in litigation against Scour<sup>3</sup> and Aimster,<sup>4</sup> industry attempts in California to close down Grokster and Streamcast failed in district and circuit courts.<sup>5</sup> In the *Grokster* and *Streamcast* cases, the courts ruled in summary judgment that the particular programs in question had significant, noninfringing uses that qualified for legal protection under the Supreme Court’s 1984 landmark decision in *Sony v. Universal City Studios*, which upheld the legality of the videocassette recorder.<sup>6</sup> The district and circuit courts also found that neither software provider had the requisite knowledge of actual infringement or the ability to curtail immediate use to qualify as a

contributory or vicarious copyright infringer. Thus, at least for the time being, and contrary to the wishes of industry, decentralized P2P operations remain in business and free of contributory and vicarious liability for copyright infringement.

Meanwhile, the industry continues to look to DRM technologies to stem the tide of unauthorized file sharing. Legally different from copyright itself,<sup>7</sup> digital rights management refers to technological tools and capabilities that monitor content use and shield against unauthorized uses or distributions. DRM can then go some way toward protecting intellectual property by helping content owners to stop copying, enforce use restrictions, and otherwise assert property rights to copyrighted material. In contrast to the views of many critics, DRM is an important facilitating mechanism for protecting copyrights in a free market.

Moreover, by preserving property rights made possible through new market techniques, DRM encourages producers to innovate because they are more certain of eventual reward. That facilitates the process of “creative destruction”—the new ideas, products, processes, and organizational modes that are hallmarks of dynamic capitalism.<sup>8</sup> Government intervention in this competitive process could be harmful.

## **Digital Rights Management and Versioning**

DRM technology includes encryption and other content controls that limit how users may make and distribute copies of digital files and physical media (e.g., CDs, DVDs) they may have purchased. While critics fear the loss of consumer uses due to DRM,<sup>9</sup> they often fail to consider the effect of mitigating market forces. That is, economic analysis informs us that content providers who heedlessly hinder customer control actually reduce the value of the product that they are selling in the market. Doing so will reduce market demand, prices, and profits.<sup>10</sup>

The ability of content owners to restrict reuse of their works may lead to a greater number of specialized or personalized options and a wider range of consumer choices. With DRM, content owners may offer different rights by designing menus of diverse services and charging a different price for each. For example, the ability to download, burn, and lend a legally accessed movie would be priced differently than the ability simply to view the work without making further transmissions or reproductions. The ability to design different services enables producers to price discriminate with regard to buyer tastes, potentially enabling greater revenue recovery.<sup>11</sup>

The concept of “versioning” is not new in market economies.<sup>12</sup> Magazine publishers make printed content available both by subscription and as single copies, and studios make film available in first-run theaters, video stores, and television and cable programs. Versioning allows consumers to choose among a number of service options instead of being confined to any one. The prospective use of different versions and prices is particularly appropriate for content industries, where vast production costs are sunk up-front. Those investments must be recovered from the subsequent sale of subsequent product.

That said, resale or arbitrage between low- and high-end markets needs to be avoided if versioning is to operate effectively. For example, if magazine subscribers could resell copies at higher prices on neighborhood newsstands, subscription prices would necessarily increase to reflect the value of likely resale. That would clearly harm readers who did not resell magazines. Therefore, DRM protections that stop the resale or redistribution of content from one market segment to another enable producers to develop more versions and enhance consumer choice.

The effect of versioning on individual users is bifurcated. Smaller users generally gain, as producers and distributors lower prices for “no frills” services to basic customers without worrying about revenue loss

from high-end users. Content distributors may also use personalization techniques to identify prospective first-time customers and extend to them free previews, time-limited rentals, and low-price introductory offers.

By contrast, the more intense and devoted users of any product generally pay more under versioning; producers charge higher prices for enhanced service features without worrying about attrition at the lower end. Despite the higher prices, those high-end customers may be better off, as suppliers now have greater incentives to develop innovative features and to take other steps to expand the capabilities of the network.

## The Music Services

Nowhere is the market potential of versioning more evident than in the evolving market for digital music services. Since Apple first launched its iTunes Music Store in April 2003, the constellation of suppliers and services has reordered considerably. Specifically, the market for digital music content has moved well beyond first-generation business models of the major label services.

The two original major label services (MusicNet and Pressplay),<sup>13</sup> which were launched in December 2001, allowed full library access through streams and downloads but ended a buyer’s access to previously downloaded music when he or she terminated the service (although Pressplay did come to permit a limited number of burns for an additional fee). The services also attempted to divide the customer spectrum by offering alternative service versions that depended on contract duration or usage level, or both.<sup>14</sup> Four major alternative service versions came to market in 2003.

### Downloads Plus Hardware

In April 2003 Apple Computer launched an innovative Internet Music Store, called iTunes, which sold more than 125 million downloads in the next 18 months and claimed 75 percent of the download mar-

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ket.<sup>15</sup> Individual songs at the Music Store, which are encoded with the MPEG-4 Advanced Audio Coding compression technology, cost 99 cents apiece. With Apple's proprietary networking technology, Rendezvous, several Mac users on a wireless network can share collections through streaming.<sup>16</sup> The Music Store has no subscription fee; it does not enable full track streaming, but 30-second samples are available for free.<sup>17</sup> The average iTunes user appears to download an album per month; the typical teenage shopper in a record store buys one CD every two months. Nearly half (45 percent) of purchased songs on iTunes were purchased as part of an album.<sup>18</sup>

The key innovation of Apple is its light-handed DRM system, called FairPlay, which allows buyers to transfer tunes to Apple iPod players, burn unlimited numbers of CDs, and transmit downloaded songs to three other hard drives.<sup>19</sup> The next generation of Apple's Music Store also contains a number of new features, including iMix, which is a new way for users to publish and comment on playlists recommended by fellow fans.

#### **Downloads Plus Software**

MusicMatch, a service that competes with iTunes, provides downloads to complement its popular music management jukebox that is now installed on more than 60 million PCs.<sup>20</sup> With jukebox software that can be paid for by user fees, advertising, and data resale, basic users of MusicMatch may buy 99-cent downloads, while deluxe users can pay \$19.99 per month for an upgraded service with faster burn speeds and no advertisements.<sup>21</sup>

MusicMatch also offers a complete personalization service (which Apple now lacks) that tracks an individual's selected downloads in order to make subsequent recommendations.<sup>22</sup> In addition, MusicMatch fully tracks user preferences to compose interactive "radio stations" with personalized content.<sup>23</sup> Moreover, MusicMatch now offers a subscription service (250,000 subscribers) that permits on-demand streaming and playlist sharing of rec-

ommended compositions with friends (described below). The prospective fortunes of the MusicMatch platform may increase considerably as the result of a prospective merger with the complementary search platforms of Yahoo!, which also owns the leading Internet radio service, Launch.<sup>24</sup>

#### **Downloads Plus Interactive Radio**

Napster, which was relaunched as a copyright-respecting service (using the Pressplay infrastructure) in October 2003, features a different combination of downloading and streaming services.<sup>25</sup> For 99 cents a track, Napster users may download and burn individual songs; an "all you can eat" subscription service is available at \$9.99 per month.<sup>26</sup> That fee includes on-demand streaming of music from Napster's library and commercial-free music from 50 interactive online radio stations.<sup>27</sup> Complementary services for all Napster users include music videos, 30-second samples, online articles, *Billboard* charts, interuser e-mail, and playlist browsing.<sup>28</sup>

#### **Interactive Streaming Plus Burning**

The leading subscription service (550,000 subscribers), RealNetwork's Rhapsody, offers an alternative model to downloading à la carte.<sup>29</sup> Its key competitive feature is "all-you-can-eat" on-demand streaming, which is made available for a subscription fee of \$9.95 per month, and its present compatibility with Apple's iPod, made possible by reverse engineering that may yet be legally contested.<sup>30</sup> Individual burns are generally available at 79 cents but were sold for as little as 49 cents during an August promotion.<sup>31</sup> The Rhapsody service also offers access to 50 commercial-free stations.<sup>32</sup>

As of April 2004, 3 percent of Internet users and 17 percent of music downloaders used paid music services.<sup>33</sup> The percentage of U.S. downloaders who actually paid for a song at one point or another increased from 8 percent to 22 percent in the first 12 months after the launch of iTunes.<sup>34</sup> Moreover, 30 percent of those downloads were from independent labels not owned by the five major

music companies, in contrast to 20 percent in offline markets.<sup>35</sup>

To summarize, a number of competitive music services that incorporate digital rights management emerged in 2003 and early 2004. Each has some interesting features that are attracting the interest of a segment of the buying public. When applied in any of those services, DRM stops users from copying content in a manner that would displace market demand. Those protections help preserve some commitment to avoiding expropriation of investments in content and distribution services.

## New Services

With the potential for more innovation in 2004–05, some content providers and distributors may again transform the market with new offerings of digital music services. In addition to extending and refining the core services described above, providers will combine music services with other brand products, such as airline tickets, retail merchandise, food, and cable services.

### Downloads Plus Hardware

Following the iTunes model, Sony now markets a competitive download service called Connect.<sup>36</sup> As in iTunes, Sony tracks are compressed with a proprietary technology (ATRAC); most songs are available for 99 cents and albums for \$9.99.<sup>37</sup> All downloaded songs can be transferred to Sony MiniDisc or Memory Stick portable devices that contain Sony's proprietary OpenMG DRM technology, as well as high-end Sony computers now sold in the company's retail stores.<sup>38</sup> Sony also recently launched in Finland a "personalized radio service" that plays music directly through mobile phones; a personal playlist feature adapts to consumers' tastes by enabling them to press a button that indicates approval or disapproval of a song.<sup>39</sup>

### Downloads Plus Streaming

Virgin Digital, a division of Sir Richard

Branson's Virgin Group (and thus a sister business to the Virgin Megastores entertainment product retailers), launched in September 2004 a competitive "all-you-can-eat" streaming service that will operate similarly to the existing Rhapsody and MusicMatch subscription services.<sup>40</sup> Virgin subscribers will pay \$7.99 per month to access a catalog of more than one million songs; service will be coupled with Virgin Electronics' new music player, which has more capacity and weighs less than a similarly priced iPod.<sup>41</sup> Microsoft launched a music download service around the same time and expects to add a subscription streaming service to it soon.<sup>42</sup> Microsoft has also released a new rights management system (called Windows Media DRM for Portable Devices) that will enable listeners to make copies to portable players that observe the same rights restrictions controlled on the PC; that will also allow the transfer to players of temporary downloads. Microsoft will derive revenue in the competitive music space through the sale of players from Creative, Samsung, and other vendors and the licensing of Windows Media software needed for operation. The new streaming services will increasingly provide a major test of the relative appeal of music streaming and downloading, as well as alternative sources of revenue.

### Downloads Plus Merchandise

From 1994 to 2004, Wal-Mart, Circuit City, Best Buy, and Target stores deeply discounted popular CDs in order to attract people to shop at their establishments.<sup>43</sup> In light of their considerable success in "brick-and-mortar" retailing, each chain now plays a related strategy in the digital marketplace. Wal-Mart now offers online downloads at 88 cents apiece.<sup>44</sup> Circuit City recently bought up the digital music platform MusicNow (formerly FullAudio). Target has a distribution deal with Napster, and Best Buy distributes music services from Rhapsody and Napster.<sup>45</sup> Amazon should soon launch a similar strategy to combine music and merchandise retailing online.<sup>46</sup>

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partnership with the music services as promotional tools to stimulate product sales. Pepsi instituted a promotional program to give away 100,000 iTunes in bottlecap coupons; Heineken, Miller Brewing Company, McDonald's, and Coca-Cola plan respective service ventures with Rhapsody, Napster, Sony, and Europe's OD2 (now owned by Loudeye).<sup>47</sup> Starbucks now allows customers at its Santa Monica location to make customized CDs. It is distinctly possible that brand building for corporations can begin if they can activate their own music downloading or streaming services using infrastructure now available from Loudeye and Microsoft<sup>48</sup> or from wholesale provider MusicNet.

As a final possibility, cable operator RCN introduced in 2004 a bundled music service with MusicNet.<sup>49</sup> Subscribers would have the opportunity to access both services for one monthly fee. MusicNet's present catalog tops one million tracks.

There are three general points to be made regarding the state of competition in this market. First, the spectrum of services is now quite wide; focused shoppers locate favored songs through à la carte downloads, listeners at large are attracted to noninteractive streaming, and more dedicated browsers insist upon the full browsing capabilities of interactive streaming. Differentiated versions imply diverse ownership rights, service length, pricing, personalization, and complementary components. With no abiding certainty of where buyer tastes reside in the market, rival providers "learn by doing" those features that consumers want most.

Second, actual market experience proves that the use of DRM indeed responds to consumer tastes. MusicNet and Pressplay at their outset did not support permanent downloads, burns, or any sort of sharing, and their fee structures were dauntingly complex. As subscriptions trailed and illegal file trading continued, the importance of permanent ownership, portability, and sharing became evident to all. Later music services then implemented simpler pricing structures and allowed permanent downloads, CD burns,

transfers to portable devices, and sharing (within reasonable limits)—features enabled yet controlled by underlying DRM technologies.

Third, with distribution platforms that are now proving their adaptability to consumer tastes, the potential gains for independent labels (indies) are considerable. As the market leader in downloads, Apple's iTunes now targets niches of indie fans with catalog rights to more than 600 labels;<sup>50</sup> Microsoft now offers content from 3,000 independent labels.<sup>51</sup> Recent launches by eMusic and Audio Lunchbox respectively feature catalogs of 3,500 and 4,200 labels.<sup>52</sup> Digital distribution has worked to the clear benefit of producers and distributors astute enough to capitalize on the new technology. For example, indie label Black Rain and distributor INgrooves pushed artist Kieran to number-one rankings at Rhapsody and iTunes in the summer of 2004.<sup>53</sup>

The potential alliance of the music services and the independent labels may be vital to the future success of digital music in two key respects. First, independent labels offer different sounds from fresher and less well-known talent, avoiding the need to promote to major retail stores and mainstream radio platforms. In addition, while major label business financially suffered in 2001–03, a number of independent labels did very well.<sup>54</sup> That suggests that music from independent labels may gain in market share as alternative distribution methods improve. The music services should then be seen as enabling agents of emerging competition between incumbent big labels and the hard-charging independent upstarts.

Finally, downloading may be superseded by streaming in the years to come. A major label receives 65 cents from online downloads that sell for 99 cents.<sup>55</sup> The remaining 34 cents of an online purchase pays distribution costs—bandwidth, credit card use, and distributor service and overhead. Accordingly, if an online album costs \$9.99, the label receives \$6.50. Accounting for differences in distribution expenses, a label makes a similar

margin in store sales.<sup>56</sup>

The margin of \$6.50–\$7.00 goes to cover mechanical royalties, artist advances, unrecovered expenses, and general promotion expenses needed to find talent and distribute materials to radio stations and record stores. With requisite payments to talent and recovery of costs, it is consistent with hard-nosed management and competition that a producer should recover the same profit margin from any new distribution channel that it does from its incumbent alternatives. For if labels fail to recover the requisite margin, profitability in the emerging market declines as customers migrate. So too does the incentive to record and promote new acts.

That said, downloads do not now appear to present the requisite consumer value. For example, a survey by research firm Ipsos-Insight found that consumers believed that \$7.99 was the best price for digital music albums.<sup>57</sup> If that amount is an accurate measure of the median buyer's valuation, a label would receive no more than \$4.50 from the sale of an album online. That would fail to recover the costs of royalties, production, and promotion.

The industry may be better off in the long run with streaming, where profit margins can be made considerably higher through licensing fees that can be adjusted more readily. From the perspective of distributors, streaming appears now to be more profitable. At present, the online music market generates \$271 million annually in revenues, which are split 60/40 between downloads and streaming subscriptions.<sup>58</sup> Those numbers may change substantially in the next few years as the streaming services come to offer the primary features—"all-you-can-eat" access to the "celestial jukebox"—that digital technology is capable of.

The basic points of the previous section must now be reaffirmed and extended. The number of music services is growing, and the market is testing new business models and technologies that may displace incumbents. Once again, digital rights management, which disallows the copying, resale, and

redistribution of content, protects the integrity of each system. Relaxing access protection, or otherwise enabling alternative technologies to take copyrighted work without compensation, harms both content owners and the emerging services.

## Fair Use and Reasonable Usage Expectations

The notion of reasonable usage bears some discussion, especially because it has been confused with the legal concept of fair use. Fair use is the "privilege in other than the owner of a copyright to use the copyrighted material in a reasonable manner without his consent, notwithstanding the monopoly granted to the owner."<sup>59</sup> When properly established, fair use must conform to specific legal guidelines and careful economic considerations of type and nature of use.<sup>60</sup>

Although case precedents exist for specific types of uses, a judge or jury must ultimately make decisions about whether particular contested uses conform to the fairness guidelines specified in Section 107 of the Copyright Act. Moreover, the protection of fair use is only defensive; that is, fair use is not a standard for inalienable consumer rights but is only a defendant's protection against an otherwise valid claim of copyright infringement. Some uses, such as noncommercial copying of content, are presumptively fair, meaning that plaintiffs must present additional evidence that would bolster an infringement claim.<sup>61</sup> That being the case, it is impossible to create any kind of automated system that determines whether a particular use is fair or not, because the stipulations in Section 107 are guidelines, not specific rules.

### Consumer Expectations

In addition to fair use, consumers have other reasonable expectations about how they can use purchased content. For example, if a user buys an album, he or she may expect to be able to sell it, record a digital cassette for later

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use in her car, or make duplicate tape copies to sell to her friends and acquaintances. The legality of the first use would be covered by the first sale doctrine,<sup>62</sup> while the second would be covered under the home taping exemption of the Audio Home Recording Act.<sup>63</sup> The third is a copyright infringement.

Although meeting every consumer expectation might not be a legal obligation of any producer, he would nonetheless be wise to take steps to heed expectations so as to increase the value of his service. Moreover, he can price particular features incrementally in order to increase the monetary recovery of the property or service. That may allow him to offer a basic service at relatively low cost. The situation here may be likened to that of a restaurant owner who offers an à la carte menu. By pricing appetizers and deserts separately, the owner can afford to keep prices down for the basic entrées.

Accordingly, whether “space shifting” or “burning” is a fair use or not, a content producer unwilling to provide consumers a means of moving music tracks off a hard drive will surely lose customers and revenues in the long run. Harsh economic reality will prevail over narrow copyright law; an overly protective system of copyright is a detriment in the eyes of consumers who have grown accustomed to a range of copying capabilities, legally fair or not.<sup>64</sup> Consequently, the ability to monetize the value of each service may lead producers to offer a great number of consumer rights that legal “fair use” does not cover.<sup>65</sup>

### **Interoperability**

Before buying into digital music in any big way, many consumers may need greater assurances that DRM systems will interoperate with one another. The industry has already made strides toward interoperability of so-called rights expressions, which describe the rights that a content owner grants a consumer and under what conditions; however, standardization in this area is not complete.<sup>66</sup> Even if it were, additional challenges would remain before DRM

schemes were fully interoperable with one another. That would enable a prospective buyer to build up a catalog from different services without worrying about later obsolescence.

Chief among the challenges is standardization of identification schemes for both users and devices. Currently, and with few exceptions, each DRM scheme has its own notion of identity and its own way of authenticating identities. A user’s identity in one scheme (e.g., for an Adobe e-book) is only coincidentally related to her identity in another scheme (e.g., for an online music subscription service based on Microsoft Windows Media). Attempts to create universal online identification schemes have been thwarted by a combination of technical complexity and concerns over privacy. A DRM scheme for integration with P2P networks should at least offer some degree of identity interoperability among popular formats, devices, and services.

Unilateral solutions may exist. In its present Harmony service, RealNetworks enables the compatibility of its RealPlayer Music Store tracks with both Apple’s iPod players and players compatible with Windows Media Audio (WMA).<sup>67</sup> RealNetworks accomplished that by producing WMA files and integrating Windows Media Player on the user’s PC (both of which are permitted by Microsoft) and by reverse engineering Apple’s FairPlay DRM file format (which Apple may yet legally contest). In another potential solution, RapidSolution Software of Germany now offers software (called Tunebite) that allows users to re-record any file played on a PC by simple loopback through the PC’s audio card; songs are stored in an open format for later use.<sup>68</sup> Parties differ as to whether the technology legally breaches access protection.<sup>69</sup>

It now seems likely that the market will consolidate to two or three major platforms for each major media type. A plausible scenario is that by the end of 2005 the market will converge on the Microsoft, Apple, and Open Mobile Alliance’s Download and DRM standards for audio; Adobe, eReader (frequently



known as Palm Digital Media), and MobiPocket for e-books; and Microsoft and RealNetworks for video downloads.<sup>70</sup> Although the number of platforms is a bit higher than that which consumers have been accustomed to for analog media,<sup>71</sup> it is—interestingly enough—consistent with the number of platforms in many other technology markets (personal computer architecture and operating systems being a notable exception).<sup>72</sup> Content producers and distributors here would be challenged to enable some form of interoperability in a multistandard market. Otherwise, they may compete to find one industry standard or until a number of different systems coexist, albeit inefficiently.<sup>73</sup>

Yet market standardization for DRM—whether open, de facto, or somewhere in between—seems preferable to government-enforced guidelines, as Sen. Ernest Hollings (D-SC) proposed in the Consumer Broadband and Digital Television Promotion Act of 2002. Had it passed, the act would have imposed government-selected DRM standards on the content and electronics industries if those industries failed to agree on standards on their own within 18 months of passage.<sup>74</sup> However, the bill set out inadequate corrective measures; that is, procedures for moving away from inferior or ineffective standards. Among other things, the CBDTPA’s provisions for allowing standards to evolve in order to keep up with new technologies, potential security threats, and changing consumer preferences were unworkably slow and cumbersome.

## Integrating P2P and DRM

As a practical matter, P2P networks are well suited for distribution of unprotected files, regardless of their legal status. P2P software is available to all takers on the Internet. P2P does not require that the source of a file actually send a file or even know the identity of the recipient, and it allows files to be copied virtually instantaneously with maximum automation and without physical media. Some argue that P2P helps facilitate an “information com-

mons” where users can transmit and modify content.<sup>75</sup> Accordingly, P2P is quite attractive to many users and academics who broadly approve of the easy information exchange that P2P makes possible.

### The Benefits and Harms of P2P

There are a number of specific capabilities of P2P that bear consideration. First, P2P technology may facilitate the distribution and discussion of full literary works<sup>76</sup> and films<sup>77</sup> that are in the public domain. Recipients can comment on or adapt certain works to provide new insights and features, thereby creating a stream of criticism that users may sequentially adapt. Second, P2P allows listeners to sample unprotected music that they otherwise might not hear and develop interests in bands and songs that might otherwise not evolve. Third, though not commonly acknowledged, major labels themselves use research from P2P networks to track which songs are traded in local areas, which can suggest new spins or modifications in local airplay and retailing.<sup>78</sup> Fourth, P2P can be melded with personalization technology that tracks consumer choices; musicians and labels can use that information to present music and related material to a group of potential buyers.

Unsigned acts—which earn income mainly from live performances—may find P2P an invaluable means of building audience interest. Many “jam bands” (such as Phish, Widespread Panic, and moe.) permit fans to tape and trade copies of live concerts, as long as they do not profit from it.<sup>79</sup> Through P2P marketing, a popular band named Wilco landed a record deal after its original label discontinued their engagement.<sup>80</sup>

However, well over 90 percent of files now traded on P2P networks appear to be nothing more than unchanged copyrighted tracks and movies that were previously ripped and uploaded without authorization.<sup>81</sup> There is no legal or economic reason to relax copyright protection for full-length tracks that are taken and passed on without contexts that typically merit fair use defenses, such as

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criticism or parody. Such unauthorized downloading can potentially displace sales and licensing of legitimate products and further reduce the chances for success of competitive service applications; illegitimate file sharing grabs a substantial center of the distribution space that interferes with the anticipated success of any neighboring service. The dimensions of the problem are now severe; while iTunes has sold more than 100 million tracks, estimated unauthorized file sharing exceeds 2.5 billion tracks per month.<sup>82</sup>

### **P2P and Superdistribution**

A capability related to P2P is “Superdistribution,”<sup>83</sup> which refers to technology that allows copyrighted content to be distributed multiple times. While P2P implies free file sharing among peers, Superdistribution implies that the process starts with a “publisher” and includes some kind of commercial transaction at each step. Depending on the technical details, Superdistribution of a work can provide revenues to content owners from each downstream transaction.<sup>84</sup>

Superdistribution has been mentioned in the same breath as DRM since the mid-1990s, when a few DRM vendors attempted to support it.<sup>85</sup> Yet true Superdistribution requires complex technology that is notoriously difficult to implement; thus, copyright-respecting online content services have implemented only partial approximations to Superdistribution.<sup>86</sup>

Superdistribution can be integrated into P2P networks if rights are specifically defined, monitored, and licensed. Generally speaking, legitimate P2P can be used in innovative business models much like other music services—à la carte service for individual plays, a subscription fee for unlimited downloads, and additional fees for enhanced services. A number of entrepreneurs have built or are continuing to combine different service capabilities into legitimate P2P services. Although their usage figures are dwarfed by the likes of iTunes and Napster—to say nothing of P2P networks like KaZaA—there is no reason why such services should not be

tested and vie for market share. We shall now describe a number of those services.

### **Business Models**

Four current business models enable Superdistribution.

***Paid Access Plus Controlled Sharing.*** MusicMatch’s new On Demand service, which launched in July 2004, now allows paying monthly subscribers to send e-mail playlists to nonsubscriber friends. Friends can play the first 20 tracks on each received playlist up to three times before being asked to pay for them as individual downloads or to subscribe to the On Demand service. For additional revenue recovery, MusicMatch obtains the e-mail addresses of each contact and uses them for marketing purposes. That capability uses an existing function in Microsoft Windows Media DRM that issues to the friend a license for each track that expires after three plays.

***Unlimited Sharing of Approved Content for a Fixed Fee.*** Wippit, based in the UK, includes over 60,000 tracks from about 200 record labels, including some of the majors, as well as numerous audiobook, game, and software titles.<sup>87</sup> It allows unlimited downloads for \$90 per year or \$23 per month. Users who download tracks can potentially share them with other subscribers, depending on the wishes of the content owner.<sup>88</sup> Some downloads are available in unprotected MP3 format; others are in protected Windows Media format with DRM. To determine whether a file has been approved for sharing, Wippit uses the MusicDNA waveform system from Cantamatrix, which is a technology that analyzes the content of each file, produces a “fingerprint,” and compares the fingerprint with those in a database provided by Cantamatrix’s owner, Gracenote.<sup>89</sup>

***Downloads with Alternate Compensation.*** Hong Kong-based Singwell International has launched Qtrax, which like Morpheus is based on the Gnutella open-source file-sharing network software.<sup>90</sup> Qtrax offers owner-approved files in a DRM-protected format that is permanently attached to unprotected MP3 files.

The DRM reports file uses to collection agencies such as BMI. SingWell derives revenue from advertising and pays royalties to IBM. Qtrax users can download files at no charge in exchange for viewing advertisements targeted to their revealed tastes in music. Users must pay for burns to optical discs.

**Distributed Agencies.** Providers on Shared Media Licensing's Weed technology network can create e-mails and blogs to recommend tunes from independent musicians to friends and acquaintances.<sup>91</sup> Network users can buy music that is protected by Microsoft DRM technology. Distributors on Weed receive a 35 percent commission for each track sold directly through them, as well as smaller amounts for works resold through their buyers. Popular artists may generate strings of secondary purchases as their works are resold sequentially through different e-mails or blogs. That use, which is similar to what Amazon.com does with its Amazon Affiliates and Listmania programs, also is somewhat like a P2P version of the "shared playlist" feature of Napster and MusicMatch.

A final creative business model is P2P streaming, which has been introduced by Grouper<sup>92</sup> and Mercora.<sup>93</sup> Now providing a test version of a P2P radio service, Mercora claims that its prospective uses adhere to guidelines that qualify for a statutory license established in the Digital Millennium Copyright Act of 1998.<sup>94</sup> Even if that assessment of statutory privilege is incorrect, record labels may look more favorably upon licensing a P2P service that permits sampling much like a subscription service. The service provider would need to continue to take all possible steps to prevent redistribution of any accessed tracks. Nonetheless, protective publishers and artists may reject positive overtures to distribute through digital technology musical works that are now under their control.

## P2P and the Courts

An important factor in the launch of services like the above, which use DRM along with

features borrowed from P2P, has been court decisions that have helped perpetuate the existence of P2P software, thereby ensuring P2P's continuing influence on the online content markets. One recent decision in particular has bolstered claims that P2P software file sharing is a legitimate service with "significant noninfringing uses," a key benchmark set in the *Sony v. Universal* Supreme Court decision to determine the legality of a device that has some potential uses that may infringe copyright.<sup>95</sup> While prevailing against Napster<sup>96</sup> and Aimster,<sup>97</sup> the content industries received a first jolt in April 2003 when a federal district court (Central District of California) dismissed a complaint brought by the movie and record industry against peer-to-peer networks Grokster and Morpheus (operated by Streamcast Networks).<sup>98</sup> The Ninth Circuit upheld the summary judgment under appeal in August 2004.<sup>99</sup> The U.S. Supreme Court has been asked by industry to hear the case.<sup>100</sup>

The Ninth Circuit in *Grokster* made key distinctions from its previous *Napster* decision, which held that Napster was guilty of contributory and vicarious infringement and which led eventually to a complete shutdown of the service.<sup>101</sup> While Napster stored on its servers information about site locations of infringing material, Grokster and Streamcast simply distributed software and therefore had no immediate knowledge of the sites and facilities where infringement resulted.<sup>102</sup>

The circuit court upheld the district court, which found that the distributed software programs had significant noninfringing uses similar enough to home video recorders that sometimes could be used to infringe copyrights but were legal nonetheless.<sup>103</sup> Contributory liability did not result because Grokster and Streamcast had no actual knowledge of infringement at the moment of its occurrence.<sup>104</sup> Moreover, although they were financial beneficiaries of file sharing, the two providers lacked the requisite monitoring ability to prove vicarious liability.<sup>105</sup>

From a legal perspective, the outcome raised some eyebrows. The Ninth Circuit's decision apparently differs from the previous

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*Napster* decision, where the same courts ruled that contributory infringers knew, or had reason to know, of direct infringement.<sup>106</sup> The second point (i.e., *had reason to know*) was made in an amicus brief filed by nine distinguished experts on copyright law.<sup>107</sup> The Ninth Circuit's latest decision on *Grokster* may then provide an incentive for software developers to figure out ways in which they can look blind, innocent, or simply incapable of taking deterrent action, whatever the apparent harms of taking action. The Seventh Circuit reached a different outcome regarding "willful blindness" inherent in the Aimster file-sharing system: "[W]illful blindness is knowledge, in copyright law, where it indeed may be enough that the defendant should have known of the direct infringement."<sup>108</sup>

From an economic perspective, the technological outcome of the conflicting decisions in the Ninth Circuit is clearly inefficient. *Napster*, *Grokster*, and *Morpheus* lead to the same basic result: more than 90 percent of their use infringed on copyrights. If only one technology is to be allowed, *Napster* would be the apparent choice; it is more efficient than the remaining two, which take considerably longer to operate because of the lack of a central directory. Moreover, if there is an economic reason to restrict *Napster* (due to offsetting harms), there is even more economic reason to restrict the less efficient services.

Whatever the potential uses made possible by *Grokster* or *Streamcast*, plaintiffs contended that the software providers could have taken other protective steps to control use.<sup>109</sup> Plaintiffs' briefs pointed out that the district court failed to consider evidence that defendants elsewhere had successfully blocked pornographic content, provided software updates, and deactivated existing software.<sup>110</sup> Meanwhile, Relatable, Audible Magic, Snocap, and others claim to have devised "fingerprinting" (acoustic analysis) technology (similar to that of Gracenote, described above) that can be used to identify and filter illegal downloads (or require payment or other consideration before allowing access to copyrighted works).<sup>111</sup>

However, citing the *Sony v. Universal* precedent, the *Grokster* and *Streamcast* courts avoided prescribing any direct filtering that would mandate a change in software technology that was apparently beyond the capacity of the courts to manage.

The two outcomes represent an evident circuit split, and the Supreme Court has granted certiorari. The Court may choose to overturn the "significant noninfringing use" clause of *Sony* that can apparently admit any technology regardless of offsetting harm to rights owners. The Court may indeed impose the alternative test of a strategic fix (i.e., a comprehensive analysis that maximizes efficiency after considering all offsetting costs and benefits of each position). However, such a fully rational analysis is entirely impractical; it is impossible to determine all likely events and alternatives, measure relevant quantities, and make accommodations and adjustments piecemeal. A more specific tactical solution would consider the deployment of filtering techniques that enable P2P technologies to continue operations so long as all steps are taken to reduce or eliminate uses that violate copyright. If filters are imposed, courts may monitor the resulting outcome to determine the need for additional action.

## **Toward a Market Resolution?**

An event in November 2004 may be an important harbinger of things to come. Universal Music Group (UMG) entered into a licensing deal with Snocap, a fingerprint filtering technology company founded by *Napster* developer Shawn Fanning, to use its technology to control usage of and process payment for UMG catalog items found on file-sharing networks.<sup>112</sup> The deal resulted in a service that was expected to launch by January 2005. It is currently unclear which P2P networks will be involved with the service.

The announcement came shortly after a related disclosure that Sony BMG Music had

entered into wider talks with both Snocap and the Grokster file-sharing network.<sup>113</sup> Under the envisioned system, Snocap would provide a service to control usage of some Sony BMG content on a new file-sharing service, provisionally called Mashboxx, that would be controlled by Grokster. Sony BMG would make some content, such as music from new artists and low-fidelity versions of content from established names, available for free downloading, while other content would require payment and have usage controlled by fingerprint filtering. That would provide Sony the ability to use P2P to determine the potential demand for new releases.

While the Sony deal has yet to be announced formally, the involvement of a major P2P network represents a primary difference from the more limited agreement between UMG and Snocap. Snocap is now one of a handful of companies with technology related to fingerprint filtering that are reportedly in serious licensing talks with the major labels. The big question is whether any fingerprinting technology is actually compatible with an existing P2P network like Grokster, or whether new file-sharing networks would have to be built to use the technology—as UK-based Wippit has already done with fingerprint filtering technology from Gracenote.

If Snocap can demonstrate that its technology can be used to complement Grokster with no (or even reasonable) modifications to the Grokster software, then the music industry will have a demonstrable case that combined solutions are technically workable. As a legal matter, the labels could then credibly argue that file-sharing networks are avoiding integrating fingerprint filtering technology on purpose. By contrast, any P2P network would risk losing most of its existing customer base if it were forced to convert itself to a copyright-respecting operation, whether using fingerprint filtering, encryption-based DRM, or some other technology.

Yet even if the existing file-sharing networks find ways to show that fingerprint filtering technology does not work with them,

record companies will find other ways to use the technology to build legitimate online music services. Therefore, any type of P2P service that uses fingerprint filtering will serve as ballast in the market to induce DRM-enabled services to add more P2P-like functions, such as CD burning or playlist sharing. Most DRM technologies can be configured to provide those features as well, if content owners desire them.

## Alternatives to Coexistence

Filtering of individual compositions would be the economically efficient means of restraining infringing uses while allowing legitimate users continued unrestricted access to unprotected files. However, if filtering is not technically practical (the question of practicality with respect to integrating filtering with existing P2P networks like FastTrack and Gnutella is hotly debated at this time) or courts otherwise fail to deal adequately with the legality of P2P technology, the content industries may yet consider additional devices to counter copyright violation. The industry is already employing or advocating three primary strategies:

### Spoofs and Decoys

Rights owners may seed false versions of songs in file-sharing networks using spoofs and decoys available from services such as Overpeer, Vidiuz, and Media Defender.<sup>114</sup> With spoofs, users' attempts to download particular songs may hit planted ruses with complete silence, spoken messages, or repeated loops. Problematically, spoofing strategies face the generic difficulty that the next attempt to take a song is literally a mouse click away. That is, if a track fails, the user may retry by moving to the next song listing displayed on his or her screen. Spoofing then is practical only to the degree that the additional delays are annoying enough to dissuade such continued efforts. Protection through spoofing is more likely to be effective with movies that last two or three hours

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than with record tracks that can be sampled in a few minutes.

### **User Lawsuit**

In September 2003 the major labels began a legal war against big uploaders by directly suing them for copyright infringement. There was some survey evidence that the initial Recording Industry Association of America (RIAA) campaign communicated its basic point and reduced the overall size of the downloading population as an immediate consequence.<sup>115</sup> However, music industry gains may be for naught if new technologies keep evolving and file-sharing activity keeps growing; the most careful scholarly study of P2P finds no evidence of a long-run slowdown in total file-sharing activity,<sup>116</sup> although users seem to be moving from previous market leader KaZaA to new or improved alternatives such as eDonkey,<sup>117</sup> BitTorrent,<sup>118</sup> and Limewire.<sup>119</sup> If settlement amounts cover costs, there is no particular economic reason to stop litigation. However, the number of network nodes appears to be quite high; the top 1 percent of the population, which may account for 40 percent of seeded tracks,<sup>120</sup> now numbers approximately 400,000 people spread throughout the world.<sup>121</sup> Moreover, the publicity consequences are negative to the industry; the music industry has certainly alienated some portion of its fan base, particularly younger users who are potentially more enthused about new uses of digital technology.

### **Legislation**

The content industry's most recent legislative response to the file-sharing problem was the Inducing Infringement of Copyrights Act of 2004<sup>122</sup> (known as the Induce Act for short), sponsored by Sen. Orrin Hatch (R-UT). If the Induce Act had passed, it would have enabled courts to find P2P networks like Grokster and Morpheus guilty of "inducing" consumers to infringe. That determination would have involved a judicial assessment of the intent of a P2P network (or other type of service) to induce infringement.

The act failed to pass in 2004, but Senator Hatch intends to try again in 2005.<sup>123</sup> Legislative efforts that outlaw technology for prospective harm deserve real caution; an overly broad bill can implicate existing or prospective technologies with some benefit and chill efforts by researchers unsure of the financial consequences of aggressive litigation and a legal status that will depend on court enforcement in common law.

### **Cooperative Notice**

When initiating action against individual users found to upload files to P2P networks, the RIAA now must institute lawsuits against anonymous John Doe defendants before learning from their ISPs the identities of the infringers.<sup>124</sup> Although ISPs may reasonably wish to protect subscriber privacy, they can facilitate settlement and reduce likely payments if they cooperate with the content industries. A template strategy has been initiated at UCLA. To encourage ISPs to participate, the RIAA could agree to allow a wider "safe harbor" against contributory infringement, which is now normally activated once first awareness is established.<sup>125</sup> The RIAA may wish to compensate ISPs for the costs, eliminating one conceivable excuse for non-compliance. That may seem an ideal solution, but it has little chance of emerging. Given present ISP concerns about common carrier status, an engagement on behalf of copyright owners may expose them to additional requests for other classes of offending content, such as libel, obscenity, indecency, and fraud.

### **Compulsory Licensing and Levies**

Another strategy for government involvement emerges from academic advocates of compulsory licensing. Under a number of proposals, users could freely download some subset of music, movies, or other content through P2P networks of various natures.<sup>126</sup> Appropriate levy amounts would be determined by Congress or the Copyright Office, or both. Revenues would be collected on Internet subscriptions, computers, storage media, and

other services and hardware that have the potential to be used for an infringing activity. Collections in the United States would be distributed to copyright owners per values assigned by a royalty tribunal or arbitration panel convened by the Copyright Office.

There are five practical problems with this scheme. First, the levies would be assessed on individual equipment purchasers and Internet subscribers regardless of their actual use of P2P technology and level of copyright infringement; computer users would be harmed by a system of taxation that would reduce their wealth and possibly stifle their purchases and upgrades of equipment and broadband service. Second, the panel would face the daunting task of parsing out a fixed pot of revenues to contending uses and determining the relative worth of each—a short novel, a two-hour movie, a three-minute song. Third, there is no apparent means for resolving international theft; the U.S. Congress clearly cannot levy a fee on computers or ISP subscriptions of foreign citizens. Fourth, administrative costs are daunting; as consumers download increasing amounts of content, copyright administrators and legislators will need to reconvene hearings annually just to adjust the tax instrument in order to keep up with revenue requirements.

Finally, in the foreseeable event that content downloading outgrows anticipated levy dollars, compensation per individual work would necessarily diminish. Content owners would then fight for a revenue pot that bore no direct relation to the value of underlying content. The uncertain nexus between individual effort and anticipated reward evidently harms the incentive of a content provider to invest the resources needed to produce and bring its commercial wares to market.

## Conclusion

Peer-to-peer file sharing is a useful technology that may greatly empower consumers, musicians, and record labels. But support for P2P must not become support for unautho-

rized downloading and related copyright violations. If unchecked, unauthorized downloading can continue to take standing ground from competitive services that vie for survival in the same market.

Property rights on P2P networks can be protected through DRM technologies that stop unauthorized reproduction and distribution. Effective DRM makes possible a number of different business models, including those with P2P features, which may then compete with one another for market share.

Competing technologies and business models make possible the market battles that contribute to “creative destruction.” In an environment that is imperfectly understood but learnable, economic efficiency must be properly gauged by the capacity to test information and adapt accordingly; which contrasts with static welfare measures common in economic textbooks. With so important a role for competition among different technologies, and so much clearly left to learn in the digital content paradigm, government should be in the position of protecting property rights, including copyright.

Government should act to protect property rights, including copyrights, but it should not pick winners or discourage any technology from competing in this new marketplace. In other words, P2P and DRM technologies should be left free to evolve together to meet the also-evolving needs of the market for copyrighted works.

## Notes

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**Government should act to protect property rights, including copyrights, but it should not pick winners or discourage any technology from competing in this new marketplace.**

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4. Relevant papers can be viewed at <http://www.riaa.com/news/filings/aimster.asp> (retrieved August 22, 2004).

5. *Metro-Goldwyn-Mayer Studios et al., v. Grokster, Ltd., et al.*, 259 F. Supp. 2d 1029 (C.D. Cal. 2003); 2004 WL 1853717; —F.3d— C.A.9 (Cal.), 2004, <http://techlawadvisor.com/docs/mgm-grokster.html>.

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7. The district court in *Universal City Studios v. Reimerdes* held that users may not break access protection even to enable fair use protected in the Copyright Act. “Defendants are not here sued for copyright infringement. They are sued for providing a technology designed to circumvent technological measures that control access to copyrighted works. . . . If Congress had meant the fair use defense to apply to such actions, it would have said so. Indeed, as the legislative history demonstrates, the decision not to make fair use a defense to a claim under Section 1201(a) was quite deliberate.” 82 F. Supp. 2d 211 (S.D. N.Y. 2000).

8. Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (New York: HarperCollins, 1947).

9. See, for example, Mike Godwin, *What Every Citizen Should Know about DRM* (Washington: Public Knowledge and New America Foundation, 2004), <http://www.publicknowledge.org/content/overviews/citizens-guide-to-drm/attachment> (retrieved August 13, 2004).

10. David Friedman, “In Defense of Private Orderings: Comments on Julie Cohen’s ‘Copyrights and the Jurisprudence of Self-Help,’” *Berkeley Technology Law Journal* 13 (1998): 1151.

11. Wendy Gordon, “Intellectual Property as Price Discrimination: Implications for Contract,” *Chicago-Kent Law Review* 73 (1998): 1367.

12. Carl Shapiro and Hal R. Varian, *Information Rules* (Boston: Harvard Business School Press, 1999), pp. 53–82.

13. MusicNet was originally owned by Warner Brothers, EMI, BMG, and RealNetworks, and Pressplay was owned by Universal and Sony. MusicNet made available to service retailers

wholesale service, including content packaging, distribution, and e-commerce services, and Pressplay provided both the latter services and the user interface.

14. For example, Pressplay users chose among Basic (\$9.95 for 300 streams and 30 downloads), Silver (\$14.95 for 500 streams, 50 downloads, and 10 burns), Gold (\$19.95 for 750 streams, 75 downloads, and 15 burns), and Platinum services (\$24.95 for 1,000 streams, 100 downloads, and 20 burns). John Borland, “Pressplay to Offer Unlimited Downloads,” *CNet News.com*, July 31, 2002. Basic listeners of MusicNet services purchased through RealNetworks paid a monthly fee of \$4.95 to stream 100 songs and download 100 more, \$9.95 for a combined package with additional Net radio services, and \$19.95 for a GoldPass subscription with sports, entertainment, and news programming. By contrast, AOL offered basic MusicNet service (20 streams, 20 downloads) for \$3.95 per month, unlimited streams and downloads for \$8.95, and 10 additional burns for \$17.95. John Borland, “NetMusic Gets AOL Audition,” *CNet News.com*, February 26, 2003.

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62. 17 U.S.C. § 109 (2000).
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64. In the same respect, CD tracks, once battered down with strict anti-copying protections, now accommodate (through extra files packaged in Microsoft Windows Media Audio Format with Windows Media DRM) limited burning, temporary sharing, and additional uploadable content that provide an enhanced listener experience on the PC. John Borland, “Copy Protected CDs Take Step Forward,” *CNet News.com*, September 12, 2003.
65. Ann Okerson, associate director of the Yale University Library, continues to stand by comments that she made in 1997 concerning libraries and fair use: “The market has brought librarians and publishers together; the parties are discovering where their interests mesh; and they are beginning to build a new set of arrangements that meet needs both for access (on the part of the institution) and remuneration (on the part of the producer). . . . [Price issues notwithstanding], libraries are able to secure crucial and significant use terms via site licenses, terms that often allow the customer’s students, faculty, and scholars significant copying latitude for their work . . . , at times more than what is permitted via the fair use and library provisions of the Copyright Act of the U.S. [emphasis ours]. Ann Okerson, “The Transition to Electronic Content Licensing: The Institutional Context in 1997,” Paper presented at Scholarly Communication and Technology Conference of the Andrew W. Mellon Foundation, Emory University, April 24–25, 1997, p. 1, <http://www.library.yale.edu/~okerson/mellon.html>.
66. Currently, there are two primary “competing” rights expression languages (REs). One is Open Digital Rights Language (ODRL), which the Open Mobile Alliance has adapted for use in its set of standards for wireless devices; the other is eXtensible Rights Markup Language (XrML), which Microsoft uses in its DRM technologies and which the Moving Picture Experts Group adapted for its MPEG REL standard, which is now an ISO standard as well.
67. Bill Rosenblatt, “RealNetworks and Motorola Open iTunes/iPod Stack,” *DRM Watch*, July 28, 2004, <http://www.drmwatch.com/drmtech/article.php/3387481>.
68. “Interoperability Nightmare Spells Entrepreneurial Opportunity,” *Digital Music News*, September 13, 2004, <http://www.digitalmusicnews.com/yesterday/september2004> (retrieved September 13, 2004).
69. Governing American law appears in 17 U.S.C. 1201(a); copyright law in most European Union countries permits such copies to be made for private use by consumers and their family members.
70. It is too early in the market for digital video streaming to predict winners, as PCs, the Internet, digital cable, and mobile telecommunications networks begin to converge and boundaries between them begin to blur.
71. For example, the number of popular physical audio formats has averaged two, such as the CD and cassette in recent times, the LP and 8-track tape in the late 1960s, and the VHS videocassette in the 1980s and most of the 1990s.
72. For example, Oracle, Microsoft, and IBM in database software; Microsoft, Sun Microsystems, and Linux in server operating systems; Sun, IBM, and BEA in Internet application server software.
73. At the time of this writing, a new standards initiative is beginning that is attempting to achieve DRM standardization through service provision instead of by standardizing content formats or individual DRM technologies. The Coral

Consortium's initial members include Sony, Philips, InterTrust, HP, Toshiba, Samsung, and Twentieth Century Fox film studios. Bill Rosenblatt, "Coral Consortium Aims to Make DRM Interoperable," *DRM Watch*, October 7, 2004, <http://www.drmwatch.com/standards/article.php/3418741>.

74. Bill Rosenblatt, "Consumer Broadband and Digital Television Promotion Act (CBDTPA)," *DRM Watch*, March 22, 2002, <http://www.drmwatch.com/special/article.php/3095121>.

75. Lange; Benkler; and Lessig.

76. For example, Project Gutenberg, which "... is the oldest producer of free electronic books (eBooks or etexts) on the Internet. Our collection of more than 12,000 eBooks was produced by hundreds of volunteers. Most of the Project Gutenberg eBooks are older literary works that are in the public domain in the United States. All may be freely downloaded and read, and redistributed for non-commercial use." <http://www.gutenberg.net> (retrieved August 23, 2004).

77. For example, the Prelinger Archives, which was founded in 1983 by Rick Prelinger in New York City. Over the next 20 years, it grew into a collection of more than 48,000 "ephemeral" (advertising, educational, industrial, and amateur) films. In 2002 the film collection was acquired by the Library of Congress, Motion Picture, Broadcasting and Recorded Sound Division. Prelinger Archives remains in existence, holding approximately 4,000 titles on videotape and a smaller collection of film materials acquired subsequent to the Library of Congress transaction. <http://www.archive.org/movies/prelinger.php> (retrieved August 23, 2004).

78. Dawn C. Chmielewski, "Music Labels Use File-Sharing Data to Boost Sales," *San Jose Mercury News*, March 31, 2004, <http://www.mercurynews.com/mld/mercurynews/news/8318571.htm?1c>.

79. "Jam Bands Redefining Economics of Music Industry," *Glide Magazine*, July 18, 2003, <http://music.press-world.com/v/1448.html> (retrieved June 12, 2004).

80. *Metro-Goldwyn-Mayer*.

81. *Ibid*.

82. "Online Music's Winners and Losers," *CNet News.com*, December 27, 2003, [http://news.com.com/2030-1027\\_3-5133561.html](http://news.com.com/2030-1027_3-5133561.html).

83. See generally Brad Cox, *Superdistribution*:

*Objects as Property on the Electronic Frontier* (New York: Addison-Wesley, 1995).

84. Note that this capability appears to contravene the first sale doctrine in copyright law, 17 U.S.C. §109, which holds that once a consumer has purchased a work from its owner, the owner may not derive benefit from any further transactions in that work that the purchaser might care to make. This law engenders the existence of public libraries, video rental stores, used bookstores, and so on. Case precedent for first sale's applicability to digital (as opposed to physical) content has not been established; therefore the media industry holds it to be inapplicable, thereby clearing the way for Superdistribution schemes of the type discussed.

85. An important example was IBM's infoMarket system of the mid-1990s, which used one of the earliest full-fledged encryption-based DRM schemes, the Cryptolope. InfoMarket was highly complex and expensive to implement, in part because it had to include a number of e-commerce software components that today would be commonplace.

86. For example, if a user legitimately purchases a file and sends a copy of it to someone else, the recipient will not be able to access the content. Services that claim to support Superdistribution today will typically present the recipient with a URL, which he or she can click to purchase rights to that file. That is a shallow approximation of true multitier Superdistribution, which allows for different commerce models at each distribution step.

87. <http://www.wippit.com> (retrieved August 31, 2004).

88. Bill Rosenblatt, "Two Major Labels Wippit," *DRMWatch.com*, March 18, 2004, <http://www.drmwatch.com/ocr/article.php/3327821>.

89. In so doing, the filtering technology identifies both the song and its copyright owner. The technology is not dependent on the designated names of the songs and therefore can be trumped neither by the use of reconfigured titles (a common tactic in the original Napster system) nor by trivial changes in the data, which would fool a system based on simpler analysis techniques such as hash calculations.

90. Bill Rosenblatt, "Qtrax to Launch BMI-Licensed File Sharing Network," *DRMWatch.com*, May 20, 2004, <http://www.drmwatch.com/ocr/article.php/3356861>.

91. "Alternative Distribution Methods Gain Ground," *Digital Music News*, August 30, 2004,

- <http://www.digitalmusicnews.com/yesterday/august2004> (retrieved October 14, 2004).
92. "Streaming P2P App Confuses Piracy Picture," *Digital Music News*, September 12, 2004, <http://www.digitalmusicnews.com/yesterday/september2004> (retrieved September 12, 2004).
93. Jack M. Germain, "Beyond File Sharing: P2P Radio Arrives," *TechNewsWorld*, September 18, 2004, <http://www.technewworld.com/story/36728.html> (retrieved October 13, 2004).
94. 17 U.S.C. 115 (2001).
95. *Sony* at 453.
96. *A&M Records v. Napster, Inc.*, 239 F.3d 1004, 1020 (9th Cir. 2001).
97. In Re *Aimster* Copyright Litigation, 334 F.3d 643 (7th Cir. June 30, 2003). *Aimster* (a.k.a., *Madster*) was a file-sharing service built on AOL's instant messenger service and a central mechanism that helped users locate files on one another's systems.
98. *Metro-Goldwyn-Mayer*.
99. *Ibid.*
100. John Borland, "Hollywood Takes P2P Case to Supreme Court," *CNet News.com*, October 8, 2004, [http://news.com/Hollywood+takes+P2P+case+to+Supreme+Court/2100-1027\\_3-5403915.html](http://news.com/Hollywood+takes+P2P+case+to+Supreme+Court/2100-1027_3-5403915.html).
101. *Ibid.* The district court issued a revised preliminary injunction that enjoined Napster from copying, downloading, uploading, transmitting, or distributing copyrighted sound recordings. *A&M Records, Inc. v. Napster, Inc.*, No. C 99-05183 MHP, 2001 U.S. Dist. LEXIS 2186 (N.D. Cal. March 5, 2001). When Napster was unable to comply with the requirements, the court temporarily shut down the service, which led to its bankruptcy.
102. The process of locating information on the *Grokster* system was made possible by concentrating information at nodal points located on user machines that accumulated and passed on information from nodes on surrounding computers. Streamcast used a Gnutella system that simply passed information requests from machine to machine. By contrast, Napster used a centralized directory to which all requests were routed.
103. *Sony* at 453.
104. *Metro-Goldwyn-Mayer*.
105. *Ibid.*, IV.B.c. Vicarious liability can be imposed where a defendant has the right and ability to supervise the infringing activity and a direct financial interest in it. *Fonovisa Inc. v. Cherry Auction, Inc.* 76 F.3d 259, 262 (9th Cir. 1996); *Napster*, 239 F.3d at 1022. In making its conclusion, the *Grokster* court acknowledged that it was "not blind to the possibility that defendants may have intentionally structured their businesses to avoid secondary liability for copyright infringement, while benefiting financially from the illicit draw of their wares." *Grokster*, 259 F. Supp. at 1046. This contrasts with *Casella v. Morris*, 820 F.2d 362, 365 (11th Cir. 1987), where the court held that willful blindness was knowledge. See also, *Napster*, 239 F.3d at 1023; and *Aimster*, 2003 U.S. App. LEXIS 13229, at \*17.
106. *Napster*, 239 F.2d at 1020 and n. 5.
107. Neil Boorstyn et al., Brief in Support of Reversal by Amici Curiae Law Professors and Treatise Authors Neil Boorstyn, Jay Dougherty, James Gibson, Robert Gorman, Hugh Hansen, Douglas Lichtman, Roger Milgrim, Arthur Miller and Eric Schwartz, [http://www.eff.org/IP/P2P/MGM\\_v\\_Grokster/LawProfessor\\_amicus.pdf](http://www.eff.org/IP/P2P/MGM_v_Grokster/LawProfessor_amicus.pdf).
108. In Re *Aimster* Copyright Litigation, 334 F.3d 643 (7th Cir. June 30, 2003).
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