

AN ECONOMIC MODEL FOR THE INCENTIVE/ACCESS PARADIGM OF
COPYRIGHT PROPERTIZATION: AN ARGUMENT IN SUPPORT OF THE
PROPOSED NEW §514 TO THE COPYRIGHT ACT

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ABSTRACT

This article proposes an economic model of the incentive-access paradigm for copyright designed to correspond to the goal of maximizing societal welfare.

The article begins with a discussion on the foundations of copyright and the objectives of the Constitution's Copyright Clause. The article adopts the majority view that the Constitution mandates that the copyright regime is designed to optimize the positive welfare impacts from copyright protection. Under this view, similarly as antitrust "protects competition, not competitors", *the copyright regime should protect creativity, not creators*. The result of this underlying policy objective is that the level of copyright propertization becomes a balancing test where Congress and the courts should set the extent of the rights granted in the Copyright Act to a level that maximizes the aggregate societal benefit from copyrightable subject matter.

After laying this legal foundation, the article analyses the strengths and weaknesses of some economic models presented in academic literature. The focus of this discussion is the model proposed by William M. Landes and Richard A. Posner, but also includes a scan of some of the other relevant academic models. The majority of the economic models that have been proposed for intellectual property are built around marginal unit cost analysis, and the article questions whether -- especially in a digital environment -- that analysis presents a valid basis for modeling. The article then proposes a microeconomic formulation of the incentive-access paradigm that captures the economic concepts needed for Congress and the courts to derive policy decisions that maximize societal welfare.

The article concludes with a discussion of an implicit real-world application of the model. In its recent report on so-called "orphan works" the Copyright Office proposes that copyright protection where the owner is unidentifiable is reduced to a liability rule. This is consistent with the model's conclusion that reducing access costs at the outer perimeters of copyright protection will result in a net increase in output, and thereby in a net societal gain. The article suggests that policymakers and courts should view changes to the level of copyright protection through the lens of the proposed model to ensure that the copyright regime evolves in a manner consistent with the utilitarian objectives of the Constitution.

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PART I: INTRODUCTION

A. Background and contention of Article

On January 31, 2006, the Copyright Office submitted its “Report on Orphan Works”¹ to the Senate Judiciary Committee. The Report uses the term “orphan works” to describe a situation where the owner of a copyrighted work cannot be identified and located by someone who wishes to make use of the work in a manner that requires the permission of the copyright owner.² The Report makes a specific proposal for a new Section 514 to be added to the Copyright Act limiting the liability of the user of an Orphan Work (as defined in the proposed statute) to “reasonable compensation”. The proposed amendment to the Copyright Act also generally precludes injunctions against copyright users of Orphan Works, thereby softening the typical property rule running through the Copyright Act to a liability rule.

The goal of this article is to analyze the Copyright Office’s proposal from an economic viewpoint. To accomplish this, the article proposes an economic model that can be used as a conceptual backdrop by policymakers for analyzing the social welfare implications of changes to copyright law. The model is based on the dominant view that the maximization of societal welfare is the constitutionally mandated objective of the copyright regime. Acceptance of this neo-utilitarian policy objective implies that, just as antitrust “protects competition, not competitors”,³ *the copyright regime should protect creativity, not creators*. Fundamentally, under this positive law philosophy the proper

¹ REPORT ON ORPHAN WORKS, a Report of the Register of Copyrights, January 2006 (available at <http://www.copyright.gov/orphan/orphan-report-full.pdf>.)

² *Id.* at 1

³ *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993) (quoting *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962)).

scope of copyright becomes a balancing test where Congress and the courts should expand or limit the property grant claimable under the Copyright Act⁴ based on the output effects of the change.

The conclusion of the article is that the Copyright Office's proposal is consistent with the objectives of the copyright system and that a bill based on the proposal should be introduced and approved into law.

B. Structure of Article

The article starts in Part II with a discussion of the theoretical foundations of copyright and an analysis of the Constitutional mandate for the United States copyright regime. The article adapts the majority view that the drafters of the Constitution expressly intended copyright to serve a societal welfare maximizing function. The subsequent economic modeling is based on the notion that the objective of the copyright regime is to benefit society rather than any specific special interest group.

Part III starts with a summary of the incentive-access paradigm and introduces some of the economic models of intellectual property in the economics literature. A more detailed review of the model by Professor William Landes and Judge Richard Posner in their recent book *The Economic Structure of Intellectual Property*⁵ is presented. After observing some key notions contained in the Landes/Posner model, the article then discusses some of the infirmities of their presentation.

Part IV then presents an alternative social welfare maximizing economic model for copyright -- an exposition of the incentive-access paradigm. The model presented is

⁴ 17 U.S.C. §§ 101, *et seq.* (property grant contained specifically in 17 U.S.C. § 106, subject to limitations contained in §§ 107 – 122).

⁵ William M. Landes and Richard A. Posner, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* (Bellknap Press 2003) (hereinafter Landes/Posner n. 5).

specifically designed to identify the social welfare maximizing value of z , a factor that Landes and Posner assign to the level of statutory propertization of intellectual rights.

Finally, Part V applies the new model to the Copyright Office's proposed new section to the Copyright Act. The article concludes that the Copyright Office's proposed new §514 to the Copyright Act would increase societal welfare and as such should be implemented.

Part II: THE OBJECTIVE OF COPYRIGHT

In order to build an economic model for a copyright regime it is necessary to have a quantifiable measure for the objective of the desired societal outcome.⁶ Since Congress's and the courts' policy decisions on the scope of copyright protection are bound by the Constitution, we begin the discussion by analyzing the Constitutional mandate for the copyright system.

A. Foundations of Copyright

The two prevalent legal theories on the foundation of copyright are the natural law and positive law schools.⁷ The fundamental policy distinction between the two

⁶ L. Ray Patterson, *Nimmer's Copyright in The Dead Sea Scrolls: A Comment*, 38 HOUS. L. REV. 431, 434 (2001) ("Lawmakers, legislative or judicial, simply cannot allocate rights between [the different interest] groups in a reasonable way without common premises to provide the basis for the allocation").

⁷ The positive law/natural law divide has been extensively examined by professors L. Ray Patterson and Craig Joyce, both separately and together. See, e.g., Craig Joyce, "A Curious Chapter in the History of Judicature": *Wheaton v. Peters and the Rest of the Story (of Copyright in the New Republic)*, 42 HOUS. L. REV. 325, 360 (2005); L. Ray Patterson and Craig Joyce, *Copyright in 1791: An Essay Concerning the Founders' View of the Copyright Power Granted to Congress in Article I, Section 8, Clause 8 of the U.S. Constitution*, 52 EMORY L.J. 909, 924 (2003) (hereafter Patterson/Joyce n. 7); L. Ray Patterson, *What's Wrong With Eldred? An Essay on Copyright Jurisprudence*, 10 J. INTELL. PROP. L. 345, 345 (2003). Some commentators consider moral rights as a separate foundation, but the majority view is that moral rights are a key attribute of the natural law philosophy. See, e.g. Patty Gerstenblith, *Architect as Artist: Artists' Rights and Historic Preservation*, 12 CARDOZO ARTS & ENT. L.J. 431, 439 (1994) ("The copyright/moral rights distinction is founded on an underlying difference between positive law and natural law").

philosophies is that under the former the primary policy focus is the protection of the authors' rights whereas in the latter the focus is society's broader interests.⁸

The natural law foundation for copyright is based on the 17th century work of the legal philosopher John Locke, and specifically his labor theory of property acquisition. According to Locke a man's "labor being the unquestionable property of the laborer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others".⁹ Under a natural rights approach there exists an "inherent" -- i.e., natural,¹⁰ -- right to the work by the author that is not subject to polity limitation based on the broader interests of society.¹¹ The commonly recognized inalienable¹² rights under a natural law theory are the key moral rights of attribution, integrity, and disclosure, as well as the right to withdraw the work from the public and to receive protection from excessive criticism.¹³

The natural law philosophy was challenged when England abolished the prior Stationers' Company monopoly and enacted the Statute of Anne in 1710.¹⁴ The Statute of Anne represented a societal determination that copyright should be viewed as a

⁸ See, e.g., Patterson n. 6 at 434

⁹ John Locke, TWO TREATISES OF GOVERNMENT, Book II, Ch V (c. 1690) as reprinted in Jesse Dukeminier and James E. Krier, PROPERTY (5th Ed) at 16 (Aspen Law & Business 2002).

¹⁰ Locke, in fact, derives the grant of the right from God, so the term "natural right" is misleading in that the claimed right according to the Lockean school originates from a supernatural source.

¹¹ Peter Read Teachout, *The Soul of the Fugue: An Essay on Reading Fuller*, 70 MINN. L. REV. 1073, 1117(1986) ("[T]he natural law approach...takes the view that law is the reflection of eternal principles which exist above and apart from whatever the state or the sovereign may choose to do").

¹² See, e.g. Monica E. Antezana, *The European Union Internet Copyright Directive as Even More than it Envisions: Toward a Supra-EU Harmonization of Copyright Policy and Theory.*, 26 B.C. INT'L & COMP. L. REV 415, 421 (2003) (explaining how moral rights under a Continental natural right regime are inalienable as an "extension of the author's personality"). It is unclear, however, why limiting the alienability of rights is necessarily in the interest of the author.

¹³ Gerstenblith, n. 7 at 439.

¹⁴ Statute of Anne, 1710, 8 Ann., c. 21 §1 (Eng.).

statutory trade regulatory tool that has the objective of maximizing societal welfare.¹⁵

Through its premise that copyright exists for “the encouragement of learning” the Statute of Anne is widely seen as being the first copyright regime to make the economic interests of authors and publishers secondary to the broader societal goals. In England the House of Lords’ 1774 decision in *Donaldson v. Beckett*¹⁶ is considered the final straw in affirming that copyright exists only through polity grace as a statutory property grant subject to the scope restrictions determined by the grantor: the government, based on social policy.¹⁷

The 18th Century English developments in the Statute of Anne and *Donaldson v. Beckett* inspired the positive law school of copyright, which enshrines copyright as a utilitarian societal tool to preserve incentives for creators of works of authorship to ensure a sufficient flow of copyrightable works for the benefit of society. A strict interpretation of the positive law philosophy would allow the polity freely to assign the property grant given to authors without regard to a moral argument that the author should have rights simply as a result of being the creator.

Although modern copyright systems have attributes of both premises, the positive law versus natural law schism persists in copyright today, as it does in other areas of law.¹⁸ As a general notion the old English colonies, as a result of the direct influence of

¹⁵ Craig W. Dallon, *The Problem with Congress and Copyright Law: Forgetting the Past and Ignoring the Public Interest*, 44 SANTA CLARA L. REV 365, 409 (2004) (“The important point is this: the Statute of Anne, the ancestor of American copyright law, had as its foremost objective the encouragement of learning -- a general public interest -- not the private economic interests of authors, printers, or publishers.”).

¹⁶ 1 Eng Rep. 837, 842 (H.L. 1774)

¹⁷ *See, e.g.*, Joyce n. 7 at 331 (the case determined copyright “to be a creature of statutory grant alone”); *see also*, Joseph J. Beard, *Everything Old Is New Again*, 38 LOY. L.A. L. REV. 19, 38 (2004) (“If there had been a common law copyright in published works before the Statute of Anne, *Donaldson v. Beckett* declared it was no more.”)

¹⁸ Teachout n. 11 at 1117 (analyzing Lon Fuller’s jurisprudential writings noting how “the schism between the philosophers of natural law and the legal positivists has been deep and largely unbridged for decades”).

the Statute of Anne, tend to be more positive law slanted whereas the Continental European systems continue to heed their natural law origins.¹⁹ It will remain to be seen how in the increasingly globalized world of the Internet the two copyright systems that result in different policy outcomes can coexist.²⁰

The following discussion explains this article's premise of treating the Constitution as mandating a fundamentally positive law regime where Congress's goal is to maximize output of copyrightable works rather than protect the interests of any specific interest group. This is not intended to deny that there are noticeable strains of natural law elements in the Copyright Act.²¹ However, and while recognizing the existence of opposing views,²² the model presented in this article subscribes to the majority view that the Copyright Clause²³ of the United States Constitution is fundamentally utilitarian as the basis for the economic analysis.²⁴

¹⁹ See, e.g. P. Bernt Hugenholtz, *Copyright and Freedom of Expression in Europe*, in THE COMMODIFICATION OF INFORMATION 241 (Niva Elkin-Koren & Neil Wenstock Natanel eds. Kluwer Law 2002); see also, Michael B. Reddy, *The Droit De Suite: Why American Fine Artists Should Have the Right To A Resale Royalty*, 15 LOY. L.A. ENT. L.J. 509, (1995) ("Modern parallels to this dichotomy can be seen in the philosophical differences between the French tradition of moral rights and the American history of positive copyright law").

²⁰ The modern natural law proponents in Europe defend the theory on a political argument that authors' rights need to be expanded to prevent the weak initial bargaining power of the individual authors to be exploited by large companies acquiring copyrights. Commenting on the relative strengths and weaknesses of the European social model is beyond the scope of this article. As to the coexistence, it would seem necessary that similarly as common law and civil law are melding, especially in European Union law, the same would need to happen with the different traditions of copyright law.

²¹ E.g. 17 U.S.C. §106A (granting a "moral right" to visual artists); 17 U.S.C. §203(a)(5) (limiting the author's right to sell his copyright).

²² E.g., Wendy Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual property*, 102 YALE L.J. 1533, 1540 (1993) (arguing that "Locke's work influenced the framers of our constitution and continues to influence contemporary courts"); Orit Fischman Afori, *Human Rights and Copyright: The Introduction of Natural Law Considerations Into American Copyright*, 14 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 497 (2004) (Interpreting the Constitutional Copyright Clause as "not totally rejecting natural law conceptions").

²³ U.S. CONST. Art. I, § 8, cl. 8 ("To promote the Progress of Science and useful Arts, by securing for limited times to Authors and Inventors the exclusive Rights to their respective Writings and Discoveries")

²⁴ See discussion in Sections B. and C., *infra*. See also, Paul Goldstein, Copyright § 1.14 (2d ed. 2002) (the "overarching object of copyright law in the United States is to encourage the widest possible production and dissemination of literary and artistic works."); Julie E. Cohen, et. al, COPYRIGHT IN A GLOBAL INFORMATION ECONOMY at 7 (Aspen Law & Business 2002) ("[C]opyright's purpose is purely

B. Jurisprudence on the Constitutional mandate for Copyright

At the time of writing the Constitution the Founders understood both the natural law and positive law theories, and there is substantial support that their choice of a positive law foundation was deliberate.²⁵ Thomas Jefferson is known to have openly rejected a natural rights theory for copyright in his correspondence.²⁶ Although less openly so, James Madison is also seen as having expressly rejecting any natural law rights of authors.²⁷ The influence of at least Jefferson's and Madison's aversion to protection of copyrights beyond society's general interest can be seen in the Limited Times provision of the Copyright Clause, which provides direct evidence that the

utilitarian...the Framers of the U.S. Constitution embraced this utilitarian rationale for copyright protection..."); Melvin A. Nimmer and David Nimmer, NIMMER ON COPYRIGHT §1.03[A] 1-88 (2005) (explaining that "copyright is predicated on the dual premise that the public benefits from the creative activities of authors, and that the copyright monopoly is a necessary condition to the full realization of such creative activities"); Marci A. Hamilton, *Copyright at the Supreme Court: A Jurisprudence of Deference*, 47 J. Copyright Soc'y U.S.A. 317, 319 (2000) ("From the first case, through the present, the [Supreme] Court has treated copyright law as positive law"); Lawrence A. Cunningham, *Private Strands In Public Law: Copyright, Lawmaking and the Case of Accounting*, 104 MICH. L. REV 291, 310 (2005) ("[T]he dominant rationale for copyright in the United States is utilitarian"); Jeffrey L. Harrison, *A Positive Externalities Approach to Copyright Law: Theory and Application*, 13 J. INTELL PROP. L. 1, 7 (2005) ("[D]espite uniform agreement that United States copyright law is utilitarian in nature with the bottom line purpose to maximize social welfare, [the current Copyright Act does not do this]"); Deborah Tussey, *Technology Matters: The Courts, Media Neutrality, and New Technologies*, 12 J. INTELL. PROP. L. 427, 442 (2005) ("This balancing of interests echoes the utilitarian approach to copyright, constitutionally based in the Copyright Clause"); Jim Chen, *A Sober Look and Appellations of Origin: How the United States Will Crash France's Wine and Cheese Party*, 5 MINN. J. GLOBAL TRADE 29, 58 (1996) ("The United States has long favored a positive law theory of intellectual property over a natural law theory"); Jill R. Appelbaum, *The Visual Artists Rights Act of 1990: An Analysis Based on The French Droit Moral*, 8 AM. U. J. INT'L L. & POLY 183, (1992) ("The American system of copyright rooted in positive rather than natural law, favors the economic over the personal interest of authors."); Dallon n. 15 at 423 ("The Constitution adopted the utilitarian, public benefit rationale for copyright protection over the property right rationale.").

²⁵ Patterson/Joyce n. 7. at 930. Professors Patterson and Joyce appear to use common law copyright to describe a natural law based foundation. Common law copyright, however, suggests that the issue is whether the law is codified (statutory law) or judicial (common law). The focus, however, is whether subject matter is whether copyright exists as a matter of polity grant (positive law) and remains subject to polity limitation for the benefit of societal welfare or whether copyright rights are "inherent" (natural law).

²⁶ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 8-9 (1966) ("[Jefferson] rejected a natural-rights theory in intellectual property rights and clearly recognized the social and economic rationale of the patent system. The patent monopoly was not designed to secure to the inventor his natural right in his discoveries. Rather, it was a reward, an inducement, to bring forth new knowledge").

²⁷ Dallon n. 15 at 424 (stating that Madison's writings "clarify that he did not believe in perpetual common law copyrights rooted in the natural law rights of authors").

Founders did not intend copyright to be equated to property protected elsewhere in the Constitution.

A utilitarian foundation for the copyright regime has been confirmed by the Supreme Court on several occasions. In its 1954 decision in *Mazer v. Stein*²⁸ the Court explained the economic philosophy behind the Copyright Clause by stating that “the encouragement of individual effort for personal gain is the best way to advance public welfare through the talents of authors and inventors”.²⁹ The Court expressly recognized that the incentive to profit is the engine that drives copyright output, but that the profits of authors are a means, and not an end, to the ultimate Constitutional objective of welfare maximization.

The teaching of *Mazer* was reaffirmed multiple times in the Supreme Court’s 1984 *Sony* decision.³⁰ The Court stated that “[t]he copyright law, like the patent statute, makes reward to the owner a secondary consideration”,³¹ and that “[t]he enactment of copyright legislation by Congress under the terms of the Constitution is not based upon any natural right that the author has in his writings, ... but upon the ground that the welfare of the public will be served and progress of science and useful arts will be promoted by securing to authors for limited periods the exclusive rights to their writings”.³² The Court concluded that “[t]he sole interest of the United States and the primary object in conferring the monopoly lie in the general benefits derived by the public from the labors of authors.”³³

²⁸ 347 U.S. 201 (1954).

²⁹ *Id.* at 219.

³⁰ *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417 (1984).

³¹ *Id.* at 429 (quoting *U.S. v. Paramount Pictures*, 334 U.S. 131, 158 (1948)).

³² *Id.* at n. 10 (quoting H.R.Rep. No. 2222, 60th Cong., 2d Sess. 7 (1909)).

³³ *Id.* at 432 (quoting *Fox Film Corp. v. Doyal*, 286 U.S. 123, 127 (1932)).

Since *Sony* the Supreme Court has emphasized the profit motive of the author as a key component of the social equation.³⁴ While the recent decision in *Eldred v. Ashcroft*³⁵ used markedly different language than *Sony* in emphasizing the need to protect the interests of copyright owners, it at the same time reaffirmed the primary goal of the copyright system as being that of promoting the arts and sciences.³⁶ This trend, which is consistent with the pattern of curtailing antitrust law,³⁷ can be seen as merely as a logical part of the rise of conservatism within the Court. Although the unambiguous references to social welfare in the utilitarian wording of *Sony* has been relegated to the dissenting opinions,³⁸ there is nothing to suggest in *Eldred* that the Supreme Court would have abandoned its long string of precedent on the matter. There is also no language in the Supreme Court's subsequent copyright decisions³⁹ to suggest that the Court would have reinterpreted the Constitutional goals of copyright since the broad exposition on the matter in *Sony*.

Congress's openness to continue expanding copyright protection, as discussed in Section C, *infra*, is likely fueled by the increased lobbying power of major entertainment

³⁴ *Id.* at 212 n.18

³⁵ 537 U.S. 186 (2003)

³⁶ *Id.* at 212 (“[W]e have described the Copyright Clause as both a grant of power and a limitation, and have said that the primary objective of copyright is to promote the Progress of Science. The constitutional command, we have recognized, is that Congress, to the extent it enacts copyright laws at all, create a system that promotes the Progress of Science.”) (internal citations and quotations omitted).

³⁷ See, e.g., Robert P. Taylor, *Antitrust Issues in Licensing Intellectual Property Rights*, 1526 PLI/Corp 365, 369 (“For the last 25 years, the trend in all antitrust cases has been to limit the wooden use of per se rules for [Section 1](#) analysis.”). Copyright law and antitrust law are polar opposites in that “more” copyright entails more exclusionary rights to proprietors, whereas “more” antitrust means limiting the proprietor’s ability to exclude. In that sense increasing copyright protection is analogous to curtailing antitrust limitations on proprietors.

³⁸ *Id.* at 253 (Breyer, J., dissenting) (“Copyright law . . . makes reward to the owner a secondary consideration”) (quoting *Sony*); *Id.* at 254 (“The economic philosophy of the Copyright Clause is to advance public welfare by encouraging individual effort through personal gain”) (quoting *Mazer*).

³⁹ The most important such decision is *Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd.*, 125 S.Ct. 2764 (2005).

companies.⁴⁰ However, expanding copyright is not necessarily in the interest of this constituency. The entertainment industry is also a major *user* of copyrights and easier access to copyrighted works can well be in the industry's interest.⁴¹ For example, the Walt Disney Company produces a substantial amount of adaptations, and the curtailment of copyright in the Copyright Office's Orphan Works proposal will enable the company to reduce transaction costs and avoid liability for the use of works that would fall under the proposed statutory provision.

C. History and expansion of the breadth and length of copyright

Throughout the past two centuries the property grant of copyright claimants has substantially expanded. The first copyright legislation in the United States, the Copyright Act of 1790, was passed by Congress to protect “not so much the right of the copyright holder to exploit the work as the right of the people of the United States to learn from it.”⁴² The Act was a “scant two or three pages”, compared to the present Act, which “weighs in at more than two hundred densely packed pages”.⁴³ This increase in volume has not only added complexity to the law,⁴⁴ but also expanded its substantive reach substantially.

⁴⁰ The Copyright Term Extension Act of 1998, Pub. L. No. 105-298, has been dubbed the “Mickey Mouse Protection Act” as a reference to the political influence and contributions of the Walt Disney Company. See, Matt Williams, *Balancing Free Speech Interests: The Traditional Contours of Copyright Protection and The Visual Artists' Rights Act*, 13 UCLA ENT. L. REV. 105, 108 n. 15 (2005).

⁴¹ Landes/Posner n. 5 at 73 (explaining that since creators do not know *ex ante* whether they end up as “debtors” or “creditors” they “might well find it in their self-interest to limit the scope and duration of copyright protection”). The authors conflate the incentive benefit and access cost by noting that “at lower levels of z the revenue enhancing effect would dominate while at higher levels the cost enhancing effect would dominate”. This societal benefit function is essentially the same as the outcome of the separate incentive benefit and access cost functions developed in Part IV, *infra*.

⁴² See, Joyce and Patterson, at 940

⁴³ Joseph P. Liu, *Regulatory Copyright*, 83 N.C. L. REV. 87, 88 (2004).

⁴⁴ Especially some of the new provisions of the Digital Millennium Copyright Act (see, e.g. 17 U.S.C. § 512) are extremely long and complex, and therefore arguably difficult to implement. See also, David Nimmer, *Ignoring the Public, Part I: On the Absurd Complexity of the Digital Audio Transmission Right*, 7

The subject matter of copyright in the original Act of 1790 included only maps, charts, and books but then over time expanded to a list of specific categories of works.⁴⁵ Despite the current Copyright Act's still containing a list of "[w]orks of authorship"⁴⁶ that presumably contain the eligible subject matter of copyright protection, courts have recognized subject matter such as characters, computer programs, and databases as examples of categories of subject matter capable of copyright protection.⁴⁷ This expansion has drawn a wide range of criticism from scholars⁴⁸ and has even been dubbed the "second enclosure movement" by commentators.⁴⁹

In addition to subject matter, the temporal property right given to copyrights has expanded from the original term of fourteen years⁵⁰ to the present term of 70 years from the author's death or 95 years from creation for works for hire.⁵¹ The breadth of protection has also been expanded, starting with the inclusion of derivative work

UCLA ENT. L. REV. 189 (2000) (discussing the opacity of recent statutes governing digital audio transmissions); David Nimmer, *Codifying Copyright Comprehensibly*, 51 UCLA L. REV. 1233, 1320 (2004) (discussing the increased length and frequency of amendments to the 1976 Copyright Act).

⁴⁵ Liu, n. 43, *supra*, at 89 (by the 1909 Act copyright protection extended also to prints, musical compositions, photographs, paintings, drawings, chromolithographs, statues, and works of fine art).

⁴⁶ 17 U.S.C. § 102(a) listing works of authorship as: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works.

⁴⁷ See, e.g. Julie E. Cohen, et. al., *COPYRIGHT IN A GLOBAL INFORMATION ECONOMY* (Aspen Law & Business 2002) (discussing the copyright protection of computer software (at 238) and of databases (at 294)).

⁴⁸ See, e.g., Paul Goldstein, *Copyright in the New Information Age*, 40 CATH. U. L. REV. 829, 833 (1991) (suggesting that "time and experience may prove these extensions [namely protection of computer software and databases] of copyright subject matter to be a bad bargain"); Jessica Litman, *Sharing and Stealing*, 27 HASTINGS COMM. & ENT. L.J. 1, 18 n. 65 (2004) ("There is a rich recent copyright literature analyzing the problems that have accompanied recent expansions in copyright rights").

⁴⁹ James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66-SPG LAW & CONTEMP. PROBS. 33 (2003).

⁵⁰ Act of May 31, 1790, ch. 15, 1 Stat. 124 (repealed 1802).

⁵¹ The Sonny Bono Copyright Term Extension Act of 1998, Pub. L. No. 105-298, tit. 1, 112 Stat. 2827 (1998). (amending various sections of the Copyright Act of 1976, codified as 17 U.S.C. §101, et. seq.).

protection originally included in the Act of 1909⁵² to the various anti-circumvention protections of the recent Digital Millennium Copyright Act.⁵³ Along the way copyright claimants' rights have been expanded by courts as well as by Congress, in broad doctrinal strikes⁵⁴ and by specific changes targeted at very limited situations.⁵⁵

The scope of copyright has also expanded substantially through the elimination of formalities that used to filter a part of otherwise copyrightable works directly into the public domain.⁵⁶ Finally, the Supreme Court's 1991 decision in *Feist*⁵⁷ enshrined the level of originality required for copyright as "minimal",⁵⁸ which constitutes a substantial expansion of copyright protection compared to the standards applied a century ago.⁵⁹

Accepting that the objective of the copyright regime is welfare maximization, the expansion would be proper so long as the increase in the property grant creates further net welfare surplus. The legal question for the present is whether further changes to the Copyright Act pass this economic test, because failing to do so would make such a

⁵² See, Liu, n. 43, *supra*, at 96 ("The exclusive rights [under the 1905 Act] similarly expanded to include not only the rights to "print, reprint, publish, copy, and vend" the copyrighted work, but also the rights to create certain derivative works and publicly perform certain works").

⁵³ 17 U.S.C. §1201, *et.al.*

⁵⁴ For example, the doctrines of contributory and vicarious liability are not contained in the Copyright Act. See, 18 Am. Jur. 2d Copyright and Literary Property § 219 ("[t]he Copyright Act does not expressly render anyone liable for infringement committed by another, the absence of such express language in the copyright statute does not preclude the imposition of liability for copyright infringements on certain parties who have not themselves engaged in the infringing activity, since vicarious liability is imposed in virtually all areas of the law, and the concept of contributory infringement is merely a species in which it is just to hold one individual accountable for the actions of another").

⁵⁵ See, e.g. the implementation of 17 USC §106A (specific additional protection for only works of visual art).

⁵⁶ See, e.g., Christopher Sprigman, *Reform[alizing] Copyright*, 57 STAN. L. REV. 485, 512 (2004) (discussing various estimates for the percentage of works that were "filtered out" due to the registration requirement before its abolishment).

⁵⁷ *Feist Publications, Inc. v. Rural Telephone Service Company, Inc.*, 499 U.S. 340 (1991).

⁵⁸ *Id.* at 345 ("Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity. To be sure, the requisite level of creativity is extremely low; even a slight amount will suffice. The vast majority of works make the grade quite easily, as they possess some creative spark, no matter how crude, humble or obvious it might be") (internal quotations and citations omitted).

⁵⁹ See, Cohen *et. al.*, n. 24, *supra* at 75-85. (discussing the differences of the originality standard under *Feist* compared to the earlier standards of *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53 (1884) and *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903)).

change of the proprietary rights of copyright claimants contrary to the stipulated Constitutional objective.

Part III: ECONOMIC MODELS FOR COPYRIGHT

A. The incentive-access paradigm as the measure of welfare maximization

Protecting copyrights can lead to societal good because granting authors exclusive rights will induce more creation of useful works of art. In the absence of any protection there would be little financial incentive (or sometimes economic ability) for authors of copyrightable works to invest their efforts in the creative process, and consequently there would be a substantial decline in output, and the promotion of arts would not be served.⁶⁰ The creation of copyrightable expression always requires an investment, which can be directly financial (the production cost of a movie) or non-financial (the time an author takes to write a novel). In either case, prior to starting the creative process there is at least an implicit return-on-investment (ROI) calculation that takes place: Is the expected return from the effort sufficient to pay back the investment? The return, of course, can also take other than financial forms, such as social prestige or self-fulfillment. These non-financial motivations are, however, only available when the creator is not forced to consider the investment from a financial well-being perspective.

The investment needed for creating a copyrightable expression can, of course, be diminished by using expression that has already been created. At the extreme, fully copying someone else's work in its entirety decreases the copier's creativity investment to zero. The broader is the scope of copyright, the less ability there is for subsequent

⁶⁰ For a more thorough discussion of this basic concept, *see, e.g.*, Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX L. REV. 989, 994 (1997).

creators to free-ride on previous expression. The problem is, however, that in the broadest sense all new creation is based on previous work. Would the musical *West Side Story* have been written if Shakespeare's *Romeo and Juliet* had not?⁶¹ In copyright this ultimate question of the breadth of copyright is encapsulated in the ultimately subjective *substantial similarity* requirement.⁶²

The societal optimization function comes from the need for copyright to balance the two contravening forces: the increase of copyright protection's incentive benefit from its inducing effect on new creation, and the output-limiting effect that excessive protection of copyrights would impose on the rest of society. By specifying the societal benefit and cost functions it is possible (in principle) to find the point at which the difference between the aggregate incentive benefit and the aggregate access cost is maximized. At any level of protection less than this point or beyond this point the overall welfare to society is no longer maximized. This phenomenon is commonly referred to as the "incentive-access tradeoff" and forms the bedrock of the model presented in Part IV.

The academic literature analyzing the optimal extent of intellectual property protection comes primarily from economists and is focused primarily on patent protection. The most authoritative law and economics discussion of copyright protection is that of William Landes and Richard Posner⁶³ in their 2003 book, which presents a

⁶¹ Cohen, et. al. at 7.

⁶² Courts have throughout time struggled with an objective formulation of substantial similarity. These tests, such as the "idea-expression dichotomy" (*Arnstein v. Porter*, 154 F.2d 464 (2d Cir. 1946)), "total concept and feel test" (*Roth Greeting Cards v. United Card Co., United Card Co.*, 429 F.2d 1106 (9th Cir. 1970)), or "ordinary observer test" (*Sid & Marty Krofft Television Productions, Inc. v. McDonald's Corp.*, 562 F.2d 1157 (9th Cir. 1977)) are all (despite their striving for objectivity) fundamentally subjective. The difficulty of the determination was highlighted in Judge Learned Hand's early decision in *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930), where he noted that he founded his decision on the conclusion that "the defendant took no more – assuming that he took anything – than the law allowed". How much exactly does the law allow would seem to be the more appropriate question.

⁶³ See note 5, *supra*.

formal economic model for copyright. Before presenting a brief scan of some of the other economics literature, we start with a discussion and critique of some aspects of the Landes and Posner presentation.

B. Summary of the Landes and Posner model⁶⁴

One of the key insights of the Landes and Posner (“L&P”) model for this article is its affirmation of the incentive/access tradeoff -- i.e., a recognition that net societal surplus and deadweight loss from the copyright regime varies as a function of the level of copyright protection. The authors posit an index “ z ” to connote the level of protection, which includes both the length and the breadth of the regulatory property grant, such as how similar the two works must be to trigger infringements, the broadness of exceptions to exclusive rights (e.g., fair use), the elements of the work that are protected, and the efficacy and cost of enforcement.

Based on various assumptions, some of which are discussed below, the authors conclude that at low levels of z the revenue enhancing effect of limiting free-riding will dominate and an increase in protection will create net societal surplus from creative output; but at a certain level of z access costs will begin to dominate, and the regime no longer maximizes societal welfare. The authors ascribe the value z^* to the level of protection that maximizes societal welfare from the copyright regime.

1. The property nature of z

Landes and Posner term the variable z as the “level of protection”.⁶⁵ The variable could, however, maybe more accurately be described as the level of *statutory*

⁶⁴ This section contains numerous references to Landes/Posner note 5, pp. 71 – 84. Citations are not always provided.

propertization of copyright claims. Copyright, as is the case for any intellectual property, is a statutory creature that exists only through polity grant; in other words, due to the lack of possessory titles and an inherent inability to exclude, the property characteristics of copyrights are to a much larger degree than physical property dependent on the regulatory framework that entitles the claimant to use the relevant polity's enforcement powers to protect the entitlement.⁶⁶ The higher the protection is, the more *in rem* rights the claimants accumulate, most importantly the power to exclude, and the more propertized the copyright claim becomes.

Understanding z as the level of statutory propertization means that a value of $z = 0$ would represent no property rights -- i.e., open access where anyone can use the claimed subject matter freely.⁶⁷ As z increases, the exclusionary rights of the claimant become stronger, and $z = 1$ would represent a theoretical point where the claimant could exercise "absolute" control over the copyrighted matter. At $z = 1$ copyright protection would be infinite in length, there would be no affirmative defenses for use (fair use, First Amendment, *de minimis*, etc.), no derivative works would be allowed, enforcement would be perfect and immediate, and so on. It is clear that $z = 1$, or anything close to that, would be impossible ever to attain.

⁶⁵ Id at 71 ("We denote the level of copyright protection by $z \geq 0$, so that $z = 0$ denotes no copyright protection and $z = 1$ signifies complete protection").

⁶⁶ We recognize that copyrighted expression can be protected by doctrines in some other areas of law, such as trademark law (See, e.g., *Walt Disney Productions v. Air Pirates*, 581 F.2d 751 (9th Cir. 1978) (Disney asserting both trademark and copyright claims against a comic book publisher)) or trade secret law (although this substantially limits the claimant's ability to reap any benefits from the work); or by means of contract or by technological means. In the overall scope of the societal impact of copyright these considerations have a marginal impact, and are ignored in the analysis to follow.

⁶⁷ The distinction between open access and a commons is worth noting here. Whereas the commons is exhaustible, copyrights are not. The users' behavior will therefore be different, because unlike in a commons where overgrazing will exhaust the field, copyrighted matter is "eternal".

The variable z is central in the alternative model presented in the next Part because this is the very factor that the legal system can address. The extent to which property rights are granted to copyrights is entirely a matter of policy, and once it is agreed that in the United States the Constitution requires z to be set to maximize the net societal value of the copyright regime it becomes a matter of calculation based on empirical data to set the variable at the socially optimal level.

2. Recognizing the multiplicity of z for different dimensions of regulation

Although in a simplified model a single aggregate point z^* can be derived by adding the weighted individual factors of the various dimension of z , it is important to recognize the separateness of each individual attribute of z . Fundamentally these dimensions relate to a temporal aspect (length) of the property grant as well as its broadness -- i.e., factors such as boundary issues (e.g., fair use, First Amendment limitations), toleration of similarity, ease of enforcement, and so on.⁶⁸ An important third dimension of the analysis is the cost and efficacy of enforcement, because legal rights that are costly or otherwise difficult to enforce constitute *de facto* a lesser level of propertization than rights where relief can be obtained at a low cost and in a timely manner. Thus, z is best thought of as vector:

$$z = \begin{pmatrix} z_1 \\ z_2 \\ z_3 \\ \dots \\ z_n \end{pmatrix}$$

where z_1 to z_n represent the various dimensions of the overall property grant: e.g., length, the various factors making up breadth, and the efficacy of enforcement.

⁶⁸ Takalo employs the variables T and w to connote the length and breadth of protection, respectively. See, Tuomas Takalo, *On the Optimal Patent Policy*, 14 FINN. ECON. P. 33 (2001).

It is entirely possible that in a given regime the length of the protection exceeds its optimal value, but that at the same time the breadth of protection -- e.g., fair use -- is too low.⁶⁹ Each dimension of the regulatory scheme has its “own” z^* , and the theoretically optimal outcome would result only from setting each z^* to its individual point of optimality:

$$z^* = (h_1z^*_1 + h_2z^*_2 + h_3z^*_3 + h_4z^*_4 \dots + h_nz^*_n) / n$$

where the corresponding factor h indicates the relative weight of each of these dimensions. Obviously, the matter is further complicated by the fact that z^* is different for each potential copyright claimant, but this mathematical exercise can be overcome by recognizing that a hypothetical “average” creator represents the outcome from a model that aggregates all of the z^* 's of potential creators.

C. Critique of the Landes and Posner model

As is true of any economic model the L&P model employs various assumptions that are necessary for the arithmetic calculations used to solve the various economic equations. The following paragraphs will critique two specific aspects of the model: the assumption that the creative author's marginal cost of copies is constant whereas the users' marginal costs of copies are escalating, and the broader rationale of tying the analysis to the number of copies.

1. Assumptions about the marginal cost of copies

⁶⁹ Or to put it differently, for the incentive to remain constant “if breadth is reduced the optimal life must increase to compensate”. W. Nordhaus, *The Optimal Life of the Patent: Reply*, 62 AMER. ECON. REV. 428, 430 (Nordhaus II), quoted in Takalo, *id.* at 36.

The L&P model solves the various functions by analyzing the supply of copies by the creative author and by others, and by deriving various points of equilibrium through different forms of marginal cost analysis. The costs for the author (A) consist of the fixed cost of expression, e , and the variable cost of reproduction, c , with A 's marginal cost of copies (c_A) assumed as constant, whereas for the users (U) marginal costs (c_U) are presumed to be escalating.

L&P openly admit that this assumption is necessary to make their model work, but argue that it is also realistic. L&P's argument is that at a given level of $z < 1$ there will be copying by consumers and other users that will be more costly and that, therefore, such disparities "should generate differences in the cost of copying among copiers" and consequently lead to increasing marginal costs.⁷⁰

Fully understanding the need for L&P to incorporate this assumption into their model to make it work, we nevertheless question whether it is sufficiently realistic. The assumption is based on an assertion that at any given level of $z < 1$ there will be "types of copying that will be more costly", and from this L&P leap to the conclusion that the copiers' marginal costs would be escalating. However, it would seem that the escalating costs to the copier from an increase in z would affect the fixed cost of expression, e_U , not at all necessarily the copiers' marginal cost of a unit, c_U . So, while there will be a

⁷⁰ In order to avoid any possible misrepresentation, we reproduce the full passage (p. 72), which reads as follows: "More important, it is *realistic* to assume that copiers will have increasing marginal costs. Recall the copying that takes place at a given level of z is lawful. Some of it takes place by consumers (for example home taping of television programs) and some by producers who incorporate the author's work into their product (for example, fair use copying). The higher z is the less the amount of such lawful copying. At a given level of $z < 1$, however, there will be some types of copying that require consumers and producers to use only a small amount of their own resources. They will be able to free ride on the author's work, so the cost of copying will tend to be low. Other types of copying will be more costly, and here free riding will be less important. Such differences should generate differences in the cost of copying amongst copiers and so lead to rising marginal costs for the copiers as a group (rising because if demand falls, more of it will be supplied by the copiers having the lowest marginal costs)." (emphasis in original).

difference in the cost to U at various levels of z , it does not follow that the cost-enhancing effect of z on U manifests itself through increasing the marginal cost (c_U), and a more accurate conclusion may be that instead the economic impact of z should be viewed as creating a difference in the fixed costs of expression between A and U .

To illustrate the argument, let us assume that the marginal costs of A and U are both constant, and moreover that they are equal. At the extreme, at $z = 0$, the fixed cost of e to U would be zero (because there is no copyright protection and all expression is freely usable), and with the marginal costs being constant and equal between A and U there would be little opportunity for A to capture his initial fixed creative investment e_A . This demonstrates the obvious point that in the absence of any copyright protection, much investment in copyrightable materials would not be justified on economic grounds. There could, of course, still be creative expression that is motivated by other incentives.⁷¹

As z increases, U will need to incorporate increasing amounts of his own original expression into the work to prevent A from being able to use the injunctive remedies of his exclusionary rights under the Copyright Act,⁷² which pushes the fixed creative cost e_U upward. It is important to note, however, that e_U can just as well be investment in new expression that renders a license from A unnecessary, or it could be an investment that U makes to acquire rights to the expression from A . Even if U acquires the totality of the expression from A , if his variable costs are less than A 's, then both can benefit by a license from A to U . In fact, for example, the book publishing industry is based on the premise that U 's (the publisher) variable costs are lower than A 's (the author), which results in the motivation of authors to license their works to publishers.

⁷¹ See discussion about the existence of α in Section 3.1, *infra*.

⁷² 17 U.S.C. § 502 (permitting courts to grant injunctions to “prevent or restrain infringement of a copyright”).

These examples are intended to demonstrate that the general assumption that copyright users' marginal costs are higher than the author's marginal costs is not quite as realistic as L&P argue. The difficulty of this to the L&P model is that its mathematical computations do not work unless L&P's argument of higher marginal costs for users is accepted.

2. The relevance of the number of copies

The L&P model is based on a notion that a "copy" is the driving variable in copyright economics. It is certainly correct that publishers continue to count the number of copies of books sold and record companies count the copies of CDs sold and even the number of paid digital downloads. However, with increasing amounts of copyrighted content becoming disseminated through various subscription models⁷³ over the Internet, the copy as an economic unit loses much of its significance.

Measuring the societal benefit and cost of copyright protection through the number of copies produced and sold is specifically questionable when the marginal cost of a "copy" is in many digital contexts approaching zero. In this environment the more appropriate economic index is the aggregate societal value derivable from the copyright and how the total value of a copyright should be shared between authors, publishers, users, and society in the most efficient manner.

The difficulty in attempting to pinpoint z^* in applying the L&P model's copy-centric view is highlighted in the case of derivative works. As the copyright user's work becomes increasingly distinct from the original, it becomes excessively difficult to

⁷³ See, e.g., the Napster To Go music subscription service where "For only \$14.95 a month, you can fill and refill your compatible MP3 player with your favorite music, artists you've just discovered and the latest releases without paying 99¢ per track. Get everything Napster has to offer PLUS unlimited music for your *Napster To Go*-compatible MP3 player." <http://www.napster.com/ntg.html> (visited Feb. 26, 2006).

quantify what a “copy” means and what its marginal costs are. For example, imagine a collage that an artist has made from various copyrighted materials and now offers for sale digitally on his website. The marginal cost of a copy is the bandwidth cost of transmitting the image to the purchaser, which is practically zero. Also, since each incorporated original work in the derivative is a fraction of the original, equating the concept of copies between the collage and each of the originals employed would seem to be disingenuous, because the allocation of the “value” of the derivative work between the original authorship of the user (i.e., his creativity in putting together the collage) and the underlying original works would necessarily be arbitrary. Similarly, comparing the copies of a movie made from a novel to copies of the original novel would not appear to be a sensible exercise.

D. Other economic models for intellectual property

The academic analysis of intellectual property law has been primarily focused on patent scope,⁷⁴ and specifically patent length. A founding discussion over the model for economically optimal patent regime between Professors F.M. Scherer and William D. Nordhaus ensued some a quarter century ago.⁷⁵ Scherer observes from an economist’s viewpoint the fundamental positive law school legal premise by noting that to the polity “patent life is a policy variable”.⁷⁶ The economic discussion focuses on the specifics of the incentive benefit with the conclusion that “easy inventions – those yielding big cost savings in relation to the research resources invested – warrant shorter patent protection

⁷⁴ Interestingly, the patent literature leaps over the conceptual discussion of the objective of the regime and implicitly accepts a utilitarian frame of mind.

⁷⁵ W.D. Nordhaus, *INVENTION, GROWTH, AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE* (MIT Press 1969) (Nordhaus I); F.M. Scherer, *Nordhaus’ Theory of Optimal Patent Life: A Geometrical Reinterpretation*, 62 *AMER. ECON REV.* 422 (1972); Nordhaus II, n. 69, *supra*.

⁷⁶ Scherer at 423. Presumably, for a natural theorist the decision would not be a policy decision due to the “inherent” rights entitlement the creator possesses irrespective of polity grant.

than hard inventions”.⁷⁷ Despite the economics merits of Professor Scherer’s suggestion, the notion that intellectual property grants would be tied to the investment made would leave courts with an impossible task of adjudicating the fair value of non-monetary investment.⁷⁸

In his response to Scherer, Professor Nordhaus reaches three conclusions: (1) A fixed property grant term is not optimal in theory; (2) The inducement of “drastic inventions” requires a longer patent grant; and (3) Compulsory licensing would lower the level of investment in inventions.⁷⁹ The first and second observations essentially correspond with Scherer’s argument, and suffer from the same flaws. The third statement recapitulates the premise of the incentive benefit function -- i.e., that there is a positive correlation between the property grant and the level of investment. A compulsory licensing regime is essentially a limitation on the property grant, and similarly as any reduction in the property grant will suppress incentives to invest so would compulsory licensing.

Another exchange of commentary took place in 1990 between Prof. Paul Klemperer and Professors Richard Gilbert and Carl Shapiro.⁸⁰ Klemperer’s article demonstrates economic conditions where a short but broad patent grant would generate more societal surplus, and compares them with situations where the opposite is the case, Gilbert and Shapiro observe that the optimization of social welfare depends on a policy decision in respect to two variables: T and Π – length and breadth. The article presents an

⁷⁷ *Id.* at 426.

⁷⁸ For example, would a novelist who took a year to write a book be entitled to more protection than the novelist who wrote a comparable book in six months because the time investment by the prior was greater?

⁷⁹ Nordhaus II, at 430-431.

⁸⁰ Paul Klemperer, *How Broad Should The Scope Of Patent Protection Be?* 21 RAND J. ECON. 113 (1990); Richard Gilbert and Carl Shapiro, *Optimal Patent Length and Breadth*, 21 RAND J. ECON. 106 (1990).

economic justification that a combination of longer patent term with a compulsory licensing scheme would result in socially optimal results.

An interesting European contribution to the discussion is Tuomas Takalo's 2001 article,⁸¹ which recapitulates the foundation economics study of the subject matter and attempts to synthesize the various models presented. Takalo focuses the policy issue on the public good aspect of intellectual property -- i.e., its inherent characteristics of being inexhaustible and non-excludable.⁸² After observing that the economic modeling of intellectual property rights has been "convoluted and characterized by subtle points of inconclusive controversy",⁸³ Takalo presents as his conclusion that if the length of protection has a large impact on the incentive to innovate then the property grant should be of minimum breadth and maximum length. If the converse is true, then the property grant should have maximum breadth and minimum length.⁸⁴

In proving his proposition Takalo focuses on the interplay between the private and social returns on innovation, and formulates his proposition from scenarios where the private return function with respect to either the length or breadth of protection is convex versus situations where the function is concave. Takalo does not, however, differentiate between the impact of changes to the property grant with respect to private return and

⁸¹ Takalo, n. 68, *supra*.

⁸² For further discussion on the public goods nature of intellectual property, *see, e.g.* Wendy J. Gordon, *On the Economics of Copyright, Restitution, and "Fair Use": Systemic Versus Case-by-Case Responses to Market Failure*, 8 J. LAW & INFO. SCI. 7, 10 n. 20 (1997) ("Public goods are defined by having two characteristics, inexhaustibility and nonexcludability"); John Edwards, *Has the Dreaded Data Doomsday Arrived? Past, Present and Future Effects of the European Union's Database Directive on Database and Information Availability in the European Union*, 39 GA. L. REV. 215, 220 (2004); citing J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?* 50 VAND. L. REV. 51, 55 (1997) ("information goods are public goods, which means that they are inexhaustible and nondepletable").

⁸³ Takalo at 35 (quoting P.A. David, *Intellectual Property Institutions and the Panda's Thumb: Patents, Copyrights, and Trade Secrets in Economic Theory and History*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHTS IN SCIENCE AND TECHNOLOGY (M.B. Wallerstein, et. al. eds., National Academy Press 1993).

⁸⁴ *Id* at 36. Takalo also proposes that "if the relative impacts [to the incentive to invest] of [] breadth and length are equal, ...social welfare is independent of the combination of patent breadth and length". *Id.*

level of investment. While an increasing property grant may well be a convex function with respect to private return – due to the increasing opportunities for strategic behavior⁸⁵ – this does not translate to the incentive to invest being convex, and in fact as discussed in Section A of the next Part, *infra*, we argue that the incentive to invest function is always concave.

A major recent exposition on the economics of intellectual property was presented by Prof. Suzanne Scotchmer in her 2004 book *INNOVATION AND INCENTIVES*.⁸⁶ The book reaffirms Landes and Posner’s conception of the existence of z^* (without commenting in any way on Landes and Posner’s book, which came out the previous year) by referencing Nordhaus and noting that an increase in the property grant “may not be beneficial from a societal point of view”.⁸⁷ The book also acknowledges that a very high z on certain aspects of copyright breadth would result in the “transaction costs of licensing copyrighted works for incidental use to be prohibitive”, implicitly acknowledging the economic necessity of the fair use doctrine of copyright.⁸⁸

Despite being at the highest academic standards for economic writing, these articles and models have one thing in common: they do not present a cohesive framework sufficiently simple for the legal community or the legislature to use as a practical

⁸⁵ For example, let us assume that derivative work protection (a sub-variable of copyright breadth) is increased -- i.e., that less similar works would be considered infringing. For a copyright owner such as Disney the increased breadth of expanding their ability to claim any depiction of a mouse to be infringing of their Mickey Mouse copyright would give the company a substantial private benefit. If the breadth would be expanded further to bring in any animal cartoon within the sphere of Disney’s proprietary rights, the private benefit would be exponentially greater, suggesting a convex slope. This, however, is entirely different from the function of what property grant was needed to induce Walt Disney to make the investment for the original creation of Mickey Mouse.

⁸⁶ Suzanne Scotchmer, *INNOVATION AND INCENTIVES* (MIT Press 2004).

⁸⁷ *Id.* at 99 (citing Nordhaus I).

⁸⁸ *Id.* at 115. The Scotchmer book also ventures into a discussion that posits legal arguments that would be subject to debate in the legal community. For example, the discussion states that for musical content the first sale doctrine “extends to digital content”. This notion is directly challenged by the legal argument that digital distribution is a licensing scheme, and that the buyer of digital content does not “own” any interest in the content but rather has a limited license to use it for personal satisfaction.

analytical tool for the evaluation of policy decisions. In the following we attempt to remedy this, and present an economic model that captures the essence of the incentive-access paradigm in a way that can be used by legislators and practitioners to evaluate the social welfare impact of changes to copyright law.

A leading exposition on the economics of patent grants from the legal community's side is Professors Robert P. Merges and Richard R. Nelson's 1990 article "On the Complex Economics of Patent Scope". The authors' conclusions include pointing out the inefficiencies of the "race to invent" model and the blocking effects of broad patents. Merges and Nelson also note that variable patent grants tied to the investment and nature of the invention would result in societal efficiencies.

As a result of the independent creation doctrine, the "race to invent" problem is not a consideration in copyright law. The blocking effect of patents as well as copyrights is a fundamental aspect of the offsetting access-cost to the incentive-benefit discussed in the following model. A system of variable intellectual property grants would undoubtedly be economically optimal, but as a practical matter the cost of administering such a system would likely make it inferior. More importantly, the *ex ante* uncertainty as to the property grant would likely result in the incentive-benefit of the regime being substantially undercut. In any event, on a pragmatic level variable copyright grants are not a realistic policy objective and are therefore ignored in the following discussion.

Part IV: A MODEL FOR COPYRIGHT TO MAXIMIZE SOCIETAL WELFARE

The following presents an economic modeling of the incentive/access tradeoff that corresponds to the societal welfare-maximizing objective of the Constitutional

utilitarian mandate of the Copyright Clause.⁸⁹ Since Landes and Posner did not present such an approach in their book and a survey of other materials did not reveal such a model having been set forth,⁹⁰ what follows is an initial economic framework to outline the principles of the incentive/access paradigm, and pinpoint the societally optimal point z^* .

A. Benefit to society from protection of copyright

The simple conceptual premise of the incentive benefit is that the more that copyrights are propertized -- i.e., the higher as a policy decision z is set -- the more opportunity the copyright claimant has to recover his investment and earn a return on it⁹¹ and, consequently, the more incentive there is to invest resources in the production of copyrightable works.⁹² This investment is (in the following) termed the incentive-benefit

⁸⁹ As a post-script to the positive law/natural law discussion, *supra*, it should be noted that natural law could not form a basis for the economic analysis of copyright. Economically each author would obviously prefer the broadest possible copyright scope; i.e., $z = 1$. Since this is not possible as a practical matter, the policy decision as to how much to limit the copyright grant under a natural law approach would have to be done on other grounds -- primarily subjective moral determinations -- because economically any curtailment would be against the pure economic interest of the primary stakeholder, the author. This would first appear to contradict the statement on page 13, *supra*, that the broadest possible copyright may not be in the entertainment industry's best interest. However, entertainment *companies* cannot, per se, be authors because it is exclusively a human activity. The entertainment industry acquires copyrights in different ways and is, therefore, more analogous to a user than to a creator. Under a pure natural law interpretation it is the creative staff -- the "laborers" as Locke would put it -- at the entertainment conglomerates whose rights would be emphasized. A Walt Disney Company employee could not rationally object to the author's getting broader rights.

⁹⁰ The underlying notion of Nordhaus, n. 69, and Takalo, n. 68, of pitting protection length against breadth is relevant but not analogous to the proposal presented here. Of course, the importance of breadth versus length may vary from situation to situation, but this will merely result in a change in the slope of the incentive function. Both length and breadth are *independently* subject to the functions presented in this Section.

⁹¹ The investment can be either financial or that of intellectual labor or genius. Although the United States copyright regime does not reward the "sweat of the brow" (*see, Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340 (1991)), it is safe to note that, for example, writing a novel requires labor and not just creativity.

⁹² This is consistent with the Demsetzian brand of utilitarian property theory -- i.e., increased propertization results in more investment. *See, Harold Demsetz, Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967); for examples of the broad academic literature generated by Demsetz's article, *see, e.g., Katrina Wyman, From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. REV. 117 (2005), n. 1.

of copyright protection, or I . As the legal system increases z , the incentive for authors to invest to produce copyrightable works grows,⁹³ and society can expect more creative output.⁹⁴ Therefore, the starting premise is that I is a positive function of z :⁹⁵

$$I = f(z)$$

$$dI/dz = f'(z) > 0.$$

The societal incentive can be aggregated from the individual incentive curves of individual actors. Consequently, setting aside the complex modeling that this would entail, the correct end result can be reached by simply considering the societal incentive curve to be identical to that of the common legal fiction of the “average” creator.

An important feature of I is, however, that there is a base level of investment that is made even at the point $z = 0$. This factor, labeled α , represents that amount of creative investment that would be made even in the absence of any copyright propertization.⁹⁶ Of course, such investment may not be (strictly) economically justified (i.e., authors could create as part of recreation rather than as a profit-driven effort, or they could be “driven”

⁹³ Landes and Posner term this the “revenue-enhancing effect”, as opposed to the “cost-enhancing effect” of the related externalities.

⁹⁴ As is clear in the text below, we posit a link between the author’s investment (I) and expected creative output and between that output and societal benefits.

⁹⁵ As we note below, the market imperfection (non-Coasean) costs of copyright include the forgone creations of those who want to build on earlier creations but cannot satisfactorily negotiate an agreement with the original creator. As an alternative to including this in the costs, instead it could be recognized as a further drag on the increase in creativity that accompanies an increase in z . In principle, if the discouragement to this “building upon” creativity were substantial, dI/dz could become negative, implying that the shape of the functional relationship could be an inverted parabola. This would reinforce the idea that there is some internal point $0 \leq z^* \leq 1$ at which society’s net welfare is maximized.

⁹⁶ On the existence of $\alpha > 0$, see Landes and Posner at 22 (“We know this because an enormous quantity (and quality) was produced before [copyright existed] and even today a great deal... would be produced if [copyright] did not exist.”); David Nimmer, *Copyright in the Dead Sea Scrolls: Authorship and Originality*, 38 HOUS. L. REV. 1, 133 (2001) (Discussing incentives to create and noting that within academia “the impetus... lies in other domains - university posts, research grants, scholarships founded on the commonweal, fame, recognition, and attribution.”). Also, there may be other means, besides copyright protection, whereby the author can gain economic benefits. Direct contractual arrangements between the author and users may be one means; another may arise in the case of physical works of art, where the creator may be able to benefit from selling the authenticated “original”. Also, in another realm of intellectual property – patents – trade secrets are an alternative means of gaining benefits for the creator.

to create), but as an empirical fact it does not seem controversial that certain creative output would occur for other reasons than potential for economic reward.

The other key feature of the incentive benefit is that as z grows the marginal increase of I diminishes; i.e.,

$$d^2I/dz^2 = f''(z) < 0.$$

This phenomenon is easily understood conceptually by first considering z in the context of real property. Let us assume that the Nevada desert is infinite, that it has some oil deposits, and that it is all state-owned property. The state wants to induce exploration by increasing the incentives to potential oil drillers. In order to reduce free-riding by subsequent drillers on found oil deposits, it establishes a program whereby anyone willing to drill a hole will get a property grant of an acre around the drilling place. This program results in some drilling, but the state feels that society would benefit if there would be more exploration (and therefore more output of oil), so the property grant is increased to two acres. The exploration increases because oil explorers have less of a concern that if they do hit oil someone would drill so close as to drain the same oil pool.

The state, however, feels that still more exploration would be beneficial, so it continues to increase the size of the property grant. In doing so the incentives to explore continue to rise, but the incremental increase in exploration from the larger grant will be diminishing. This is because potential explorers will likely believe that the difference between a two-acre grant and a one-acre grant is much more significant than the difference between an eleven-acre grant and a ten-acre grant. Doubling the initially small property grant serves to eliminate a much greater competitive threat to the explorer

compared to the same absolute increase in the property grant amounting only to a 10% expansion from the previous state.

Now substitute for the desert the infinite space of creative expression, and for the oil explorer the creator of a work of authorship. Similar to the oil explorer, the same *absolute* increase in property protection induces investment in creation more when z is low compared to a situation where the creator already has a substantial property grant. This is not to say that the private value to the claimant would not always increase linearly, or even exponentially.⁹⁷ If weak copyright is strengthened, the increase in z will foreclose direct competition and preserve the claimant's property where it is most valuable – “near” the drilling hole. An increase of z of the same amount when protection is already broad will not incentivize the author as much, because in such a situation the property expansion is likely in markets that the claimant does not consider in evaluating the investment to create.

The phenomenon can also be looked at from the viewpoint of regulation. Let us assume that the City of New York sells exclusive business licenses for specific geographic areas to restaurant entrepreneurs. The license is, however, limited to only allowing the establishment of one restaurant. In such a situation, a bigger geographic area of exclusivity would induce more potential restaurant entrepreneurs to apply for the license and pay the fee. However, a one block increase that doubles the grant will induce more new restaurant license applications than would an increase of one block if the original area is already ten blocks. This is because the difference in whether a competing

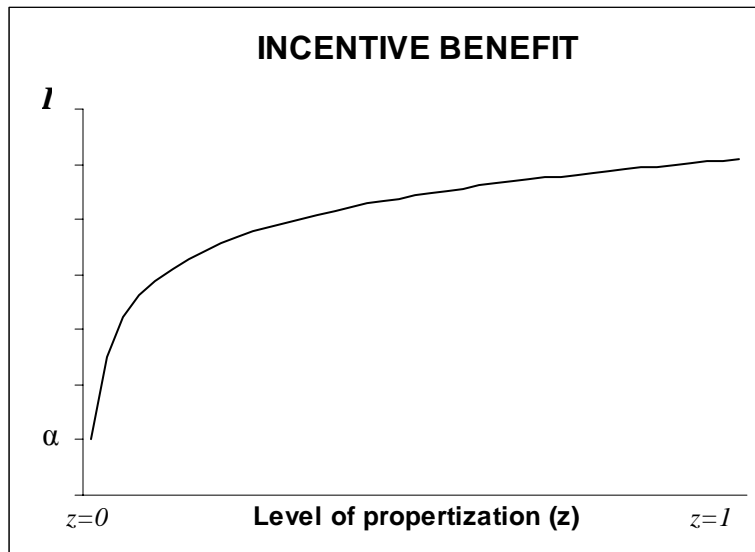
⁹⁷ In fact, as copyrights broaden, the exclusionary rights of the claimant may enable it to engage in more strategic behavior and enable it to extract increasing returns. This, however, is entirely separate from the determination of the threshold propertization needed for the claimant to engage in the activity. Of course, the oil driller would prefer that the entire Nevada desert be awarded to him for drilling one hole, but what is relevant here is only how much is necessary to induce him to make the investment.

restaurant is eleven or twelve blocks away matters much less compared to whether it is one block away or two blocks away. As the competing restaurant is pushed farther away, there is less direct competition anyway, so the increase in the property grant represents less of an incentive for the contemplating entrepreneur.

The preceding discussion of the incentive benefit of copyright propertization implies that the relationship between creative investments and the extent of propertization is a concave function. One specific characterization of this functional relationship would be:

$$I = \alpha + \log(z)$$

where α represents the base level amount of creative investment that would exist absent any copyright protection and the logarithmic function indicates the additional output that increased copyright propertization induces. The graphical illustration of the incentive benefit is:



The diminishing marginal increase in the incentive as z increases applies to both the breadth and the length of copyright protection. With respect to copyright length the obvious conclusion is that a one-year increase when the term is short is a more powerful incentive than when the term is already long. This is partly due to psychological factors: it is much easier for a creator to comprehend an improvement in the low end than when protection already is substantial. From an economic standpoint the lesser value of an extension farther out is due to discounting and also to the increased risk that the work of authorship has by then been commercially exhausted. If we relate this back to the oil drilling example, if the grants by the state would be temporally limited, then a one-year increase from 100 to 101 years would induce less incremental drilling than an increase from 10 to 11 years. In addition to discounting, this is also because it is less likely that even if oil is found the pool would still generate value after a hundred years than it is that the pool would do so after ten years.

The analysis above focused on the *ex ante* incentives of private investment, but it can be transposed directly to depict the societal benefit side of copyright propertization through the following steps:

1. Increase in the property grant induces incremental creation;
2. Incremental creation results in more output;
3. Creative output has societal value;
4. Therefore, the increase in the societal value is a function of the increase in output, which in turn is a function of private incentives to creative investment.

This allows the investment (I) in works of authorship to be linked with an average societal value (v), and the societal welfare (W) created by the copyright system can thereby be calculated as the perpetually discounted product of the two, or:

$$W = (Iv)/r$$

where r represents the discount rate.

B. Cost to society from protection of copyrights

The societal cost of the protection is the limit that it puts on copyright users to benefit from existing works, because a higher level of propertization enjoyed by copyright claimants affords them more exclusionary powers. As z increases society has progressively less ability to benefit from creative works through their enjoyment⁹⁸ or use as building blocks for new derivative works. In applying the incentive-access tradeoff terminology, this is labeled the access-cost, or C , of copyright protection.

What makes C somewhat more complex than I is that it is the sum of two independent factors: (1) the costs that would exist in a frictionless society, i.e., the Coasean⁹⁹ utopia of no transaction costs (C_q), and (2) costs related to market imperfections (C_m). The Coasean (frictionless society) cost arises out of the deadweight loss resulting from pricing above marginal costs that is enabled by the property rights¹⁰⁰

⁹⁸ The word “enjoyment” is selected here to highlight the fact that copyrights are non-exhaustible; i.e., they cannot be consumed and thereby exhausted in the manner that most physical goods are consumed.

⁹⁹ See, Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). The “Coase Theorem” is commonly used to describe a society where transaction costs are zero, and in which therefore under Prof. Coase’s framework the allocation of resources is most efficiently done bilaterally by the societal actors.

¹⁰⁰ We have refrained from describing copyright in terms of “monopoly”, because the latter term seems inappropriate as a general descriptor for a system in which hundreds of thousands of new pieces of property are created every year. Instead, like real estate, every piece of copyright property is unique and different from each other, and they compete to greater or lesser extents (imperfectly) with each other. The models of “monopolistic competition” and “imperfect competition”, developed by Edward Chamberlin and Joan

of the copyright claimants. The market-imperfection-related costs include primarily transaction costs (including the opportunistic exclusionary power of copyright claimants to prevent the work from being used as a building block for future works¹⁰¹), search costs, and the cost of enforcement.¹⁰²

1. Frictionless society costs of copyright

The societal cost of copyright in a frictionless society can also be demonstrated using the oil exploration and restaurant examples of the previous section. As the property grants for oil explorers are increased, the increase in the incentive to drill is offset by the inability of others to drill in areas that are now demarcated by prior explorers. As the size of the property grants increases, the disincentive for drilling by newcomers escalates as they will be pushed progressively farther away from areas where oil has been found. This may enable the property claimant to “rest on its laurels” or extract monopoly rents for drilling rights from second-comers that will reduce drilling, and thereby reduce output and increase the price of oil to consumers. Similarly in the restaurant example, a very large exclusive area would have a social cost simply as a result of there being fewer restaurants, which would translate into less competition (i.e., higher prices) as well as longer distances for consumers to travel to get to one.

Robinson, respectively, seem more appropriate. See Edward H. Chamberlin, *THE THEORY OF MONOPOLISTIC COMPETITION*, 7th edn. (1956); and Joan Robinson, *THE ECONOMICS OF IMPERFECT COMPETITION* (1933).

¹⁰¹ In a Coasean world the copyright claimant and the “builder upon” would be able to bargain to a satisfactory outcome that could make both parties better off (so long as the future work increases social value). On the economics of “improvements” -- i.e., derivative works generally -- see, Lemley, n. 59 *supra*. In this article the author notes that from very early times courts have struggled with the benefits of derivative works and the impact that they have on the original claimant. The author discusses the case of *Seyre v. Moore*, 102 Eng. Rep. 139, 140 (1785), where Lord Mansfield pondered between “the two extremes equally prejudicial” in a case where copyrighted navigation charts had been improved without authorization.

¹⁰² Landes and Posner do not draw a distinction between frictionless and market imperfection costs (at 16-20)

In the copyright context the Coasean costs similarly impose a burden on society by limiting competition and enabling pricing above marginal costs. Of course, the amount of rents that a copyright claimant can extract depends on the availability of substitutes in the marketplace. Therefore, the broader the property grant is for copyright - i.e., the higher is z -- the greater is the ability of copyright claimants to exclude close competition and charge prices that encompass rents, which in turn create a deadweight loss for society.

The Coasean costs increase as z increases because this will bring increasing numbers of works under the exclusionary rights of their original claimants, and some fraction of this increased exclusionary power will result in societal deadweight loss. Further, with respect to extending the term of copyright, longer periods mean that users must wait longer before obtaining unfettered access to the copyright material – again implying a positive association between social costs and z .

Unlike the incentive benefit, however, the shape of the relationship between Coasean costs and z is difficult to specify *a priori*. On the one hand, it is clear that extending the copyright term generally has a declining marginal cost aspect, since discounting means that the present value of the costs of users' waiting an extra year when the copyright term is being extended from 75 to 76 years is smaller than when the term is being extended from 3 years to 4 years; this would imply the same concavity that applies to the incentive benefit. On the other hand, when an extension of term also applies retroactively to works already created, this sharply increases the social costs from an increase in z .¹⁰³ With respect to the breadth of propertization, an increase in z could imply either falling or rising marginal social costs, with the latter more likely if the

¹⁰³ This has been a major criticism of the CTEA. See, S. Rep. 104-315, Minority view of Sen. Brown.

increase in z extends the exclusionary powers, and thereby the deadweight cost, also to present works. The mathematical depiction of the Coasean cost is therefore

$$C_q = zP$$
$$dC_q/dz > 0$$
$$d^2C_q/dz^2 > 0 \text{ or } < 0?$$

where P is the weighted average of the societal value of the deadweight loss imposed by the property regime.

2. Market imperfection related costs of copyright

The non-Coasean costs with respect to copyright are much greater for copyrights than they would be for oil exploration or restaurant licenses. This is because of the dynamic nature of copyrights, also referred to as the OTSOG principle.¹⁰⁴ Unlike oil drilling, where each new hole is started from inception,¹⁰⁵ works of authorship are by their nature built on prior works. Therefore, the exclusionary rights of prior claimants to prevent subsequent creators from using the works as building blocks results in a much greater deadweight loss than would be the case in the oil drilling or restaurant license examples.

¹⁰⁴ Lemley, note 560 *supra* at 997 n. 30 (“The most famous formulation of this phenomenon is credited to Sir Isaac Newton, who reportedly said, “If I have seen further it is by standing on the shoulders of giants.” THE OXFORD DICTIONARY OF QUOTATIONS 362 (3d ed. 1979). This is occasionally referred to in computer law as the OTSOG (“On the Shoulders of Giants”) principle”). Again, in a Coasean world the parties would be able to bargain to a mutually advantageous agreement that would allow the subsequent creator to build upon the earlier work (so long as greater social value is created in the process).

¹⁰⁵ Although subsequent drillers may be able to learn from earlier drillers – e.g., about successful (or unsuccessful) technologies, geological conditions, etc.

A broad copyright grant also enables copyright claimants to engage in strategic behavior -- e.g., by leveraging the copyright to accomplish anti-competitive ends.¹⁰⁶ The broader the copyright grant is and therefore the less substitutability there exists in the marketplace, the greater will be the “excess” monopoly rent and opportunistic rent-seeking that the regime allows as the cost of the incentive to first comers.¹⁰⁷

The other market-imperfection-related costs cannot as easily be set into the oil exploration and restaurant license contexts because they arise from inherently unique characteristics of copyrights, most importantly their fuzzy metes and bounds.¹⁰⁸ Unlike tangible property, which can be demarcated precisely, the perimeters of a copyright grant are always abstract. The broader the grant, the more situations there will be where the limits of the property right may have been crossed, which will drive up both transaction and enforcement costs.

The market-friction-related costs -- i.e., transaction, search, and enforcement costs -- are not linear but rather are likely to form a convex function. The reason for this can be easiest illustrated with a limitation on *de minimis* use: the smaller is the allowance (i.e., the higher is z), the lower is the trigger for a secondary creator to need to find and obtain

¹⁰⁶ For example, a refusal to deal to enable the claimant to use the copyright as a means of gaining market dominance in a secondary market would qualify as such rent seeking.

¹⁰⁷ An example of opportunistic rent seeking would be to use the gauntlet of potential injunctive relief as a lever to extract an objectively disproportionate share of a revenue stream where the copyrighted work in no way contributed to the economic value of the allegedly infringing work. See, *Ringgold v. Black Entertainment Television*, 126 F.3d 70 (2d Cir. 1997) (“plaintiff asserted a violation of her display right when an authorized poster depicting her work was used in the background of a scene for a television program”).

¹⁰⁸ The metes and bounds of a physical object are easy to ascertain by simply observing the object. While disputes over the metes and bounds of real property are, or at least have been, common, it is possible to draw a border and ultimately, perhaps through judicial means, determine with high precision where one property ends and another begins. The metes and bounds of copyrights are, to the contrary, hazy at best and can never be established with any determinative clarity as to how far they extend. See, also, Stewart E. Sterk, *What’s in a Name?: The Troublesome Analogies Between Real and Intellectual Property*, Benjamin N. Cardozo School of Law, Jacob Burns Institute for Advanced Legal Studies, Working Paper 88, available at <http://ssrn.com/abstract=575121>.

a license from every prior copyright claimant whose work could be claimed to be in any small way incorporated into the secondary creation. This results in an escalating number of small licenses where the search and transaction costs would make the secondary output impossible.¹⁰⁹

While in a frictionless society this additional licensing will not impose more than linearly increasing societal cost, the need for a copyright user to search and transact with increasing numbers of parties who may claim an interest in the secondary work due to a prior copyright will result in exponentially growing transaction and search costs. The same logic can be applied to a fair use analysis. As fair use is progressively limited (e.g., z is increased), this will drive up transaction costs exponentially as z becomes very high (i.e., when there is practically no fair use safety valve), because, for example, if every private photocopy of a newspaper article would require a formal license the sheer number of transactions would become astronomical. Similarly, if derivative work protection would be increased to very high levels, the need for subsequent creators to search whether their work resembles some prior work and then obtain licenses from all prior copyright claimants that have made similar work (i.e., not *substantially* similar) would chill production merely due to the impossible transactional difficulties.

Similarly, in respect to copyright term length, a copyright user's ability to find all claimants that she may need to license from as the term increases will become increasingly costly. The judicial enforcement costs will also rise exponentially because there will necessarily be more uncertainty as to the correct claimants of very old copyrights. At the extreme very long protection would likely begin inducing an anti-

¹⁰⁹ In principle, all output could be considered to be secondary output, because in the broadest and most fundamental sense everything has already been created. It is, therefore, not in the best interest of society to limit copying more than is necessary to sustain a flow of new derivative works.

commons effect because older rights are more likely to be splintered either between heirs or various partial assignees or licensees.¹¹⁰

Consequently, the functional relationship between these market imperfection costs (C_m) and z could be described as follows:

$$C_m = f(z)$$

$$dC_m/dz = f'(z) > 0$$

$$d^2 C_m/dz^2 = f''(z) > 0.$$

One characterization of the slope of the societal cost of the copyright system from market imperfections could therefore be exponential, or:

$$C_m = z^\delta$$

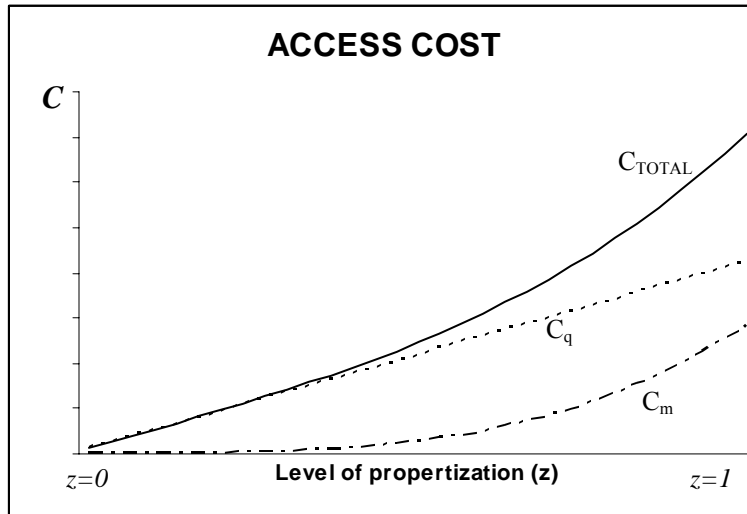
with $\delta > 1.0$.

Consequently the total function C would consist of:

$$C = zP + z^\delta, \text{ or:}^{111}$$

¹¹⁰ The conceptual premise of the anti-commons is that similarly as the tragedy of the commons results in over-exploitation, rights that are splintered so as to enable holdouts opportunistically to prevent economic exploitation of resources creates a similar tragedy: that of under-exploitation. *See, generally*, Michael A. Heller, *The Tragedy of the Anti-Commons: Property in the Transition from Marx to Markets*, 111 HARVARD L. REV. 621 (1998)

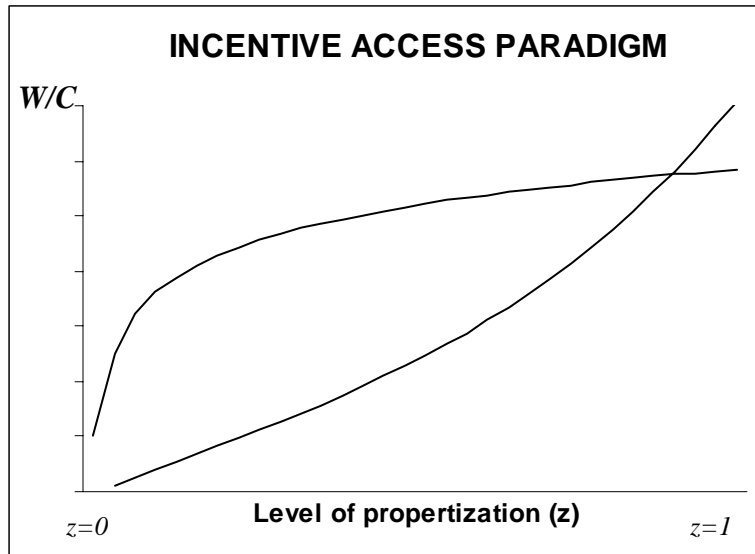
¹¹¹ The total access costs C_{TOTAL} is the sum of the Coasean costs described in Section 3.1.1. above (C_q) and the market imperfection costs discussed in Section 3.1.2 (C_m). For the purposes of approximation in the diagram, we have portrayed the Coasean costs as linear.



These costs can also be seen directly as aggregate societal costs of the property regime because they will directly offset the benefits created by the incentive. Access costs often manifest themselves as actually limiting output; i.e., output that would have otherwise occurred as a result of the incentive benefit will not occur because of the more-than-offsetting access costs. It is important to note that on the cost side there is no equivalent of α , and that access costs at $z = 0$ are zero because in a system of no intellectual rights protection there would be no societal cost: since everything is freely usable, the value of the work is immediately conveyed to society.

C. Optimal level of copyright protection

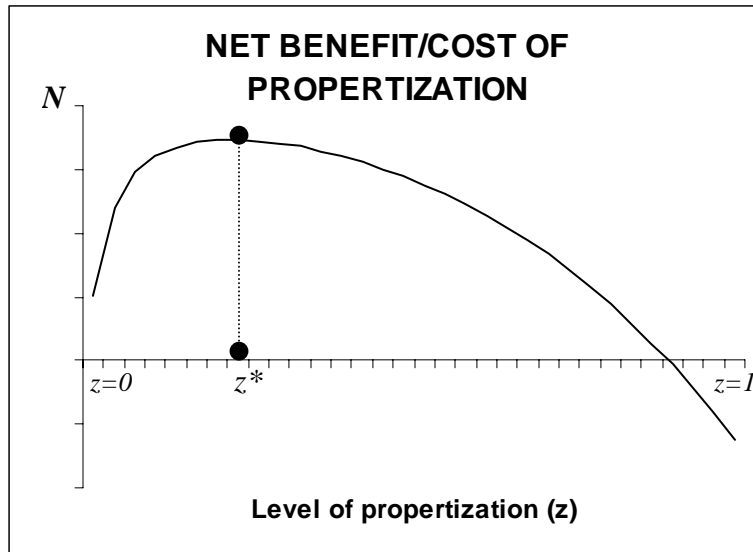
The societal net outcome of the copyright regime can be derived by combining the incentive benefit and access cost functions:



Since the net benefit is the vertical difference between the incentive benefit and access cost, we can portray the net societal welfare (N) simply as:

$$N = W - C.$$

The graphic portrayal of this function creates an inverted parabola, which allows us easily to identify several points on the continuum $0 \leq z \leq 1$. First, at $z = 0$ there is a net benefit to society, because even in the absence of any copyright protection there would be some creative works produced. However, as z increases we see that the net benefit to society increases, ultimately reaching the maximizing point of z^* . After z^* the net benefit diminishes, ultimately sinking below the level that would be the case with no protection.



The quantification of the theoretical point z^* would require substantial empirical analysis on its numerous sub-components, as discussed above. It would, however, appear possible to investigate the proper level of z at least with respect to some of its dimensions. More importantly, however, it might be helpful if societal decision makers would view the issue of copyright protection by explicitly applying the type of thinking presented in the model. Certainly, the model is implicitly used by both Congress and the courts in limiting copyright claimants' exclusive rights in situations where the societal cost of upholding copyright protection would clearly exceed the social benefit.¹¹² However, should the model be more expressly applied it could be that some of the present levels of z would have to be substantially reconsidered. At its extreme, truly to maximize the net societal surplus from copyright the levels of z would likely need to be set differently for different types of copyrightable subject matter. For example, the

¹¹² In addition to fair use (17 U.S.C. §107) the Copyright Act contains numerous provisions where Congress has limited the exclusive rights of the copyright owners, ostensibly for the very reason discussed above.

substantial financial investment required to make a feature film likely would necessitate more property protection to sustain sufficient output compared to novelists, whose investment is primarily time. As a practical matter a regime that would distinguish between the types of end products would likely be unwieldy, and so the model would serve the most purpose as a broad level guideline for policy decisions related to the overall level of copyright propertization.

Part V: ORPHAN WORKS: A PRACTICAL APPLICATION OF THE MODEL

While a precise numeric application of the model is likely to be empirically impossible, its conceptual ease lends it to be used easily when changes to the copyright regime are contemplated. Any change to copyright law is in essence a change in z – by altering the status quo the property grant on some dimension of the various aspects of copyright will be either strengthened or weakened as a result of the change. In the following the model is applied to the Copyright Office’s recent proposal for a new Section §514 to the Copyright Act.

The Copyright Office issued a 133 page report to Congress entitled “Report on Orphan Works” in January 2006. The report was prepared in response to requests by Senators Orrin Hatch and Patrick Leahy, who would likely be sponsors of the new legislation proposed by the Copyright Office.

A. The Copyright Office’s Proposal

The Copyright Office proposes a new section §514 that should be added to the Copyright Act. The proposed statutory language provides that when an infringer has

“performed a good faith, reasonably diligent search to locate the owner” but failed to do so the subsequent remedies of the copyright owner are limited.¹¹³ Specifically, “no award for monetary damages shall be made other than requiring the infringer to pay reasonable compensation for the use of the infringed work”. Similarly, unlike under the general provisions of the Copyright Act the copyright owner will not be granted injunctive relief to prevent the copyright user from moving forward with his use so long as reasonable compensation is paid.

¹¹³ The full recommended statutory language provides:

SECTION 514: LIMITATIONS ON REMEDIES: ORPHAN WORKS

(a) Notwithstanding sections 502 through 505, where the infringer:

(1) prior to the commencement of the infringement, performed a good faith, reasonably diligent search to locate the owner of the infringed copyright and the infringer did not locate that owner, and

(2) throughout the course of the infringement, provided attribution to the author and copyright owner of the work, if possible and as appropriate under the circumstances, the remedies for the infringement shall be limited as set forth in subsection (b).

(b) LIMITATIONS ON REMEDIES

(1) MONETARY RELIEF

(A) no award for monetary damages (including actual damages, statutory damages, costs or attorney’s fees) shall be made other than an order requiring the infringer to pay reasonable compensation for the use of the infringed work; *provided*, however, that where the infringement is performed without any purpose of direct or indirect commercial advantage, such as through the sale of copies or phonorecords of the infringed work, and the infringer ceases the infringement expeditiously after receiving notice of the claim for infringement, no award of monetary relief shall be made.

(2) INJUNCTIVE RELIEF

(A) in the case where the infringer has prepared or commenced preparation of a derivative work that recasts, transforms or adapts the infringed work with a significant amount of the infringer’s expression, any injunctive or equitable relief granted by the court shall not restrain the infringer’s continued preparation and use of the derivative work, provided that the infringer makes payment of reasonable compensation to the copyright owner for such preparation and ongoing use and provides attribution to the author and copyright owner in a manner determined by the court as reasonable under the circumstances; and

(B) in all other cases, the court may impose injunctive relief to prevent or restrain the infringement in its entirety, but the relief shall to the extent practicable account for any harm that the relief would cause the infringer due to the infringer’s reliance on this section in making the infringing use.

(c) Nothing in this section shall affect rights, limitations or defenses to copyright infringement, including fair use, under this title.

(d) This section shall not apply to any infringement occurring after the date that is ten years from date of enactment of this Act.

The proposal made by the Copyright Office in its Report is in response to its factual finding that “the orphan works problem is real”.¹¹⁴ The Report expressly recognizes that the inability for a potential user to obtain the necessary licenses for the copyright will result in the “productive and beneficial use of the work [being] forestalled”.¹¹⁵ This statement recognizes that the orphan works problem is one of suppression of output – derivative works that could be made based on existing copyrights cannot be made because risk-averse secondary users are not able to secure necessary licenses. Such potential investors are precluded from the market when there is a possibility that subsequently the owner of the original copyright will emerge and demand excessive remuneration under the threat of an infringement suit and the formidable gauntlet of an injunction. As the Report notes the situation caused by the orphan works problem is not consistent with the public interest,¹¹⁶ an objective of the copyright regime that the Copyright Office thereby affirms.

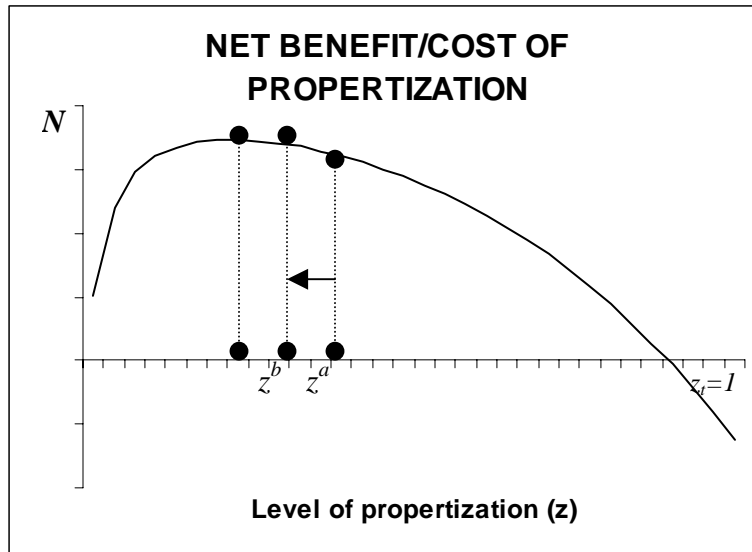
B. Economic analysis of the Orphan Works proposal

Since the Copyright Office’s proposal entails a lowering of z , the expectation is that it will reduce the incentive-benefit but also reduce the access-cost. In the event that the diminution of the welfare resulting from the negative impact from the incentive-benefit is more than offset by the societal benefit from the reduced access costs, then the movement from z^a to z^b will have been in the direction of z^* :

¹¹⁴ *Id.* at 7

¹¹⁵ *Id.* at 15

¹¹⁶ *Id.*



In the case of orphan works, at least in the limits that the Copyright Office’s proposal entails, there would not seem to be a possibility of a real debate about the matter. The reduction in the incentive-benefit would result in prospective creators being less motivated to make the necessary investment out of the worry that their ability to extract control over the work will be diminished if the work should later be considered an orphan work. In essence the proposal imposes an additional cost to the copyright claimant to inform the marketplace of its claim to the copyright and make his contact information available for possible licensing requests.¹¹⁷ It is implicit that this concern will have a minuscule impact in creative investment. Investment decisions in a creative work are highly unlikely to be decided against as a result of this concern – at the time of the decision to engage in creative production the thought of the work later being of interest to someone but this user not being able to locate the copyright owner is a remote

¹¹⁷ In as sense the Orphan Works proposal draws the sibling bodies of law of copyright and trademark closer, because the Copyright Office’s proposal brings into copyright what is essentially an abandonment doctrine that is well enshrined in trademark law.

consideration. The reduction in output as a result of this change will likely be nearly non-existent.

On the access-cost side, in contrast, the elimination of the barriers to use of orphan works can have a substantial output-enhancing impact. Under the present situation a copyright user has to incur substantial search costs in its attempt to locate the copyright owner, and despite the investment he may be unable to proceed, not because of an inability to agree on terms of use by the owner, but because the owner cannot be located. By analogy this could be viewed as a situation where an antique restorer finds a piece in a trash bin, but is not allowed to renovate it because of his inability to find who discarded it.¹¹⁸

Although a specific numeric analysis is not possible, a direct conceptual application of the model presented to the orphan works problem would clearly indicate that the Copyright Office's proposal is consistent with the Constitutional objectives of copyright. The model presented in this article could be used as a tool in an express economic analysis of the societal benefits and costs of proposed changes, similar to what is customarily done with respect to policy decisions relating to antitrust.

Part VI: CONCLUSION

This article has presented a straightforward model for copyright that sets out the incentive-access paradigm in economic terms. The model suggests that for each

¹¹⁸ We recognize that orphan works are not always "discarded" in the sense of an antique in a trash bin. However, if a potential user cannot -- despite reasonable diligence -- find the copyright owner, it is likely that the copyright owner no longer considers the work as something in productive use. The concept of abandonment and renewable copyright terms is one that the Copyright Office should have at least given consideration as part of its Report. See William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471, 476 (2003); and Lawrence Lessig, *THE FUTURE OF IDEAS* 215 (Random House 2001).

dimension of copyright propertization a social welfare maximizing point could be derived through empirical analysis. The article contends that in order for the copyright system to meet the utilitarian goals of the Constitution, Congress should use its ability to conduct the necessary analysis of the societal implications of proposed changes to the copyright regime before increasing (or decreasing) the property rights of copyright claimants. The Copyright Office's "Report on Orphan Works" and the related proposition for legislation is an example of the implicit application of the model presented in this Article.