

THE PROBLEMS OF JUDGING YOUNG TECHNOLOGIES: A COMMENT ON SONY, TORT DOCTRINES, AND THE PUZZLE OF PEER-TO-PEER

R. Anthony Reese[†]

INTRODUCTION

Professor Yen's article *Sony, Tort Doctrines, and the Puzzle of Peer-to-Peer*¹ tackles important questions about the scope of secondary liability for copyright infringement by looking to principles of liability in tort law. This approach yields useful suggestions for how courts should decide whether to impose secondary liability in many of the novel situations in which copyright owners have recently been seeking to hold defendants' liable for infringement by third parties.

The article focuses in particular on the difficult problem of whether the supplier of software that enables peer-to-peer (p2p) dissemination of works of authorship should be liable for copyright infringement committed by users of that software, and the difficulties that courts have had in applying the traditional secondary liability doctrines to that question. Professor Yen suggests that for p2p technology, those doctrines should be replaced by a standard, derived from tort principles of negligence and products liability, that would evaluate whether the technology was reasonably designed to prevent or limit infringement, essentially by weighing the costs and benefits

[†] Thomas W. Gregory Professor, School of Law, The University of Texas at Austin; Visiting Professor, Stanford Law School, 2004-2005. B.A., Yale University; J.D., Stanford Law School. Thanks to Stacey Dogan, Paul Goldstein, Mark Lemley, Christopher Leslie, Jessica Litman, Pam Samuelson, and Fred von Lohmann for helpful conversations and comments on this topic, and to Raymond Ku and Jacqueline Lipton for inviting me to participate in the symposium.

¹ 55 CASE W. RES. L. REV. 815 (2005).

of the technology. This standard, however, will likely result in many instances in imposing liability on suppliers of technologies that produce a net social benefit, because it will generally require courts (and technology developers) to evaluate the reasonableness of a technology's design, and its costs and benefits, at a relatively early stage in the evolution of the technology, when important information (particularly about the technology's potential beneficial uses) is likely to be poor.

Society would be better served in cases of technologies with both infringing and noninfringing uses (including in the p2p cases) by judging secondary liability not by the traditional doctrinal tests or by the proposed reasonable design standard, but instead by the rule the Supreme Court announced in *Sony v. Universal Studios*² to determine whether the maker of the videocassette recorder (VCR) was liable when its customers used their VCRs to infringe. In that case, the Court ruled that if the technology is capable of substantial noninfringing use, then the technology supplier is not liable for copyright infringements committed by the technology's users. This approach is less likely in general to stifle technologies that produce a net social benefit, and avenues other than secondary liability exist, and may be preferable, to deal with any particular technology that passes the *Sony* test but produces a net social cost.

I. TORT PRINCIPLES AND ORDINARY SECONDARY LIABILITY

Professor Yen's article does an excellent job of identifying how secondary liability doctrines in copyright law—doctrines of contributory infringement and vicarious liability—have become unmoored from their origins. At its core, contributory infringement seeks to impose liability on those who actively, knowingly assist a direct infringer—in essence to impose liability on the infringer's accomplices for aiding and abetting the infringement. Vicarious liability for copyright infringement originated in the venerable doctrine of *respondeat superior*, which requires principals (usually employers) to answer for infringements committed by their agents (usually employees). Courts seeking to apply these doctrines to boundary cases formulated tests that tried to capture the underlying principles at the heart of each doctrine in a way that made clear that those principles covered the boundary case at hand. As those tests became widely adopted, courts sometimes became overly formalistic in using them, applying the various verbal formulations without necessarily justifying those ap-

² 464 U.S. 417 (1984).

plications in terms of the underlying principles that the tests were meant to capture.

Professor Yen presents this picture particularly clearly with respect to vicarious liability. Early copyright cases imposed liability somewhat beyond the traditional employment context, holding operators of dance halls liable for infringing public performances of musical works by bands that the operators had hired to play in the dance hall, even though the formal relationship between the operator and the musicians was that of independent contractors rather than employer-employee. Years after the dance-hall cases began to impose liability, the Second Circuit in the landmark case *Shapiro, Bernstein & Co. v. H.L. Green Co.*³ faced the question of a department store's liability for infringing record sales by the independent concessionaire that operated the store's record department. Extrapolating from the general principles that justified holding employers and dance-hall operators liable, and going beyond the "technical employer-employee relationship,"⁴ the court ruled that vicarious liability could be imposed if "the right and ability to supervise [the infringing activity] coalesce with an obvious and direct financial interest in the exploitation of copyrighted materials."⁵ On the facts of the case, the Second Circuit found that the store was liable; although the infringing concessionaire was not an employee, in the court's view the facts established that the relationship between the store and the infringer was analogous enough to warrant imposing liability on the same principles as in an employer-employee situation.⁶

Professor Yen demonstrates that the Second Circuit's test, which largely restated the *respondeat superior* principles underlying vicarious liability, has, for many courts, taken on a life of its own that no longer looks to those principles. The *Fonovisa v. Cherry Auction*⁷ case that he discusses, ruling that a flea market operator could be held vicariously liable for infringing sales of recordings by vendors who rented space at the flea market, is perhaps the high-water mark of this approach. The Ninth Circuit's decision focuses almost wholly on the

³ 316 F.2d 304 (2d Cir. 1963).

⁴ *Id.* at 307.

⁵ *Id.*

⁶ The court recounted those facts in some detail. Employees of the licensee, Jalen, were obliged to follow all of defendant Green's rules and regulations, and Green had the unreviewable discretion to discharge them for breaches. When Jalen sold records in Green stores, the customer got a receipt with Green's name on it and the sale proceeds went directly into Green's cash registers, from which they were collected by Green's store cashier. Periodically, Green would deduct its 10 to 12% share, deduct the salaries and withholding taxes for Jalen's employees (it paid the salaries directly to the employees and turned the withholding over to Jalen), and then pay the remainder to Jalen. *Id.* at 306.

⁷ 76 F.3d 259 (9th Cir. 1996).

test's language of right and ability to supervise (or "control," as previous courts had phrased the first prong), and on the financial interest,⁸ and offered little discussion of whether the relationship between the flea market operator and the vendor justified imposing liability in the way that a relationship between an employer and employee or independent contractor or concessionaire justified such liability. Whatever the correct outcome of the secondary liability claims on the facts of the case, Professor Yen is surely right that the development of the law would be better served by express consideration of whether the principles justifying vicarious liability as a general matter in fact justify imposing liability in this case than by a relatively wooden application of the "supervise" and "financial interest" language of the standard doctrinal test. And that will continue to be true as courts are presented with increasingly novel claims for secondary liability, such as those that Professor Yen identifies in his concluding paragraph, including one against credit card companies that allow online disseminators of allegedly infringing material to charge their customers' credit cards for their services.⁹

Professor Yen's article is thus very helpful in suggesting that considering ordinary tort principles can help courts decide novel claims in secondary liability cases. Courts faced with questions in contributory infringement cases of whether a defendant "knew" of a direct infringer's activity can certainly benefit by looking to what Professor Yen identifies as tort law's view that a substantial general certainty that some injury will occur is not sufficient knowledge for imposing secondary liability and that instead a substantial certainty of a relatively immediate and specific injury to an identifiable party is required.¹⁰ Similarly, viewing the control and direct financial interest prongs of the vicarious liability test as indicators of whether the agency *relationship* between the parties is the kind that justifies holding one liable for the acts of the other may help determine the appropriate scope of vicarious liability in copyright law.

Courts may well be receptive to Professor Yen's proposal in ordinary secondary liability cases. One can read the recent Ninth Circuit decision in *Ellison v. Robertson*¹¹ as perhaps limiting the potential breadth of *Fonovisa*, at least as to vicarious liability. *Fonovisa* ruled

⁸ For criticism of *Fonovisa*'s treatment of the directness of the financial benefit at issue, see Mark A. Lemley & R. Anthony Reese, *Reducing Digital Copyright Infringement Without Restricting Innovation*, 56 STAN. L. REV. 1345, 1367-68 (2004).

⁹ See *Perfect 10, Inc. v. Visa Int'l Serv. Ass'n*, 71 U.S.P.Q.2d (BNA) 1914 (N.D. Cal. 2004).

¹⁰ Yen, *supra* note 1, at 847-48.

¹¹ 357 F.3d 1072 (9th Cir. 2004).

that the flea market operator would have a “direct financial interest” in the infringing record sales by some of its vendors, even though the operator received only a flat daily rental fee from the vendors, if the chance to buy infringing records drew customers to the flea market, and those customers then bought parking, admission tickets, and refreshments from the operator. *Ellison*, a decision involving AOL’s liability for the unauthorized dissemination of fiction on one of the many hundreds of Usenet newsgroups that AOL retransmitted to its members, emphasizes that a plaintiff must *show* the directness of the financial benefit to the defendant in order to succeed on a vicarious liability claim. The Ninth Circuit indicated that a copyright owner must establish “a causal relationship between the infringing activity and any financial benefit a defendant reaps.”¹² *Ellison* reminds us that *Fonovisa* ruled on a 12(b)(6) motion and so merely established that infringing activity that “draws” customers *could* provide the direct financial interest needed for secondary liability, while *Ellison* makes clear that a copyright owner will have to *prove* the direct connection between the infringing activity and the defendant’s financial benefit. But *Ellison* may also suggest a current judicial skepticism about whether secondary liability might be extended too far, and thus a willingness to look to tort principles, as Professor Yen suggests, in deciding novel cases.

II. TORT PRINCIPLES AND SECONDARY LIABILITY FOR DUAL-USE TECHNOLOGIES

The focus of Professor Yen’s article, though, is not on ordinary secondary liability cases, but rather on cases involving peer-to-peer file sharing software and networks, the most prominent current example of a “dual use” technology—that is, a technology that can be used for both infringing and noninfringing purposes. Professor Yen ably shows how much trouble lower courts have had in deciding—and explaining—whether to hold suppliers of p2p technology liable for infringements by p2p users. I agree with Professor Yen that the difficulty in these cases is that the existing ordinary doctrines of secondary liability that courts have applied fit the p2p problem very poorly. Professor Yen therefore proposes replacing those doctrines with a standard drawn from the tort law of negligence and products liability that essentially evaluates whether the technology was reasonably designed to limit or prevent infringement.

¹² *Id.* at 1079.

While I agree that dual-use technology cases should not be governed by the ordinary doctrines but instead by a special rule of secondary liability, I prefer the rule announced in *Sony*—no liability for supplying a copying technology if the technology is capable of substantial noninfringing use.¹³ *Sony* is preferable because the courts that engage in the analysis required by Professor Yen's reasonable design proposal will likely have to evaluate a technology while it is still relatively new and therefore will likely systematically undervalue the potential long-term benefits of the technology. As a result, the standard will lead courts to impose liability and forestall the development and deployment of technologies that might otherwise have substantial benefits to society in general and often to copyright owners in particular. In this Part, I first suggest how *Sony* replaced the standard secondary liability tests with a different test in dual-use technology cases and why the p2p cases do not require changing *Sony*'s test. I then examine why Professor Yen's proposed alternative is likely to lead courts to impose liability too often on suppliers of dual-use technologies: because it will require courts (and technology developers acting in anticipation of what courts will decide) to evaluate technologies when they are relatively new, and a technology's relative novelty will complicate the cost-benefit analysis that the reasonable design standard requires. Finally, I explain why the *Sony* test is a better alternative for evaluating liability of suppliers of dual-use technologies.

A. Peer-to-Peer Technology, and Judicial Reactions to It, Do Not Require Abandoning Sony

Professor Yen's discussion of the *Napster*¹⁴, *Aimster*¹⁵, and *Grokster*¹⁶ decisions clearly shows the difficulties of applying the traditional doctrinal tests for contributory infringement and vicarious liability to claims involving dual-use technology, and I will not reprise that discussion here.¹⁷ Professor Yen argues that the problem in the p2p cases is that courts have applied copyright's usual secondary li-

¹³ By "copying" technology, I mean any technology that enables activity that falls within the general scope of a copyright owner's exclusive rights, even if the activity does not involve reproduction, but rather, for example, performance or display of a work. This is consistent with the view that the requirement in an infringement suit that the copyright owner prove "copying" requires proving that the defendant engaged in some activity reserved to the copyright owner, even if the defendant did not produce tangible copies of the work.

¹⁴ *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004 (9th Cir. 2001).

¹⁵ *In re Aimster Copyright Litig.*, 334 F.3d 643 (7th Cir. 2003).

¹⁶ *MGM Studios, Inc. v. Grokster*, 380 F.3d 1154 (9th Cir. 2004), *cert. granted*, 125 S. Ct. 686 (Dec. 10, 2004) (No. 04-480).

¹⁷ Yen, *supra* note 1, at 832-44. For another critique of this line of cases, see Lemley & Reese, *supra* note 8, at 1355-65.

ability doctrines without sufficient attention to the tort principles that originally animated, and should guide development of, those doctrines. In my view, the difficulty in applying the traditional secondary liability doctrines to the p2p cases has a different source. The dual-use technology cases simply present a very different kind of secondary liability claim than the existing doctrines were meant to address. Supplying to the general public a technology that can subsequently be used in both legitimate and illegitimate ways does not really fit either the accomplice model at the heart of contributory infringement or the principal-agent model at the heart of vicarious liability. As a result, courts trying to apply these doctrines in the p2p context have produced, as Professor Yen nicely demonstrates, a very messy set of opinions, essentially because they are using tools that were designed for a different job.

Because the dual-use technology cases present fundamentally different issues than those addressed by contributory infringement and vicarious liability doctrines, those cases demand a different approach than the traditional doctrines, and Professor Yen proposes an alternative: addressing the p2p secondary liability issue by reformulating the applicable doctrines along lines suggested by tort principles of negligence and products liability. The next section discusses this proposal in detail. But we should recognize that we already have a different approach for secondary liability in dual-use technology cases: the one set out by the Supreme Court in *Sony v. Universal City Studios*. The *Sony* majority holds that if a technology is capable of substantial noninfringing use (or, perhaps, of commercially significant noninfringing use), then copyright law will not hold the supplier of that technology liable for infringements committed using the technology.¹⁸

Professor Yen reads *Sony* similarly to the way the Ninth Circuit read it in the *Napster* case. That reading finds *Sony* relevant only to contributory infringement, and not to vicarious liability,¹⁹ and sees *Sony* merely as a limit on the circumstances in which a court can impute knowledge to a supplier of a dual-use technology to determine contributory infringement.²⁰ In this view, *Sony* addresses the dual-use technology problem merely by refining one of the tests of traditional secondary liability doctrine.

¹⁸ 464 U.S. 417.

¹⁹ 239 F.3d at 1022; Yen, *supra* note 1, at 831. On the applicability of *Sony* to vicarious liability claims, see Lemley & Reese, *supra* note 8, at 1356 n.41.

²⁰ 239 F.3d at 1020; see also *Grokster*, 380 F.3d at 1160-61; Yen, *supra* note 1, at 828, 833, 845.

I read *Sony* more broadly as not refining the traditional tests but displacing them. With respect to both contributory infringement and vicarious liability, *Sony* teaches that if the plaintiff claims that the supplier of a dual-use technology is liable for infringements committed by users of the technology, then the traditional tests simply do not apply to that claim, and instead a court should look to whether the technology is capable of substantial noninfringing uses. If it is, then no liability should be imposed; if it is not, then liability is appropriate.

Professor Yen dislikes this reading of *Sony* because, he writes, it produces extreme and risky outcomes.²¹ As a practical matter, I do not think that the case has been made that the *Sony* approach is extreme and should be abandoned. The *Sony* rule seems to have led to relatively good results overall in the last 20 years in terms of allowing technology development to flourish.²² And on the whole, copyright owners have generally proven relatively adroit at finding ways to exploit and profit from new technologies that interact with works of authorship, as demonstrated quite spectacularly in the case of the VCR itself: the U.S. film industry today earns more revenue from home video distribution of its audiovisual works than from theatrical releases.²³ It therefore seems far from clear that with respect to dual-use technologies generally the case has been made for abandoning the *Sony* approach. It is not clear for which particular technologies *Sony* would free a supplier from liability for infringing uses of the technology while Professor Yen's proposed approach would hold the sup-

²¹ Yen, *supra* note 1, at 852.

²² See, e.g., Brief of Amicus Curiae The Business Software Alliance 10-11, available at: http://www.eff.org/IP/P2P/MGM_v_Grokster/050124_BSAGrosterBrief.pdf (describing *Sony* as having provided "a clear and predictable test for innovators and the courts" and noting that "[t]echnology companies have relied upon this bright-line test and invested billions of dollars in research and development over the past two decades, resulting in unprecedented technological progress that has directly benefited users worldwide."); but see Jessica Litman, *The Sony Paradox*, 55 CASE W. RES. L. REV. 917 (2005) (expressing skepticism that *Sony*'s substantial noninfringing use test has offered innovators much effective protection against infringement suits by copyright owners).

²³ See WILLIAM W. FISHER, PROMISES TO KEEP: TECHNOLOGY, LAW, AND THE FUTURE OF ENTERTAINMENT 75-76 (2004) (indicating that in 1990 major film studios earned \$3.3 billion from theatrical releases and \$5.1 billion from sales and rentals of home videos); *id.* at 212 (indicating that studios earned \$7.8 billion in 2000 from sales and rentals of videotapes and DVDs); Kate Bulkley, *DVDs force the movie business to rewrite its rules*, FINANCIAL TIMES, Jan. 20, 2004, at 8 ("In the US, 2002 revenue from DVD/VHS video sales and rental accounted for 62 per cent of the total domestic income of the major studios, according to consultancy Screen Digest."). See also FREDERICK WASSER, VENI, VIDI, VIDEO: THE HOLLYWOOD EMPIRE AND THE VCR 153 & Table 5.3 (2001) (showing that for U.S. theatrical films, worldwide home video revenues exceeded worldwide box office revenues beginning in 1987); HAROLD L. VOGEL, ENTERTAINMENT INDUSTRY ECONOMICS: A GUIDE FOR FINANCIAL ANALYSIS 55 (4th ed. 1998) (showing 1995 worldwide theatrical earnings of \$4.9 billion and home video earnings of \$7.3 billion, and forecasting that in 2000 about 40% of film industry worldwide revenues would derive from home video formats and about 30% from theatrical exhibition).

plier liable *or* that imposing liability (and possibly an injunction against the supply of the technology) on such a technology would be socially desirable.

Perhaps the outcomes of the *Sony* test and Professor Yen's reasonable design test would be different as to p2p software and networks (although the social desirability of imposing secondary liability on the suppliers of such software is less clear). Certainly the current primary argument against *Sony* seems to be that p2p technology has resulted in widespread but dispersed acts of direct copyright infringement, and that reading *Sony* to exempt suppliers of p2p technology from liability for that infringement will require copyright owners to tolerate infringement on such a scale that it will eliminate or substantially undermine the incentives to create and disseminate works of authorship in the first place. Peer-to-peer technology has indisputably led to widespread unauthorized dissemination of copyrighted material, particularly musical recordings, though the extent to which that dissemination has cut into the financial returns on recorded music is a subject of much disagreement.²⁴ But the problem of widespread infringement on p2p networks does not necessarily require revising *Sony*'s liability exemption for dual-use-technology suppliers generally. Several alternative approaches have been proposed for dealing specifically with p2p infringement, including levies on devices and services used in p2p operations that would be used to compensate copyright owners;²⁵ voluntary blanket licensing of music for private noncommercial p2p use;²⁶ and an administrative dispute resolution system to allow copyright owners to assert infringement claims against directly infringing

²⁴ See, e.g. Kai-Lung Hui & Ivan Png, *Piracy and the Legitimate Demand for Recorded Music*, 2 CONTRIBUTIONS TO ECONOMIC ANALYSIS No. 1 Art. 11 (2003); Stan J. Liebowitz, *Pitfalls in Measuring the Impact of File-sharing*, available at <http://www.utdallas.edu/~liebowit/intprop/pitfalls.pdf> (last visited March 29, 2005); Stan J. Liebowitz, *Will MP3 Downloads Annihilate the Record Industry? The Evidence So Far* (2003), available at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID414162_code030627500.pdf?abstractid=414162 (last visited March 29, 2005); Felix Oberholzer & Koleman Strumpf, *The Effect of File Sharing on Record Sales: An Empirical Analysis* (2004), available at http://www.unc.edu/~cigar/papers/FileSharing_March2004.pdf; Rafael Rob & Joel Waldfogel, National Bureau of Economic Research, NBER Working Paper No. 10874, *Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students* (2004), at <http://papers.nber.org/papers/W10874> (last visited March 29, 2005).

²⁵ See FISHER, *supra* note 23. Jessica Litman, *Sharing and Stealing*, 27 HASTINGS COMM. & ENT. L.J. 1 (2004); Neil Weinstock Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J. L. & TECH. 1 (2003); LAWRENCE LESSIG, *FREE CULTURE* 300-04 (2004); Raymond Shih Ray Ku, *The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology*, 69 U. CHI. L. REV. 263, 312-15 (2002).

²⁶ See ELEC. FRONTIER FOUND., *A BETTER WAY FORWARD: VOLUNTARY COLLECTIVE LICENSING OF MUSIC FILE SHARING* (Feb. 2004), available at http://www.eff.org/share/collective_lic_wp.pdf (last visited Apr. 4, 2004).

p2p users more cheaply and quickly than through copyright litigation in federal court.²⁷

As Professor Yen shows, the traditional doctrinal tests for secondary liability are a poor fit for judging secondary liability of those who supply dual-use technologies. But *Sony*, read as providing an alternative to those tests rather than refining them, deals more appropriately with dual-use technologies. And to the extent that *Sony* creates difficulties for copyright owners dealing with p2p networks, those difficulties are better dealt with by using solutions targeted at the p2p problem than by abandoning *Sony*'s general rule for technology suppliers.

B. Problems With the Proposed Alternative

Abandoning *Sony* would, of course, require choosing what would replace it. Professor Yen examines the tort principles underlying or analogous to copyright's secondary liability doctrines and finds they suggest a new approach. He suggests that for contributory infringement, tort law would lead to adopting a negligence approach, while for vicarious liability the relevant analogy would be products liability law. Under both views, the actual analysis of the secondary liability question for supplying a dual-use technology would largely converge and essentially lead to liability unless the designer of the p2p technology in question had acted reasonably in designing the technology to reduce the risk of infringement, particularly in light of alternative ways in which she could have designed the technology.²⁸ Both proposed approaches would require courts to balance the social costs of the infringement enabled by a p2p technology against the social benefits that the technology produces,²⁹ and would admonish courts to consider particularly carefully both the current and *potential* benefits, in recognition of what Professor Yen calls the *Sony* decision's wisdom in drawing attention to a technology's *capability* for substantial noninfringing uses.³⁰

My reservations about this proposal arise because I am less confident than Professor Yen that courts are in a position to do a good job

²⁷ See Lemley & Reese, *supra* note 8, at 1410-1425.

²⁸ See Yen, *supra* note 1, at 850 (indicating that most p2p contributory infringement cases would be resolved not by intentional tort principles but by negligence principles, and summarizing the negligence analysis as turning on "whether the defendants took reasonable precautions against the risk of infringement"); *id.* at 855 (discussing p2p vicarious liability proposal based on products liability as focusing on determining whether technology's design is reasonable in light of possible alternative designs).

²⁹ *Id.* at 850-51; *id.* at 855-56.

³⁰ *Id.* at 829-830.

at the kind of detailed, fine-grained weighing of costs and benefits that it would require.³¹ In particular, I think that courts will generally be called upon to weigh these costs and benefits at a time when the technology is in its infancy, and that such early consideration will present significant challenges to robust analysis of a dual-use technology's costs and benefits. In the abstract, the cost-benefit analysis approach is appealing. Exempting the supplier of a dual-use technology from liability under *Sony* makes little sense when we know that a technology produces a social benefit of \$100 and a social cost of \$1000.³² But when we are unlikely to be able to quantify a technology's actual costs and benefits, or perhaps even their relative magnitudes, with any degree of certainty, *Sony*'s prophylactic rule generally shielding against liability seems far less ridiculous than the firm numbers in the hypothetical might suggest. Several structural problems suggest that courts are not well-positioned to accurately assess the social benefits of dual-use technologies, in large part because courts (and technology developers anticipating court decisions) will have to weigh a technology's costs and benefits when that technology is in its infancy (when claims of secondary copyright liability are often brought). The likely problems of evaluating new technologies call into question the likely accuracy of the kind of detailed cost-benefit analysis that Professor Yen's proposal requires. The following sections discuss in more detail several likely difficulties in evaluating technologies when they are new.

1. Difficulties Facing Courts in Evaluating New Technologies

a. Undervaluing Potential Uses

Experience suggests that courts may be reluctant to give much weight to potential future uses of a new technology if they do not see any current exploitation of such uses.³³ The p2p cases themselves offer some evidence of this preference for evaluating current uses and reluctance to value future uses. In *Napster* and *Aimster*, various po-

³¹ For these purposes, I take the relevant costs and benefits to be those related to copyright, not other costs such as, for example, the potential impact of toxic chemicals in a copying device.

³² See Randal C. Picker, *Copyright as Entry Policy: The Case of Digital Distribution*, 47 THE ANTITRUST BULL. 423, 444 (2002).

³³ Of course, all anticipated social benefits (like costs) will presumably be discounted to present value in a court's analysis simply because they are benefits that will be realized in the future, if at all. My argument in the sections that follow is that we have reason to expect that courts will discount future potential benefits of new technologies more than is justified by the fact that they are in the future.

tential noninfringing uses of the p2p systems at issue were identified.³⁴ These were not mere theoretically possible uses; they were uses to which the technology in its current state could immediately be put. In *Aimster*, Judge Posner himself identified five potential categories of noninfringing use that the defendant's system, as it then existed, allowed.³⁵ Yet while the circuit courts in both cases acknowledged these possible legitimate uses, the tenor of both opinions treats these uses largely as makeweights by defendants desperately seeking to justify a technology currently being used overwhelmingly for infringing purposes.³⁶ Indeed, Judge Posner in the *Aimster* decision expressly indicates that in order to enjoy the benefit of *Sony's* protection from liability, the technology supplier would have to offer evidence of current and *actual*, not merely potential, noninfringing use of the technology.³⁷

In the *Grokster* case, by contrast, the defendants put forth evidence of actual current use of their p2p software—perhaps at least 10% of its use—for noninfringing purposes.³⁸ Presented with evidence of actual noninfringing use, both the trial and the appellate courts in *Grokster* seemed more concerned than the *Napster* and *Aimster* courts about the danger that imposing liability would cut off legitimate use. The contrast, especially in light of *Aimster's* express demand for a weighing of actual uses in determining liability,³⁹ suggests that courts may be inclined to give insufficient weight to potential uses to which a new technology can be put even when those uses are enabled by the current version of the technology. This inclination would tend to skew the cost-benefit analysis of the new technology toward a finding of net social cost, and to incline courts to hold the developer liable for users' infringements.

³⁴ See *Napster*, 239 F.3d at 1019; *Aimster*, 334 F.3d at 652-53.

³⁵ *Aimster*, 334 F.3d at 652-53.

³⁶ This attitude is even clearer in the district court decision in *Napster*. See *A&M Records, Inc. v. Napster, Inc.*, 114 F. Supp. 2d 896 (N.D. Cal. 2000).

³⁷ *Aimster*, 334 F.3d at 653.

³⁸ See *MGM Studios, Inc. v. Grokster*, 259 F. Supp. 2d 1029, 1035-36 (C.D. Cal. 2003) (detailing numerous declarations offering evidence of use of p2p software for dissemination of "public domain materials, government documents, media content for which distribution is authorized, media content as to which the rights owners do not object to distribution, and computer software for which distribution is permitted"); *Grokster*, 380 F.3d at 1161 (describing in detail several instances of noninfringing use of defendants' p2p software, including example of band Wilco, which disseminated by p2p network an album that its recording company had decided "had no commercial potential" in order to demonstrate widespread interest in the recording and convince a company to release it); *id.* at 1162 n.10 (indicating that plaintiffs conceded that 10% of use of defendant's software was for noninfringing purposes).

³⁹ *Aimster*, 334 F.3d at 649 ("some estimate of the respective magnitudes of [infringing and noninfringing] uses is necessary" for judging secondary liability); *id.* at 652-53 (requiring evidence of actual uses).

b. Problems Identifying Future Beneficial Uses of New Technologies

The contrast just noted between the *Napster* and *Aimster* courts on one hand, and the *Grokster* courts on the other, in considering existing potential noninfringing uses of a new technology further suggests that courts may well give even less weight to potential noninfringing uses that are not currently possible using the technology but that might be enabled by further development of the technology or of complementary inputs. In the p2p cases, the courts were presented with presently possible noninfringing (or potentially noninfringing) uses. But courts faced with evaluating the costs and benefits of a new dual-use technology also need to identify the uses to which the technology might be put in the future in order to anticipate the potential costs and benefits of such uses, and they are likely to have difficulty doing so.

History suggests that often even those who are relatively intimately involved with the creation and development of a new technology do not foresee many of the primary uses eventually made of that technology.⁴⁰ The early developers of radio transmission were primarily attempting to produce a means of point-to-point individual communication in situations where wired communication was infeasible (such as between ship and shore), not a medium for communicating by broadcast from a single transmitter to an enormous audience of multiple receivers.⁴¹ When Thomas Edison developed technology for recording sound, he envisioned its use primarily for business purposes such as dictation, as well as for recording the spoken voice (in the form of deathbed testaments, readings and speeches by important literary and political figures, and recorded books for the blind), rather than for entertainment purposes or recording of music.⁴² One biographer wrote that Edison “failed to comprehend or foresee what was to constitute the magnificent destiny of his invention”⁴³ and that he said, “I don’t want the phonograph sold for amusement purposes. It is not a toy. I want it sold for business purposes only.”⁴⁴ While these ex-

⁴⁰ See generally Nathan Rosenberg, *Factors Affecting the Diffusion of Technology*, 10 EXPLORATIONS IN ECON. HIST. 3 (1972); Nathan Rosenberg, *A Good Crystal Ball Is Hard To Find*, AM. HERITAGE OF INVENTION & TECH., Spring 1986, pp. 44-50.

⁴¹ See, e.g., Nathan Rosenberg, *A Good Crystal Ball Is Hard To Find*, AM. HERITAGE OF INVENTION & TECH., Spring 1986, at 47; Nathan Rosenberg, *Factors Affecting the Diffusion of Technology*, 10 EXPLORATIONS IN ECON. HIST. 3, 13-14 (1972).

⁴² See MATTHEW JOSEPHSON, *EDISON 171-174* (1959); ANDRE MILLARD, *EDISON AND THE BUSINESS OF INNOVATION 78-87* (1990). Recorded music was one of the ten possible applications of the phonograph that Edison enumerated in 1878, but his initial efforts at commercialization were largely not in that direction. MILLARD, 78-87, 318-326.

⁴³ MILLARD, *supra* note 42, at 172.

⁴⁴ MILLARD, *supra* note 42, at 326.

amples do not necessarily involve technologies that have early infringing uses and later-discovered noninfringing uses, they do illustrate that even those who develop new technologies do not necessarily accurately predict the ways in which those technologies will be used.

Given that those close to new technologies often do not anticipate how they will develop, courts seem unlikely to have a good chance of identifying with much accuracy how people will come to use a new technology and the social benefits and costs those uses might create. *Sony* itself is not particularly reassuring on this score. Almost none of the justices or lower-court judges really considered possible future uses of the VCR, focusing instead on the currently enabled uses of the device. This focus may have made sense in *Sony*, which involved a largely static piece of stand-alone equipment.⁴⁵ But the difficulty of identifying future uses of new technologies seems likely to pose a bigger problem today and going forward, since digital technologies are often more dynamic and may be susceptible to a greater eventual variety of uses than devices such as the VCR (or the technologies embodied in those devices).

c. Overstating the Costs of Infringement

While courts may systematically undervalue the potential social benefits of a new dual-use technology, they may also overvalue the social costs of such technologies. One reason for this is that infringing uses are likely to be occurring and currently observable when copyright owners sue for infringement, in contrast to potential future noninfringing uses of the technology. Another reason is that courts may be likely to consider all infringing uses of a technology as social costs. Given the extremely broad definition of copyright owners' exclusive rights in current law, courts may find that many acts may technically constitute infringement.⁴⁶ It is not clear, however, that

⁴⁵ Largely, but not entirely. Most of the models sold at the time of the trial in *Universal City Studios v. Sony Corp. of America*, 480 F. Supp. 429, 435 (C.D. Cal. 1979) did not include a remote control, which may in large degree explain the survey findings that most people who watched recordings for time-shifting purposes did not skip the recorded commercials. *Id.* at 468 (noting that survey showed that only 25% of viewers fast-forwarded through commercials). Today, of course, remote controls for televisions and video recorders are ubiquitous.

⁴⁶ For example, Judge Posner offhandedly concluded in *Aimster* that *Sony* established that fast-forwarding through the commercials in a recorded television broadcast would come within the scope of the copyright owner's exclusive rights, *Aimster*, 334 F.3d at 647-48, a conclusion that finds no express support in the majority opinion in *Sony*, which focuses on the home recorder's act of *reproduction* of a televised work, not on whether skipping commercials during playback prepares a derivative work. Judge Posner's analysis would seem to apply equally to fast forwarding through portions of a film on DVD or to playing the tracks on an audio CD in an order other than that in which they appear on the disc and to condemn such activities as infringing.

every technical act of infringement should be considered as a cost of a new technology. In some cases, an act that infringes gives a user access to a work where she simply never would have paid for that access. In such instances, acts that technically infringe as a legal matter have no detrimental economic impact on the copyright owner but in fact benefit society by reducing the deadweight loss that copyright protection itself imposes by creating a market price significantly greater than the marginal cost.⁴⁷ The debates over the impact of the use of p2p networks on the recording industry⁴⁸ demonstrate the difficulty in quantifying how much infringing use of any particular technology actually falls into this category, but some use surely does. Nonetheless, courts evaluating dual-use technology cases seem likely to take a relatively formal view that sees all infringing acts enabled by the technology as a cost,⁴⁹ and, consequently, may be likely to restrict technologies more often than would be desirable.

d. Failing To Account for Interaction of Short-Term Infringement Costs and Long-Term Benefits from Noninfringing Future Uses

Courts balancing social costs of a technology's infringing uses against the benefits of its noninfringing uses may also give insufficient weight to important *interactions* between infringing and noninfringing uses of new technologies. The example of the VCR suggests that tolerating some amount of infringement in the short term may be important in driving consumer adoption of a technology that, in the long term and with widespread deployment, will be put to much wider noninfringing uses that provide copyright owners with enormous markets. In the VCR case, widespread adoption of the device created a huge market for the rental and sale of prerecorded cassettes of copyrighted audiovisual works, which in turn laid the groundwork for the rise of the even larger DVD market. As a result, motion picture studios have for some years earned greater revenues from exploiting their works in the home video/DVD market than in theatrical

⁴⁷ See Lemley & Reese, *supra* note 8, at 1374 n.110.

⁴⁸ See *supra*, text accompanying note 24.

⁴⁹ Of course, the lack of economic harm to the copyright owner from an activity that falls within the scope of the copyright owner's exclusive rights is relevant to determining whether that activity constitutes fair use, and courts evaluating dual-use technologies may, as the *Sony* courts did, consider the lack of economic harm in determining whether a category of use (such as unauthorized home time shifting recording of television programming) is fair. But because this fair use analysis considers whether an activity would reduce the value of a copyrighted work if it became widespread, a court might well deem a particular *category* of use (such as, for example, unauthorized home time-shifting) not to be a fair use, even though some portion of those making the use would have been unwilling or unable to pay the price demanded by the copyright owner. As a result, fair use analysis alone will not necessarily capture the social benefit of uses that reduce copyright's deadweight loss.

release.⁵⁰ Of course, the market for prerecorded cassettes or discs does not require that consumers have a device such as the VCR that allows the *recording* of audiovisual content; only the playback function is needed. But it is far from clear that, when the VCR was developed and introduced to the public in the late 1970s and early 1980s, a machine that only *played* prerecorded material would have found a large number of buyers. The ability to record television programs appears to have been a primary motivator for consumers to buy the devices. In its early days, the VCR competed against playback-only laserdisc systems, but the superior picture that those systems provided “was simply not superior enough to impress most people as sufficient compensation for the inability to record.”⁵¹ But once millions of consumers bought VCRs, seemingly in significant part for their recording functions, the conditions existed for the explosion of the prerecorded cassette market. Even if the Ninth Circuit’s holding in *Sony* that unauthorized home-time shifting was not fair use had been upheld by the Supreme Court and all such use weighed as a social cost of the VCR, in the long run copyright owners and society might well have benefited from allowing such infringement and permitting the sale of the VCR, because it helped to establish the conditions for an extremely lucrative new method of exploiting copyrighted works, the benefits of which might well have exceeded the costs of early infringing uses.

It is possible that in a few decades a similar story might be told with respect to digital music technologies. Initial users of these technologies may well be engaged largely in infringing, or at least potentially infringing, activity: downloading digital recordings using p2p networks, burning copies of CDs, and ripping recordings from CDs to music files stored on a computer or a portable music player.⁵² These

⁵⁰ See *supra*, text accompanying note 23.

⁵¹ JAMES LARDNER, FAST FORWARD: A MACHINE AND THE COMMOTION IT CAUSED 13, 192 (rev. ed. 2002). See also WASSER, *supra* note 23, at 60-70 (discussing various early playback-only video systems). While playback-only systems might have achieved substantial market penetration in the absence of competition from recording devices, it seems likely that consumer adoption would have been slower for playback-only devices than it was for the more versatile recording systems.

⁵² How much of this activity *actually* infringes is disputed, particularly outside the p2p context. Copyright owners have asserted that most personal copying by burning a duplicate CD or ripping CD tracks to transferable and usually compressed-format files is infringing. See, e.g., RIAA, *Frequently Asked Questions—Downloading and Uploading*, at http://www.riaa.com/issues/music/downp_faq.asp#digitaldevices (last visited Mar. 7, 2005). At least one circuit court has held that the latter activity, while apparently not protected under the Audio Home Recording Act’s limitation on music copyright owners’ exclusive rights, 17 U.S.C. § 1008 (1997), qualifies as fair use as noninfringing “space shifting,” by analogy to the time-shifting use of audiovisual works held fair in *Sony*. *Recording Indus. Ass’n of Am. v. Diamond Multimedia Sys., Inc.*, 180 F.3d 1072 (9th Cir. 1999).

potentially infringing uses, however, have created an enormous awareness of the advantages and potential of digital music, and arguably paved the way for the legitimate market in digital music that has begun to develop in recent years. Indeed, many would say that the existence of digital music technologies initially used in infringing or potentially infringing ways pressured music copyright owners to begin to create a legitimate digital music market that they otherwise might not have.⁵³ Whatever the actual costs of infringement today using digital music technologies, they may ultimately pale in comparison to the money to be made by copyright owners exploiting their works using those technologies and their improved descendants.

The VCR experience thus offers a cautionary tale not only about the difficulty of foreseeing the beneficial ways in which a dual-use technology will come to be used in the future, but also about the possibility that tolerating the costs of a technology's initial infringing uses in the short run may sometimes be necessary to reap the long-term benefits of later noninfringing uses. And even where the infringing uses are not *necessary* to create the market for the noninfringing uses, the costs of the infringement may be more than compensated because they accelerate that market's development. The market for prerecorded copies of movies and television programs might well have developed by the sale of playback-only devices, but it surely would have developed far more slowly than it did with the advent of the VCR.

e. Finding Infringement-Limiting Designs That Severely Constrain a New Technology to be Reasonable

My final concern about courts applying the proposed reasonable design tests also arises from the problems of evaluating a technology when it is very new, but does not relate to identifying how the technology will be used, determining whether any of those uses will infringe copyright and to what extent, or evaluating the costs and benefits of infringing and noninfringing uses. Instead, the concern here relates to the evaluation of whether a technology developer acted "reasonably" in designing the technology to limit infringement, and the way in which the very novelty of a challenged technology may affect the reasonableness inquiry.

⁵³ Indeed, it is possible that *Sony's* determination that supplying a VCR did not result in copyright infringement liability might have pressured the film industry to market prerecorded cassettes, or to do so more quickly and aggressively than they might otherwise have done, in order to capitalize on a technology that could not be suppressed using copyright law. *Cf. Rosenberg, Factors Affecting the Diffusion of Technology, supra* note 40, at 26 (suggesting that appearance of innovative technologies spurs improvements in competing older technologies).

Many potential infringement-limiting controls on an infant technology may seem reasonable because the full capacity of the technology is not understood. As a result, courts may impose liability unless designers implement such controls, and rational designers will presumably anticipate potential liability and build in such controls in order to avoid liability. But these controls may well prevent, or certainly delay, the full flowering of the technology's capacities and the social benefits it might offer.

Take the example of the World Wide Web. In the mid-1990s, the technology of the Web was just beginning to emerge; few people had access to it and relatively little content was available. But the potential for copyright infringement on Web sites was fairly evident. Those who designed Web browsers and server software, and who provided hosting and Internet connectivity, might have implemented precautionary measures to limit infringement. For example, they might have required that before any content posted to a publicly available Web site became accessible to visitors to that site, the content would have to be "quarantined" and available for 48 or 72 hours at a special Web site accessible only to copyright owners, who could screen the content before it went online generally and object to content that they alleged to be infringing. If Web technology providers failed to do this, a copyright owner seeking to hold them liable for infringement committed by their customers might have argued in court that they had failed to take a reasonable precaution to limit infringement and thus should be held liable.

Today, having seen how the Web developed, this suggested precaution might seem fairly ludicrous. But in the early years of the Web, when most people did not have access and were certainly not used to the ability for content to be essentially instantaneously posted on Web sites, the restriction might well have appeared to be a reasonable way to limit copyright infringement. Courts might have found it to be a reasonable step that Web technology providers should take, or those providers might have thought that such a judicial outcome was likely enough that they would have adopted the step themselves. But while the precaution might have seemed reasonable at the time, it would likely have significantly altered the nature of the World Wide Web. Not having to wait 48 or 72 hours in order to post material to the Web is obviously crucial to many substantial activities that now take place on the Web—such as sites reporting or commenting on current news, politics, or culture; blogs; and commercial sites adding items to inventory, to name but a few.

The example may seem somewhat far-fetched,⁵⁴ but it illustrates the point that when a technology is in its infancy, designers and courts may have at best a dim understanding of how the technology will evolve and come to be used, and that possible controls on infringement that may seem reasonable at that point in the development of the technology may significantly diminish the social benefits that the technology could provide if allowed to develop without the controls. It might be that in some instances the controls deemed reasonable in a technology's early years would in fact reduce the social costs of copyright infringement more significantly than they would reduce the social benefits that the technology would produce without the controls. But it is not clear that, in the early stages of a technology's lifecycle, courts or technology developers have the information necessary to distinguish those instances from cases where precisely the opposite result will occur. This, I think, counsels against adopting an approach to secondary liability for dual-use technology suppliers that will often require evaluating potential alternative, infringement-limiting designs while the technology is young.

2. *Difficulties Facing Developers in Designing New Technologies*

Imposing secondary liability on suppliers of a dual-use technology based on whether the technology was reasonably designed to limit infringing uses will, in most cases, require evaluating the costs and benefits of a technology when it is new. For the reasons just explored, courts seem likely to undervalue the benefits of a new technology and overstate its costs, and therefore impose liability on the technology supplier in some cases where the net benefits would in fact surpass the costs. In addition, the reasonable design standard may lead those who develop new dual-use technologies to forego developing technologies that would produce a net social benefit, for at least two reasons.

The proposed test of liability for dual-use technology suppliers turns on the reasonableness with which the supplier designed the technology. Those who design dual-use technologies will obviously do so with this liability standard in mind, and will thus have to determine as they develop their products whether a court is likely to find their design decisions to be reasonable. But, as just discussed, courts

⁵⁴ On the other hand, history offers examples of actual controls on early technologies that in hindsight may seem equally far-fetched. Cartrivision, an early VCR technology, featured prerecorded rental cassettes with a locking device that prevented a home viewer from rewinding the cassette, so that the recorded film could only be watched once per rental. LARDNER, *supra* note 51, at 68-71.

seem likely to systematically err in weighing the reasonableness of design decisions, and to do so in a way that increases the likelihood that a technology developer will be found to have designed her product unreasonably and therefore be subject to liability.

Technology developers will face many of the same difficulties as courts in evaluating whether their technology designs are reasonable—including the inability to identify potential future noninfringing uses and the possibility of accepting as reasonable fairly severe infringement-limiting constraints. But a rational technology developer will also take into account the likelihood that a court asked to evaluate the reasonableness of her design will make the kind of errors just described and hold the designer liable. Thus, even if the designer is able to make a more optimistic and accurate forecast than a court about the potential future noninfringing uses of the technology and their social benefits, courts skeptical about the benefits of future uses (particularly in the face of currently observable infringement) may mistakenly undervalue the social benefits, making a finding of liability more likely. If courts are in fact likely to systematically judge the net social benefit of new dual-use technologies too harshly, technology developers' choices in designing their products will reflect that likelihood. And in making those choices developers are likely to take into account the possibility that they will face liability beyond simply compensating copyright owners—liability for their profits or for statutory damages—as well as a possible injunction against continued dissemination of their technology.

For technology designers, another difficulty with liability based on whether they acted reasonably in designing the technology to reduce the risk of infringement is that it may be unclear, when the technology is designed, precisely what conduct is infringing. A new technology will often enable new kinds of uses for works of authorship, and whether those uses are infringing will be an open question. The VCR, for example, enabled for the first time home time-shifting of publicly transmitted audiovisual works, a use that simply had not been possible before. Should a VCR developer, in the late 1960s and early 1970s, have designed the machine to prevent or reduce such unauthorized time-shifting? This would depend, in part, on what reasonable alternative designs were available to the developer.⁵⁵ But it

⁵⁵ The plaintiffs in *Sony* tried to offer evidence at trial that the VCR could have been designed to allow recording only if the broadcaster indicated that recording was permitted, at a cost of under \$15 per VCR. LARDNER, *supra* note 51, at 104-05. See also 464 U.S. at 815 (Blackmun, J., dissenting) ("Sony may be able, for example, to build a VTR that enables broadcasters to scramble the signal of individual programs and 'jam' the unauthorized recording of them.").

also depends in part on whether the activity is infringing, and to what extent, since the proposed secondary liability analysis focuses on acting reasonably to prevent infringement. The question of whether home time-shifting infringes, however, was not firmly resolved until the Supreme Court's *Sony* decision in 1984, nearly eight years after the copyright owners filed suit, and many years after Sony's original VCRs were designed. And while the *Sony* majority held home time-shifting to be fair use, a majority of all 13 federal judges who considered the question ruled time-shifting to be infringing use.⁵⁶

This points to the dilemma facing a technology developer trying to avoid secondary liability under the proposed test: the technology may enable some activity that *might* be infringing, but the developer will have to consider whether to design the technology to limit or eliminate that activity without knowing for certain whether it is infringing. (Indeed, the dilemma may be more acute, as the activity may clearly be noninfringing in some circumstances—for example, home time-shifting authorized by copyright owners or of noncopyrighted content—as well as potentially infringing in others.) If the activity is ultimately held not to infringe, then the developer presumably faces no liability for supplying the technology that enables the activity. But if the activity is ultimately ruled to infringe, and the developer could reasonably have designed the technology in a way that would have limited the activity, the designer would seem to be liable for infringing use under the proposed analysis. Given the initial uncertainty of whether the activity infringed, a court might refuse to impose monetary liability on the designer for activity that occurred before its infringing nature was clear; I have elsewhere suggested a somewhat similar approach to issues of direct liability where the legality of the use is uncertain.⁵⁷ But once a court rules that the technology's use *is* infringing, a court would presumably enjoin the continuing supply of the technology, and the supplier would be unable to recover any more of its investment in the development of the technology.

As a result, if the technology supplier's liability turns on whether it reasonably designed the technology to reduce infringement, rational developers may be inclined to design their technology to limit activities that *might* infringe, but that might instead turn out to be found

⁵⁶ Three circuit judges and four Supreme Court justices would have ruled that unauthorized home time-shifting was not fair use. *Universal City Studios v. Sony Corp. of America*, 659 F.2d 963 (9th Cir. 1981); *Sony Corp. of America v. Universal City Studios*, 464 U.S. 417, 457 (1984) (Blackmun, J., dissenting). One district judge and five Supreme Court justices ruled that it was fair use. *Universal City Studios v. Sony Corp. of America*, 480 F. Supp. 429 (C.D. Cal. 1979); *Sony*, 464 U.S. at 417.

⁵⁷ R. Anthony Reese, *Innocent Copyright Infringement* at 63-74 (2005) (unpublished manuscript on file with author).

noninfringing. This caution might deny to the public technologies that enable legitimate, noninfringing uses.⁵⁸

C. *Sony as a Better Alternative*

The proposed reasonable design standard for secondary liability will often require courts and technology developers to weigh a dual-use technology's costs and benefits in the technology's very early days. This Part has argued that there are good reasons to expect that this early-stage evaluation may generally understate the net social benefit of the new technology, leading technology developers not to produce the technology or leading courts to impose liability on them for doing so. Given the difficulties of accurately applying the reasonable design standard to relatively new technologies, I fear that this standard will restrict the availability of technologies that, in the long run, would prove to create social benefits greater than the costs of the infringement that they enable. Courts may have to engage in this kind of analysis, despite its problems, when the new technology at issue causes physical injury or damage, as in the products liability and negligence cases on which Professor Yen draws. But it is not clear that the potential economic injury of copyright infringement necessitates this kind of analysis, given the inherent problems of evaluating new technologies in their early stages.

By contrast, the *Sony* rule that a technology supplier is not liable as long as its technology is capable of substantial noninfringing use poses much less danger that courts will outlaw technologies that on the whole benefit society. Properly read, the *Sony* test's focus on a technology's *capacity* for substantial noninfringing use means that the vast majority of dual-use technologies will easily qualify for protection against secondary liability claims: by definition, these technologies have noninfringing uses, and in most cases those uses *could* be or become substantial. In a sense, the *Sony* standard balances the costs and benefits involved in the deployment of new dual-use technologies not at the level of each particular technology, but at a more general level, and represents a conclusion that on balance the social benefits of dual-use technologies are sufficiently likely to exceed their costs in most cases to justify a general rule against secondary liability as long as the technology is in fact capable of substantial noninfringing use.

The fact that most technologies will pass muster under *Sony* means, of course, that in particular cases, supplying a technology will

⁵⁸ Indeed, the question of whether the technology's use is infringing may never be resolved. If *Sony* (or a competitor) had not marketed a VCR that enabled home time-shifting, the courts would not have had occasion to consider its copyright implications.

be held lawful because it could potentially have a net social benefit, when in fact it has a net social cost. This is essentially the inverse of the danger that the reasonable design test will suppress too many technologies: the *Sony* test may suppress too few. While the view underlying *Sony* is that dual-use technologies will generally provide a net social benefit, in individual cases any particular technology's costs might outweigh its benefits, and p2p networks might be a case where they do so.

There are, however, reasons to prefer *Sony*'s possible tolerance of too many dual-use technologies that have a net harm over the reasonable design standard's possible intolerance of technologies with a net social benefit. First, while the harms caused by infringing uses of a dual-use technology are enabled by the technology supplier, they are directly caused by the technology *user* who engages in acts of copyright infringement. This means that in a dual-use technology case, there will always be a party more directly culpable for the harm than the technology supplier and against whom an injured copyright owner can seek redress. With widely disseminated technologies, seeking to hold direct infringers liable can be very costly, though music copyright owners have begun to take this approach by suing infringing users of p2p systems, and Mark Lemley and I have proposed an administrative system that would reduce the costs of pursuing direct infringement claims.⁵⁹

Second, and more importantly, the *Sony* standard for secondary liability offers copyright owners and society only a first line of defense against technologies that impose a net harm, and it is an appropriately restrained protection given the likely uncertainty in many cases about the costs and benefits of the dual-use technology. But the fact that a technology passes the *Sony* test need not finally resolve the question of that technology's permissibility. In any particular case in which the net harm of the technology can be established with more certainty, Congress can amend copyright law to address that particular technology. Congress, of course, has potentially better mechanisms than courts to gather more certain information about the harms and benefits of a challenged technology. In addition, Congress has a more robust range of remedies available, some of which may allow more of a technology's noninfringing use than the simple imposition of secondary liability on the technology's supplier, particularly within a copyright system that offers often supracompensatory remedies (in the form of statutory damages) and routine injunctive relief.

⁵⁹ Lemley & Reese, *supra* note 8, at 1410-25.

Congress essentially took this approach to digital audio recording technology when it adopted the Audio Home Recording Act of 1992 and imposed a levy and technological protection system on digital audio recording devices and media in return for an exemption from liability for those who supply or use those devices.⁶⁰ And as noted above, several proposals have been made for legislation that would specifically address infringement over p2p networks.⁶¹ Such legislative solutions to the harms of dual-use technologies have the advantage that, in contrast to a revised secondary liability standard, they can be targeted at a particular technology of concern rather than applying to all dual-use technologies generally.

Finally, suppressing too many dual-use technologies in the digital environment may do more harm to the production of transformative works of expression than it would have with respect to earlier dual-use technologies such as the VCR or the photocopier. In the past, many noninfringing uses of a new technology were, in the language of the *Sony* opinions, “consumptive.”⁶² They generally allowed increased access to a copyrighted work as it was produced and disseminated by the copyright owner. For example, a VCR allowed a user to record the evening news in order to watch it at a more convenient time. Indeed, one of the main disagreements between the Supreme Court majority and dissenters, and between the Ninth Circuit panel and the district court, was whether such “consumptive” uses could qualify as fair uses. But those on both sides of the question recognized that such uses generally involve the passive receipt of copyrighted works.

Digital technologies today, however, enable (or promise to enable) uses that are far more “productive” and that result in the creation of new, expressive works of authorship, as Larry Lessig, Neil Netanel, and Joe Liu, among others, have recognized.⁶³ Someone who digitally records the evening news may still be doing so to watch it at a more convenient time. But she may instead be recording it in order to use some of the footage of an event reported in the news to produce

⁶⁰ Audio Home Recording Act of 1992, Pub. L. No. 102-563, § 2, 106 Stat. 4237 (codified as 17 U.S.C. §§ 1001-10).

⁶¹ See *supra*, text accompanying notes 25-27.

⁶² *Sony Corp. of America v. Universal City Studios*, 464 U.S. 417, 450 n.33, 455 n.40 (1984); *id.* at 475-85 (Blackmun, J., dissenting); *Universal City Studios v. Sony Corp. of America*, 659 F.2d 963, 970-72 (9th Cir. 1981).

⁶³ See, e.g., LAWRENCE LESSIG, *FREE CULTURE* (2004); Joseph P. Liu, *Copyright Law's Theory of the Consumer*, 44 B.C. L. REV. 397 (2003). Neil Weinstock Netanel, *Copyright and a Democratic Civil Society*, 106 YALE L.J. 283 (1996); Neil Weinstock Netanel, *Impose a Non-commercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1 (2003).

her own commentary. For example, as a commentary on Anglo-American cooperation in launching and prosecuting the war in Iraq, she might record footage of public appearances by George Bush and Tony Blair, together and separately, in order to produce a video in which that footage is synchronized to the Diana Ross and Lionel Richie duet "Endless Love," so that the political leaders appear to be singing the lyrics to each other.⁶⁴ The relative ease with which digital technology allows such expressive re-use of works of authorship, as compared with older analog technologies, means that shortsightedness about potential noninfringing uses of new technologies will have greater negative effects today than in the past, when declaring a device contraband would have cut off more consumptive than productive uses.

CONCLUSION

Professor Yen's proposal to revisit the tort principles that undergird copyright's secondary liability doctrines has great appeal in the many novel cases being brought at the boundaries of traditional secondary liability. And evaluating the liability of a supplier of a dual-use technology by a standard other than copyright's traditional doctrinal tests for secondary liability is equally appealing. But the proposal to judge dual-use technologies based on whether they were reasonably designed to limit infringement will likely lead courts to impose liability on technologies that produce a net benefit to society and to deter developers from creating such technologies. This is in large part because information about the technology's benefits is likely to be poor in the early stages of its evolution, when developers and courts will often have to evaluate the reasonableness of the design. By contrast, *Sony's* substantial noninfringing use test for liability is generally less likely to suppress beneficial technologies, while leaving open many avenues to reduce the harm of dual-use technologies in particular instances when good information exists that the harms outweigh the benefits.

⁶⁴ See <http://politicalhumor.about.com/cs/bushmultimedia/v/blendlesslove.htm> (last visited Mar. 5, 2005). The actual video was apparently produced for a Swedish television program.