FAIR USE AND INNOVATION POLICY

ROBIN A. MOORE*

New technologies such as the VCR and Google Book Search can change the way copyrighted works are used, thereby making their innovators rich. Copyright owners are aware of these riches and often strategically sue the technology companies with the aim of gaining a share of the money. This dynamic—an innovator investing to create a new technology and a creator of a copyrighted work then suing for her share of the profits—creates an investment incentive problem. The dual goal of promoting the efficient creation of both new copyrighted works and new technologies that augment those works requires us to choose a legal rule that divides the gains from these new technologies between authors and innovators. The fair use doctrine—the statutory rule that allows some types of copyright infringement—is the legal rule that is used to do this dividing. However, economic theories of copyright law do not contain an analysis of investment incentives. This Note analyzes the effects fair use has on the incentives to create copyrighted works and to invest in technologies that affect those works.

INTRODUCTION

In 1984, the fate of the VCR's "record" button was in the hands of the United States Supreme Court. In *Sony Corp. of America v. Universal City Studios, Inc.*[1] (the "*Sony Betamax*" case), the Court had to decide whether consumer homerecording of shows such as *The Dukes of Hazzard* and *Mister Rogers' Neighborhood* violated the television studios' copyrights. Had the Court sided with the studios, Sony would likely have been forced either to disable the record button on its VCRs or to pay a tax to the studios for each VCR sold.[2] Instead, the Court ruled in favor of Sony, left the VCR intact, and levied no

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[1] 464 U.S. 417 (1984).

[2] *Id.* at 427 ("[T]he District Court discussed the respondents' prayer for injunctive relief, noting that they had asked for an injunction either preventing the future sale of Betamax machines, or requiring that the machines be rendered incapable of recording copyrighted works off the air."); *see also* John Cirace, *When Does Complete Copying of Copyrighted Works for Purposes Other than for Profit or Sale Constitute Fair Use? An Economic Analysis of the* Sony Betamax *and* Williams & Wilkins *Cases*, 28 ST. LOUIS U. L.J. 647, 671 (1984) ("The remedy that the plaintiffs in *Betamax* sought would require a tax on home video recorders and blank tapes that would be distributed to the plaintiffs and other copyright owners.").

tax.[3] The Court held that home recording did not violate the studios' copyrights because it was covered by "fair use,"[4] the statutory exception to the general rule requiring people to obtain permission from the author before reproducing or using a copyrighted work.[5]

Today, another new technology's fate may be placed in the hands of the courts. The online service Google Book Search[6] (formerly known as "Google Print") allows its users to search the text of copyrighted books, sometimes without the authors' express permission.[7] A consortium of publishers and a group of authors have sued Google in federal court to enjoin the company from including their copyrighted material.[8] If the case reaches trial, the court will face the same question posed in *Sony Betamax*: Does fair use include reproduction of copyrighted works through new technology?[9]

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[3] *Sony Corp. of Am.*, 464 U.S. at 456 ("Sony's sale of [VCRs] to the general public does not constitute contributory infringement of respondents' copyrights.").

[4] *Id.*

[5] 17 U.S.C. § 107 (2000) (defining "fair use" and exempting it from infringement actions).

[6] Google Book Search, http://books.google.com (last visited Jan. 20, 2007).

[7] *See generally* Paul Ganley, *Google Book Search: Fair Use, Fair Dealing and the Case for Intermediary Copying*, J. INTERNET L., Nov. 2006, http://www.accessmylibrary.com/coms2/summary_0286-28027121_ITM (evaluating suit against Google and contrasting U.S. copyright law with U.K. law); Michael Goldstein, *Google's Literary Quest in Peril*, 2005 B.C. INTELL. PROP. & TECH. F. 110301, http://www.bc.edu/bc_org/avp/law/st_org/iptf/articles/content/2005110301.html (concluding that Google has "a strong argument that Google Print is protected by the Fair Use Doctrine"); Elisabeth Hanratty, Note, *Google Library: Beyond Fair Use?*, 2005 DUKE L. & TECH. REV. 0010, ¶ 33, http://www.law.duke.edu/journals/dltr/articles/PDF/2005DLTR0010.pdf (concluding that Google Book Search is likely not fair use); Randall Stross, *Google Anything, So Long as It's Not Google*, N.Y. TIMES, Aug. 28, 2005, § 3, at 3 (describing Google Book Search project). The service is currently online, but Google has yet to make available any copyrighted works that were not voluntarily submitted by authors or publishers. *See* Kevin Kelly, *Scan This Book!*, N.Y. TIMES MAG., May 14, 2006, at 43 (describing state of Google's current book search technology); Bob Thompson, *Search Me? Google Wants to Digitize Every Book. Publishers Say Read the Fine Print First*, WASH. POST, Aug. 13, 2006, at D1 (same).

[8] Class Action Complaint at 8–13, Author's Guild v. Google, Inc., No. 05 CV 8136 (S.D.N.Y. 2005) 2005 WL 2463899 (arguing that Google's book scanning project violates complainants' copyrights); Kelly, *supra* note 7, at 49–50 (describing lawsuit against Google); Jeffrey Toobin, *Google's Moon Shot*, NEW YORKER, Feb. 5, 2007, at 30, 30 ("A federal court in New York is considering two challenges to the project, one brought by several writers and the Authors Guild, the other by a group of publishers, who are also, curiously, partners in Google Book Search.").

[9] Kelly, *supra* note 7, at 49 ("Google's lawyers argued that the snippets the company was proposing were something like a quote or an excerpt in a review and thus should qualify as a 'fair use.'"). Congress considered the impact of computer indexing of books and its implications for fair use as early as 1965:

> At the 1965 House hearings, it was proposed that Section 107 [the Fair Use statute] be amended to specifically allow computer fair use of copyrighted works to the same extent allowed noncomputer use, specifically, citations to

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Commentators have struggled to answer the more general question of what, broadly, should constitute fair use. Given that U.S. copyright law was developed primarily to serve economic purposes,[10] it has seemed natural to analyze the fair use doctrine from the perspective of social welfare maximization.[11] In this vein, law and economics scholars have proposed that fair use should be invoked if and only if a copyright owner and a potential user could not reliably engage in a socially valuable market exchange to negotiate permission.[12] This might occur for one of two reasons: First, it might be prohibitively expensive for a user to negotiate permission with a copyright holder (i.e., transaction costs are too high). Second, it might be impossible to reach an agreement because the user's valuation of use does not represent its true social value (i.e., externalities[13] exist).

"parts of the work where the desired information may be found," the copying of short quotations, and the preparation of indices and abstract.

WILLIAM F. PALTRY, THE FAIR USE PRIVILEGE IN COPYRIGHT LAW 452 (1995). However, Congress did not resolve the issue or enact any change. *Id.*

[10] Copyright statutes are passed by Congress under Article I, Section 8 of the Constitution which specifies that Congress is empowered to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8.

[11] One scholar notes:

The same economic considerations that guide the copyright system as a whole can also be used to suggest modes of resolving the conflicts, providing a method of applying fair use both to achieve desirable dissemination and to avoid the erosion of incentives. This economic view of fair use can provide a coherent approach to application of the traditional factors and their emerging companions.

Wendy J. Gordon, *Fair Use as Market Failure: A Structural Approach and Economic Analysis of the* Betamax *Case and its Predecessors*, 82 COLUM. L. REV. 1600, 1604–05 (1982). Economic modeling can demonstrate the various interests at stake and how each of the relevant factors interact, and it can also help judges and policymakers resolve conflicts or avoid potential market failures. *See* Ryan C. Grelecki, Comment, *Can Law and Economics Bring the Funk . . . or Efficiency?: A Law and Economics Analysis of Digital Sampling*, 33 FLA. ST. U. L. REV. 297, 309–10 (2005) ("The balancing of costs and benefits in order to achieve efficient outcomes is the foundation of economic analysis. . . . It is a tool for analyzing the costs and benefits of instituting particular rules, establishing particular rights, and enforcing particular punishments for the purpose of determining an efficient legal outcome.").

[12] *See* Gordon, *supra* note 11, at 1614 (arguing that fair use should be allowed when "market failure is present"). This approach has been widely endorsed by law and economics scholars. *See infra* note 50 and accompanying text.

[13] An "externality" is any cost or benefit an economic actor does not consider when making a decision. *See* WALTER NICHOLSON, MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS 587 (2005) ("An *externality* occurs whenever the activities of one economic agent affect the activities of another agent in ways that are not reflected in market transactions."); STEFANO ZAMAGNI, MICROECONOMIC THEORY: AN INTRODUCTION 538 (1987) ("Externalities are those (favourable or unfavourable) effects of the consumption or production of one economic agent (an individual or firm) on the production and/or consumption of another economic agent for which no price is paid or received.").

Under this theory (and, conveniently, under the fair use doctrine), recording a television show,[14] photocopying a few pages of an article,[15] commenting on an NFL telecast in a blog,[16] parodying a famous song,[17] and including a short quote of another work in a scholarly article[18] are all fair uses.

Although the transaction-cost-and-externality model has been widely embraced, extended, and refined,[19] it remains, unfortunately, insufficient. In particular, it falls short when applied to new technologies—such as the VCR and Google Book Search—that rely on copyrighted works. In these contexts, a pure transaction-cost-and-externality approach does not consider the incentives or disincentives faced by the innovator to invest in new technologies. By ignoring the potential social welfare generated by innovation, this simplified model fails to provide a policymaker with the complete economic picture.

Some legal commentators have proposed that the current fair use law may stifle innovation.[20] However, these arguments have generally neither reasoned from economic principles nor fit their conclusions within the widely accepted economic model of fair use.[21] Rather, these commentators argue that from the perspective of society's right to have access to works, the fair use doctrine is not serving the social interest.

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[14] *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 456 (1984) (holding that home recording is fair use).

[15] *See* 17 U.S.C. § 108 (2000) (setting forth rules regarding library photocopying).

[16] STAFF OF H. COMM. ON THE JUDICIARY, 87TH CONG., COPYRIGHT LAW REVISION 24 (Comm. Print 1961) (providing examples of fair use that include "[q]uotation of excerpts in a review or criticism for purposes of illustration or comment").

[17] *See* Campbell v. Acuff-Rose Music, 510 U.S. 569, 594 (1994) (finding rap parody of Roy Orbison song not "presumptively unfair").

[18] STAFF OF H. COMM. ON THE JUDICIARY, 87TH CONG., *supra* note 16, at 24 (including "[q]uotation of short passages in a scholarly or technical work" as example of fair use).

[19] *See, e.g.*, sources cited *infra* note 50 and accompanying text (detailing refinements of transaction-cost-and-externality theory in context of new technology).

[20] *See* Kevin M. Lemley, *The Innovative Medium Defense: A Doctrine to Promote the Multiple Goals of Copyright in the Wake of Advancing Digital Technologies*, 110 PENN ST. L. REV. 111, 113, 135–38 (2005) (arguing that fair use law should not stifle innovation of technologies that increase value of copyrighted works to consumers); Adrienne J. Marsh, *Fair Use and New Technology: The Appropriate Standards to Apply*, 5 CARDOZO L. REV. 635, 639–40 (1984) (contending that technical innovation that enhances consumer access to works should be viewed as fundamental to purpose of fair use doctrine).

[21] *See* Elisa Vitanza, *Castle Rock Entertainment, Inc. v. Carol Publishing Group, Inc.*, 14 BERKELEY TECH. L.J. 43, 43 n.2 (1999) ("The economic theory of copyright is the dominant theory in the United States."); *cf.* Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1033 (2005) ("The rhetoric and economic theory of *real* property are increasingly dominating the discourse and conclusions of the very different world of *intellectual* property.").

In this Note, I provide an economic analysis of the fair use doctrine that attempts to account for the incentives facing potential technological innovators by extending established modes of analysis and economic efficiency frameworks to incremental innovation. My analysis brings copyright theory in harmony with the economic theory of patent law, which already considers incentives to innovate in similar contexts.

In the patent context, incremental innovation occurs frequently: Technology A is invented, allowing Technology B to be developed. Policymakers must then decide how to divide the profits from Technology B between the various inventors. Without patent law protection, all the profits would go to the second inventor. Such a practice might deter the original inventor from developing Technology A in the first place. The opposite rule—giving all the profits to Technology A's inventor—creates similar disincentives for Technology B's inventor. To address this question, Suzanne Scotchmer developed a framework for thinking about incremental innovation in patents.[22]

I propose that a similar "incremental innovation" framework is applicable in the copyright context. The original works (e.g., television programs in *Sony Betamax*, books in Google Book Search) can be a key input to the value of a new technology. Applying Scotchmer's idea to the copyright context suggests that society should provide incentives to both the works' original authors and the new technology's investors, so that each will have sufficient incentives to invest in creating socially valuable products.

Part I explains the traditional fair use analysis of transaction costs and externalities and points out the economic assumptions upon which it relies. Part II demonstrates how the model fails to consider its effect on innovative technologies. Part III adopts certain tools from the patent literature, using them to evaluate various potential copyright rules.

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[22] Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29, 31 (1991) (first innovation can make second invention possible, cheaper, or occur more quickly); *see also* Oren Bar-Gill & Gideon Parchomovsky, *The Value of Giving Away Secrets*, 89 VA. L. REV. 1857, 1874–79 (2003) (evaluating incentives facing companies involved in incremental innovation); Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. ECON. 20, 22–25 (1995) (same).

I
INTRODUCTION TO ECONOMIC FAIR USE ANALYSIS

Copyright law provides authors with an added financial incentive to create works[23] by giving copyright owners the "right to exclude"—the legally enforceable right to restrict uses of one's work.[24] Thus, an author of a book can sell her manuscript to a publishing house and sue all others that print and sell her book. She also has the exclusive power to sell movie rights and to write (or allow others to write) further books in the series. The author,[25] through copyright law, holds a qualified monopoly on her work, allowing her to set prices and forbid uses of her work that she does not want.[26] However, an author may not forbid others from *all* uses of her copyrighted works. There are exceptions; one of those exceptions is "fair use."[27]

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[23] *See* WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 11 (2003) ("Because intellectual property is often copiable by competitors who have not borne any of the cost of creating the property, there is fear that without legal protection against copying the incentive to create intellectual property will be undermined."); Ben Depoorter & Francesco Parisi, *Fair Use and Copyright Protection: A Price Theory Explanation*, 21 INT'L REV. L. & ECON. 453, 454 (2002) ("The general purpose of intellectual property protection, and more specifically, copyright protection, is to provide authors with incentives to create, by providing 'an avenue for obtaining renumeration.'" (quoting Gordon, *supra* note 11, at 1602)).

[24] 17 U.S.C. § 106 gives the "owner of copyright under this title" a qualified exclusive right to do any of the following:

> (1) to reproduce the copyrighted work in copies or phonorecords;
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> (2) to prepare derivative works based upon the copyrighted work;
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> (3) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
>
> (4) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;
>
> (5) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and
>
> (6) in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.

17 U.S.C. § 106 (2000); *see also* Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55, 94 (2001) ("Copyright law creates exclusive rights that yield economic value to a copyright owner.").

[25] I use the term "author" throughout this Note to refer to anyone who creates a copyrighted work. Examples of copyrightable works include movie scripts, sculptures, plays, books, articles, and computer code. *See* 17 U.S.C. § 102 (2000) (defining scope of copyright protection).

[26] *See* Meurer, *supra* note 24, at 94 ("Without copyright law, the financial reward to authors and publishers would be substantially eroded because the economic value of intellectual property is easily misappropriated.").

[27] *See supra* note 14–18 and accompanying text.

Fair use is a statutory exception to the general rule that people must obtain permission from copyright holders in order to use their copyrighted works legally. The Copyright Act specifies four factors for a court to examine in order to determine if a use of a copyrighted work is to be deemed "fair."[28] In the end, however, these factors only provide guidance; the final word is left to the courts' discretion.[29] In practice, the outcome of this balancing test is often unpredictable.[30]

Rather than focus on the doctrine of fair use as applied by the courts, this Note examines the economic rationale that is widely believed to explain the doctrine.[31] This rationale—originally proposed by Wendy Gordon[32]—suggests that the fair use exception is necessary to address market failures. These market failures might arise for two reasons: (1) transaction costs might be prohibitively high, or (2) externalities might preclude efficient transactions.[33]

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[28] The four factors set out in 17 U.S.C. § 107 are:

(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;

(2) the nature of the copyrighted work;

(3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and

(4) the effect of the use upon the potential market for or value of the copyrighted work.

17 U.S.C. § 107 (2000).

[29] The statutory factors in § 107 are not intended to be exclusive. *See* Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 560 (1984) ("The factors enumerated in the section are not meant to be exclusive: '[S]ince the doctrine is an equitable rule of reason, no generally applicable definition is possible, and each case raising the question must be decided on its own facts.'" (quoting H.R. REP. NO. 94-1476, at 65 (1976), *as reprinted in* 1976 U.S.C.C.A.N. 5659, 5679)).

[30] *See* Dellar v. Samuel Goldwyn, Inc., 104 F.2d 661, 662 (2d Cir. 1939) ("[T]he issue of fair use . . . is the most troublesome in the whole law of copyright . . . ."); Depoorter & Parisi, *supra* note 23, at 455 ("Striking the right balance between authors' individual rights and the public interest in dissemination is not an obvious task for courts.").

[31] Although my primary focus is on economic analysis rather than doctrine, the two are intertwined. In fact, the economic analysis of fair use has itself impacted the doctrine, and courts have repeatedly cited Wendy Gordon's seminal paper. *See, e.g.*, Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 478 (1984). Likewise, the economic model has also influenced policymaking: For example, the Clinton administration, in a white paper, evaluated the suggestion that fair use should be severely limited given the advent of new pay-for-use technologies (i.e., technologies that lower transaction costs between users and authors). WORKING GROUP ON INTELLECTUAL PROP. RIGHTS, INFO. INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE 17 (1995), http://www.uspto.gov/web/offices/com/doc/ipnii/ipnii.pdf. This Note argues that the current economic model fails to account for crucial disincentives for innovation, which may in turn affect future doctrinal and policy discussions.

[32] *See generally* Gordon, *supra* note 11.

[33] *See id.* at 1627–32 (detailing transaction cost and externality rationales for fair use exception). Gordon also proposed a third justification: Fair use is necessary to counteract antidissemination motives. *See id.* at 1632–33 (defining antidissemination motives as desires to stop reviewers and parodists from commenting on author's work). Because my

A. Transaction Costs

Gordon first proposes that fair use is justified when the costs of negotiating a royalty payment are higher than the value of the use at issue.[34] This scenario leads to a market failure: Society as a whole would be made better off by the transaction, but the costs involved in actually executing the transaction (e.g., time, effort, cash payments) prevent it from moving forward.[35]

For example, imagine that an academic scholar wants to include ten epigraphs[36] in a forthcoming article. The scholar values the use of these epigraphs at $100—that is, she would be willing to pay up to $100 to use them. Now imagine that copyright law requires the scholar to negotiate permission with each publishing house, and that these negotiations would cost her $200 in time and effort and $50 in cash payments.[37] Because the cost of the transaction ($250) outweighs its market value ($100), the scholar will choose not to use the epigraphs.

Yet this result would be inefficient. Assuming the use would not impose any costs on the publishing houses,[38] it is socially beneficial: It makes one party better off without harming anyone else. Nevertheless, the deal will not occur because the transaction costs outweigh the increase in social welfare. However, if the fair use exception covered

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analysis does not involve criticism or parody, the antidissemination justification is irrelevant to this discussion.

[34] *See id.* at 1628 (arguing that fair use may be appropriate if "transaction costs exceed anticipated benefits").

[35] *See id.* at 1629 ("[When transaction costs exceed anticipated benefits], transaction costs are likely to prevent at least some value-maximizing transfers from occurring if the copyright is enforced." (footnote omitted)).

[36] An epigraph is a short quotation used at the beginning of a piece of writing.

[37] I am ignoring the legal distinction between de minimis use and fair use infringement for the purposes of this paper. For a discussion of the relation between them, see *Ringgold v. Black Entm't Television, Inc.*, 126 F.3d 70, 74–76 (2d Cir. 1997). The court explained that de minimis copying can have three meanings, one of which is that unauthorized use may be deemed fair use because the alleged infringer only copied a trivial amount of the protected work.

> One commentator describes de minimis copyright doctrine this way:
> The legal maxim of de minimis non curat lex is often translated as "the law does not concern itself with trifles." As this definition indicates, the basic idea behind de minimis, when used as a defense to copyright infringement, is that no liability should attach to infringements of little consequence.

Andrew Inesi, *Images of Public Places: Extending the Copyright Exemption for Pictorial Representations of Architectural Works to Other Copyrighted Works*, 13 J. INTELL. PROP. L. 61, 71 (2005) (footnote omitted).

[38] If so, the publishing houses would be willing to receive any amount of money for the exchange, no matter how small. Nonetheless, a rational publishing house would not relinquish its right to the epigraphs because it might receive some revenue from the few people willing to pay (e.g., in those situations where the value of the use outweighed the transaction costs).

the epigraphs, the scholar could proceed without negotiating, and the transaction costs would disappear. This would result in the more efficient outcome, helping to explain—from an economic perspective—one rationale for the existence of a fair use exception.[39]

B. Externalities

Gordon proposes another reason for a fair use defense based on the economic concept of externalities. If the use generates social value beyond the value to the user, this excess value might not be factored into the negotiations. In other words, the user will not "internalize" the value received by the rest of society, and this result may preclude an efficient outcome.[40]

For example, assume that the same academic scholar wants to include a two-page excerpt from a book in his forthcoming article. The scholar values the use of the excerpt at $100. The original author, however, will not accept anything less than $200 because she fears the use might decrease sales of her own book. So far, there is no market failure: The costs to the author outweigh the benefits to the scholar, so the bargain is inefficient (i.e., net social welfare decreases). However, now imagine that the use of the excerpt will also contribute valuable ideas to the world that are worth $500. By assumption, this $500 is a positive externality that has no effect on the valuations by either party, and it will not be factored into the negotiations. The transaction will not occur, even though it is now efficient (because net social welfare would increase by $400).[41] Applying the fair use exception would avoid the market failure: No longer required to negotiate, the scholar would use the excerpt, and society would reap the benefits of the positive externalities.

C. The Social Benefits of Requiring Payment for Ancillary Uses

The above analysis raises the question: Why require payment for ancillary uses of copyrighted works at all? The answer is that when markets for creative works are functioning well, society is better off permitting authors to command compensation for the benefits they

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[39] The above treatment and example of a transaction-cost-precluded bargain in the context of copyright law is similar to one given by Landes and Posner. *See* LANDES & POSNER, *supra* note 23, at 115–16 (illustrating need for fair use with example of author who wishes to quote brief passage of another author's work).

[40] *See* Gordon, *supra* note 11, at 1630–32 (explaining importance of externalities in fair use social welfare calculus).

[41] *See id.* at 1631 ("In cases of externalities, then, the potential user may wish to produce socially meritorious new works by using some of the copyright owner's material, yet be unable to purchase permission because the market structure prevents him from being able to capitalize on the benefits to be realized.").

provide.[42] By compensating authors for secondary uses of their works, the market provides an extra incentive to produce original works. This leads to more works being produced, which in turn generates more social welfare.

To illustrate this point in more detail, consider the epigraph example described above and the following set of graphs.[43] Figure 1 represents the inverse supply and demand curves facing authors of works in a world where epigraphs are deemed subject to "fair use."

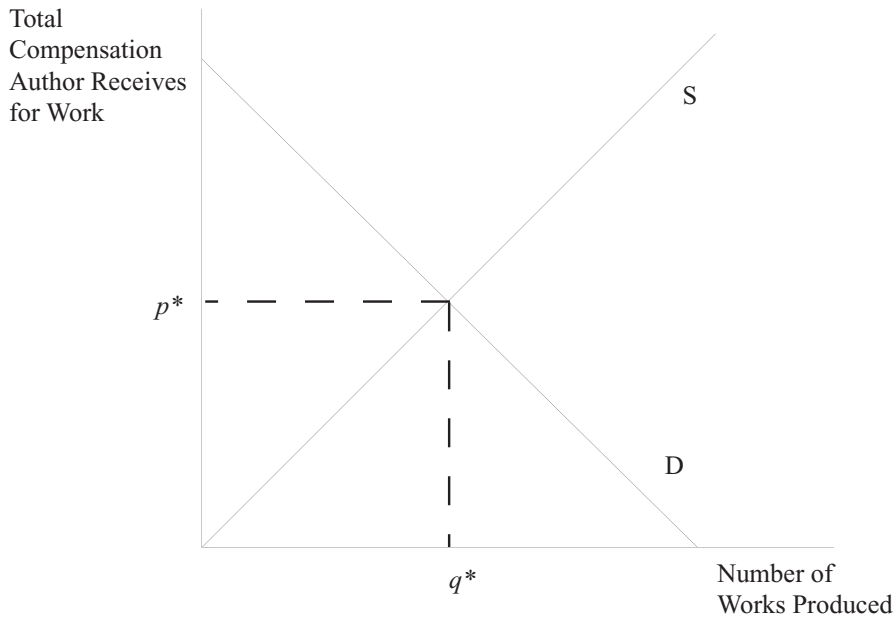FIGURE 1: SUPPLY AND DEMAND FOR WORKS

Figure 1 describes an equilibrium where q^* represents the number of total works the authors will produce and p^* represents the

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[42] *See* Meurer, *supra* note 24, at 95 (describing "standard argument" that firms will only make optimal level of investment if "they can appropriate all of the social value from the investment").

[43] The graphs in this Note are standard accounts of supply and demand that can be found in any economics textbook. *See, e.g.*, HAL R. VARIAN, MICROECONOMIC ANALYSIS 235 (3d ed. 1992). Other scholars have used similar graphs to analyze fair use. *See* William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1659, 1701, 1708, 1711 (1988) (using graphs to analyze optimal levels of copyright and fair use protection); S. J. Liebowitz, The Economics of Betamax: Unauthorized Copying of Advertising Based Television Broadcasts 3, 9 (June 1985) (unpublished manuscript, *available at* http://www.utdallas.edu/~liebowit/intprop/betamax.pdf) (using graphs to analyze economics of *Sony Betamax*).

price paid by society for the least socially valuable work.[44] It is important to remember that "price" in the above figure is not the retail price for a copy of *Harry Potter and the Half-Blood Prince*;[45] rather it is the amount that the author receives for all uses of her work. So, for an author like J.K. Rowling, "price" includes the revenue generated from the sales of books, movie rights, figurines, audio books, etc. In sum, the "price" is the aggregate revenue generated from each of the markets in which the copyrighted work is sold. Because epigraphs are deemed fair use in this hypothetical, J.K. Rowling and other authors receive no payment from the epigraph market.

Now, suppose a court rules that using an epigraph is not a fair use, correctly determining that transaction costs are not prohibitive. A new market for epigraphs will then develop. This new market will have its own inverse supply and demand curve, as illustrated in Figure 2:

Here, p_{epi}^* and q_{epi}^* represent the equilibrium price and quantity of epigraphs consumed by the public from one work (for example, *Harry Potter and the Half-Blood Prince*). Unlike in Figure 1, "price" here refers to the price the author will charge to use an epigraph from the work. In this new epigraph market, J.K. Rowling will set the price for epigraphs so as to maximize her revenues. Since she is a monopolist, that price will be where her marginal revenue equals her marginal cost.[46] The author's marginal cost is zero because allowing others to use short quotes of the book neither costs her sales nor requires any

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[44] Figure 1 is not the "normal" inverse supply-and-demand curve that one would draw for a commodity. Instead, it is akin to the inverse supply-and-demand curve that one would draw for a perfectly price-discriminating monopolist in the following way: Each author does not receive the equilibrium price but instead receives the amount of compensation depicted by the demand curve, *D*. This follows because each work is generating a different amount of revenue based on demand for that individual work; the author of a more popular work will receive a higher price than the author of a less popular work. *Cf.* VARIAN, *supra* note 43, at 241 ("*First-degree price discrimination* involves the seller charging a different price for each unit of the good in such a way that the price charged for each unit is equal to the maximum willingness-to-pay for that unit. This is also known as *perfect price discrimination*.").

[45] J.K. ROWLING, HARRY POTTER AND THE HALF-BLOOD PRINCE (2005).

[46] *See* VARIAN, *supra* note 43, at 235 fig.14.1 ("The monopolist produces where marginal revenue equals marginal cost."). According to Richard Posner:

> [T]he profit-maximizing seller will expand output so long as an additional unit sold adds more to his total revenue than to his total cost, and stop when the sale of an additional unit would increase his total cost by more than his total revenue the profit-maximizing output is the quantity at which marginal revenue and marginal cost are equated . . . .

RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 274–75 (6th ed. 2003). Above this price point, the increased revenue from her higher profits will be outweighed by the lowered revenue resulting from her decreased sales.

FIGURE 2: SUPPLY AND DEMAND FOR EPIGRAPHS FOR ONE WORK
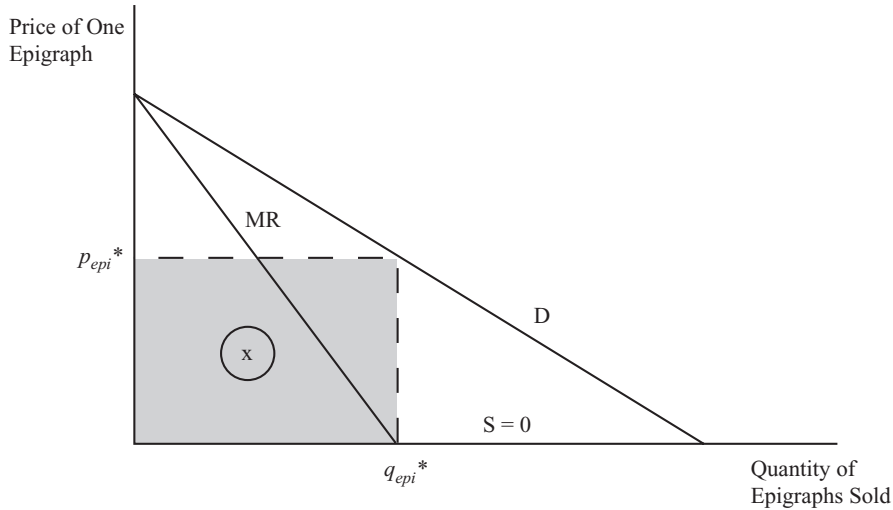
extra effort on her part.[47] The price p_{epi}^* is therefore set to the point where her marginal revenue equals zero.[48] Because she charges p_{epi}^* for each of the q_{epi}^* units sold, she earns a total revenue $x = (p_{epi}^*)(q_{epi}^*)$, which is called the "producer surplus."[49]

With the advent of this new epigraph market, society is now paying more money to authors for the same number of works. This

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[47] This is by assumption.

[48] Marginal revenue (MR in Figure 2) is defined as the change in revenue as a result of an infinitesimal change in quantity. The marginal revenue curve of a linear demand curve has a slope that is twice as steep as the slope of the demand curve from which it is derived. This can be shown by the following proof. Let R be revenue, P be price, and Q be quantity; let R' be marginal revenue (change in revenue as a result in change in Q), C be a constant, and A be a constant coefficient.

(1) $P = C - AQ$ (the linear demand function), and

(2) $R = P \times Q$ (the definition of revenue).

After substituting (1) into (2), we have:

(3) $R = (C - AQ)Q$.

Finally, differentiating revenue, R, with respect to quantity, Q, gives us marginal revenue:

(4) $R' = C - 2AQ$.

QED.

[49] "Producer surplus" represents the difference between the price that producers are willing to accept and what they are paid in the market. *See* NICHOLSON, *supra* note 13, at 263 ("Production surplus is the extra return that producers make by making transactions at the market price over and above what they would earn if nothing were produced."). In our example, the author has no costs and so is willing to accept any price; therefore, all revenues are included in the producer surplus.

Similarly, "consumer surplus" represents the difference between the price that consumers would be willing to pay and what they are charged in the market. ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 114 (2d ed. 1992).

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producer surplus from the epigraph market thus changes the demand curve for authors' works (represented by *D* in Figure 1). The inverse demand curve, *D*, shifts to *D'* in Figure 3. Now that society is willing to pay more for every work, more authors find it profitable to enter the market and more works are produced. A new equilibrium results with price *p*'* and a quantity *q*'*.

FIGURE 3: SUPPLY AND DEMAND FOR WORKS WITH EPIGRAPH MARKET
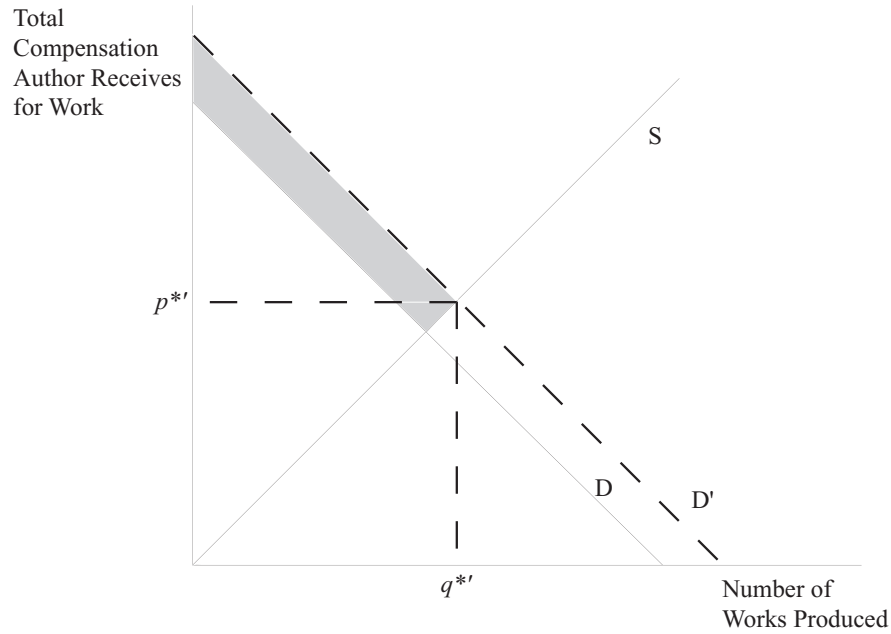
In this simplified model, copyright law increases the total number of works, which in turn increases social welfare. Some scholars use this analysis to suggest that when transaction costs are low and externalities nonexistent, the need for fair use disappears.[50] More specifi-

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[50] *See* Tom W. Bell, *Fair Use vs. Fared Use: The Impact of Automated Rights Management on Copyright's Fair Use Doctrine*, 76 N.C. L. REV. 557, 561 (1998) ("A default rule of fared use [requiring users to pay for each use of a work] would create a new public bargain between consumers and copyright owners that would largely flow from the interaction of [automated rights management] with current law."); Jonathan Dowell, *Bytes and Pieces: Fragmented Copies, Licensing, and Fair Use in a Digital World*, 86 CAL. L. REV. 843, 870 (1998) ("If the second-comer can internalize the benefits, then he should share those with the author, in order to maintain the overall incentive structure."); Robert P. Merges, *The End of Friction? Property Rights and Contract in the "Newtonian" World of On-Line Commerce*, 12 BERKELEY TECH. L.J. 115, 130 (1997) ("[B]ecause the contemporary fair use doctrine is predicated on a market failure rationale, and because an electronic exchange potentially eliminates this market failure for digital content, fair use law will significantly

cally, they point to the Internet and the ability to charge micropayments for individual uses and argue that this substantially reduces—and may completely eliminate—the need for the fair use doctrine. They propose—and some courts have adopted[51]—the following test: If a paid market exists for rights to a use, then that use should not benefit from the fair use exception. This Note challenges that proposal by demonstrating that copyright protection can be inefficient, even in the absence of transaction costs and externalities, when concerning the "incremental innovation" of new technology.

### D.	Monopolistic Pricing and Deadweight Loss

Before discussing incremental innovation, it is important to note that scholars have already pointed out problems with the basic model of transaction costs and externalities.[52] One problem with automatically barring a fair use defense when a market could develop is that the deadweight loss[53] from allowing authors to exploit a new market

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shrink . . . ."). Other commentators have argued that a transaction-cost approach needs to be supplemented if there exist externalities or idiosyncratic preferences, but these arguments implicitly or explicitly accept the proposition that in a world without any of these market problems, fair use should be severely limited. *See, e.g.*, Depoorter & Parisi, *supra* note 23, at 453 (arguing that fair use in world of zero transaction costs is appropriate when copyright holders are not acting strategically); Lydia Pallas Loren, *Redefining the Market Failure Approach to Fair Use in an Era of Copyright Permission Systems*, 5 J. INTELL. PROP. L. 1, 7–8 (1997) (arguing that transaction-cost approach must be modified by consideration of externalities created by use). The above-mentioned papers all derive their arguments from Wendy Gordon's idea that the fair use defense should be predicated on market failure. Gordon, *supra* note 11.

[51] *See, e.g.*, Princeton Univ. Press v. Mich. Document Servs., 99 F.3d 1381, 1389–91 (6th Cir. 1996) (holding that existence of clearing mechanism for photocopies used in course packet was evidence of harm to academic publishing market, weighing against finding of fair use); Am. Geophysical Union v. Texaco Inc., 60 F.3d 913, 930–31 (2d Cir. 1994) (holding that existence of market to purchase rights to photocopies weighed against finding of fair use). Both of these cases have been described by commentators as embracing the market failure approach to copyright law. *See* Dowell, *supra* note 50, at 859–62 ("[T]wo circuit courts [referring to the two above-mentioned cases] recently have used the emergence of a newly developed licensing market to limit drastically the scope of fair-use protection."); Glynn S. Lunney, Jr., *Fair Use and Market Failure:* Sony *Revisited*, 82 B.U. L. REV. 975, 1020 (2002) (describing *American Geophysical Union* court as using "market failure approach to fair use").

[52] *See* Matthew Africa, Comment, *The Misuse of Licensing Evidence in Fair Use Analysis: New Technologies, New Markets, and the Courts*, 88 CAL. L. REV. 1145, 1150 (2000) (arguing that courts have been "[o]verly influenced by market failure theory" in fair use analysis and that Congress is better suited to make such policy determinations); Dowell, *supra* note 50, at 843 (arguing that more sophisticated account of "lingering bargaining costs, externalities, or anti-dissemination motives" provides ample reason for fair use defense even if transaction costs are low); Fisher, *supra* note 43, at 1698–1719 (analyzing trade-off of extending copyright protection to various uses).

[53] "Deadweight loss," in this case, is defined as the aggregate social-welfare loss due to beneficial transactions not completed. William Fisher defines deadweight loss as "mea-

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may exceed the social gain (i.e., consumer surplus and producer surplus combined) that results from this exploitation. Take our epigraph example: Applying copyright protection will create a new epigraph market, but that will in turn decrease epigraph use because, for some users, the value of the epigraph will not justify the price demanded by the author. Since each epigraph use is socially valuable—it brings value to the user without imposing harm on the author or any other party—this diminished epigraph use will decrease overall social welfare. This decrease is known as the "deadweight loss," and is depicted in Figure 4 as *dwl*. If the deadweight loss exceeds the consumer and producer surplus gained from the shifting inverse demand curve in Figure 3, copyright protection will lead to a less efficient result than would the fair use doctrine. Using this reasoning, William Fisher has argued that courts should consider not only inefficiencies from transaction costs and externalities but also those that stem from monopolistic pricing on the part of authors.[54]

The deadweight loss problem is exacerbated if there are positive externalities from the use. If uses produce positive externalities, each use deterred by monopolistic pricing will result in an even greater decrease in social welfare. This is depicted in Figure 5: The author sets her price based on the users' demand curve *D*, but society's true demand curve is in fact *D'*. The deadweight loss with positive externalities (*dwl'* in Figure 5) is therefore greater than it was without positive externalities (*dwl* in Figure 4). Accordingly, a use should be considered "fair" if the total deadweight loss, *dwl'*, is greater than the consumer and producer surplus that results from the shifting of the inverse demand curve.
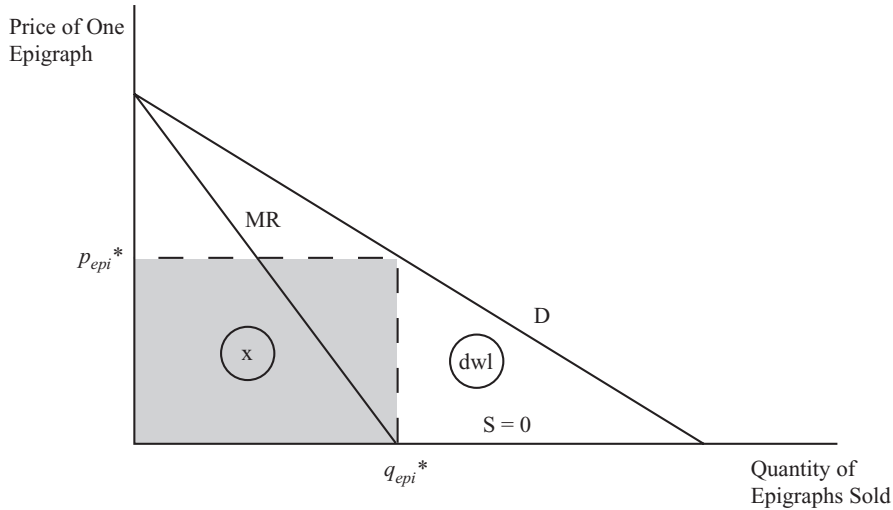
An example will help illustrate Fisher's argument: Suppose a new market develops for scanned books and courts rule that displaying snippets of scanned books is not fair use. Further suppose that the publishers set a price of one dollar per search in order to maximize their profits. Under this scheme, the publishers will generate revenue primarily from wealthier users; however, some users—students, for example—will not be able to afford the service. This is socially harmful for two reasons: (1) the students value the use at more than the marginal cost of providing the use (deadweight loss); and (2) society derives value from student use—as it encourages curi-

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sured by the total of the consumer surplus that would have been reaped by the excluded consumers and the producer surplus that would have been reaped by the copyright owner had he sold the work to them." Fisher, *supra* note 43, at 1702.

[54] *Id.* at 1698–1705.

FIGURE 4: SUPPLY AND DEMAND FOR EPIGRAPHS FOR ONE WORK

Price of One
Epigraph

MR

p_{epi}*

x   dwl   D

S = 0

q_{epi}*   Quantity of
                     Epigraphs Sold

osity and greater knowledge—but this positive value is not considered in the transaction (externalities).[55]

II
HOW FAIR USE AFFECTS INCENTIVES TO INNOVATE

The economic analysis described above accurately models situations such as epigraphs but fails when applied to situations of "incremental innovation"—where technology creates new markets for copyrighted works. The traditional approach to fair use—stressing the importance of transaction costs, externalities, and deadweight losses—does not fully consider the incentives necessary to invest in new technologies.[56] My argument, in short, is that the traditional analysis focuses only on the ex post (relative to the creation of a new technology) incentives to authors and ignores the ex ante incentives to both authors and technology companies.

Some commentators have argued that a pure transaction-cost-and-externality account of fair use may stifle innovation, but in so doing they do not fully evaluate the incentive effects of fair use policy choices. For example, Kevin Lemley argues that the flaws in the current model lie in its failure to account for authors' irrational behavior—they might irrationally "veto" new technologies to stifle

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[55] Together, these two sorts of loss make up *dwl'* in Figure 5.
[56] By the "traditional approach," I mean Gordon's approach and those derivative of her work. *See supra* notes 50–51 and accompanying text.

FIGURE 5: SUPPLY AND DEMAND FOR EPIGRAPHS FOR ONE WORK
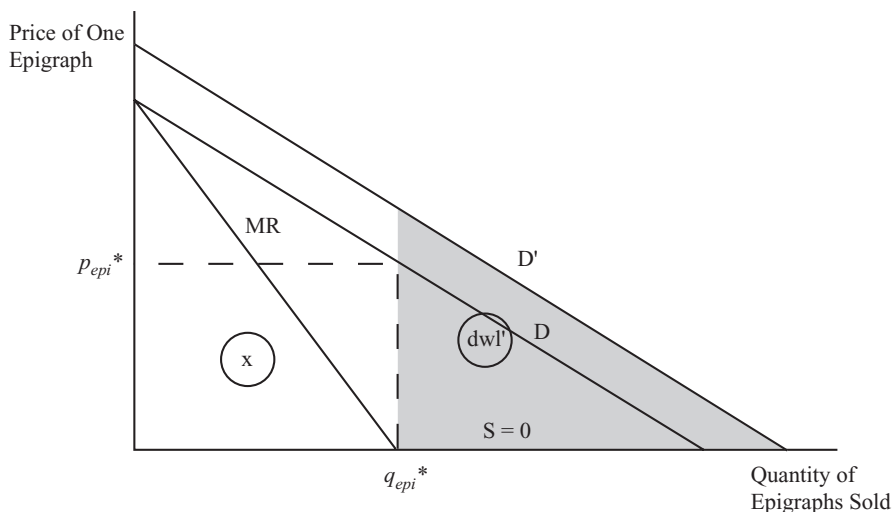
"consumer autonomy" because of their own myopia.[57] Lemley cor-
rectly argues that innovative mediums that increase access to copy-
righted works are a key part of the goal of copyright law.[58] However,
Lemley does not model the trade-offs inherent in fair use innovation
policy—that is, he does not provide a framework to analyze the social
costs and benefits of allowing content producers to control innovative
media.[59] Instead of simply arguing that innovation will be stifled by
content owners, I will show explicitly how policy choices about fair use
impact social welfare vis-à-vis innovation.

Rather than discard the current economic framework, I propose
to expand it in order to account for a more complete set of incentives.
My proposed model contains several actors: (1) a *court* that aims to
maximize social welfare through its rulings; (2) the *authors* of copy-

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[57] *See* Lemley, *supra* note 20, at 135–38 ("Copyright owners have a rich history of pro-
testing technological advances.").

[58] *See id.* at 134 ("The first justification for protecting innovative mediums under copy-
right law is that innovation of new mediums is a second fundamental purpose of copyright
law.").

[59] *See id.* at 134–40 (discussing, yet not rigorously modeling, copyright law's potential
to stifle innovation). Adrienne Marsh also discusses the effect of fair use on innovation.
See Marsh, *supra* note 20. Marsh, like Lemley, does not evaluate the social welfare trade-
offs of allowing technology companies to use the fair use defense, but instead argues that
current fair use doctrine allows technology companies a fair use for innovations that
increase dissemination of copyrighted works. *See id.* at 639–40 ("When the public interest
in encouraging second works or widening dissemination of the earlier copyrighted works is
deemed to override the financial interest of the first copyright owners, the fair use doctrine
provides the doctrinal mechanism for reaching that result." (footnote omitted)).

righted works; and (3) an *innovator* that creates a new technology to utilize or reproduce copyrighted works.

My proposed model operates under several assumptions. First, I assume that once the technology is developed, there are no transaction costs (the innovator can freely and easily bargain with authors) or positive externalities (the innovator receives all the benefits of her invention). This allows me to show that even under ideal circumstances, the potential for market failure exists. Second, I assume that the cost of creating a new technology is greater than zero; in other words, the innovator will only create the technology if she can recoup her initial costs. Finally, I assume that (1) the market created by the new technology has no effect on paid demand in the other markets for the copyrighted works, and that (2) the innovator has a monopoly over her invention. These last assumptions help simplify the analysis, and I will later discuss how they can be relaxed.[60]

A.   *Applying the Traditional Economic Analysis*

To illustrate the flaws in the traditional analysis, assume that the market for copyrighted works initially begins in the equilibrium depicted in Figure 6,[61] just like the equilibrium in Figure 1.

Once the innovator invents the new technology, there is a new market for each copyrighted work. This new market is represented in Figure 7, and because the innovator has a monopoly over the market, it behaves just like the market for epigraphs depicted in Figure 2.[62] The innovator sets a price $p_{tech}*$ per use of the technology for each particular copyrighted work, and $q_{tech}*$ sales will result. The shaded region, $x = (p_{tech}*)(q_{tech}*)$, is the amount of surplus (i.e., revenue) that the technology company can extract from consumers for this *one work*.[63]

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[60] *See infra* Part III.B.

[61] I am assuming that authors as a group do not have expectations about future revenue stemming from technological improvements. This assumption is made for clarity of exposition and does not change the result. If authors do have accurate expectations about future technological improvements, then the only difference in the model is that authors anticipate the shift in the demand curve and create works accordingly. This anticipation will not change the result I reach because my result is only dependent upon the amount of the surplus the authors receive, not the timing of when they receive that surplus.

[62] As in the epigraph example, I am assuming that the monopolist (in this case the innovator) incurs no costs for each individual sale. *See supra* Part I.C.

[63] Again, I am assuming that the technology company cannot perfectly price-discriminate against users, i.e., charge each consumer according to her willingness to pay. My result does not change if the company can perfectly price-discriminate because the company must still share its profits and may therefore have an insufficient incentive to innovate. *See supra* note 44 (providing definition of perfect price discrimination).

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FIGURE 6: SUPPLY AND DEMAND WITHOUT THE
NEW TECHNOLOGY
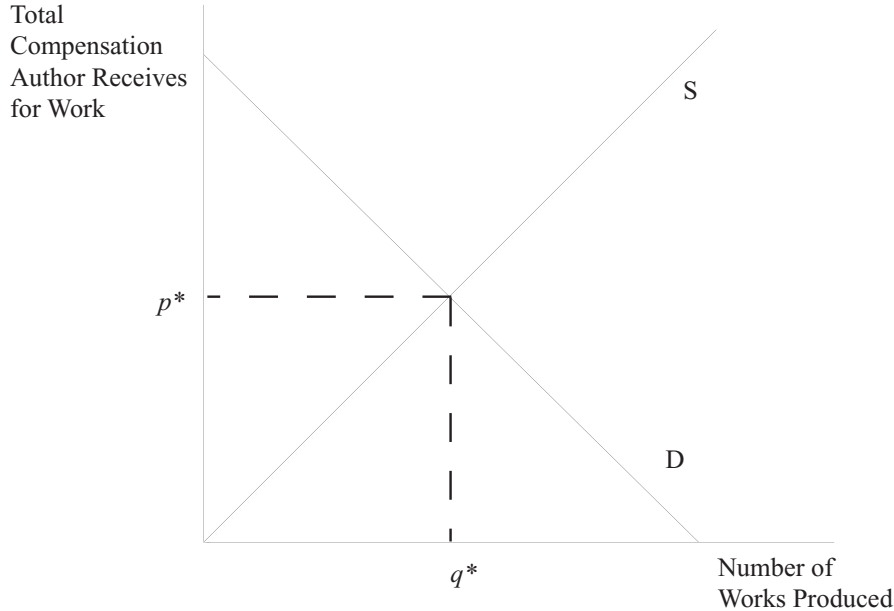
Under the traditional economic analysis, the court will see that transaction costs are not prohibitive and that no positive externalities exist; therefore it will rule that this new technology does not constitute fair use. Faced with copyright infringement lawsuits, the innovator will offer to split the profits generated from the works with each work's author. There are q^* works authored, and each work generates x revenue;[64] therefore the total revenue generated by the technology is equal to q^*x. If we assume the innovator splits her profits equally with the authors,[65] the innovator is left with $q^*x/2$ and the authors

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[64] I am assuming that each work generates an identical amount of revenue, x. This assumption is for simplicity and does not change the result. If the assumption was relaxed, it would not affect the result because the innovator would still not capture all the revenue generated by her investment, and thus the problem I outline would persist.

[65] The assumption that the parties split an exogenous amount of the surplus is a common and natural one in the contract literature. *See, e.g.*, Bar-Gill & Parchomovsky, *supra* note 22, at 1878 (assuming parties with equal bargaining power split surplus equally); Green & Scotchmer, *supra* note 22, at 24 (assuming each party in model of incremental innovation split bargaining surplus evenly); Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L.J. 541, 552 (2003) (assuming that each party's percent share of contract surplus is set exogenously). For the theoretical underpinnings of this assumption, see generally Ariel Rubinstein, *Perfect Equilibrium in a Bargaining Model*, 50 ECONOMETRICA 97 (1982) and John Sutton, *Non-Cooperative Bargaining Theory: An Introduction*, 53 REV. ECON. STUD. 709, 712–17 (1986). The

FIGURE 7: SUPPLY AND DEMAND FOR COPYRIGHTED WORK IN
NEW TECHNOLOGY MARKET
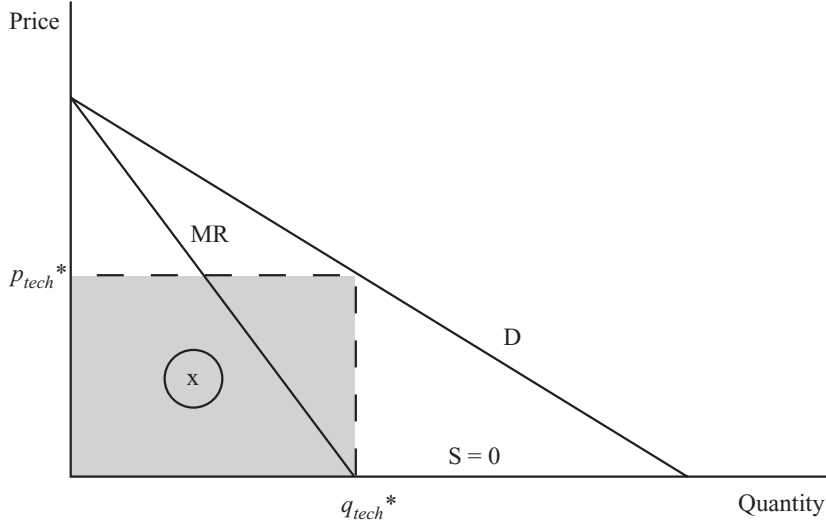
receive the rest. Because authors are now being paid more for their
works, the inverse demand curve shifts out just as in Figure 3. The
new technology market increases the price society is willing to pay for
new works, which in turn induces some authors to create works when
it previously would have been unprofitable. These new works have
value, so overall social welfare is increased. So far, the traditional
analysis appears sound.

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assumption that the parties split an *equal* share does not change the outcome of the
analysis. As long as the innovator does not capture all the revenue generated by her
investment, the problem I describe will persist.

Crucial to my result is the fact that parties splitting the surplus do not take into
account the amount the technology company spent developing the technology—that is, the
parties split the revenue generated by the new technology without regard to sunk costs. If
this assumption is inaccurate, the problem I describe in this Note disappears. *See* Lorne
Carmichael & W. Bentley MacLeod, *Caring About Sunk Costs: A Behavioral Solution to
Holdup Problems with Small Stakes*, 19 J.L. ECON. & ORG. 106, 107 (2003) ("Caring about
sunk costs can lead to economically efficient outcomes when agents are faced with joint
investment opportunities and must then bargain over the division of the resultant sur-
plus."). However, the assumption I make is common and well documented in the litera-
ture. *See, e.g.*, Schwartz & Scott, *supra*, at 560 ("At [the point of renegotiation], the
investment cost *s* would have been sunk and so would be ignored in the new bargain: The
only issue for the parties would be whether to trade the specialized product at some price
or not to trade.").

FIGURE 8: SUPPLY AND DEMAND FOR WORKS WITH
NEW TECHNOLOGY
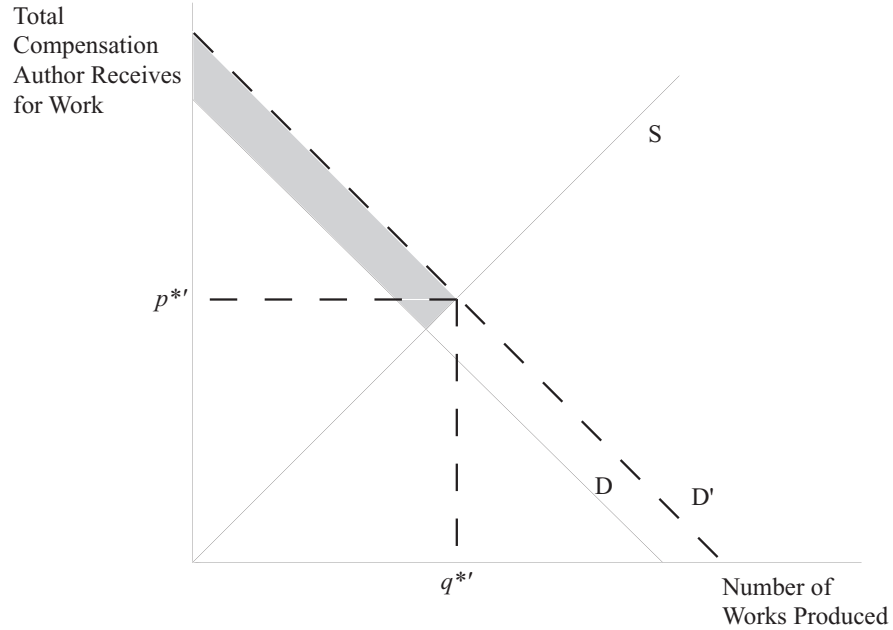
B.   Insufficient Incentives for the Innovator

The above analysis is a plausible account of what happens when a new technology is created and authors get a slice of the resultant revenue, but it fails to consider the incentives to create the technology in the first place. In other words, the story assumes that the technology will be invented under the current fair use analysis, but this may not be the case. A rule that forces the innovator to share her profits with the authors could leave her with insufficient incentives to invest in the technology in the first place. This is the central point of this Note: A court using the transaction-cost-and-externality approach ignores important ex ante incentives to the innovator.

To analyze these ex ante incentives, we must look at the decision the innovator faces prior to the invention of the new technology.[66] The innovator seeks to maximize her profit. Assume that her only costs are upfront research and development costs; let R_{exp} be her

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[66] For a similar treatment of the problem of incremental innovation in the patent context, see Green & Scotchmer, *supra* note 22, at 23–24 (describing inefficiency created by ex post bargaining in patent policy applied to incremental technical innovation).

expected revenues and $C_{R\&D}$ be her research and development costs. Her profit function is:

$$\pi_c = R_{exp} - C_{R\&D}.$$

Since she will be splitting the revenues with the authors,[67] she will expect to earn $R_{exp} = q^*x/2$ as outlined above. Her profit function therefore becomes:

$$\pi_c = q^*x/2 - C_{R\&D}.$$

And herein lies the problem. Innovative technology enhances social welfare if its total revenues exceed its cost of research and development.[68] However, the innovator will only choose to develop the new technology if *her own* expected revenues exceed the research and development costs. If the technology is not considered fair use, the innovator will be forced to share her revenues with authors and will decline to create certain technologies that are nonetheless socially valuable. For example, if a new technology costs $10 million to develop and is expected to generate $15 million in revenue, it is efficient (i.e., its development would increase social welfare). However, the innovator will expect to split the revenue with the authors with only $7.5 million left over for herself. Faced with these expectations, the innovator will choose not to invest in the technology, because she would expect to lose $2.5 million. If the technology is not created, there is no surplus to split, no shift in the demand curve, and social welfare is decreased by at least $5 million. This is the market failure that the current literature ignores.[69]

III
EVALUATING ALTERNATE RULES USING PATENT THEORY

The above demonstration of a potential market failure implies that the traditional fair use test—focusing solely on transaction costs and externalities—can lead to inefficient outcomes. Nevertheless, it is difficult to fashion a rule that is perfectly efficient. If fair use law focuses solely on transaction costs and externalities, some inventors will choose not to develop certain socially beneficial technologies. On

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[67] *See supra* note 65 and accompanying text.

[68] This depends on the assumption that the new technology market does not adversely affect other markets. *See infra* Part III.B.

[69] The above result holds even if the technology company can perfectly price-discriminate (i.e., charge each customer the maximum price she is willing to pay) and thus capture the entire surplus created by its invention. So long as the innovator does not capture the full benefit of his invention, the danger of insufficient incentives to innovate exists. If the technology company can perfectly price-discriminate, it can capture a larger part of the social surplus from its invention, but it still must share some of that surplus with authors under the traditional rule.

the other hand, if fair use law gives technology companies a free pass to use copyrighted works, authors will lose their incentive to create new copyrighted works. In a perfect world, we would give the technology company just enough incentive to create the innovative technology, and we would give the authors the rest to provide them with incentives to create more copyrighted works.[70]

Attempts to solve the problems posed by incremental innovation are not new. Suzanne Scotchmer, in her theory of incremental innovation, described the inherent difficulties in creating socially optimal incentives. Scotchmer explained how patent innovation policy is complicated by the fact that no general rule can provide all incremental innovators and original inventors with the efficient level of incentives.[71] Excessively broad construction of patents can retard innovation because requiring subsequent innovators to license from the original patentee denies them access to the full social value of their technology.[72] On the other hand, if patents are construed too narrowly, the original inventor may lose the ability to recoup her investment and might choose not to invent the original product in the first place. Ideally, the original inventor should be fully compensated for his social contribution embodied in the "follow-on" innovation.[73] Scotchmer concluded that "[n]o [licensing][74] policy can achieve fully efficient incentives."[75] Her solution was to encourage (or at least not discourage) firms to enter into prior agreements, that is, to allow firms to divide expected profits *before* the innovation is developed. Scotchmer showed that prior agreements can lead to efficient innovation decisions.[76]

Prior agreements, however, are difficult to negotiate and rarely occur in practice.[77] Successful negotiation is always difficult between

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[70] *Cf.* Scotchmer, *supra* note 22, at 31 ("[T]he only way to ensure that firms undertake every research project that is efficient is to let the firms collect as revenue all the social value they create.").

[71] *Id.* at 34 ("No [licensing] policy can achieve fully efficient incentives . . . .").

[72] *Id.* at 34–35.

[73] *See* LANDES & POSNER, *supra* note 23, at 325 (summarizing Scotchmer's theory of follow-on patenting and laying out policy dilemma).

[74] A "license" means any agreement reached after the follow-on technology has been produced. *See* Scotchmer, *supra* note 22, at 32 (describing "licenses" as agreements "negotiated after research costs are sunk and patents have been awarded").

[75] *Id.* at 34.

[76] *See id.* at 36 ("Prior agreements are a social improvement over licensing because they can improve incentives to invest in second generation products, whatever the breadth of patent protection.").

[77] Oren Bar-Gill and Gideon Parchomovsky outline the difficulties in reaching ex ante contracting solutions:

> There are, however, many impediments to ex ante contracting (that is[,] contracting prior to the development of the cumulative innovation). First and

two monopolistic parties, but it is especially so in the face of uncertain future profits, costs, and potential impact on the author's works in other markets.[78] Moreover, these problems are exacerbated by the fact that no single party can negotiate on behalf of all the authors. As more authors or groups of authors participate in the negotiation, the greater the problem of holdouts and search costs will be. Furthermore, such negotiation contexts implicate Arrow's paradox of disclosure[79]—the parties cannot negotiate unless the innovator discloses the idea for the technology, which is often itself extremely valuable. Ex ante bargaining is rarely a practical solution to the puzzle of incremental innovation.

The traditional economics literature has created formal models to study the optimal breadth of patent policy,[80] and these same models can be adapted to the copyright realm. I use this literature as a starting point to evaluate three potential treatments of the use of copyrighted materials via new technologies: (1) blanket fair-use allowance, (2) blanket prohibition absent permission, and (3) a hybrid rule that tries to balance the competing interests. My goal here is not to suggest a new rule for courts to adopt;[81] instead, I hope merely to

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> foremost, if a potential cumulative innovator approaches the initial inventor with an idea for a cumulative innovation, the initial inventor may simply steal the idea. Asymmetric information introduces another significant obstacle to ex ante contracting.

Bar-Gill & Parchomovsky, *supra* note 22, at 1861 n.10 (citing Howard F. Chang, *Patent Scope, Antitrust Policy, and Cumulative Innovation*, 26 RAND J. ECON. 34, 38 n.6 (1995)). *But see* John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 489 n.142 (2004) ("Transaction costs of prior agreements may be lower because the bargaining range is likely to be narrower.").

[78] *Cf.* Green & Scotchmer, *supra* note 22, at 22 (assuming in model that value of incremental technology is unknown to parties).

[79] Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY 609, 615 (Richard R. Nelson ed., 1962) (arguing that absent legal protection, information holders cannot sell information because selling requires disclosing and disclosing requires giving it away); *see also* Bar-Gill & Parchomovsky, *supra* note 22, at 1866–67 (summarizing Arrow's "information paradox").

[80] *See generally, e.g.*, Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 21 RAND J. ECON. 106 (1990) (examining effect of infinite-length patents on innovation incentives); Green & Scotchmer, *supra* note 22 (modeling sequential innovation to calculate optimal breadth and length of patent protections). For a law review–style account of optimal patent breadth policy arguing that theories of natural monopoly should be used to think about patent scope, see Duffy, *supra* note 77, at 510.

[81] My principal goal is to illustrate the effects that fair use rules will have on innovation. In order to suggest a rule for courts to follow, one needs a more robust and complete model, based on empirical work done to evaluate the relative social costs of alternate rules. The simplified approach I adopt in this Note is meant to illustrate the trade-off between incentives to innovate and incentives to create copyrighted works; to suggest a new rule for the courts to adopt, one would have to know the shape of the demand and supply curves,

illustrate the social welfare costs and benefits of each rule, shedding some light on the difficulty facing a policymaker.

A. Social Welfare Implications of Decision Rules

In this section, I will evaluate various rules that a legislature (or court) could adopt when confronted with copyright suits involving innovations that leverage existing copyrighted works. I have made the following simplifying assumptions: (1) There are n technologies and each creates the same expected revenue, T; (2) the cost to develop, C, is uniformly distributed within the range $[0, T]$; (3) each new technology has sufficiently low transaction costs such that the innovator can pay the copyright holders for each use of their works; (4) ex ante bargaining is impossible; and (5) if the technology company must pay the copyright holders, they will split the ex post profits equally.[82]

1. Fair Use Protection

To begin, I will model the social welfare increase that would result if new incremental innovations were always considered fair use. Under such a fair use regime, innovators will retain all the revenues from their technologies and will develop any technology whose costs are less than this expected revenue. For each technology, the cost, C, is lower than the expected revenue, T; therefore, all n technologies will be developed. Because the costs, C, are uniformly distributed from 0 to T, the following equation describes the aggregate social welfare generated by the technologies:

$$SW = \sum_{i=0}^{n} T - i(T/n).$$

As the number of technologies, n, goes to infinity, this function can be approximated by the following integral:[83]

$$SW = \int_{0}^{n} (T - xT/n)dx = nT/2.$$

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the relative administrative costs, and the amount of social welfare that would be gained by providing more (or less) incentives for technology companies to innovate.

[82] The above assumptions are used to illustrate the trade-off between incentives to create new technologies and incentives to create copyrighted works. I have adopted the assumptions with the aim of simplifying the math in this section.

[83] The term xT/n represents the cost of a technology and originates from the assumption of a uniform distribution of costs within the range $[0, T]$. To calculate the cost of a given technology, i, within the range of technologies $[0, 1, 2, 3, \ldots, n]$, one must multiply i by T and divide by n. For example, in a world where $n = 100$ and $T = 50$, the tenth technology would have a cost of $10 \times 50 / 100 = 5$, while the hundredth technology would have a cost of $100 \times 50 / 100 = 50$.

This integral describes the shaded portion under the curve in Figure 9. The *n* technologies in the model are sorted by order of increasing cost of development along the x-axis. The shaded region is the aggregate revenue of all the technologies.

FIGURE 9: SOCIAL WELFARE GENERATED BY NEW TECHNOLOGIES
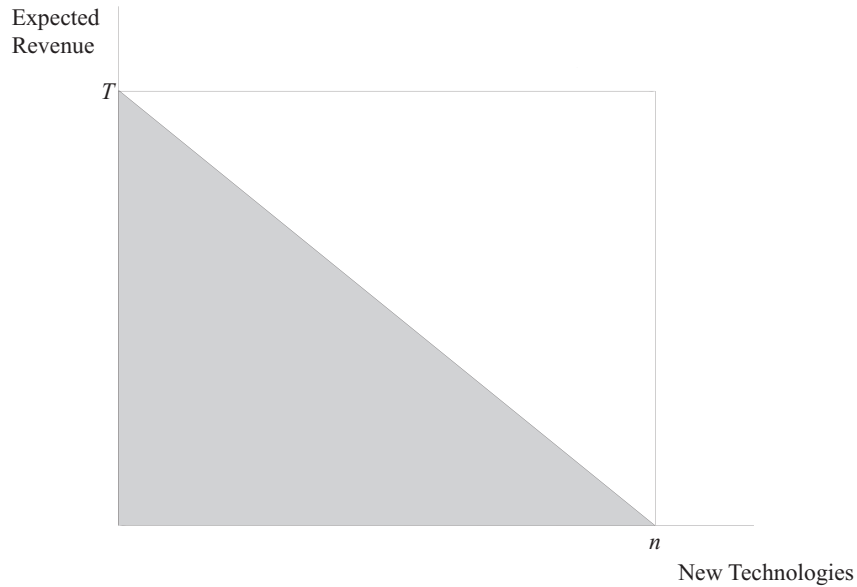
2. Copyright Protection

In Part II.B, I demonstrated how a pure transaction-cost-and-externalities rule can create a market failure by decreasing the incentives for technological innovation. In this section, I formally model the social welfare loss from that market failure.

Because transaction costs are not prohibitive (see assumption (3) above), the traditional economic analysis would suggest that the fair use exception should not apply to innovative technologies; instead, to avoid copyright infringement, an innovator would be forced to split her profits evenly with authors. The innovator would now only expect to generate revenue of $T/2$ and thus will only develop technologies for which $C < T/2$. Only half of the *n* technologies will be developed, and we can write the resulting social welfare increase as:

$$\sum_{i=0}^{n/2} T - i(T/n).$$

Just as before, this sum can be expressed as an integral:

$$\int_{0}^{n/2} T - (xT/n)dx = T \int_{0}^{n/2} 1 - (x/n)dx = T[n/2 - (n/2)^2/2n] = nT(3/8).$$

Again, this integral represents the area under the curve of technology revenues; however, this integral is truncated because only half of the technologies (those for which $C < T/2$) will actually be developed. The shaded region in Figure 10 represents the social welfare gain from the new innovations, which will be split evenly between the innovators and authors—$nT(3/16)$ each. The unshaded region, y, represents the social welfare that would have been generated under a fair use regime.

FIGURE 10: SOCIAL WELFARE GENERATED BY
NEW TECHNOLOGIES
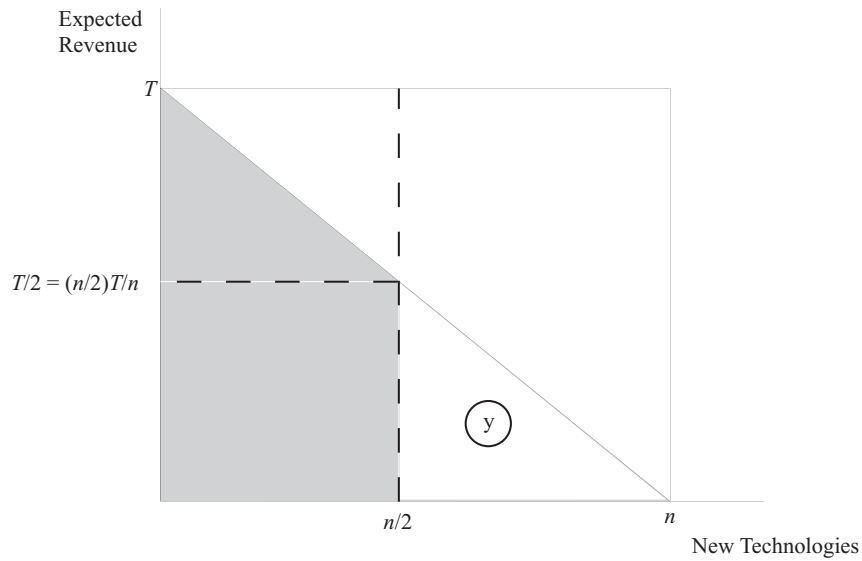
Copyright protection inhibits social welfare production through innovation, but it generates more social welfare by stimulating authors to create more works.[84] This social welfare increase is a function, $w(\Delta q)$, where Δq represents the new works created ($q^{*'} - q^*$ in Figure 8 above),[85] which is itself a function of the money received by authors.

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[84] *See supra* Part I.C.

[85] Note that $q^{*'}$ is itself a function of the revenue the authors receive—$nT(3/16)$—and of the elasticity of supply (the percentage change in supply as a result of a percentage change in price).

The total social welfare increase in this context is the sum of these two terms—the social welfare directly created by the technologies plus the social welfare created by the change in supply of works:

$$SW = nT(3/8) + w(\Delta q).$$

How does this compare with a fair use regime? We lose $nT/8$ in direct innovation revenues but gain $w(\Delta q)$ from the generation of new works. Copyright protection will therefore be superior[86] to a fair use regime whenever:

$$w(\Delta q) > nT/8.$$

In other words, when determining whether fair use should apply, a policymaker must weigh the cost of precluding new technologies against the benefits of increasing the number of new works.

3. Hybrid Rule

The above analysis suggests another rule: A court could apply the fair use exception when the cost of developing the technology is greater than fifty percent of its expected revenue; in all other circumstances, copyright protection would apply. If this rule were in place and perfectly administered, innovators would retain their incentive to develop all n technologies. In those contexts where copyright protection would create disincentives, the fair use doctrine would apply. In all other contexts, innovators would split their profits with the authors, in turn encouraging them to create more new works. This rule would have the best of both worlds, with a total social welfare increase of:

$$SW = nT/2 + w(\Delta q).$$

In practice, of course, such a rule would be manipulable and extremely difficult to administer. The revenue and cost figures would be easy to manipulate: The innovator has full control over the costs of creating a technology, and the bright-line cutoff creates perverse incentives to increase the costs above the threshold. Moreover, innovators would have an incentive to lie about their expected revenues

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[86] By "superior," I mean Kaldor-Hicks superiority—i.e., cumulative social welfare is higher. *See* ROBIN PAUL MALLOY, LAW AND MARKET ECONOMY: REINTERPRETING THE VALUES OF LAW AND ECONOMICS 154 (2000) ("Under [the Kaldor-Hicks] test, if an exchange will generate more gains for the winner than the loss to the loser the legal system should encourage or coerce the transaction in order to achieve a Kaldor-Hicks-efficient outcome."); POSNER, *supra* note 46, at 12–14 (defining Kaldor-Hicks efficient transactions as those in which "[w]inners could compensate the losers, whether or not they actually do"). This is in contrast to Pareto superiority, which would require that at least one person be better off without making anyone worse off. MATTHEW D. ADLER & ERIC A. POSNER, NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS 5 (2006).

and development costs. These figures would be hard to verify, especially because the revenue generated by a new technology usually occurs well into the future. As a result, many of these issues would only be addressed through costly litigation.

Nevertheless, it is unclear whether the social waste generated by these practical difficulties would outweigh the theoretical benefits of a more tailored regime. The answer to that question is left for another day.

B.   *Relaxing Assumptions*

Throughout my analysis, I have made several simplifying assumptions, some of which can be easily relaxed and others of which cannot without substantially changing the model. As an example of the former, I have consistently assumed that an innovative company would have a monopoly in the new market it creates. In reality, however, innovators creating new markets for copyrighted works have rarely maintained a sustainable monopoly—Sony was not the only VCR manufacturer, and Google Book Search already has potential competitors in Microsoft and Yahoo.[87] Nevertheless, my analysis is still valid even without the assumption of a monopoly. So long as innovators are forced to split their revenues with authors and thereby receive only part of the producer surplus, copyright protection will prevent innovators from developing some socially valuable technologies. In sum, market structure will change the dynamic of the profit split but not this result.

A more fundamental assumption is the notion that new technologies will have no impact on existing markets for copyrighted works. For example, I have assumed that the development of the VCR did not impact the ability of television studios to charge advertisers for advertising time. Similarly, I have assumed that Google Book Search will not result in lost sales of hardcopy books. Of course, this assumption is not realistic in all cases.

Taking that factor into consideration would change the analysis and make copyright protection more attractive in these settings. Relaxing the assumption would require an additional variable to represent the decrease in authors' revenue and the corresponding decrease in generated works that would follow.[88] One benefit of full

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[87] *See* Toobin, *supra* note 8, at 30 ("Google's is not the only book-scanning venture . . . . [T]he Open Content Alliance, a consortium that includes Microsoft, Yahoo, and several major libraries, is also scanning thousands of books . . . .").

[88] This is simply the converse of the phenomenon described in Figure 3. In that case, an increase in authors' revenue would spur them to create more works. Conversely, a decrease in authors' revenue will push some authors to leave the market.

copyright protection for incremental innovation is that authors have the power to protect themselves against lost sales by negotiating a price that fully compensates them.[89] In contrast, if incremental innovation is considered fair use, the lost sales to the author are an externality, and the innovator might create socially harmful (i.e., welfare-reducing) technologies.[90]

C. Implications for Judicial and Congressional Decisionmakers

This Note proposes that a complete economic model of fair use should not only consider transaction costs and externalities; it must also take into account the incentives to innovate. Although I believe my proposal is sound, its implications are unclear. There are good reasons for courts to stay out of this business; as demonstrated above, conditioning fair use decisions on the incentives to innovate might increase litigation costs and create perverse, inefficient incentives for innovators.[91]

IV
CONCLUSION

In this Note, I have shown that a fundamental flaw exists in the current economic analysis of fair use when it is applied to incremental innovations. The current literature proposes two rationales for the fair use exception: transaction costs and externalities. This Note suggests a potential third rationale: maintaining incentives to invest in new technologies that create new markets for copyrighted works.

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[89] *Cf.* R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 2–6 (1960) (showing that clear definition of enforceable property rights results in efficient allocation of resources).

[90] *See supra* note 13 and accompanying text (discussing problems associated with externalities).

[91] *See supra* Part III.A.3 (discussing incentives for technology companies to inflate their costs of innovation).