THE GROKSTER DEAD-END

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I. INTRODUCTION

*Grokster*¹ is so 2005. While courts and legal scholars pore over the subtleties of the new inducement theory and its relationship to existing theories of secondary liability, the file-sharing community has already moved on, just as it has in the past. After the Ninth Circuit upheld the trial court's preliminary injunction against Napster in 2001,² effectively shutting it down,³ unique users of Napster dropped from a high of 13.6 million in February 2001 to 5.5 million in August 2001.⁴ Users were even quicker to abandon Grokster. Even before the Supreme Court's decision in June 2005, Grokster's FastTrack network had already declined from 4.4 million users in April 2003 to 2.3 million users in March 2005.⁵

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^{1.} Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd. (Grokster III), 125 S. Ct. 2764 (2005).

^{2.} A&M Records, Inc. v. Napster, Inc. (Napster II), 239 F.3d 1004, 1011 (9th Cir. 2001).

^{3.} See A&M Records, Inc. v. Napster, Inc. (*Napster III*), 284 F.3d 1091, 1097 (9th Cir. 2002) (affirming the district court's order "to keep the file transferring service disabled until Napster satisfied the court 'that when the new system goes back up it will be able to block out or screen out copyrighted works that have been noticed" (citation omitted); *see also* Joshua P. Binder, *The Future of Streaming Technology After Grokster*, L.A. LAW., Dec. 2005, at 13, 17 n.9.

^{4.} See Press Release, comScore Networks, Users of File-Swapping Alternatives Increase Nearly 500 Percent in the U.S., Surpassing Napster, Reports Jupiter Media Metrix (Oct. 10, 2001), http://www.comscore.com/press/release.asp?id=255.

^{5.} See Thomas Mennecke, Media Metrix Depicts Rapid Kazaa Decline, SLYCK, Mar. 31, 2005, http://www.slyck.com/news.php?story=729; see also John P. Mello, Jr., File Sharers

Thus far, copyright owners have favored suing facilitators over suing direct infringers. Many commentators have argued that such suits dampen technological innovation and engender bad social policy.⁶ In contrast, this Note argues not that secondary suits *should not* be brought, but that they *will not* be a sustainable policy against increasingly elastic technologies in the future — regardless of their merits in the past. While the immediate impact of *Grokster* on the peer-topeer ("P2P") community remains in dispute,⁷ one thing is certain: file-sharing technologies have not disappeared.⁸ Rather, they have deftly adapted to the new legal landscape and, indeed, have already subverted the intent-based analysis of the Supreme Court's *Grokster* decision.

Part II outlines recent attempts by copyright owners to use indirect liability to control file-sharing technologies, including the *Grokster* decision. Part III surveys the technological adaptations in the filesharing community that have enabled infringement to continue. Part IV examines the implications of these technologies for the *Grokster* decision and explains why they spell a dead-end to its line of argumentation. Finally, Part V concludes by suggesting that copyright owners must focus their energies on alternative strategies in order to be effective going forward.

II. PLUGGING THE HOLES

Using indirect liability suits to control file-sharing technology has been a cat-and-mouse game, like many undertakings in the Internet sphere.⁹ The courts expound rules to pin liability, and technology de-

Deserting Kazaa's FastTrack Protocol, TECHNEWSWORLD, June 8, 2004, http://www.technewsworld.com/story/34305.html. Note that numbers were lower for Grokster than for Napster, even though the overall number of file-sharers had increased dramatically, because Grokster had more competitors than Napster.

^{6.} See, e.g., Mark A. Lemley & Anthony Reese, *Reducing Digital Copyright Infringement Without Restricting Innovation*, 56 STAN. L. REV. 1345, 1379 (2004); see also Brief of Amici Curiae Internet Law Faculty in Support of Respondents at 11, Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd., 125 S. Ct. 2764 (2005) (No. 04-480), available at http://www.eff.org/IP/P2P/MGM_v_Grokster/20050301_internet_law_profs.pdf.

^{7.} Compare Thomas Mennecke, P2P Population Nears Record High, SLYCK, Dec. 19, 2005, http://www.slyck.com/news.php?story=1031 ("The resuming growth of the P2P population ... defies the MGM vs. [sic] Grokster decision."), with Nate Mook, Illegal File Sharing Drops Post Grokster, BETANEWS, Dec. 14, 2005, http://www.betanews.com/article/Illegal_File_Sharing_Drops_Post_Grokster/1134598859 ("[A research] firm attributed the drop [in P2P usage] to the record and entertainment industry's victory against file sharing service Grokster in June.").

^{8.} To be precise, this Note focuses on the development of new methods of file-sharing, though existing decentralized P2P networks like Grokster or Gnutella will probably never disappear in their entirety.

^{9.} Apt comparisons could be drawn to the escalating wars between antivirus companies and virus makers, as well as between online game manufacturers and distributors of "hacks" (modifications that allow players to cheat). *Cf.* Tim Wu, *When Code Isn't Law*, 89

velopers find and exploit loopholes. Thus far, courts have stretched the rules to cover these workarounds, but it is unclear whether they can continue to do so as the rules get stretched thinner and thinner. Indeed, *Grokster* may herald the arrival of that breaking point.

The opening move came when the recording industry sued Napster on December 6, 1999.¹⁰ Launched in May 1999, Napster had already become the seminal file-sharing application,¹¹ attracting nearly one million users by the time of the suit.¹² General web search engines were cluttered and clumsy,¹³ but Napster had created an efficient, specialized search engine dedicated to MP3 audio files by combining a centralized search index with direct P2P file transfers, making it effortless to find and transfer MP3s.¹⁴ Using Napster's proprietary software, users contacted Napster's servers, requested a file, and were then routed directly to computers that had the file, in the same manner that operators and switchboards connect telephone calls.¹⁵ Ultimately, that central index was critical because it allowed the Ninth Circuit to find that Napster had "actual knowledge" of the infringing activity for purposes of contributory infringement,¹⁶ and that Napster could supervise and control its users' conduct for purposes of vicarious liability.¹⁷

Almost immediately, file-sharing technologies found two clever loopholes. First, all "knowledge" of infringing activity could be disclaimed by removing any logs of transfer activity. Aimster accomplished this by encrypting all transfers so it would be incapable of

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VA. L. REV. 679, 682 (2003) (suggesting that "[t]he programmer is not unlike the tax lawyer, exploiting differences between stated goals of the law, and its legal or practical limits").

^{10.} See JOSEPH MENN, ALL THE RAVE: THE RISE AND FALL OF SHAWN FANNING'S NAPSTER 124 (2003); Press Release, Recording Industry Association of America, Recording Industry Sues Napster for Copyright Infringement (Dec. 7, 1999), http://www.riaa.com/news/newsletter/press1999/120799.asp.

^{11.} Napster was not the first file-sharing mechanism. Other methods existed, including regular website hosting such as MP3.com, as well as File Transfer Protocol ("FTP") and internet-relay chat ("IRC"), but these were cumbersome to use and largely unreliable. Napster was intended to be a solution to these problems. *See, e.g.*, MENN, *supra* note 10, at 29.

^{12.} See *id.* at 123. In addition, the lawsuit brought with it much positive hype that greatly boosted Napster's usage statistics in the following months. See *id.* at 125–26. Estimates subsequently peaked as high as 60 million registered users, 26 million active users, and nearly 3 billion songs traded per month. See Wu, supra note 9, at 710.

^{13.} Google, which revolutionized the field of search engines, was still largely unknown, having just been incorporated on September 7, 1998. *See* Wikipedia, *Google*, http://en.wikipedia.org/wiki/Google#History (as of Mar. 23, 2006, 18:44 GMT); *see also* MENN, *supra* note 10, at 36 (noting that "Google was more of a search engine for Internet experts at the time [June 1999], only later developing a mainstream following").

^{14.} See Napster II, 239 F.3d 1004, 1011–12 (9th Cir. 2001); see also MENN, supra note 10, at 67 (likening Napster to "search engine Lycos's music service 'on steroids"").

^{15.} See MENN, supra note 10, at 34.

^{16.} Napster II, 239 F.3d at 1022.

^{17.} Id. at 1023-24.

knowing what files were being sent over its network.¹⁸ Second, although Napster had been vulnerable because it was centrally maintained, decentralizing the search index could eliminate this legal bottleneck. Some services, like Gnutella, split indexing duties evenly across all peers in the network, while others, like Grokster, optimized by limiting indexing duties to certain supernodes.¹⁹ Although the Ninth Circuit's decision directly caused Napster's shutdown in 2001,²⁰ its impact on file-sharing was minimal; even before Napster was shut down, its users were already switching to other alternatives.²¹

The courts, of course, were predictably miffed. Judge Posner of the Seventh Circuit, in In re Aimster Copyright Litigation, cleverly dispensed with the first loophole by reasoning that although Aimster had used encryption to avert actual knowledge, it had also "failed to produce any evidence that its service [had] ever been used for a noninfringing use, let alone evidence concerning the frequency of such uses."22 In order to qualify for immunity from secondary liability, Aimster had attempted to argue that its product was "capable of substantial noninfringing uses" - the "COSNU" defense against secondary liability set out in 1983 in Sony-Betamax.²³ But Posner upped the ante, rejecting Aimster's argument that mere *capacity* for noninfringing use should satisfy the COSNU defense, and requiring instead that Aimster demonstrate actual substantial noninfringing uses; in this inquiry, the question was how probable the noninfringing uses were.²⁴ In an ironic twist, although Aimster had avoided knowledge of infringing uses, it also could not prove any actual noninfringing uses of its network because it had intentionally blinded itself to all uses.

^{18.} See In re Aimster Copyright Litig., 334 F.3d 643, 646 (7th Cir. 2003).

^{19.} See Grokster III, 125 S. Ct. 2764, 2771 (2005); see also Nelson Minar, Distributed Systems Topologies: Part 1, OPENP2P.COM (Dec. 14, 2001), http://www.openp2p.com/pub/a/p2p/2001/12/14/topologies_one.html.

^{20.} See supra notes 2-4 and accompanying text.

^{21.} See Cecily Barnes & Rachel Konrad, Fans Undaunted by Napster Constraints, CNET NEWS.COM, Mar. 2, 2001, http://news.com.com/2100-1023-253512.html; Leander Kahney, Still Plenty of Music Out There, WIRED NEWS, Feb. 13, 2001, http://www.wired.com/ news/business/0,1367,41775,00.html.

^{22. 334} F.3d 643, 653; *see also id.* at 650–51 ("[A] service provider that would otherwise be a contributory infringer does not obtain immunity by using encryption to shield itself from actual knowledge of the unlawful purposes for which the service is being used.").

^{23.} Sony Corp. of Am. v. Universal City Studios, Inc. (*Sony-Betamax*), 464 U.S. 417, 442 (1983) ("[T]he sale of copying equipment, like the sale of other articles of commerce, does not constitute contributory infringement if the product is widely used for legitimate, unobjectionable purposes. Indeed, it need merely be capable of substantial noninfringing uses.").

^{24.} Aimster, 334 F.3d at 651–53; see also Andrew J. Lee, MGM Studios, Inc. v. Grokster, Ltd. & In re Aimster Litigation: A Study of Secondary Copyright Liability in the Peer-to-Peer Context, 20 BERKELEY TECH. L.J. 485, 495–97 (2005) (observing that the Seventh Circuit outlined at least five considerations, mainly in dicta, that "significantly limited the protection offered by the 'substantial noninfringing uses' shield").

Moreover, to discourage similar attempts to skirt the law, the Seventh Circuit stated that "willful blindness" constituted knowledge sufficient to invoke contributory liability.²⁵ While these statements were primarily dicta, they appeared to close the first loophole.

Later generations of P2P applications, like Grokster and Stream-Cast, took advantage of the other loophole: decentralized software meant there was no centralized file-sharing network, as there was in Napster, to supply the knowledge necessary for contributory infringement or the control necessary for vicarious infringement.²⁶ This architectural modification was enough to satisfy the Ninth Circuit in finding Grokster and StreamCast not liable, reasoning that "the software design is of great import. ... [Napster] employed a centralized set of servers that maintained an index of available files. In contrast . . . neither StreamCast nor Grokster maintains control over index files."27 Whereas Napster had satisfied both the actual knowledge and material contribution requirements through its centralized site and facilities, Grokster had satisfied neither, thus defeating the contributory infringement claim.²⁸ This distinction also defeated the vicarious infringement claim because Grokster, unlike Napster, "[had] no ability to actually terminate access to filesharing functions."29

Although Grokster successfully evaded *Napster* liability, and even advanced a more robust technological product, the Supreme Court — unlike the Ninth Circuit³⁰ — was unwilling to turn a blind eye to behavior that was so obviously tailored to circumvent the law. In applying a new "inducement" theory and unanimously reversing the Ninth Circuit,³¹ the Court made much of the fact that StreamCast intended to "leverage Napster's 50 million user base . . . [and] that

^{25.} Aimster, 334 F.3d at 650.

^{26.} See Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd. (*Grokster II*), 380 F.3d 1154, 1162 (9th Cir. 2004) (distinguishing Napster on the grounds that "Plaintiffs' notices of infringing content are irrelevant, because they arrive when Defendants do nothing to facilitate, and cannot do anything to stop, the alleged infringement of specific copyrighted content" (citing Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd. (*Grokster I*), 259 F. Supp. 2d 1029, 1037 (C.D. Cal. 2003)) (internal quotations omitted)).

^{27.} Id. at 1163.

^{28.} Id. at 1160-64.

^{29.} *Id.* at 1165. A vicarious infringement claim requires "(1) direct infringement by a primary party, (2) a direct financial benefit to the defendant, and (3) the right and ability to supervise the infringers." *Id.* at 1164 (*Napster II*), 239 F.3d 1004, 1022 (9th Cir. 2001). The Ninth Circuit focused on the third factor in concluding that Grokster could not be held vicariously liable. *Id.* at 1164–66 ("The sort of monitoring and supervisory relationship that has supported vicarious liability in the past is completely absent in this case.").

^{30.} The Ninth Circuit had concluded that Grokster was more than just the next Napster. *Id.* at 1164 ("While Grokster and StreamCast in particular may seek to be the 'next Napster,' the peer-to-peer file-sharing technology at issue is not simply a tool engineered to get around the holdings of *Napster I* and *Napster II.*") (citation omitted).

^{31.} *Grokster III*, 125 S. Ct. 2764, 2778–79 (2005) (holding that "it was error to grant summary judgment to the [defendants] on MGM's inducement claim").

StreamCast planned to be the next Napster,"³² as well as that "Grokster's name is an apparent derivative of Napster."³³ The Court also noted the companies' advertisement-based business models and the lack of preemptive filtering tools.³⁴ But none of these actions that the Court pointed to were inherently wrong.³⁵ The Supreme Court scowled at Grokster and StreamCast because they unabashedly exploited a loophole in the *Napster* decision and thumbed their noses at the courts' attempts to shut down illegal file-sharing.

Perhaps an intent-based test was a necessary addition to the doctrine,³⁶ but at root, the Supreme Court ducked the difficult question: whether P2P technology is sufficiently valuable to society to merit immunity at the expense of artistic copyright. This was the *Sony-Betamax* issue — drawing the proper line between technological innovation and artistic protection³⁷ — and the Court studiously distinguished *Sony-Betamax* by asserting that "[n]othing in *Sony* requires courts to ignore evidence of intent if there is such evidence."³⁸ However, the Court was not simply practicing judicial minimalism — Grokster's decentralized architecture had left the Court conflicted as to whether such technologies ought to be beyond the reach of secondary liability. The Seventh and Ninth Circuits had openly disagreed on this very question,³⁹ with the Seventh Circuit examining the present likelihood of potential noninfringing use,⁴⁰ and the Ninth Circuit satisfied by mere capacity for future societal value.⁴¹ Many observers

^{32.} Id. at 2773 (internal quotations omitted).

^{33.} Id.

^{34.} *Id.* at 2774. For a discussion on the proper role of preemptive gatekeeping on the Internet, see Jonathan Zittrain, *A History of Online Gatekeeping*, 19 HARV. J.L. & TECH. 253 (2006), arguing that such regulation has historically — and rightly — been exercised lightly.

^{35.} Cf. Mark A. Lemley, *Inducing Patent Infringement*, 39 U.C. DAVIS L. REV. 225, 234 (2005) (noting that "the evidence the [*Grokster III*] Court relied upon to infer intent is itself troubling, since most of it involves conduct that is difficult to distinguish from the sale of a staple item of commerce").

^{36.} See, e.g., Justin Hughes, On the Logic of Suing One's Customers and the Dilemma of Infringement-Based Business Models, 22 CARDOZO ARTS & ENT. L.J. 725, 754 (2005) (arguing that "if the Justices simply restate the *Betamax* doctrine and fail, at a minimum, to add tests of knowledge and/or intent, these types of tools, designed, intended, and marketed for copyright infringement will flourish").

^{37.} Sony-Betamax, 464 U.S. 417, 442 (1983).

^{38.} Grokster III, 125 S. Ct. at 2779.

^{39.} See Grokster II, 380 F.3d 1154, 1162 n.9 (9th Cir. 2004) ("We are mindful that the Seventh Circuit has read *Sony*'s substantial noninfringing use standard differently.... Even if we were free to do so, we do not read *Sony-Betamax*'s holding as narrowly as does the Seventh Circuit." (citations omitted)).

^{40.} See id. ("[The Seventh Circuit] determined that an important additional factor is how 'probable' the noninfringing uses of a product are." (citing *In re* Aimster Copyright Litig., 334 F.3d 643, 651 (7th Cir. 2003))).

^{41.} See id. at 1162 (stating that the Sony-Betamax standard requires that "a product need only be capable of substantial noninfringing uses").

had expected the Supreme Court to resolve this split;⁴² instead, the Court divided along those very lines.

Justice Ginsburg, in her concurrence, essentially adopted the Seventh Circuit's position that immunity under the Sony-Betamax COSNU defense ought to require a strong evidentiary showing of substantial noninfringing uses. Because there was "no finding of any fair use and little beyond anecdotal evidence of noninfringing uses," Ginsburg strongly suggested that Grokster and StreamCast would not merit such immunity on the facts.⁴³ On the other hand, Justice Brever's concurrence embraced the Ninth Circuit's focus on potential future noninfringing uses of new technology, emphasizing the phrase "capable of" in the Sony-Betamax COSNU defense, and explicitly rejecting the Seventh Circuit's narrower test.⁴⁴ Although Breyer noted that Grokster might not currently have sufficient legitimate uses to sustain it in the long run, even 10 percent might serve "as an adequate foundation where there is a reasonable prospect of expanded legitimate uses over time."45 Furthermore, Breyer — like the Ninth Circuit — was concerned about "the development of technology more generally," not just the fate of Grokster.⁴⁶

This strain at the highest Court suggests that we are reaching the limit as to how far secondary liability doctrine can be stretched to cover file-sharing technologies. Although the Court unanimously ruled against Grokster, it had to reach for new doctrine, and nevertheless remained evenly split as to where to draw the line between copyright interests and technological innovation. ⁴⁷ As file-sharing technologies continue to adapt to these judicially constructed boundaries and become progressively more neutral, courts will increasingly

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^{42.} See, e.g., Petition for a Writ of Certiorari at 24–29, Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd., 543 U.S. 1032 (2004) (No. 04-480), 2004 WL 2289200, available at http://www.eff.org/IP/P2P/MGM_v_Grokster/20041008_Grokster_final_petition.pdf; Lee, supra note 24, at 501, 505–06; Timothy K. Andrews, Comment, Control Content, Not Innovation: Why Hollywood Should Embrace Peer-to-Peer Technology Despite the MGM v. Grokster Battle, 25 LOY. L.A. ENT. L. REV. 383, 406 (2005). But cf. Zittrain, supra note 34, at 288 ("[T]he stakes in Grokster were not limited to which circuit had properly interpreted Sony. Grokster was an opportunity for the Supreme Court to consider imposing an affirmative duty on software makers like the Grokster defendants, and makers of generative technologies in general, to serve as gatekeepers.").

^{43.} *Grokster III*, 125 S. Ct. at 2785–86 (Ginsburg, J., concurring). Indeed, Justice Ginsburg chided the Ninth Circuit for failing to "distinguish between uses of Grokster's and StreamCast's software products (which this case is about) and uses of peer-to-peer technology generally (which this case is not about)." *Id.* at 2786.

^{44.} *Id.* at 2789–90 (Breyer, J., concurring) ("[O]f the Courts of Appeals that have considered the matter, only [the Seventh Circuit] has proposed interpreting *Sony* more strictly than I would do.").

^{45.} Id. at 2789 (Breyer, J., concurring).

^{46.} Id. at 2790 (Breyer, J., concurring); see also Grokster II, 380 F.3d 1154, 1167 (9th Cir. 2004).

^{47.} Two Justices sided with Justice Ginsburg, two Justices sided with Justice Breyer, and three Justices abstained as to this point. *Grokster III*, 125 S. Ct. 2764.

reach — and pass — this inflection point of discomfort where they become unwilling to impose liability.

III. GUERILLA TACTICS

An underlying characteristic of the P2P systems that have been brought before the courts is that the discovery and delivery of files occur within the same package.⁴⁸ Thus, if a user looks for a file on either Napster or Grokster, the application interface provides a search box in which to enter the query, a window to list any results, and a mechanism — generally double-clicking — for initiating and tracking the download. The search functionality "discovers" desired files, while the download algorithm "delivers" them. This aggregation within one application provides a smoother experience for the user, who does not have to switch between applications or perform extraneous operations like copying and pasting. The user can sit back and click his digital library into creation.

Discovery and delivery are not always packaged together, however. For example, if you were to hire a repairman to fix your refrigerator, you might look up repair services in a YellowPages directory and then call the company to send an employee to repair your refrigerator. You would not fault YellowPages if the repair company sent the repairman to the wrong address; nor would you fault the repair company if YellowPages was poorly organized and made it difficult to locate good repair services. The two are unaffiliated and provide independent functions.

The file-sharing community has already begun to move toward this disaggregated model. While traditional P2P networks such as FastTrack and Gnutella remain operational, a major segment of the community is switching to at least two alternative forums: BitTorrent and mass web storage utilities like YouSendIt.⁴⁹ Both YouSendIt and BitTorrent handle only the data; the pointers to that data must be published elsewhere — on search engines like isoHunt⁵⁰ or The Pirate Bay⁵¹ for torrent files, or in web forums for YouSendIt links. The following sections explain these two technologies in greater detail.

^{48.} See, e.g., Wu, supra note 9, at 717-18 (observing that a P2P file-sharing application generally requires (1) a program that regular home users can download, (2) a way to search the network, and (3) a way for users to send files to each other).

^{49.} For purposes of this Note, "YouSendIt" refers to this collective set of utilities. YouSendIt was the first such utility, established in 2003. *See* About YouSendIt, http://www.yousendit.com/about.aspx (last visited Apr. 29, 2006). 50. IsoHunt, http://www.isohunt.com (last visited Apr. 29, 2006).

^{51.} The Pirate Bay, http://thepiratebay.org (last visited Apr. 29, 2006).

A. YouSendIt

The YouSendIt service provides a simple, clean interface that allows users to upload files of up to one gigabyte onto the YouSendIt servers.⁵² After specifying a recipient e-mail address, the user selects the file to be uploaded and clicks the "Send It" button to begin the upload process.⁵³ The upload time increases proportionately with file size since the entire file is being copied to the server; sharing is not instantaneous as with Napster or Grokster. Once the upload has completed, YouSendIt e-mails the recipient a link to the file stored on the server.⁵⁴ This link can then be used for twenty-five downloads over a period of seven days.⁵⁵ An important feature is that any user can instantly remove the file from the server if they simply have the link and wish to report it as abuse; however, there is no search functionality to locate infringing files on an ad hoc basis.⁵⁶

The appeal of YouSendIt is evidenced by its high traffic⁵⁷ and by the large number of imitators, each offering slightly varying features.⁵⁸ One important distinction is file lifetime — YouSendIt, with its limit of twenty-five downloads over seven days, is miserly when compared with newer services that allow unlimited downloads until the file has been idle for thirty days.⁵⁹ Equally relevant is storage

56. See YouSendIt: Report Abuse, http://www.yousendit.com/abuse.aspx (last visited Apr. 29, 2006). Users must have the original link (or the unique 26-character identifier) to report a file as abuse. See id.; see also 1-Klick Hosting at RapidTec, Frequently Asked Questions, http://rapidshare.de/en/faq.html (last visited Apr. 29, 2006) (refusing to allow access to file archives). But see Megaupload Premium, http://www.megaupload.com/ premium/ (last visited Apr. 29, 2006) (allowing access to most popular file listings for paying members).

57. YouSendIt transfers over forty-three terabytes per day. *See* YouSendIt, http://www.yousendit.com/ (last visited Apr. 29, 2006). Megaupload transfers over thirty terabytes from more than five hundred thousand users every day. *See* Megaupload, Frequently Asked Questions, General, http://www.megaupload.com/faq/#general (last visited Apr. 29, 2006).

^{52.} See YouSendIt, How Does It Work?, http://www.yousendit.com/howdoesitwork.aspx (last visited Apr. 29, 2006). Storage limits vary from service to service, ranging from one hundred megabytes on RapidShare, http://www.rapidshare.de (last visited Apr. 29, 2006), to two gigabytes on Bigupload, http://www.bigupload.com (last visited Apr. 29, 2006).

^{53.} See YouSendIt, supra note 52.

^{54.} See id.

^{55.} See YouSendIt: Frequently Asked Questions, http://www.yousendit.com/faq.aspx (last visited Apr. 29, 2006). Other services allow downloads over indeterminate periods of time. See infra text accompanying note 59 (describing alternative services that allow unlimited downloads until the file has been idle for thirty days).

^{58.} *See, e.g.*, Megaupload, www.megaupload.com (last visited Apr. 29, 2006); RapidUpload, http://www.rapidupload.com (last visited Apr. 29, 2006); RapidShare, *supra* note 52; SendSpace, http://www.sendspace.com (last visited Apr. 29, 2006); Bigupload, *supra* note 52.

^{59.} *See, e.g.*, Bigupload, Frequently Asked Questions, File Upload and Storage Questions, http://www.bigupload.com/faq.php#storage (last visited Apr. 29, 2006); Megaupload, Frequently Asked Questions, File Upload and Storage, http://www.megaupload.com/faq/#storage (last visited Apr. 29, 2006).

space, which ranges from one hundred megabytes to two gigabytes per file.⁶⁰ Download speeds also vary, from 20 Kb/sec to 700 Kb/sec or more. Many services impose artificial costs, such as capping bandwidth, limiting each IP address to one download at a time, and delaying for forty-five seconds or more before displaying the download link to encourage users to peruse banner ads. Some services then offer premium memberships providing "extra" features that simply negate these burdens.⁶¹ In addition, at least one service offers a list of the one hundred most popular files to its premium members, reminiscent of Aimster's "Club Aimster," which also provided paying members with access to the most popular songs.⁶² Finally, most, but not all, include extensive legal terms of service.⁶³

Since YouSendIt is merely an online file storage service and chooses not to publish a central directory anywhere on its site, links to shared files must be posted in other locations, usually in public, thirdparty web forums, but sometimes also on private e-mail lists. While this increases the difficulty for downloaders to discover files, it is equally difficult for copyright owners to track and take down any infringing files.

B. BitTorrent

Another popular forum for sharing files is BitTorrent, a distributed file download service.⁶⁴ BitTorrent improves upon the Grokster P2P architecture in two ways. First, BitTorrent maximizes availability of files by using a "rarest-first" piece selection algorithm, where each file is divided into tiny segments (usually 256 kilobytes each) and users download with highest priority the file chunks that are rarest

^{60.} See supra note 52.

^{61.} See, e.g., Megaupload, Premium, http://www.megaupload.com/premium/ (last visited Apr. 29, 2006).

^{62.} See Megaupload, Top 100, http://www.megaupload.com/top100/ (last visited Apr. 29, 2006). Compare id. with In re Aimster Copyright Litig., 334 F.3d 643, 646 (7th Cir. 2003).

^{63.} YouSendIt, Megaupload, SendSpace, and Bigupload include terms of services. *See* YouSendIt, Terms of Service, http://www.yousendit.com/tos.aspx (last visited Apr. 29, 2006); Megaupload, Terms of Service, http://www.megaupload.com/terms/ (last visited Apr. 29, 2006); SendSpace, Service Agreement, http://www.sendspace.com/terms.html (last visited Apr. 29, 2006); Bigupload, Terms of Service, http://www.bigupload.com/terms.php (last visited Apr. 29, 2006); RapidUpload and Rapidshare do not bother with terms of service. *See* RapidUpload, *supra* note 58; Rapidshare, *supra* note 52.

^{64.} See, e.g., Thomas Mennecke, EDonkey2000 Dethrones BitTorrent for Video Distribution, SLYCK, Aug. 10, 2005, http://www.slyck.com/news.php?story-881 (pointing to bandwidth studies by CacheLogic suggesting that "[o]n average, ISPs were witnessing 60% of their bandwidth consumed by BitTorrent, while others saw an astounding 90%"); Seth Schiesel, File Sharing's New Face, N.Y. TIMES, Feb. 12, 2004, at G1 (reporting that "[w]hile the [Motion Picture Association of America ("MPAA")] first became aware of the technology about a year ago, BitTorrent's surging popularity prompted the group to start sending infringement notices to BitTorrent site operators in November [2003]").

among their peers.⁶⁵ This increases the likelihood of redundancy — that complete copies of files will remain available — by focusing resources on duplicating those data segments that are least readily available. Second, BitTorrent maximizes fairness by using "choking" algorithms to implement an effective tit-for-tat mechanism.⁶⁶ Choking is a temporary refusal to upload to peers who are providing poor download rates, and it incentivizes downloading peers to upload a proportionate amount and contribute back to the communal resources, rather than to leech and disappear.

Like YouSendIt, BitTorrent is also merely a delivery mechanism. The original host makes a file available by placing a ".torrent" file on the Internet.⁶⁷ This is a tiny file that only contains information about the original file's name, its length, and the URL of a "tracker," which tells your computer where to download the original file.⁶⁸ There is no central directory of files; rather, users depend upon a wide variety of search engines (like the one on BitTorrent.com itself) to locate these trackers. Each search engine is maintained independently, and many even operate like private forums, requiring a login and password, and creating communities around specific genres.⁶⁹ While trackers can be shut down and removed from the Internet, this process is about as tedious as shutting down individual direct infringers.⁷⁰

Although both YouSendIt and BitTorrent operate as file delivery services, the two network architectures differ in that the former is wholly centralized while the latter is wholly decentralized. The You-SendIt service depends fundamentally on a central server model: files are uploaded to YouSendIt, and the company then directly delivers the cached file to each recipient upon request. BitTorrent, on the other hand, relies entirely on P2P connections, like Napster and Grokster, and pointers to the shared files are distributed across the Internet. However, both are similar in that they require substantially more ini-

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^{65.} See Bram Cohen, Incentives Build Robustness in BitTorrent 2-3 (2003),

http://www.sims.berkeley.edu:8000/research/conferences/p2pecon/papers/s4-cohen.pdf. 66. See id. at 3-4.

^{67.} See id. at 2.

^{68.} See id. ("The .torrent contains information about the file, its length, name, and hashing information, and the url of a tracker.... The tracker's responsibilities are strictly limited to helping peers find each other."). BitTorrent has also released a "trackerless" version which relies instead on a distributed hash table, which distributes contact information across all peers in a torrent. See BitTorrent, BitTorrent Goes Trackerless: Publishing with BitTorrent Gets Easier!, http://www.bittorrent.com/trackerless.myt (last visited Apr. 29, 2006).

^{69.} See, e.g., Filesoup, http://www.filesoup.co.uk/index.php (last visited Apr. 29, 2006) (featuring software content); Living Torrents, http://livingtorrents.org/ (last visited Apr. 29, 2006) (featuring Christian content); MixtapeTorrent.com, http://mixtapetorrent.com/ (last visited Apr. 29, 2006) (featuring mixtape and hiphop content); RebelTorrent, http://rebeltorrent.net/ (last visited Apr. 29, 2006) (featuring indie and underground content).

^{70.} Moreover, a trackerless version would not even have trackers that could be shut down. *See supra* text accompanying note 68.

tiative to share files than either Napster or Grokster. YouSendIt forces users to wait for uploads to finish — sometimes for hours — while BitTorrent requires creation and hosting of a .torrent file.

IV. DRAWING A LINE IN THE SAND

What is the significance of such disaggregation? It allows filesharing technologies to avoid legal liability, but more than that, it is the next move in a larger sequence that spells the end of file-sharing secondary liability cases. As courts have pushed harder on the filesharing pipeline, the pipeline has demonstrated an uncanny ability to disperse piece by problematic piece. When control of the network resulted in liability, Grokster and others created a decentralized network and disclaimed control. Now that intent has become problematic, YouSendIt and BitTorrent demonstrate that even the specter of intent can be removed from these technologies.⁷¹ Liability will have no choice but to revert solely to the direct infringers.

Under the commonly accepted model, there are only two main flavors of P2P systems: pure and hybrid.⁷² In pure systems, all nodes are equal and no functionality is centralized, including discovery and delivery of data.⁷³ This is true P2P: everyone is an identical clone and the network works like a tessellation, where a single shape interlocks with itself to create a larger picture. By contrast, hybrid models make trade-offs on this pure uniformity to optimize network performance, including speed, control, and usability.⁷⁴ For example, Napster used direct peer connections for content delivery, but added a central "collective directory" to improve discovery and make it easier to locate files.⁷⁵

Legal immunity has arguably become another such trade-off. In this respect, the Ninth Circuit was wrong to believe that Grokster and similar systems were not simply workaround solutions.⁷⁶ Napster's central index made discovery simple and fast, and those benefits

^{71.} But cf. Katie Dean & Kevin Poulsen, BitTorrent Whiz Extolled Piracy?, WIRED NEWS, July 4, 2005, http://wired.com/news/digiwood/0,1412,68046,00.html (discussing a manifesto written by Bram Cohen titled "Technological Activist's Agenda," and possible legal ramifications under the Grokster intent-based standard).

^{72.} This is obviously a simplified taxonomy. For more in-depth analysis of different P2P topologies, see Damien Berry & Ralf Muhlberger, *Peer-to-Peer Information Systems*, 12–17 (2002), http://citeseer.ist.psu.edu/berry02peertopeer.html.

^{73.} See Beverly Yang & Hector Garcia-Molina, Comparing Hybrid Peer-to-Peer Systems, 1 (2001), http://citeseer.ist.psu.edu/yang01comparing.html.

^{74.} See Elizabeth Miles, Note, In re Aimster & MGM, Inc. v. Grokster, Ltd.: Peer-to-Peer and the Sony Doctrine, 19 BERKELEY TECH. L.J. 21, 27 & n.33 (2004) (noting that "[d]esigners consider trade-offs between the 'purity' of decentralization and the performance advantages of centralized architecture").

^{75.} Napster II, 239 F.3d 1004, 1012 (9th Cir. 2001).

^{76.} See supra note 30.

would not have been abandoned but for the Ninth Circuit's say-so. In fact, Gnutella, the subsequent, pure version of P2P, suffered from ineffective searches and slow transfer speeds,⁷⁷ and Grokster was developed as a compromise between the liability-prone Napster architecture and the inefficient Gnutella architecture.⁷⁸ The trick was to make the system as efficient as possible without triggering liability, and Grokster attempted this by distributing special "supernodes" throughout the network.⁷⁹ Disaggregation of control was the first trade-off made for legal immunity, and disaggregation of discovery has become the next. Table 1 places the file-sharing systems discussed in this Note in the context of these developments.

Table 1: Trends of Disaggregation		
	Integrated Discovery	Disaggregated Discovery
Integrated Control	Napster	YouSendIt
Disaggregated Control	Grokster	BitTorrent

The immediate question that arises is why copyright owners cannot simply continue pursuing secondary liability claims against these systems. If the pipeline will indefinitely trade off efficiency for legal immunity, why not keep pressing until the pipeline becomes too inefficient to share files? The reason is the incentives for pursuing secondary liability dissipate as the infringement pipeline disperses and replicates across the Internet. Two factors contribute to this dissipation: one practical and one legal.

First, on a practical level, secondary liability suits become inefficient as the number of secondary infringers approaches the number of direct infringers. These suits are often pursued because "[w]hen a widely shared service or product is used to commit infringement, it may be impossible to enforce rights in the protected work effectively against all direct infringers."⁸⁰ As the pipeline disperses, however, there will no longer be a convenient Napster or Grokster to sue. Instead, copyright owners will have to go after smaller and smaller fish,

^{77.} See Wu, *supra* note 9, at 732–33; Janelle Brown, *The Gnutella Paradox*, SALON.COM, Sept. 29, 2000, http://salon.com/tech/feature/2000/09/29/gnutella_paradox/index2.html (citing two major problems with Gnutella: limited depth of search, resulting in poor discovery; and weakest link, resulting in poor delivery).

^{78.} See Wu, supra note 9, at 734–35.

^{79.} See id. at 735.

^{80.} Grokster III, 125 S. Ct. 2764, 2776 (2005).

with each individual suit shutting down one thousand or one hundred or perhaps only twenty-five direct infringers at a time. Given the higher burden of proof, secondary liability suits will become increasingly less cost-effective. Moreover, these smaller slices are highly interchangeable, making enforcement ineffective. Even if YouSendIt were shut down, users could easily relocate to any YouSendIt clone, or to Gmail, Yahoo!, or other mass-storage webmail services.⁸¹ Variants of the YouSendIt service have also been developed in other countries, such as South Korea.⁸² Nevertheless, copyright owners may still want to enlist secondary parties as gatekeepers.⁸³ For example, suing secondary parties may be seen as advantageous because one is not suing one's own customers.⁸⁴

Second, on a legal level, disaggregation frustrates the courts' attempts to fix liability on secondary parties because any potential liability becomes diluted across the entire pipeline until it is no longer triggered by any party. Controlling large chunks of the pipeline may garner charges of abetment and inducement, but ownership of small slices will benefit from stronger presumptions of neutrality, as each slice's connection to the pipeline becomes more attenuated. It will be difficult to establish that a party who only provides some minor functionality of the pipeline has sufficient knowledge, control, or even intent to merit liability for the entire operation. More likely, the balance of interests will shift in favor of protecting these neutral technological innovations and courts will be disinclined to assign liability. Indeed, as we have moved from Napster to Aimster to Grokster and StreamCast, we have seen decreasing control over the pipeline and increasing hesitation by the courts to apply secondary liability.

This inverse correlation can only continue as file-sharers separate the discovery function from the delivery mechanism. A program, like BitTorrent, that remains more purely algorithmic makes a much stronger case to the courts for technological innovation than a P2P

^{81.} Software applications like Peer2Mail automate the process of splitting files into attachable segments and sending these file segments one by one to a specified e-mail account. Peer2Mail can then download and merge these segments back together. *See* Peer2Mail, http://www.peer2mail.com (last visited on Apr. 29, 2006).

^{82.} See, e.g., ClubBox, http://www.clubbox.co.kr/ (last visited Apr. 29, 2006). ClubBox is a web service based in South Korea that allows users to upload personal libraries that can then be browsed by other users. If you qualify for a "gold" clubbox, uploaded files last indefinitely; otherwise, uploaded files last for ten day periods, which are renewable for successive periods if sufficiently popular. See ClubBox, Frequently Asked Questions #6, http://help.clubbox.co.kr/clubbox/faq/exSelfFAQS.jsp?category_id= CATE20050630000019&category_id2=CATE20050630000020&category_name= %B9%DA%BD%BA%BF%EE%BF%B5 (last visited Apr. 29, 2006).

^{83.} See Zittrain, supra note 34, at 254–57; cf. Wu, supra note 9, at 711–15 (describing copyright's long reliance on a gatekeeper system).

^{84.} *But see* Hughes, *supra* note 36, at 729 (arguing that "[t]he 'suing their own customers' mantra was always a little silly if it meant that a business should not irritate or offend those who bring it custom").

engine, like Grokster, that purposely mimics the features of a known malevolent like Napster. A mere algorithm admits of no intent, and thus the BitTorrent client would be immune from the Grokster inducement analysis.⁸⁵ Moreover, BitTorrent has arguably demonstrated sufficient noninfringing uses,⁸⁶ even under the more stringent standard favored by Justice Ginsburg and the Seventh Circuit, because there is more than "anecdotal evidence of noninfringing uses."⁸⁷

For YouSendIt, disaggregation confers benefits from a different source of immunity. Although YouSendIt maintains centralized control and thus has a Napsteresque "right and ability to police its system,"⁸⁸ the removal of discovery and consequent focus on delivery lend it certain qualities reminiscent of Online Service Providers ("OSPs"), rather than traditionally understood P2P networks. OSPs are companies that "store information for consumers for mass distribution to others," and typically include web hosting services such as Geocities and YouTube.⁸⁹ These OSPs are exempted from secondary liability under section 512(c) of the Digital Millennium Copyright Act ("DMCA") as long as they comply expeditiously in removing infringing material upon notification in the form of a "takedown notice."⁹⁰

While YouSendIt services were perhaps not the original intended recipients of DMCA immunity, YouSendIt has meticulously tailored its service to fit within the boundaries of the law.⁹¹ It stores information for mass distribution and provides a very straightforward, automated abuse report mechanism to satisfy the takedown requirement — even if the effectiveness of its takedown procedure is sharply limited by both the obscurity of pinpointing specific infringing files⁹² and the extremely short shelf life of each file.⁹³ The only potential limitation on DMCA immunity is the rarely tested requirement in section 512(i)

^{85.} This is not to say that other BitTorrent clones might not garner inducement charges if they are so foolish as to openly advertise or encourage infringement.

^{86.} See, e.g., Hughes, supra note 36, at 752 (citing examples from "Etree's BitTorrent site which promotes the distribution of large, higher-quality non-MP3 files from 'trade friendly' bands to File Soup's offering of open source software and authorized media files").

^{87.} Grokster III, 125 S. Ct. 2764, 2785 (2005) (Ginsburg, J., concurring).

^{88.} Napster II, 239 F.3d 1004, 1023 (9th Cir. 2001).

^{89.} Zittrain, supra note 34, at 258 n.18, 266.

^{90.} See id.; Digital Millennium Copyright Act of 1998 § 512(c), Pub. L. No. 105-304, 112 Stat. 2860, 2879–81 (1998) (codified as amended in scattered sections of 17 U.S.C.).

^{91.} See, e.g., YouSendIt, DMCA Policy, http://www.yousendit.com/dmca.aspx (last visited Apr. 29, 2006); Bigupload, Digital Millennium Copyright Act, http://www.bigupload.com/DMCA.php (last visited Apr. 29, 2006).

^{92.} Each file is identified by a randomized hash of twenty-six letters and numbers. See YouSendIt, Report Abuse, *supra* note 56.

^{93.} While the transience of the links requires users to upload more frequently, it also diminishes the impact of each individual takedown since users expect that links will expire anyway.

to implement a policy to terminate repeat infringers, since YouSendIt might have difficulty actually enforcing such a policy.⁹⁴

Since both YouSendIt and BitTorrent focus on immunizing delivery, one natural counter might be to instead exploit the potential legal vulnerabilities in the "discovery" portion of the pipeline. Use of You-SendIt for file-sharing purposes depends upon public postings of pointer links, since there is no other way to locate files that have been uploaded to YouSendIt's servers. These links are typically posted on discussion boards, which best complement the transient quality of the links — although they could theoretically be placed in any public forum, including web pages, mass e-mail lists, or even traditional P2P networks. Discussion boards that focus on and encourage the swapping of infringing files would likely be subject to liability. In Sega Enterprises Ltd. v. MAPHIA, the system operator of an electronic bulletin board system ("BBS") was held liable for contributory infringement for soliciting users to upload and download unauthorized copies of Sega's copyrighted video games.⁹⁵ While posting YouSendIt links is technically different from directly uploading files to a BBS, the distinction may not be sufficient to distinguish Sega.⁹⁶

BitTorrent suffers a similar problem: torrent files must be located through special search engines called "tracking sites" or "hubs." Thus far, these hubs have been vulnerable, with several recent examples of such sites being taken over or pressured into being taken down.⁹⁷ Similarly, the founder of BitTorrent, Bram Cohen, has agreed to cooperate with the Motion Picture Association of America ("MPAA") in removing links to copyrighted works from the search engine he operates at BitTorrent.com.⁹⁸ Taken to an extreme, copyright owners

98. See Sharon Waxman, Web Site Agrees to Help Curb Access to Movies, N.Y. TIMES, Nov. 22, 2005, at C1, available at http://www.nytimes.com/2005/11/23/technology/

^{94.} *See* Zittrain, *supra* note 34, at 269 (discussing Ellison v. Robertson, 189 F. Supp. 2d 1051 (D. Cal. 2002), *rev'd*, 357 F.3d 1072 (9th Cir. 2004), in which the Ninth Circuit ruled the § 512(i) issue a jury question where AOL had a policy, but had apparently never terminated any repeat infringers).

^{95. 948} F. Supp. 923, 927, 932–33 (N.D. Cal. 1996).

^{96.} *Cf.* Arista Records, Inc. v. MP3Board, Inc., No. 00 Civ. 460, 2002 U.S. Dist. LEXIS 16165, at *15–16, *32–33 (S.D.N.Y. Aug. 28, 2002) (denying summary judgment on motions to dismiss contributory infringement and vicarious liability claims against MP3Board, a website providing users with links to infringing copies of songs).

^{97.} See, e.g., News Release, U.S. Immigration and Customs Enforcements, Federal Law Enforcement Announces Crackdown on P2P Piracy Network, (May 25, 2005), available at http://www.boingboing.net/images/EliteTorrents.pdf; John Borland, Feds Shut Down Bit-Torrent Hub. CNET NEWS.COM, May 25. 2005, http://news.com.com/ Feds+shut+down+BitTorrent+hub/2100-1028_3-5720541; Rick Ellis, MPAA Takes Over Popular BitTorrent Site, NBC13.COM, Feb. 11, 2005, http://www.nbc13.com/technology/ 4189706/detail.html; Andrej Preston, The Truth About SuprNova.org Shutdown, Dec. 19, 2005, http://www.suprnova.org/?op=showLong&aID=80. But see Clive Thompson, The BitTorrent Effect, WIRED, Jan. 2005, available at http://www.wired.com/wired/archive/ 13.01/bittorrent.html?pg=3 (describing the defiance of The Pirate Bay to a cease and desist letter from DreamWorks).

could even lobby Congress to codify such agreements by altering the DMCA to require service providers to actively self-monitor for infringing activity.⁹⁹

However, while attacking discovery mechanisms may generate some superficial effects, the long term consequences, as with integrated P2P systems, are likely to be minimal. As in the past, it will prove difficult and expensive to track down these enclaves of filesharing and shut them down. Furthermore, discovery mechanisms will likely benefit from the same disaggregation process that has immunized delivery mechanisms. Generalized search engines, like Google, already provide the means for locating torrent files. YouSendIt links might migrate away from discussion boards to more distributed forums that are less susceptible to takedown notices. Or, perhaps, a neutral protocol like HTTP might be developed to easily and reliably locate infringing (and noninfringing) content.

Web services like YouSendIt and BitTorrent represent a generation of file-sharing tools that have laundered the delivery component of file-sharing. But if courts push harder on attributing secondary liability, whether on the discovery mechanism or some other element, the file-sharing pipeline will likely continue to disaggregate into smaller, more neutral slices until the courts become uncomfortable pressing any further. The Supreme Court has already demonstrated that the breaking point is near, if not already here, through its unwillingness to hold Grokster liable on technological grounds. While the inducement theory eked the Court past Grokster, it has been roundly criticized for its lack of practical applicability,¹⁰⁰ and indeed, has already been circumvented by existing file-sharing technologies. This entire line of secondary liability reasoning is unlikely to remain viable as a deterrent of file-sharing technologies as we move beyond *Grokster*.

V. CONCLUSION

This Note paints a dim picture for copyright interests, but it does not go so far as to suggest that illegal file-sharing is unassailable. The

²³film.html?ex=1145332800&en=773abd9eff0c6bf4&ei=5070; *see also* MPAA, *Bram Cohen Announcement Today in Hollywood*, BOINGBOING, Nov. 22, 2005, http://www.boingboing.net/2005/11/22/mpaa_bram_cohen_anno.html. This agreement, of course, does not affect other tracking sites.

^{99.} Currently, there is no monitoring requirement. See Digital Millennium Copyright Act of 1998 § 512(m), Pub. L. No. 105-304, 112 Stat. 2860, 2886 (1998) (codified as amended in scattered sections of 17 U.S.C.).

^{100.} See, e.g., Ernest Miller, Kicking the Sony Can Down the Road, CORANTE, June 28, 2005, http://importance.corante.com/archives/2005/06/28/kicking_the_sony_can_down_the_road.php; Lawrence Solum, Grokster and the Future of P2P, LEGAL THEORY BLOG, June 29, 2005, http://lsolum.blogspot.com/archives/2005_06_01_lsolum_archive.html#112006686207391975.

primary goal here has merely been to clarify that secondary liability suits against file-sharing technologies are approaching a dead-end, despite the outcome of *Grokster*. These technologies are fighting a guerilla movement against copyright owners that will cause the courts to back off long before such technologies are meaningfully crippled.

While parts of this trend have long been anticipated and feared, copyright owners have nevertheless pursued secondary liability in the hope that creating speed bumps will significantly deter illegal file-sharing. Trade-offs have indeed been made, and no solution today offers the incredible combination of ease, speed, reliability, and scalability that Napster was able to achieve. These technological obstacles and risks of legal liability have pushed some users to embrace systems like the iTunes music store — notwithstanding constraints like digital rights management and end user licenses — because they offer ease of use, richness of choice, and legality. Yet, illegal file-sharing has also continued at ever-increasing rates, raising the possibility that incremental speed bumps have merely inoculated against such obstacles, or even that file-sharing has become so ingrained into our cultural ethos that speed bumps are no longer effective.

Where the equilibrium will settle between these two groups of users will be, in part, a function of how high the deterrents are and how appealing the alternatives are. As secondary liability suits reach the limit of their effectiveness, however, copyright owners will be unable to raise the technological speed bumps much further. Instead, they will have to look toward expanding alternative forms of deterrence.¹⁰¹ Some scholars have argued that direct liability suits remain a viable option,¹⁰² while others have suggested administrative dispute resolution systems,¹⁰³ governmental levies on equipment or services,¹⁰⁴ or some combination of such approaches.¹⁰⁵ Copyright owners should also focus on perfecting positive business models that maximize the appeal of purchasing music legally. Since file-sharing technologies are here to stay, copyright owners will have to reassess what level of infringement will be tolerable, and be prepared to accept that the level may of necessity be higher than in the pre-Internet era. How much higher will depend upon how far they can look beyond Grokster. Sec-

^{101.} Indeed, copyright owners have already been aware that secondary liability suits are insufficient alone. *See* Hughes, *supra* note 36, at 750 (noting that "the recording industry had already decided [even before losing *Grokster* in the Ninth Circuit] that lawsuits against P2P business were not a complete substitute for lawsuits against individuals").

^{102.} See id. at 729 (concluding that "[i]t turns out that suing P2P users is not a bad idea").

^{103.} See Lemley & Reese, supra note 6, at 1351–52.

^{104.} See WILLIAM W. FISHER III, PROMISES TO KEEP: TECHNOLOGY LAW AND THE FUTURE OF ENTERTAINMENT ch. 6 (2004); Neil W. Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1 (2003).

^{105.} See Lemley & Reese, supra note 6, at 1352–53.

ondary liability has been a moral victory for copyright owners thus far, but if illegal file-sharing is to be conquered, it will not be lost for want of a Grokster.