

THE UNEASY CASE REVISITED: A SECTORAL APPROACH TO INTELLECTUAL PROPERTY

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[*Note to Reader: This is a preliminary and incomplete draft. Parts of it may give the illusion of a more complete draft, but the argument is still in its formative stages.*]

I. INTRODUCTION

Pick up a newspaper these days and you will find yourself reminded of the growing influence that intellectual property rights exercise over the United States economy.¹ As growing segments of our society feel the economic impact of intellectual property rights and policy, debate has emerged over our goals for, and methods of, establishing such policy. My argument in this Article is that the increased economic importance of intellectual property rights justifies a more careful, and potentially more costly, method of establishing intellectual property policy – particularly patent and copyright policy.

The context for the argument begins with the traditional good news/bad news story we tell ourselves about intellectual property. The good news is that copyright and patent law solve a public goods problem² by improving a technological or cultural innovator's power to exclude rivals and earn a sufficient profit to make costly investments in innovation – such as research and development – worthwhile. The incentives provided by these laws, we say, have been the foundation for dramatic advances in technology and the arts. The bad news is that, while solving

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¹ For example, the *New York Times* has added a weekly “Patents” column in its business section, reflecting general interest in patent developments.

² Information exhibits public goods characteristics because it may be “consumed” non-rivalrously and is imperfectly excludable by those who “produce” useful information. Economists conclude that these characteristics inhibit investment in the production of useful information because innovators will not be able to earn a positive return on such investment in a competitive market. *See infra* nn. ____ and accompanying text.

one problem, these rights create another by providing rightsholders with a powerful weapon to use against both direct competitors and follow-on innovators who seek to bring socially beneficial innovations to market. The attention that intellectual property receives in the news highlights both aspects of the law – in some cases highlighting the power of exclusive rights in the hands of well-financed owners to generate significant economic value³ or, in others, to impose significant economic harm.⁴

Given the double-edged qualities these rights exhibit and the increasing economic importance associated with balancing the socially beneficial and harmful aspects of intellectual property protection, one might ask whether current law properly articulates the patent and copyright rights we want. In fact, the most powerful speaker on economic matters in the United States has done just that:

If our objective is to maximize economic growth, are we striking the right balance in our protection of intellectual property rights? Are the protections sufficiently broad to encourage innovation but not so broad as to shut down follow-on innovation? Are such protections so vague that they produce uncertainties that raise risk premiums and the cost of capital? How appropriate is our current system--developed for a world in which physical assets predominated--for an economy in which value increasingly is embodied in ideas rather than tangible capital?⁵

For purposes of this Article, I accept “maximizing economic growth” as the central objective of U.S. intellectual property policy. A number of other policy objectives, such as maximizing freedom of expression or innovation, may have claims to preeminence in this field,

³ [example]; *see also* Alan Greenspan

⁴ [example]

⁵ Remarks by Chairman Alan Greenspan, Market Economies and Rule of Law, at the 2003 Financial Markets Conference of the Federal Reserve Bank of Atlanta, Sea Island, Georgia (via satellite), Apr. 4, 2003, *available at* <http://www.federalreserve.gov/BoardDocs/speeches/2003/20030404/default.htm>

but for present purposes, we assume away any conflicts there may be between or among these goals. In pursuit of our goals, we have struck the “balance” to which Chairman Greenspan alludes at a very high level of generality.

Traditionally, within United States law, we have struck the balance by placing competing interests on opposite sides of three fulcrums: subject matter, duration, and scope.⁶ The U.S. Constitution broadly addresses only subject matter and duration: So as “to promote the Progress of Science and Useful Arts,” the framers said, Congress may grant exclusive rights over certain forms of information – “writings” and “discoveries” – for a duration not to exceed “limited Times.”⁷ As interpreted by the current Supreme Court, the constitutional subject matter and duration provisions constrain Congress’s discretion to strike the balance in certain respects.⁸ In all others, it is up to Congress to decide how broadly or narrowly to define the subject matter, duration, and scope of the exclusive rights.

In recent years, within respect to patent and copyright law, Congress’s general approach has been to hold the duration and scope of the rights constant for all sectors of the economy and focus attention on whether certain subject matter should be entitled to the relatively uniform rights-sets of either patent or copyright. Considerable public debate has surrounded recent

⁶ Subject matter refers to the information that qualifies for protection by the statutory rights. Ideas are products of the mind but they are not within the subject matter of either patent or copyright law. Instead, only specific embodiments or expressions of those ideas receive statutory protection. Duration refers to when statutory rights expire. Patents expire long before copyrights do. Scope refers to the rights and limits on those rights expressed in law. A persistent scope issue has been whether, and to what extent, a rightsholder should be able to restrain inventions or works of authorship that derive from the rightsholder’s patented invention or copyrighted work. Should the scope of rights restrain only direct copies or something more? If more, how much more?

⁷ U.S. Const. art. I, § 1, cl. 8. In full, the exclusive rights provision reads: “The Congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries . . .”

⁸ *See, e.g.,* Feist, Eldred, Dastar, Bonito Boats.

subject matter disputes, including whether computer software should be subject to copyright or patent rights, whether methods of doing business should be patentable, and whether human gene sequences should be treated as patentable inventions.

Subject matter, then, has been the principal fulcrum on which we look at the specific economic characteristics of markets for good incorporating certain information to decide whether we need the incentives provided by protection more than we fear the power to restrain other information producers within that economic sector. As I discuss *infra*, the only other place where sectoral considerations have come to the fore has been in discussions of scope with respect to whether the exclusive rights of copyright should be subject to statutory licensing for certain uses. Otherwise, the assumption has been that once a form of information makes it into the patent or copyright club, all the privileges of membership are extended to that information. This assumption has been left unquestioned and undefended for too long – we no longer can afford this state of affairs.

In this Article, I argue for a methodology by which the subject matter, duration, and scope of existing and proposed patent and copyright rights should be evaluated. I argue that for those persuaded by utilitarian justifications for copyright and patent, more attention should be, and can be, paid to differences among information-dependent industries along all three dimensions. I advocate, as a first step, that we analyze the specific economic characteristics of information-dependent industries or sectors, such as the motion picture industry, the consumer computer application industry, the pharmaceutical drug industry. From this analysis, we should evaluate what incentives exclusive rights can and should supply to induce optimal investments in

producing the valuable information on which these industries thrive. We should then consider the feasibility of tailoring subject matter, duration and/or scope to create the desired level of incentives. If sector-specific tailoring is feasible, we must then evaluate the trade-offs between tailoring rights to specific economic sectors and maintaining a sector-indifferent set of exclusive rights.

My approach finds its source and inspiration in Stephen Breyer's pioneering 1970 tenure piece, *The Uneasy Case for Copyright*.⁹ Breyer, following in the footsteps of British copyright skeptic Arnold Plant,¹⁰ focused his inquiry on copyright's welfare effects with respect to book publishing. Breyer's approach was on the leading edge of economic analysis applied to law, and it broke ground in a number of respects. Welfare economics has come to have a profound influence on the justifications and vocabulary that scholars and a number of judges now use to discuss intellectual property law and policy. But where Breyer chose to be empirical, subsequent economic treatment of copyright has turned theoretical.¹¹ (Breyer's analysis also anticipated subsequent developments in the copyright field – such as rent-seeking behavior by institutional copyright holders to extend the term of protection,¹² and the development of the Copyright Clearance Center as a means by which publishers could charge for institutional photocopies.¹³)

⁹ Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281 (1970); see also PAUL GOLDSTEIN, COPYRIGHT'S HIGHWAY: FROM GUTENBERG TO THE CELESTIAL JUKEBOX 22-26 (1994) (describing the impact of Breyer's article).

¹⁰ See Arnold Plant, *The Economic Aspects of Copyright in Books*, 1 ECONOMICA 167 (1934).

¹¹ See, e.g., William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989).

¹² See Breyer, *supra* n. X, at 323-24; see also *Eldred v. Ashcroft*, 123 S. Ct. 769, ____ (2003) (Breyer, J., dissenting).

¹³ Breyer, *supra* n. X, at 331-34 (identifying welfare losses that such a clearinghouse would likely impose); see also generally Goldstein, *supra* n. X, at 219-23 (describing formation of the Copyright Clearance Center and its litigation strategy).

In defending his “fairly comprehensive method for analyzing copyright problems,”¹⁴ Breyer argued that the justification for granting copyright rights cannot solely be that copiers have an economic advantage over initial producers because the copiers do not bear the costs of initial production.¹⁵ Rather, he argued, one should first ask (1) what market-based advantages might initial producers have from which they can recoup the costs of initial production; (2) does the government subsidize the costs of initial production; and (3) might consumers find ways to channel funds to the initial producer to finance production costs?¹⁶ The answers to these inquiries would set the baseline from which one would measure the marginal benefits that any level of copyright rights might yield. Breyer continued that even when copyright rights might yield marginal benefits, policy makers must attend to the costs that copyright imposes, such as diminishing circulation and utilization of useful information.¹⁷

As a general matter, subsequent economics-influenced literature has formalized Breyer’s approach in some respects and ignored it in others. For example, the collection of scholarship found in the eighth issue of Volume 94 of the *Columbia Law Review*, featuring *A Manifesto Concerning the Legal Protection of Computer Programs*¹⁸ addressed itself to the thorny problems of whether to fit software innovations into the copyright and patent regimes or whether the economics of software innovation require *sui generis* treatment.¹⁹

¹⁴ See Stephen Breyer, *Copyright: A Rejoinder*, 20 UCLA L. REV. 75, 75 (1972).

¹⁵ *Id.* at 75-76.

¹⁶ *Id.* at 76.

¹⁷ *Id.*

¹⁸ Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994).

¹⁹ See *id.* (concluding that *sui generis* treatment is necessary).

I hope in this Article to revive interest in the empirically-focused methodology that Breyer proposed and applied to the book trade. In doing so, I call attention to two new supplements to the model. First, the questions that Breyer posed for copyright apply equally to any set of rights that are justified as a means of inducing greater investment in the production of valuable information. In this Article, I add patent law to the focus, but the method also would apply to trade secret and existing and proposed *sui generis* rights in information. Second, the inquiry is not at an end after the incentive baseline for a particular industry has been established and the relative costs and benefits *for that industry* of extending exclusive rights have been identified.

Exclusive rights provide additional incentives for information production insofar as rightsholders can use the legal system to effectively restrain competition. If we have concluded through the first two steps of the inquiry that exclusive rights will provide society with a net benefit with respect to a specific form of information, such as books, we must recognize that the rights tailored for the book publishing industry may result in net losses when applied to other industries, such as software publishing. Insofar as sector-indifferent exclusive rights may produce divergent welfare effects, we must then ask whether we can effectively tailor exclusive rights to generate that net benefit without imposing net losses as applied to other industries. More attention need be paid to how exclusive rights can be defined and administered to satisfy this inquiry. Finally, we must also be satisfied that exclusive rights will be sufficiently enforceable, as a practical matter, to yield the industry-specific net benefits we have identified.

I explicate this methodology as follows. Part II details the now-traditional economic justification for patent and copyright rights. This justification recognizes the trade-off that Breyer identified between underproduction and underutilization. Moreover some of the literature recognizes that the welfare effects that exclusive rights generate will depend on context. However, the literature does not follow Breyer's study and empirically evaluate how and to what extent exclusive rights in particular industries are warranted.

Part III makes explicit the unstated assumptions and arguments in support of uniform treatment of all copyrighted works and patented inventions and then critiques those assumptions and arguments as theoretically oversimple and empirically questionable. In short, the predominant reaction to sector-specific treatment is that such an approach would be too unwieldy and/or too costly to administer. However, exclusive rights can be, and already are in some instances, tailored to specific industries either through legislation or judicial application.

To be clear, mine is not an argument that we should replace the relatively uniform rights under copyright and patent with fifty or more *sui generis*, sector-specific schemes of rights. I generally agree with the unstated argument that the similarities of the public goods characteristics of information across sectors warrants similar legal treatment – at least at the level of a general legal framework for exclusive rights. However, copyright law already expresses considerable sectoral nuance, and pressures are building for patent law to follow suit. We need a better explanation for how and when we should be sectorally responsive in copyright and patent law. The process by which sectoral rights are articulated needs to be rationalized by (1) addressing a set of questions to set the incentive baseline for a specific sector; (2) assessing the welfare effects

that exclusive rights would have on the sector; and (3) assessing the trade-offs involved in granting and administering sectoral rights.

I make this argument first with a technocratic decisionmaker acting in good faith in mind. From that vantage point the trade-offs between uniformity and sector-specificity are evaluated solely according to sectoral data and reasonable inferences that can be drawn from the data. Even with an idealized decisionmaker in place, I recognize that the data must be gathered and that it is costly to do so. For that reason, I do not call for a wholesale audit of existing intellectual property law to determine how and where sectoral differences should be introduced.

Instead, I argue that sectoral analysis should be introduced from this point going forward and applied to proposals to amend existing law. The burden of producing relevant data should be placed on the players within a sector who can produce the data at the least cost. The way to generate this information is to shift the presumption away from uniformity and toward sectoral legislation. For example, it is rumored that the pharmaceutical drug manufacturers intend to lobby Congress in 2003-04 to extend the term of patent protection. Under my approach, Congress would first demand that industry come forth with credible evidence that a lengthened term will provide incentives for greater research and development expenditures rather than, say, increased dividend payouts to shareholders. Critics of such a proposal would be invited to produce evidence concerning the social costs of extending the term of drug patents. Assuming the pharmaceutical industry can set forth a *prima facie* case for an extended term, Congress would hold hearings inviting other industries to make their case for an extended term. If no other groups can do so, Congress will then address whether it can craft term-extension language that

likely will apply only to drug patents without creating undue litigation over what qualifies as a drug patent. If the evidence concerning sectoral delineation provides reason to believe that sufficiently stable definitions can be crafted, Congress will consider legislation that would extend the term of patent only for drug patents, assessing the costs and benefits of doing so for that sector of the economy.

Similarly, when legislative proposals to reduce the subject matter, scope or duration of intellectual property protection are introduced, proponents bear the initial burden of showing – with publicly available information – that some socially desirable use of copyrighted works or patented inventions is being thwarted or hindered by the existing rights structure. The presumption again would be that any reduction in the level of protection would apply only to the sectors in which the proponents’ uses take place unless it can be shown that such a reduction would enable beneficial uses across a variety of sectors. Rightsholders in the potentially-affected sectors would then be asked to produce data concerning the incentive effects of any such reduction, and Congress would proceed to consider legislation on a sectoral basis unless a sufficiently broad coalition emerged to indicate that uniform treatment is necessary.²⁰

I then become more pragmatic and address our real-world policymaking process. Even if a well-intentioned technocrat could identify where sectoral treatment would enhance social welfare, will not a process that invites or forces each industry to seek differential treatment

²⁰ Defining the breadth of such a coalition necessarily is imprecise. The notion of “critical mass” perhaps best captures the suggested tipping point. Congress need not wait until 51 percent of rightsholders’ or users’ representatives have spoken before adopting a uniform approach. Rather when representatives of more than a few sectors make common cause, the presumption should shift to favor uniformity and the burden then becomes one of arguing for sectoral carve-outs by those with special circumstances. But my argument is that Congress should be more amenable to fashioning such carve-outs.

exacerbate the problems of public choice? Certainly that is a real risk. However, we live today with the risk that influential sectors use their sway over legislatures to impose their policy preferences on the rest of the community. The recent extension of the term of copyright and the paracopyright for technological protection measures are cases in point. Had term copyright extension been limited to fictional audiovisual works so as to protect Mickey Mouse, the net social benefits from bringing books and music from the 1920s and 1930s into the public domain would have been significant. Similarly, had § 1201 been limited to only certain forms of copyrighted works – even if broadly defined – we would not have to bear the social costs potentially imposed by Lexmark’s litigation stance. Finally, greater sectoral specificity raises the evidentiary bar for making intellectual property policy, increasing the political costs of accepting conclusory allegations concerning industry’s inadequate incentives or – if Congress were ever so disposed to increase the scope of consumer rights – consumer advocates’ cries of curtailed fair use.

II. TRADITIONAL UTILITARIAN JUSTIFICATIONS FOR PATENT AND COPYRIGHT

A. The Public Goods Problem

The now-familiar utilitarian justification for intellectual property law starts with an observation about information. In Thomas Jefferson’s words, information’s “peculiar character . . . is that no one possesses the less, because every other possesses the whole of it. . . . [H]e who lites his taper at mine, receives light without darkening me.”²¹ For Jefferson, the capacity for

²¹ Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in 6 THE WRITINGS OF THOMAS JEFFERSON 180 (H.A. Washington, ed. 1861).

information to “freely spread from one to another over the globe” is part of nature’s “benevolent[]” design.²²

For the economist, however, the “benevolent” design of information poses a problem - a public goods problem.²³ The economist assumes – and Dr. Johnson asserted – that “[n]o man but a blockhead ever wrote, except for money.”²⁴ If pecuniary motivation drives creation, we should not expect to see useful information²⁵ produced unless the producer can recoup his or her investment.²⁶ Because the distribution of valuable information cannot be controlled in the ways that distribution of tangible goods like tubes of toothpaste or radial tires might be – that is, information is nonrivalrous and imperfectly excludable – the producer, acting alone, cannot rely on competitive markets to supply a sufficient return to make the investment in producing such information worthwhile.²⁷

²² *Id.*

²³ A public good can be consumed without depletion (non-rivalrous consumption) and can be withheld from nonpaying beneficiaries only at prohibitive cost (non-excludability). See ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 40-41 (2d ed. 1997); see also Wilfried Ver Eecke, *Public Goods: An Ideal Concept*, 25 *J. of SocioEconomics* ____ (1999).

²⁴ James Boswell, 6 *LIFE OF JOHNSON*, chapter iv 1776. Johnson was the son of a bookseller.

²⁵ The terms “valuable” and “useful” information in this Article refer to information that is costly to produce and that members of our society find to be useful, informative, enriching, or otherwise of value. Such information includes the ideas and expressions or embodiments of those ideas found in, for example, novels, movies, music, methods for manufacturing useful articles (medicines, computers, clothing, etc.), computer software, etc.

²⁶ *E.g.*, Mark A. Lemley, *The Economics of Improvement in Intellectual Property*, 75 *TEX. L. REV.* 989, 994 (1997) (“In a private market economy, individuals will not invest in invention or creation . . . unless they can reasonably expect to make a profit from the endeavor.”); Christian Koboldt, *Intellectual Property and Optimal Copyright Protection*, 19 *J. OF CULTURAL ECON.* 131, 134 (1995) (“If profits are the incentive for the production of information, fewer works will be created with a corresponding decrease in the difference between the marginal costs to original producers and that of copiers.”); Kenneth W. Dam, *Some Economic Considerations in the Intellectual Property Protection of Software*, 24 *J. LEGAL STUD.* 321, 335 (1995) (“Whatever the merit of [the argument against copyright], it has less merit in the modern software market . . . [where] products are so complex that they will be undertaken only by commercial firms operating with commercial incentives.”). *But see* Linux.

²⁷ *See, e.g.*, CARL SHAPIRO & HAL VARIAN, *INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY* 3 (1999); Ian E. Novos & Michael Waldman, *The Effects of Increased Copyright Protection: An Analytic Approach*, 92 *J. POL. ECON.* 236, 237 (1984).

The underproduction argument proceeds as follows:

- (1) People are rational, self-interested welfare-maximizers.
- (2) A rational, self-interested welfare maximizer will not invest in the cost of producing intellectual works unless he or she thinks it possible to recoup the costs of, and profit from, such investment.
- (3) The innovator will not be able to exclude competitors from reproducing the information, and the marginal cost of reproducing an intellectual work will be less than the cost of initial production.
- (4) Consequently, an innovator will not be able to recoup the costs of initial production in competition with those who bear only the costs of reproduction.
- (5) Useful information will be underproduced unless the government provides the innovator with the means to earn a positive return on investment in initial production.

B. Solutions to the Public Goods Problem

To a market-oriented utilitarian, the public goods problem for information production represents a form of market failure.²⁸ The question for the utilitarian is “whether the changes [in the law] will increase the overall value realized by society – including the value realized both within and outside markets – under the current system.”²⁹ At one level, this is difficult because “the degree to which any particular arrangement of rules is better or worse than any other arrangement at promoting progress, objectively defined, is an empirical question that may be inherently untestable.”³⁰ The problem is deeper because even if data were available, we lack a coherent metric by which to measure interpersonal utility.³¹ And, even in cases for which

²⁸ See, e.g., Brett Frischmann, *Innovation and Institutions: Rethinking the Economics of U.S. Science and Technology Policy*, 24 VT. L. REV. 347, 373-76 (2000) (categorizing forms of market failure for innovation).

²⁹ Julie E. Cohen, *Lochner in Cyberspace: The New Economic Orthodoxy of “Rights Management”*, 97 MICH. L. REV. 462, 551 & n.342 (1998).

³⁰ *Id.* at 557 (footnote omitted).

³¹ See, e.g., JULES L. COLEMAN, *MARKETS, MORALS AND THE LAW* 125-27 (1988); MARGARET J. RADIN, *CONTESTED COMMODITIES* ____ (1996). Indeed, *intrapersonal* measures of utility also prove problematic. See, e.g., Mark Kelman, *Hedonic Psychology, Political Theory and Law (I): Is Welfarism Possible?* (Working Paper); Daphna Lawinsohn-Zamir, *Consumer Preferences, Citizen Preferences, and the Provision of Public Goods*, 108 YALE L.J. 377, 378 (1998) (“A policymaker wishing to base . . . decisions on people’s preferences faces not only the problem of conflicts among the preferences of different people but arguably also the difficulty of conflicts between the

commensurability problems can be overcome, it turns out that both the Pareto and Kaldor-Hicks measures of utility cannot specify a single point of equilibrium toward which we should strive because each measure is indeterminate for different reasons.³²

These difficulties reveal hard positive and normative questions about what United States information policy should be. The public goods problem is a “problem” only if one is troubled by the observation that, without state intervention, market actors are unlikely to make investments in some kinds of information production in the same manner and degree as they would in the production of tangible commodities. That observation is followed by the statement that in the absence of state intervention, the economy will produce less useful information than it would with such intervention. This second statement is contestable on positive and normative grounds. Do we know that less information overall will be produced or will total information production stay the same, with the marginal information that state intervention induces crowding out the production of other information? Even if total information is less in the absence of state intervention, is that a problem?³³ Are we not already suffering from “information overload”?

revealed preferences of the same persons.”).

³² See COLEMAN, *supra* n. X, at 104-05 (explaining the Scitovszky paradox by which two economic states can be Kaldor-Hicks efficient to one another), 126-27 (demonstrating that multiple Pareto-optimal states exist and not every Pareto optimal state is preferable to every non-Pareto-optimal state); see also T. De Scitovszky, *A Note on Welfare Propositions in Economics*, 9 REV. ECON. STUD. 77, 88 (1941)

³³ See, e.g., ARISTOTLE, POLITICA 1268b, 20-25 (Benjamin Jowett trans.) in THE WORKS OF ARISTOTLE TRANSLATED INTO ENGLISH (W.D. Ross ed. 1921) (“To honour those who discover anything which is useful to the state is a proposal which has a specious sound, but cannot safely be enacted by law, for it may encourage informers, and perhaps even lead to political commotions.”).

We may have trouble defending any particular answer at a system-wide level.³⁴ But we do have a series of normative grounds, some utilitarian, others deontological, on which we rely to promote free expression of information. These grounds might also be pressed into service to defend state intervention to sponsor the production of such expression.³⁵ We also may have specific types of information that would likely not be produced without some form of state intervention, such as some kinds of medical research or \$100 million feature films.

In my view, it is this last point that justifies state intervention to stimulate investments in information production. We value the benefits that certain kinds of information bring us, whether that be scientific or medical research or a well-made play. This information is costly to produce, and we have reason to believe that in certain instances innovators will not be willing to bear those costs without government support. For present purposes, then, we can leave aside whether the information we hope to have produced actually will enhance welfare in some absolute sense, if such a sense even made sense. Even if we cannot identify an equilibrium point at which information production is “just right,” some degree of intervention appears warranted to bring into being the kinds of information we want. We also recognize that we cannot fully predict what kinds of information we want produced. The incentive structure without intervention appears inadequate to induce production of the most costly forms of valuable information. Because that kind of information can have broadly beneficial impacts, most people would support some level of intervention to bring about the production of such information. The

³⁴ For an argument that we should seek to enlarge the size of the total set of useful knowledge (defined more narrowly than in this Article) because it provides the “epistemic base” that determines the level of support for the techniques used in economic production, see JOEL MOKYR, *THE GIFTS OF ATHENA: HISTORICAL ORIGINS OF THE KNOWLEDGE ECONOMY* 5 (2002).

³⁵ *See, e.g.*, Harper & Row Enters., Inc. v. The Nation, ___ U.S. ___ (copyright is the engine of free expression).

tools of welfare economics can be helpful to help identify the kinds of interventions that would be most likely to bring about the information production we want at the least cost.

1. Possible Solutions

The exclusive rights embodied in copyright and patent regimes are not the only means available to compensate innovators for the costs of innovation. To induce investment, society may choose (1) to directly compensate the innovator for producing the information while otherwise leaving the costs of reproduction and distribution to be borne by participants in a competitive market, (2) to indirectly compensate the innovator through tax policy, (3) to provide the producer with a means to improve excludability to the point that the producer can recoup the initial investment through supracompetitive prices in the market, or (4) some combination of (1), (2), and (3).³⁶

Commentators have on occasion considered whether the public goods problem might be best solved by direct government investment.³⁷ One model shows that a government-based reward system might be equal to or better than using exclusive legal rights to finance initial production in information.³⁸ Nonetheless, the consensus view among economically-oriented

³⁶ See Working Paper No. 122.; Lessig, *Future of Ideas* at 96; Frischmann, *supra* n. X, at 392-95 (analyzing trade-offs among policy approaches). Compensation from the government could be in the form of an *ex ante* subsidy or an *ex post* reward. Subsidies already are a feature of art and science policy in the United States, manifested in grants made by entities such as the National Institutes of Health, the National Science Foundation, the National Endowment for the Arts and the National Endowment for the Humanities. For a model analyzing the relative efficiency of the latter, see Steven Shavell & Tanguy Van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 *J. L. & ECON.* 525 (2001). Quasi-governmental payments, through tax-subsidized charities such as the MacArthur Foundation, serve as both subsidies and rewards.

³⁷ *E.g.*, Shavell, *supra* n. X, at __; Breyer, *supra* n. X, at 307-08.

³⁸ Shavell, *supra* n. X, at

commentators is that increased excludability through control is superior to reward.³⁹ [Shavell] [spell out]⁴⁰

A different but related justification for granting creators exclusive rights is the “prospect” theory of intellectual property championed by Professor Kitch.⁴¹ The justification remains instrumental but focuses more on the incentives that exclusive rights provide to invest in commercializing existing ideas rather than on the incentives to produce the ideas.⁴²

For purposes of this analysis, we will accept the conventional wisdom that increasing creator control will optimize investments in information production and distribution.

2. The Preferred Solution – Creator Control

Until recently, most economists assumed that society’s only means for increasing excludability was to give the creator a legal entitlement in the form of a set of enforceable exclusive rights.⁴³ More recent legal and economic scholarship has widened the aperture through which those in the legal community view social control. Many theorists now understand human behavior to be caused and controlled by complex interactions between internal, psychosomatic forces, and modalities of external incentives and constraints imposed by markets, law, social norms, and architecture.⁴⁴ These forces and modalities interact in ways that we do not fully comprehend.

³⁹ See, e.g., Edmund W. Kitch, *Elementary and Persistent Errors in the Economic Analysis of Intellectual Property*, 53 VAND. L. REV. 1727, 1728 (2000).

⁴¹ See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & Econ. 265 (1977) (introducing the prospect theory); see also Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 Va. L. Rev. 305 (1992) (refining the prospect theory to account for patentees’ rent-seeking behavior).

⁴² See, e.g., Mark A. Lemley, *The Economics of Improvement in Intellectual Property*, 75 TEX. L. REV. 989, 1045-46 (1997).

⁴³ E.g., William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 332 (1989)

⁴⁴ E.g., LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (Appendix) (1999).

In more recent terminology, the traditional economic justification for patent and copyright law is an argument that modalities of social control have to be combined. The economist's preference for resource allocation and social control through markets requires the aid of the law to first solve the public goods problem by improving excludability through the grant of legally enforceable exclusive rights.

Modern theorists, however, would not assume that the law is the only modality through which excludability can be increased. Instead, we might first consider, among other things, whether (1) a human predisposition toward reciprocity might be activated to curb unauthorized reproduction or distribution of valuable information;⁴⁵ (2) social norms against unauthorized reproduction might evolve,⁴⁶ or (3) architectural changes in copying technology might yield self-help means to increase excludability.⁴⁷ Again, excludability may be sufficiently improved by some combination of these measures. Of these substitutes for exclusive legal rights, the power of architecture (code) has attracted the greatest scholarly attention. Significant empirical doubt exists concerning the feasibility of digital rights management⁴⁸ and other architectural means of controlling reproduction and distribution, but scholars, assuming that code can successfully increase excludability, have wrestled with the normative question of how intellectual property law should respond to code's power to solve the appropriability problem.⁴⁹

As interesting and important as the broader discourse on creator or distributor control is, this Article puts that discussion to one side and focuses on the traditional, and still-dominant,

⁴⁵ String cite to reciprocity research

⁴⁶ String cite on norms

⁴⁷ String cite on digital rights management

⁴⁸ For an analysis of a potentially problematic implementation of digital rights management by Intuit, owner of the popular application, TurboTax, see <http://www.extremetech.com/article2/0,3973,881243,00.asp>

⁴⁹ Ku, Cohen, etc.

view that legally enforceable exclusive rights are the optimal means for solving the problems of appropriability and underinvestment in innovation.⁵⁰

3. Creator Control Through Exclusive Rights

Economists believe that securing creator control through exclusive legal rights supplies a sufficient probability that the innovator's initial costs can be recouped in the market through supracompetitive prices to induce optimal investment in initial production. The next challenge the traditional utilitarian analysis has taken up has been fashioning a set of rights sufficient to induce optimal investment in initial production.

While exclusive rights are the preferred solution to the public goods problem - underproduction of valuable information - economists recognize that extending these rights to innovators is only a second-best solution because these rights create a different problem - underutilization of valuable information.⁵¹ The very power to exclude potential users so as to charge prices above marginal cost means that some potential users of valuable information will be priced out of their desired use. These may be end users or follow-on innovators. The underutilization problem raises the issue of whether the exclusive rights should be protected by a property rule or a liability rule. A property rule permits the rightholder to sue for injunctive and other equitable relief; whereas, a liability rule provides a right only to demand payment for use of

⁵⁰ See, e.g., Dam, *supra* n. X, at 333. For example, with respect to copyright, Professor Dam could confidently assert in 1995 that “the notion of creating a property right to deal with the problem of appropriability is, with limited exceptions, uncontroversial with respect to such core subject matter as copyright in books” *Id.*

⁵¹ See Novos & Waldman, , *supra* n. X, at 238; Lemley, *Economics of Improvement*, *supra* n. X, at 996-97.

protected information. A statutory license is an example of liability rule protection.⁵² When the government opts for liability rule protection, it must devise a means of valuing the right.⁵³

Through the lens of transaction-cost economics, associated with Ronald Coase and his famous theorem, government should extend rights protected by property rules to facilitate efficient exchange unless the transaction costs are high enough to block such exchange.⁵⁴ The traditional account assumes that transaction costs generally are not sufficiently high to justify resort to a liability rule, and therefore the solution to the underproduction problem is to provide innovators with exclusive rights protected by property rules.⁵⁵

There are some reasons to doubt the efficiency of property rule protection for rights in valuable information. A number of factors will frequently defeat efficient licensing when intellectual property rights are protected by a property rule - particularly with regard to licenses between initial producers and improvers. Mark Lemley has identified these as transaction costs, uncertainty over valuation of a licensed use, undervaluation because of positive externalities, strategic behavior, and noneconomic factors.⁵⁶

Nonetheless, for the time being, it appears to remain an article of faith that whatever social costs these bargaining defects impose, they are less than the costs of administering a liability rule regime in most instances.

⁵² See, e.g., 17 U.S.C. §§ 111, 112, 114, 115, 119, 122 (setting forth various statutory licenses for uses of copyrighted works without the copyright owner's permission).

⁵³ See A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 123-26 (1983).

⁵⁴ See, e.g., JULES L. COLEMAN, MARKETS, MORALS AND THE LAW 29 (1988); Ronald Coase, *The Problem of Social Cost* 1 J. L. & ECON. 3 (1960).

⁵⁵ See, e.g., Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293 (1996) (arguing that even when transaction costs among multiple players are high, repeat players will bargain toward an efficient allocation of resources).

⁵⁶ See Lemley, *Economics of Improvement*, *supra* n. X, at 1052-61.

C. Specifying the Solution: Exclusive Rights Protected By Property Rules

1. Copyright

The standard model applying neo-classical microeconomics to markets for valuable information covered by copyright is found in the 1989 article, *An Economic Analysis of Copyright Law* by William Landes and Richard Posner.⁵⁷ In their formal model, Landes and Posner address the question of what rights the government must grant at a very high level of abstraction -- reducing the entire right-set to a single variable that they denominate “z”. For them, the relationship between the level of the number of works that will be produced (N) as a consequence of the level of copyright protection N_z is reflected in the equation:

$$N_z(f_{NW} - E_N) = -f(N)w_z + E_z$$

The model reflects the trade-offs made between the underproduction and underutilization problems - that is the trade offs between producer and consumer welfare. Copyright protection is subject to the law of diminishing returns because information is an input for new works as well as the protected output. As copyright protection increases, producers’ input costs rise as do the costs of administering the system. As a result, increased copyright protection beyond equilibrium will, according to the model, induce additional production but the marginal welfare produced by each additional work will not be worth the price.

Landes & Posner draw the following three key implications from their model:

- (1) Optimal copyright protection requires content-based discrimination. The welfare produced by each work will depend on the demand for the work and the costs of

⁵⁷ See William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989); see also Jacco Hakfoort & Sten Willensen, *Copyright Protection: Not More But Different*, CPB Working Paper No. 122, available at <http://www.cpb.nl/nl/pub/werkdoc/122/cr/> (treating Landes & Posner’s work as the “Standard Model”).

reproducing the work. Because high demand will attract free-riding copiers, the optimal level of protection will be higher for “classes of work that are more valuable socially.”⁵⁸

- (2) Increasing copyright protection above the optimal level increases production of new works but the welfare that each such work produces will be not be worth the price in increased costs of expression for new authors and the increased administrative and enforcement costs imposed by the new works.
- (3) If, over time, the demand for a given work increases (due to increasing income and/or technological advances) and the costs of copying are reduced, copyright protection should increase.

Landes & Posner did not opt to set forth an optimal Copyright Act derived from their model. Indeed, doing so would be impossible given the model’s level of abstraction. Rather, they set out to explain why select features of the Copyright Act of 1976 were consistent with their model. The features they chose to highlight were four elements of copyright’s scope – (1) the idea/expression dichotomy, (2) rights in derivative works, (3) fair use, (4) independent creation – and the term of protection. With regard to copyright’s term, Landes and Posner recently have retreated from their explanation for why the current statute is efficient and have proposed a new mechanism for setting copyright’s term.⁵⁹

It is odd that Landes and Posner found the outcome of the legislative process to be entirely efficient in their original article. Most economists subscribe to some version of public choice theory. According to that theory, we should expect legislative outcomes to be inefficient where discrete groups with common interests can manipulate the legislative process so as to secure redistributive legislation at the expense of large, heterogenous groups that do not protect

⁵⁸ Landes & Posner, *Economic Analysis of Copyright Law*, *supra* n. X, at 343.

⁵⁹ See William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*,

their interests because the costs of collective action are too high.⁶⁰ Copyright and patent legislation serves for some as a paradigm public choice case because such legislation generally is the product of bargaining among industry groups with little or no consumer representation.⁶¹ Commentators suggest that interest group involvement in copyright and patent legislation has intensified in recent years. “In many industries, incumbent publishers spent considerable amounts of time and money on lobbying for increased protection. This raises the issue whether this rent-seeking behavior is optimal from a society’s point of view.”⁶²

Landes and Posner more recently have recognized the point Stephen Breyer raised in 1970 – with respect to the duration of exclusive rights, incumbent rightsholders have strong incentives to press for extensions even when an extended term would be socially undesirable.⁶³ One would think the same could be said about incumbents’ efforts to expand the scope of rights, by adding a series of paracopyright rights, for example.

2. Patent

As with the economic literature on copyright, economically-oriented commentators on patent law have focused on the need to balance between underproduction and underutilization.

⁶⁰ See, e.g., DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 110 (1990) (“Because politics make and enforce economic rules, it is not surprising that property rights are seldom efficient.”).

⁶¹ See, e.g., Michael W. Carroll, *Disruptive Technology and Common Law Lawmaking: A Brief Analysis of A&M Records, Inc. v. Napster, Inc.*, 9 VILL. SPORTS & ENT. L.J. 5 (2002) (copyright law has been product of business-to-business negotiations); William F. Patry, *Copyright and the Legislative Process: A Personal Perspective*, 14 CARDOZO ARTS & ENT. L.J. 139, 141 (1996) (“In my experience, some copyright lawyers and lobbyists actually resent members of Congress and staff interfering with what they view as their legislation and their committee report.”); Jessica Litman, *Copyright Legislation and Technological Change*, 68 OR. L. REV. 275, 277 (1989).

⁶² No. 122 at 6.; see also Merges, 100 Years of Solicitude, 88 CAL. L. REV. 2187, 2234-36.

⁶³ See Breyer, *supra* n. X, at ___; Landes & Posner, *Indefinitely Renewable Copyright*

Early models focused on use of the duration of patent rights to strike the balance.⁶⁴ More recent work has considered trade-offs between the duration and breadth of patent rights.⁶⁵ The Gilbert and Shapiro model suggests that duration could be quite long if breadth is sufficiently restricted, but they acknowledge at the end of their paper that their stylized model does not attempt to account for the effects on follow-on innovation of lengthy patents.⁶⁶

Robert Merges and Richard Nelson show that when one accounts for the effects that patent rights have on follow-on innovation, good reasons exist to limit duration and the scope of such rights. Moreover, they argue that sectoral differences should be reflected in the scope of patents.⁶⁷ They recognize that the innovative process differs depending on the type of technology being developed. They distinguish among four categories of innovation: (1) discrete inventions; (2) cumulative technologies; (3) chemical technologies; and (4) science-based technologies.⁶⁸ Arguing against the prospect theory for exclusive rights, they demonstrate that broad patents, particularly broad pioneering patents, can slow, and have slowed, the pace of innovation in certain industries.⁶⁹ Moreover, the braking effect of broad pioneering patents will be more pronounced for cumulative technologies, some chemical technologies, and most science-based

⁶⁴ W.D. NORDHAUS, INVENTION, GROWTH AND ECONOMIC WELFARE (1969); F.M. Scherer, *Nordhaus' Theory of Optimal Patent Life: A Geometric Reinterpretation*, 62 Am. Econ. Rev. 422 (1972); W.D. Nordhaus, *The Optimum Life of a Patent: Reply*, 62 Am. Econ. Rev. 428 (1972).

⁶⁵ See Richard Gilbert & Carl Shapiro, *Optimal Patent Length and Breadth*, 21 RAND J. ECON. 106 (1990); P. Klemperer, *How Broad Should the Scope of Patent Protection Be?*, 21 RAND J. ECON. 113 (1990)

⁶⁶ Gilbert & Shapiro, *supra* n. X, at 112 & nn. 3-4.

⁶⁷ See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 843 (1990) (“[T]he issues at stake regarding patent scope depend on the nature of technology in an industry.”).

⁶⁸ Merges & Nelson, *supra* n. X. at 843 (“[T]he issues at stake regarding patent scope depend on the nature of technology in an industry.”).

⁶⁹ Merges & Nelson at 885-87.

technologies.⁷⁰ In their view the scope of patent protection should vary depending on the type of innovation at issue.

While recognizing the importance of economic differences among sectors, Merges and Nelson do not question the relative efficiency of the existing right structure to account for these sectoral differences. Instead, they advocate sector-sensitive judicial application of patent law's general scope doctrines. In passing, they also suggest that the Patent and Trademark Office should be sector-sensitive when examining patent applications, but they focus more on having sectoral considerations be accounted for through the enablement doctrines and infringement doctrines such as the doctrine of equivalents and the reverse doctrine of equivalents.⁷¹ Other commentators have followed their approach with respect to specific sectors or technologies.⁷²

Merges and Nelson's work reemphasizes the importance of articulating exclusive rights in a way that provides first-generation innovators with the ability to earn a profit while leaving consumers and follow-on innovators room to maximize beneficial uses of patented technologies. Their model takes many of the features of the U.S. patent system as given, leaving open a more radical inquiry into whether sector-specific balancing might be better done through the initial right structure rather than through judicial doctrines brought to bear in the very few cases that go to litigation.⁷³

⁷⁰ Merges & Nelson at 908-16.

⁷¹ See generally Merges & Nelson

⁷² See, e.g., Antony L. Ryan & Roger G. Brooks, *Innovation vs. Evasion: Clarifying Patent Rights in Second-Generation Genes and Proteins*, 17 BERKELEY TECH. L. J. 1265 (2002) (proposing a framework that will balance concerns of underproduction and underutilization when applying the doctrine of equivalents to inventions flowing from protein engineering).

⁷³ Cite Lemley, [less than 1 percent of issued patents have been subject of litigation]; see also Jean O. Lanjouw & Josh Lerner, *The Enforcement of Intellectual Property Rights: A Survey of the Empirical Literature*, 49/50 ANNALES D'ECONOMIES ET DE STATISTIQUE 223, 224 (1998) (for patents issued in the 1980s, more than one law suit will be generated by each 100 patents).

D. Challenges to the Standard Model for Exclusive Rights

For as long as the underproduction tale has been told, skeptics have questioned whether innovators really lack sufficient incentives to produce valuable information without state support. These writers ask for a fuller explanation of why market conditions will not permit the innovator to recapture the costs of initial production even if competition will eventually drive the price of information down to the marginal cost of reproduction. A variety of conditions may exist in markets for valuable information that would either obviate or reduce an innovator's need for state support. Consistent with Breyer's approach, one might ask where the incentive baseline is prior to granting or extending exclusive rights. Breyer set forth some of the conditions that might provide innovators with sufficient incentives absent exclusive rights. Landes and Posner took the position that overall these factors would be unlikely to substitute for excludability.

The list of factors to consider when setting the incentive baseline has grown more extensive since the Breyer and Landes-Posner articles were written. These considerations indicate that the Landes-Posner neo-classical model skews the level of protection too high because it ignores what can in some circumstances be quite substantial incentives to innovate even in the absence of exclusive rights. Adding a small measure of balance, Polk Wagner has identified one factor that indicates that the Landes-Posner model sets the level of protection too low.⁷⁴

Some of the factors below, particularly network effects and price discrimination, also effect what the scope of exclusive rights should be when granted. These factors tend to magnify

⁷⁴ R. Polk Wagner, *Information Wants to Be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995 (2003)

the impact that increased excludability has on the producer's ability to recoup its initial investment, suggesting that in markets where network effects or the power to price discriminate are substantial, the scope of rights should be more circumscribed. The last factor, coordination costs, arises when rights are granted. The Landes-Posner model incorporates the general point that information also is an input, and any increase in the scope or duration of exclusive rights will make the cost of information as an input rise. The Landes-Posner model makes this a linear relationship. More recent scholarship indicates that because goods have many information inputs that can be owned by multiple parties, coordination costs can drive up the social costs of exclusive rights exponentially.

As I explain more fully in Section III, these considerations vary widely across markets. With such divergent incentive baselines, a uniform set of exclusive rights with uniform duration is likely to overprotect producers of some valuable information and underprotect others. Insufficient attention has been paid to how and when law's flexibility should be used to reduce the social costs of over- and underprotection by fashioning sector-specific rules and rights.

1. Lead-time or First-mover Advantage

For at least some period of time, information will be excludable where the creation of the information is unobserved and when the information has not been otherwise communicated. The Wright Brothers, for example, chose Kitty Hawk, North Carolina as the site of their flight experimentation not only for its wind conditions but also for its remoteness.⁷⁵ Any information generated by their experiments would remain excludable until they chose to communicate it. If the producer invests in information security procedures and measures, he or she can capitalize on

⁷⁵ Cite (PBS documentary if nothing else).

this limited-duration excludability by being first to market with the goods incorporating the valuable information.⁷⁶ For at least some period of time, then, the producer will be the sole source of the good and be able to charge supracompetitive prices before competitors acquire the good, reproduce it and enter the market with cheaper alternatives.⁷⁷ If the profits derived from this lead-time or first-mover advantage are sufficient to recoup the costs of initial production, no underproduction problem exists.⁷⁸

Landes and Posner acknowledge the possibility that lead-time profits could be sufficient to induce optimal production of certain kinds of information. In their view, however, lead-time profits generally are unlikely to supply a sufficient return to cover initial production costs, particularly because advances in copying technology have reduced dramatically an initial producer's lead time advantage.⁷⁹ They do acknowledge that this line of reasoning may be persuasive as to faddish goods - those for which demand is initially strong but falls after a brief period.⁸⁰

⁷⁶ Trade secret law is concerned with keeping valuable information excludable where the producer does not seek to sell the information directly. Justifications for exclusive rights in trade secrets are outside the scope of this Article.

⁷⁷ See Frischmann, *supra* n. X, at 369 (“Lead time advantage is primarily dependent on secrecy, timing, and the ease of copying or reverse engineering.”).

⁷⁸ See e.g., Jerome H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 Colum. L. Rev. 2432 (1994). One commercial publisher has decided to rely solely on its lead-time advantage for its line of books directed at open source programmers. See Steve Lohr, *Steal This Book? A Publisher Is Making It Easy*, N.Y. TIMES, Jan. 13, 2003, at C4.

⁷⁹ *Id.*

⁸⁰ Landes & Posner, *Economic Analysis of Copyright Law*, *supra* n. X, at 330. Their assumption on this point is that “faddishness” is unrelated to the presence or absence of copyright protection but that the absence of copyright will “distort” the market by driving production toward faddish goods. See *id.* at 332.

It may be, however, that “faddishness” is at least in part a product of the presence or absence of copyright law. Take the marketing of sheet music for example. Prior to widespread distribution of photocopiers, sheet music was packaged without significant alteration over long periods of time because demand - particularly from institutional consumers such as high school bands - was largely inelastic. As photocopiers became common, music publishers faced stiff competition from cheap photocopies and sales dropped precipitously. In effect, the photocopier had marginalized copyright's ability to increase excludability by greatly decreasing the costs of unauthorized reproduction by consumers and increasing the enforcement costs for publishers to the point where copyright was of

2. Costs of Competition

The magnitude of the public goods problem depends, in part, on the size of the gap between the producer's and competitor's costs. The competitor does not bear the costs of initial production, such as the time and effort to write a novel, and should therefore have marginally lower costs. The margin may not be that great where the competitor faces fixed costs of its own, such as the costs of rekeying a manuscript. Indeed, when Breyer surveyed the book publishing industry in 1970, he concluded that copyright was largely superfluous for ensuring optimal book production in most segments of the industry because of the relatively high costs of competition, the initial publisher's lead-time profits, and the initial publisher's ability to retaliate against new entrants by underselling them (after having reaped the profits of supracompetitive prices during the lead time).⁸¹

Landes and Posner acknowledge that where the costs of competition are relatively high, the justification for copyright is relatively weak.⁸² However, they hold that as a general matter competitors will enjoy a significant cost advantage by avoiding the costs of initial production and therefore initial producers will be unwilling to bear such costs in the absence of exclusive rights.⁸³

little value. Publishers responded by repackaging well-known works to create faddish demand similar to that seen in the fashion industry. One wonders whether the inverse effect were to exist as well.

Fashion designers have tried unsuccessfully to assert copyright and trademark rights against competitors. *See, e.g.,* [find a clothes case, e.g. *Knitwaves v. Lollytogs*, (2d. Cir. 1995); *Wal-Mart Stores, Inc. v. Samara Bros., Inc.*, 529 U.S. 205 (2000) (dress design cannot be inherently distinctive). Were they to succeed, would the pace of innovation, or at least recirculation, of designs slow?

⁸¹ *See* Breyer, *supra* n. X, at 299-302, 309-13.

⁸² Landes & Posner, *Economic Analysis of Copyright Law*, *supra* n. X, at 329.

⁸³ *Id.*

Even if one were to agree with Landes and Posner, their model would need to incorporate another cost of competition – the monetary value of time. Incorporating the value of time would reduce the level of protection for two reasons: it would account for the initial producer’s lead-time advantage, which Landes & Posner recognize can be quite significant for “faddish” goods or other time-sensitive information, and it would account for copiers’ opportunity costs of time. As the model indicates, the level of protection should be reduced when other factors increase copiers’ costs.

3. Non-monetary Rewards

Copyright and patent may be unnecessary because, perhaps, producers need not recoup the initial investment in production through sales of reproductions. Perhaps anticipated prestige, notoriety or other “nonpecuniary income” would serve as a sufficient return on the investment to induce initial production in the absence of copyright or patent. Alternatively, the investment in initial production may serve as a loss leader to increase other revenue streams, such as speaker’s fees.

As to the first point, economists recognize that innovators receive some non-monetary benefits from creation and that these anticipated benefits are likely to induce some level of production. Siding with Dr. Johnson, however, they hold that most innovators are not “blockheads.”⁸⁴ The conventional wisdom doubts that such nonpecuniary benefits will supply a

⁸⁴ Some cultural innovators have been candid about their pecuniary motivations to create. *See, e.g.*, TYLER COWEN, IN PRAISE OF COMMERCIAL CULTURE 18 (1998) (citing comments by Mozart and Charlie Chaplin among others).

sufficient incentive to induce the initial production of most valuable information - be that a new pharmaceutical drug or the Great American Novel.⁸⁵

This long-held view has been challenged by creators of, and the very existence of, open source software. Some participants in what Yochai Benkler has termed the “peer production”⁸⁶ model of software development assert that intrinsic motivation is sufficient to produce optimal investments in initial production of software.⁸⁷

Some economists question whether open source developers truly are so intrinsically motivated. Instead, such developers may be using their investments in development as a loss leader to increase revenue from other sources, such as sale of their services.⁸⁸ But, if the loss-leader explanation describes why most software developers invest resources in open source projects, are not copyright and patent superfluous? According to most economists, no. Even if the loss-leader strategy may supply sufficient incentives for development of some information, such as some kinds of software, alternative revenue sources will not be sufficient to induce investments in many other forms of valuable information. Moreover, the economist may point out, the open source movement depends on the exclusive rights supplied by copyright in the form of the GNU General Public License (GPL) to prevent single players from appropriating aggregate investments. On this view, the protection from this form of free-riding that the GPL, backed by

⁸⁵ See LP, *Copyright*, at 331-32; Lemley, *Economics of Improvement*, *supra* n. X, at 994 (“In a private market economy, individuals will not invest in invention or creation unless . . . they can reasonably expect to make a profit from the endeavor.”).

⁸⁶ See Yochai Benkler, *Coase’s Penguin, or, Linux and the Nature of the Firm*, 112 YALE L.J. 369 (2002).

⁸⁷ Cite to Richard Stallman, *Reevaluating Copyright: The Public Must Prevail*, 75 Or. L. Rev. 291 (1996), Moglen, Raymond, etc.

⁸⁸ Tirole & Lerner

copyright, supplies is necessary to induce the initial investment that most developers make in an open source project.

4. Pricing Power - Sharing and Price Discrimination

Where the initial producer has sufficient market power, it can increase its surplus through price discrimination.⁸⁹ The classic example of price discrimination is the book publisher who sells a hardcover edition for one price at one time and then enters the market with a cheaper paperback months later. Another common example is the theater owner who offers student and senior citizen discounts.⁹⁰ Increased copyright protection increases the producer's power to price discriminate and capture a larger share of the consumer surplus.⁹¹ The power to price discriminate is limited by the degree of monopolistic competition present in the market. Such competition exists when valuable information produced by other innovators – such as a pop song or a word processing application – serves as an imperfect substitute.

This factor should be considered both when examining the incentive baseline and when considering the scope of exclusive rights. The power to price discriminate magnifies exclusive rights' effects on the balance between producer and consumer surplus. If a producer has market power, with or without exclusive rights, it can adopt a pricing strategy by which it captures some of the copiers' surplus. Consumers will pay a higher price for copies from the producer if they plan to make their own copies.⁹² Pricing strategies for most specialized journals and consumer-

⁸⁹ On price discrimination, see Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55 (2001); Julie E. Cohen, *Copyright and the Perfect Curve*, 53 VAND. L. REV. 1799 (2000).

⁹⁰ Meurer on first, second, and third-degree price discrimination.

⁹¹ Shapiro & Varian, *Information Rules* at ___; Vogel at 332-33.

⁹² See Michael J. Meurer, *Sharing Copyrighted Works and Patented Technology*, ; see also Bakos, Brynjolffson, & Lichtman, *Shared Information Goods*, 42 J. OF L. & ECON. 117 (1999); Stan J. Liebowitz, *Copying and Indirect Appropriability: Photocopying of Journals*, 93 J. POL. ECON. 945 (1985); see also Stan J. Liebowitz, *The Impact Of Reprography On The Copyright System*, Copyright Revision Studies, Bureau Of Corporate Affairs,

oriented software embody this approach. By increasing price, the producer receives compensation for the unauthorized copies.

Two other features of price discrimination put downward pressure on the desired level of exclusive rights. As Breyer suggests, the producer can use the power of price discrimination not only to maximize its take of the consumer surplus but also to increase copiers' entry costs by retaliating against rivals through "fighting editions."⁹³ Additionally, because the model recognizes information as an input as well as an output, price discrimination will increase the costs of expression for follow-on innovators.

5. Network Effects

A producer in a market with network externalities may have a number of ways to recoup the costs of initial production even in the absence of exclusive rights.⁹⁴ Unauthorized copying can serve to strengthen the market share of an information provider in a "tippy" market.⁹⁵ The victory that Microsoft has scored in the market for word-processing software is a good example. Microsoft Word is now the standard format in most industries. Use of incompatible file formats within a firm or among cooperating firms drives up costs. Even if Microsoft Word is inferior to

Ottawa, 1981.

⁹³ Breyer, cite.

⁹⁴ Hakfoort segregates the "superstar" effect from network effects, but the "superstar" phenomenon is just a network externality by a different name. On one telling, superstars emerge in some markets because it lowers consumer search costs for quality goods. See Hakfoort, (citing Sherwin Rosen, *The Economics of Superstars*, 71 Am. Econ. Rev. 845 (1981)). A more convincing account would focus on the signaling function that certain forms of consumption play. Once momentum builds behind a particular book, movie, song, entertainer, athlete, or fashion design, consumers' purchasing decisions will be influenced more by the importance of signaling membership in the herd than by any subjective evaluation of the good's quality. See ROBERT H. FRANK & PHILLIP J. COOK, *THE WINNER-TAKE-ALL SOCIETY: WHY THE FEW AT THE TOP GET SO MUCH MORE THAN THE REST OF US* (1996).

⁹⁵ See Shapiro & Varian, *supra* n. X, at ___; Lisa N. Takeyama, *The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities*, 17 J. Ind. Econ. 155, 165 (1994) ("Once the network-enhancing effect of the copies is taken into account, not only can copying lead to greater firm profits, it can produce a Pareto improvement in social welfare, despite the absence of indirect appropriation.").

WordPerfect, the benefits for users to congregate around a single standard are greater than any marginal loss in the quality of the program. In such markets, the owner of the industry standard can extract income through its dominant position in myriad ways even without exclusive rights.⁹⁶

Even where network effects are not strong enough to induce a desired level of investment in information production, network effects can amplify the market power that exclusive rights can confer.⁹⁷

6. Overlapping Exclusive Rights

Insufficient attention has been given to the incentive effects supplied by overlapping legal protections. Most important, trademark protection supplies an important source of supracompetitive revenues. The effects of trademark and trade secret protection may be sufficient to induce optimal investment even in the absence of copyright or patent rights in some cases.⁹⁸ Moreover, the exclusivity provided by copyright or patent rights facilitates the producer's ability to establish strong, highly distinctive marks.⁹⁹ This effect likely explains why consumers continue to purchase branded over-the-counter drugs such as Tylenol® or Advil® at a

⁹⁶ See Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998).

⁹⁷ See Lemley, *Economics of Improvement*, *supra* n. X, at 1066-67 (stating that intellectual property rights reinforce market power where there are strong standardization effects).

⁹⁸ On the role of trade secret, see Reichman, *Legal Hybrids*. . . For an example of trademark's power, the PENGUIN CLASSICS mark gives Penguin Group, USA a noticeable advantage in the market for books in the public domain. See Bill Goldstein, *Publishers Give Classics a Makeover*, N.Y. Times, Feb. 10, 2003 at ____ (Business). Even in the absence of copyright protection, publishers find it profitable to invest in competing publications. *Id.* In addition to the power of brand recognition, the inducements for these investments in the absence of copyright protection are that the investment is less risky because the status of these books as "classics" demonstrates some demand, and network effects magnify the demand as these books become required reading in secondary school and "must-read" items for adult book groups.

⁹⁹ Gideon Parchomovsky & Peter Siegelman, *Towards an Integrated Theory of Intellectual Property*, 88 VA. L. REV. 1455, 1457 (2002) ("Those who actually use intellectual property protection, however, appreciate that its various modalities can be combined to yield important synergies: Patents can help create goodwill, and trademarks can be used to appropriate the gains from innovation.").

significant premium even when they have available cheaper generic drugs that are chemically perfect substitutes. In markets in which this effect is particularly strong, the level of protection may be reduced by, for example, reducing the term of protection without significantly reducing the incentive effects the protection supplies. One might similarly analyze the presence or absence of effective technological controls that perfect excludability in the absence of exclusive rights.¹⁰⁰

7. Direct Investments in Production

The government does not rely solely on its power to supply exclusive rights to induce desired information production. The government also directly and indirectly subsidizes information production through grants, rewards, and tax incentives.¹⁰¹ Because the standard model recognizes that optimal protection must trade off solutions to the underproduction and underutilization problems, where the underproduction problem is solved through direct or indirect government investment, the level of protection should decrease to minimize deadweight losses from underutilization.¹⁰²

8. Coordination Costs

Robert Merges critiques the neo-classical model from the perspective of New Institutional Economics. From this perspective, the flaw in the neo-classical model is the assumption of a one-to-one mapping of the exclusive rights and the product embodying the information subject to

¹⁰⁰ Such an analysis is complicated by the presence of exclusive rights in the use of access and copy controls. See 17 U.S.C. § 1201.

¹⁰¹ Tax incentives can be used to spur investments in certain types of innovation – e.g., development of uses for solar energy – or as an add-on incentive to existing intellectual property rights. The latter has caused a stir recently concerning valuations used when deductions are taken for patents donated to eligible charities. [cites]

¹⁰² For an argument to this effect with respect to publicly financed biotechnology research, see Arti K. Rai & Rebecca S. Eisenberg, *Bayh-Dole Reform and the Progress of Biomedicine*, 66 Law & Contemp. Prob. ____ (2002).

such rights.¹⁰³ For some types of information, this assumption may hold. The book trade has been the focus of much neo-classical attention and the one-to-one mapping fits for those books that are not derivative of other copyrighted works. In the rest of the real world, however, tangible goods usually are outputs of processes that involve multiple information inputs subject to a mix of the exclusive rights of patent, copyright and/or trade secret.¹⁰⁴ Where more than one entity owns those rights, a follow-on innovator must bear the cost of obtaining multiple licenses.

The upshot of the NIE insights is that the social costs of granting exclusive rights will be higher than the neo-classical model predicts because the model ignores the coordination costs involved when more than one set of rights covers necessary inputs to a follow-on innovation.¹⁰⁵ These costs can be sufficiently high to thwart entirely the follow-on innovation.¹⁰⁶ Consequently, coordination costs ought to be featured when designing exclusive rights.¹⁰⁷

9. Increasing Protection - Creator Control Will Always Be Imperfect

Polk Wagner highlights the spillover effects generated by information production and dissemination and argues that even if law and technology were combined to yield “perfect” creator control, useful information would still leak because law and technology cannot render

¹⁰³ See Robert P. Merges, *Intellectual Property and the New Institutional Economics*, 53 VAND. L. REV. 1857, 1859-60 (2000).

¹⁰⁴ See *id.* at 1859.

¹⁰⁵ Economic models illustrating the effects exclusive rights have on bargaining between pioneer and follow-on innovators can be found in Jerry R. Green & Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. ECON. 20 (1995); Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29 (1991); Suzanne Scotchmer & Jerry Green, *Novelty and Disclosure in Patent Law*, 21 RAND J. ECON. 131 (1990).

¹⁰⁶ Merges, *IP and NIE*, *supra* n. X, at 1865 (“The idea is that widespread bargaining breakdown may result from the profusion of rights, leading to serious disruptions in the supply of IPR-intensive goods and services.”).

¹⁰⁷ See Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Market*, 111 HARV. L. REV. 621 (1998); Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293 (1996).

control complete.¹⁰⁸ Because consumers will be able to transmit useful information without compensating the initial producer, and that information will serve as an input for the creation of more useful information, the neo-classical model overstates the “cost of expression” that exclusive rights impose on follow-on innovators. Consequently, the level of protection can be set somewhat higher than the model suggests before the marginal costs of new works exceed their marginal benefits.¹⁰⁹

E. Summary

A number of factors affect the incentives to innovate. These factors are present in different degrees across information-dependent sectors. Consequently, the “incentive baseline” differs across sectors. By questioning what the hard costs of different forms of innovation are and by evaluating the likely returns that an innovator would earn without copyright or patent rights, policy makers can better understand the magnitude and scope of the various but related public goods problems that innovation policy seeks to solve. The factors listed above should be used by policy makers as a checklist to determine whether state intervention is required, and if so, in what form. In the field of copyright, Congress already has implicitly endorsed sectoral analysis on an *ad hoc* basis by enacting sector-specific rights or statutory licenses, but sectoral analysis has not been undertaken in any systematic fashion with respect to numerous recent amendments, such as the 1998 extension of the term of all copyrights or the provision of paracopyright rights for all copyrighted works. These legislative amendments apply to all

¹⁰⁸ See Wagner, *supra* note X, at 996 (“The core contention here is that the critics understate – perhaps dramatically – the contribution that even “perfect” control of intellectual creations makes to the public domain . . .”).

¹⁰⁹ See *id.* at 1018-19.

copyrighted works, even when we have evidence that the incentive baseline for some works, say, software, differs significantly from that for production of feature films. The open source model demonstrates that the costs of initial production can be shared by many and that digital networks can be used to effectively minimize the coordination costs associated with peer production. Moreover, even when Congress has taken up specifically sectoral questions, such as whether a public performance right should be added to the exclusive rights held by sound recording copyright owners, Congress has not seriously examined whether the incentives to create and distribute recorded music in the absence of such a right have been insufficient to stimulate desired musical innovation.

In the field of patent, Congress has been similarly inattentive to the market distinctions for different kinds of inventions. For example, software and biotechnology inventions have significantly different costs and the markets for these kinds of information have different lead-times and network effects. As is discussed briefly *infra* the Federal Circuit has applied facially sector-indifferent rules differently to software and biotechnology inventions, implicitly recognizing the importance of sectoral variation. Similarly, the interaction between patent and trademark law deserve more attention from policy makers. When pharmaceutical manufacturers plead for extended terms allegedly to recoup as-yet unrecouped research and development expenditures, policy makers should inquire about the trademark status of the invention(s) and consider whether the manufacturer may continue to enjoy supracompetitive profits through brand loyalty even when the patent(s) expire. Alternatively, if other policies greatly undermine the power of trademark rights – such as government-mandated or managed-care rules that require

purchase of generic drugs whenever available – the market effects of such policies should be taken into account when evaluating how robust pharmaceutical patent protection should be.

III. SECTORAL ANALYSIS: REFINING THE UTILITARIAN JUSTIFICATION

The factors in Section II that identify conditions under which initial producers might have sufficient incentives to innovate in the absence of exclusive rights, or may enjoy magnified benefits from exclusive rights, are context-sensitive. Can policy makers obtain evidence that will help them assess how heavily these factors should weigh? At least one philosopher thinks so.¹¹⁰

However, Judge Posner is far more skeptical. “Unfortunately, the empirical problems are acute—and little progress has been made as yet toward their solution. . . . The task is daunting, for it requires that we be able to estimate both the social gains from additional intellectual property of different types and the social costs of trying to induce the creation of the additional intellectual property by means of adjustments in the regime of intellectual property rights.”¹¹¹

Certainly the task of making information policy for an economy as large and complex as that of the United States is daunting. It is made all the more so if one is committed to an approach by which the utility of exclusive rights must be summed across widely divergent sectors characterized by different combinations of the factors set forth *supra* in Section II. Perhaps the empirical challenges and the utility calculus could be rendered more manageable if policy were directed at specific sectors of information production.¹¹²

¹¹⁰ PETER DRAHOS, *A PHILOSOPHY OF INTELLECTUAL PROPERTY* 7 (1996) (“Probably the greatest service that economics can perform in the area of intellectual property is to track empirically the consequences of various intellectual property arrangements.”).

¹¹¹ Richard A. Posner, *The Law and Economics of Intellectual Property*, *DAEDALUS* 5, 12 (Spring 2002).

¹¹² See David G. Post & David R. Johnson, “*Chaos Prevailing on Every Continent*”: *Towards a New Theory of Decentralized Decision-Making in Complex Systems*, 73 *CHI.-KENT L. REV.* 1055 (1998) (using “Gardner’s Dilemma” to illustrate strategy of optimizing a complex system by optimizing discrete subsections).

In this Section, I argue that a context-sensitive inquiry is logically and practically the best way to address the daunting task of determining when and how to grant exclusive rights in information.

Logically, if one accepts that optimal financing for the production and distribution of useful information requires government investment, and that the government should invest primarily in the creation and administration of exclusive rights rather than in direct monetary subsidies, the next question to address is what the subject matter, scope, and duration of such rights should be. In answering this question, the economic literature has not appreciated, or has ignored, the implications of its own findings and the approach outlined by Breyer. For example, the literature on the economics of copying shows that whether unauthorized reproduction is harmful to society's interests depends on context.¹¹³ Similarly, although the Landes-Posner model represents the entire copyright system with a single variable, the authors recognize that the level of copyright protection should vary according to whether the lead-time advantage and costs of copying will supply a sufficient incentive to induce optimal investment in the production of certain types of works.¹¹⁴ Even when copyright protection is needed, Landes and Posner find as an implication of their model that the level of protection should vary according to the demand for a work.¹¹⁵ Yet their analysis of the scope of rights in the Copyright Act of 1976 focuses only on features common to all copyrighted works – the idea/expression dichotomy, fair use, derivative

¹¹³ See, e.g., Ian E. Novos & Michael Waldman, *The Effects of Increased Copyright Protection: An Analytic Approach*, 92 J. OF POLITICAL ECON. 236 (1984); William R. Johnson, *The Economics of Copying*, 93 J. POL. ECON. 158 (1985).

¹¹⁴ LP, *Copyright* at 330

¹¹⁵ LP, *Copyright* at 344.

works protection, and the independent creation defense - without addressing why this uniform treatment is efficient.¹¹⁶

If the welfare effects of granting innovators exclusive rights in information depend upon other conditions in the markets for goods for which useful information is a significant input - conditions such as those detailed *supra* in Section II - then we should ask whether market conditions in the absence of exclusive rights differ according to the subject matter of the valuable information. If such differences exist, we should ask whether it is possible to tailor the exclusive rights to the conditions of the different markets. If it is possible, we should adopt a sector-specific approach unless the costs of administering such a system outweigh the benefits that greater precision would yield.¹¹⁷

Economic models of exclusive rights in information have not explicitly considered the trade-offs between varying degrees of specificity in legal rights. The trade-offs have received some attention in theories of tangible property. Harold Demsetz argued that as resources increase in value, the legal rights attached to those resources will be defined with greater precision to facilitate more efficient allocations of the resource.¹¹⁸ Those persuaded by the Demsetz view should support greater sectoral specificity of exclusive rights in information

¹¹⁶ See LP, *Copyright*

¹¹⁷ I use the term “sector” somewhat differently than an economist might. I will use the term in relation to the type of information that is the subject of exclusive legal rights - for example, motion pictures, recorded music, pharmaceutical drugs, software. By contrast, an economist might differentiate only between the public sector and the private sector. Alternatively, an economist might define a “sector” by the type of output that those working within the sector produce. On this view, one might think of all entertainment-related industries as belonging to a common sector because the goods and services produced all are directed toward consumption in relation to leisure time. See, e.g., HAROLD L. VOGEL, *ENTERTAINMENT INDUSTRY ECONOMICS: A GUIDE FOR FINANCIAL ANALYSIS* (5th ed. 2001). Within that sector one might speak of distinct “segments,” such as the motion picture segment or the recorded music segment. See *id.* at 24.

¹¹⁸ See Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 350 (1967) (discussing the emergence of property rights); see also Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1320-22 (1993) (surveying literature).

because the economic value of such information has increased dramatically in recent times. As a corollary, the increased economic importance of intellectual property rights means that the magnitude of social welfare loss increases with overbroad rights. So it is equally important to specify the limits on these rights to minimize this loss.

A. Whether Sector-Specific Rights are Feasible

1. The Argument Against Sector-Specificity

- On the copyright side, been there done that. Prior to the 1976 Act, copyright law was overly-specific about subject matter, causing wasteful litigation about the copyright status of photographs, movies, musical works (piano rolls), etc. “Original works of authorship” chosen to make law more readily adaptable to new forms of expression.
- On the patent side, many technologies are not sector-specific (e.g. assembly line methods) and so it wouldn’t work.
- Moreover cannot create stable legal definitions. For example, if we were to change the term of protection for “computer programs” to only five or ten years, software manufacturers would expend enormous, wasteful effort litigating the boundaries of “computer programs” and recharacterizing software to obtain a longer term.
- Even if we could create stable subject matter definitions, the administrative costs of different scope and duration would be too high, particularly since many goods have multiple information inputs.
- Finally, it would be inequitable. Even on purely utilitarian grounds equitable treatment of innovators avoids the disaffection costs of preferring one type of innovators over others, expressed through a grant of more robust rights.

2. Sectoral Rights Are Feasible

The argument above proves too much. A brief review of the United States experience with exclusive rights demonstrates that sectoral rights are feasible. We have extended sector-specific rights for both copyrighted and patented works.

3. Facially Sectoral Rights

a. Copyright

The history of the Copyright Act is one of extending rights to new economic sectors that arise as new technologies have been developed. Exclusive rights extended initially to only “books, charts and maps”.¹¹⁹ The visual arts industry was left to its own in the market. Historically, the first Congress excluded works of visual art from the scope of copyright primarily because copyright had been, and was considered to be, a tool for regulating the publishing industry. Speaking anachronistically, one could also justify the exclusion on the ground that the costs of competition and the economics of fame applicable to popular visual artists provided sufficient insulation from competition to supply adequate incentives for the production of works of visual art. [CHECK]

As new technologies have created new forms of expression and new means of distributing older forms of expression, the subject matter of copyright has expanded. Exclusive rights now cover motion pictures, television, radio, software, toys, etc. The process for expanding the scope of copyright law has not been one of merely adding new types of works subject to the set of exclusive rights established by law. In some cases, extension of scope has been more limited. For example, when the Copyright Act of 1976 extended coverage of federal copyright protection

¹¹⁹ Cite

to recorded music as distinct from the underlying music and lyrics, the rights extended were not commensurate with those granted to other protected works.¹²⁰ Even to the extent that Section 106 of the Copyright Act does not discriminate sectorally in the rights initially granted, the limitations imposed on the Section 106 rights in Sections 111-122 yield sectoral exceptions to the broad, initial grant. In addition, sectoral *sui generis* rights have been granted to industries that do not qualify for protection under Section 106. For example, Title 17 now extends limited exclusive rights to semi-conductor chip masks¹²¹ and boat hull designs.¹²² Congress has considered for the past [6 or 7] sessions whether to create *sui generis* rights in databases.¹²³

b. Patent

On the patent side, the most notable sectoral treatment has been for plants and plant varieties.¹²⁴ The importance of this distinct treatment has been undercut by the Supreme Court's decision in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*,¹²⁵ holding that plant variety inventions are within the subject matter of general utility patents.¹²⁶ [other examples? defense to

¹²⁰ Compare 17 U.S.C. § 106(4) (granting performance right to certain works of authorship) with *id.* § 106(6) (limiting the performance right for sound recordings to "digital audio transmissions").

¹²¹ See 17 U.S.C. §§ 901-14; see also Robert W. Kastenmeier & Michael J. Remington, *The Semiconductor Chip Act of 1984: A Swamp or Firm Ground?*, 70 MINN. L. REV. 417 (1985).

¹²² 17 U.S.C. §§ 1301-32.

¹²³ See, e.g., Jerome H. Reichman & Paul F. Uhlir, *Database Protection at the Crossroads: Recent Developments and Their Impact on Science and Technology*, 14 BERKELEY TECH. L.J. 793 (1999)

¹²⁴ See, e.g., Plant Variety Protection Act of 1970, 7 U.S.C. § 2321 *et seq.*; *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995) (rejecting Federal Circuit's "crop-by-crop" reading of the PVPA); Plant Patent Act of 1930, 35 U.S.C. §§ 161-164 (1994 & Supp. V). TRIPS Article 27.3 requires adherents to adopt *sui generis* protection for plant varieties.

¹²⁵ 534 U.S. ____ (2001).

¹²⁶ See *id.* (interpreting 35 U.S.C. § 101).

business method patents] One commentator argues that the scope of patent rights in human DNA sequences require sectoral treatment.¹²⁷

Biotechnology is the subject of sectoral treatment with respect to novelty and nonobviousness.¹²⁸

Business method patents have been treated distinctly with enactment of the prior user defense in Section 273.

4. De Facto Sectoral Rights

Even when the subject matter of exclusive rights is not explicitly sectoral, we have seen the creation of *de facto* sectoral rights through [licensing practices?] and judicial interpretation. Because copyright has been more explicitly sectoral, we have fewer examples of *de facto* sectoral application. The principal source for such differentiation would be found in Section 107's fair use limitation on the rights granted by Section 106. The courts have not provided sufficiently clear guidance on the scope of the fair use limitation to function as *de facto* sectoral treatment – although they might have with, for example, the legality of music sampling. Rather the Supreme Court has declared a category of expression – parody – as privileged under Section 107.¹²⁹ Parody is protected across a range of sectors – book publishing, recorded music, video games, motion pictures, etc. – although the scope of the parody privilege remains uncertain.¹³⁰

¹²⁷ See, e.g., Donna M. Gitter, *International Conflicts over Patenting Human DNA Sequences in the United States and the European Union: an Argument for Compulsory Licensing and a Fair-use Exemption*, 76 N.Y.U. L. Rev. 1623 (2001).

¹²⁸ See 35 U.S.C. § 103(b).

¹²⁹ See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569 (1994).

¹³⁰ See *Sun Trust Bank v. Houghton Mifflin Co.*, 268 F.3d 1257 (11th Cir. 2001) (vacating preliminary injunction because unlikely that parody of *Gone With The Wind* probably within fair use right secured by 17 U.S.C. § 107).

The pressures of sectoral balancing are more apparent in the judicial application of patent law's more sector-indifferent rights. Mark Lemley and Dan Burk argue that sectoral differences in the scope of patent rights are made likely because those rights depend on the knowledge of a "person having ordinary skill in the art" or PHOSITA.¹³¹ Moreover, they argue, the Federal Circuit has interpreted PHOSITA to generate sector-specific standards for evaluating patent validity – most notably for inventions in the software and biotechnology fields.¹³² Others are less persuaded that the Federal Circuit's application of PHOSITA amounts to *de facto* sectoral standards in these fields.¹³³ Setting aside how this dispute should be resolved on the merits, the plausibility of the Lemley-Burk reading is strong enough to demonstrate that judicial interpretation is another means by which sector-specific policy may be implemented.

5. Summary

The law is a sufficiently versatile tool through which stable, sectoral rights have been, and can be, delineated – either through facially sectoral rights granted by legislatures or *de facto* sectoral rights created by judicial interpretation. Consequently, under a utilitarian justification for exclusive rights in information, policy makers must address the question of whether, or under what conditions, such rights are preferable to broader, sector-indifferent rights.

B. Possible Sectoral Differentiation

A variety of commentators have endorsed the principles of a sectoral approach to exclusive rights – at least along the subject-matter dimension. The former influential Chair of

¹³¹ See Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*

¹³² *Id.* at ___

¹³³ See, e.g., R. Polk Wagner, *(Mostly) Against Exceptionalism*, working paper (2002); Lawrence M. Sung, *On Treating Past as Prologue*, 2001 U. ILL. J. L. TECH. & POL'Y 75.

the House of Representatives committee from which intellectual property legislation emerged, including the landmark Copyright Act of 1976, has written that

Congress, before deciding to provide protection to a particular enterprise, must necessarily consider alternative ways in which the industry can or is protecting itself. Knowledge of the industry gained in such an inquiry can indicate whether proposed legislation will involve costs or benefits for the industry; in addition, the analysis can provide a frame of reference from which to consider costs and benefits of protection for society as a whole.”¹³⁴

Others have been more assertive in insisting that the burden of proof of the social benefits of exclusive rights lies with those who seek such rights: “[E]very system or category of copyright or patent should prove its value up front.”¹³⁵

This subject-matter inquiry is a helpful starting point, but I argue that we should jettison the working assumption that once in the club, any form of copyrighted or patented information should be entitled to the full panoply of rights provided thereunder. By also being flexible about scope and duration we may bring more information into the club, even if it is accorded less robust protection.

1. Identifying Sectors

From a technocratic standpoint, policymakers considering a sectoral approach to exclusive rights first must be able to identify the relevant sectors. This could be quite tricky were one contemplating a sectoral approach from some initial position prior to the division of labor and the development of a multilayered economy. My argument might look different were it directed to a thought experiment along those lines. Instead, the argument addresses the current historical position in which United States policy makers find themselves.

¹³⁴ Kastenmeier & Remington, *supra* n. X, at 452.

¹³⁵ Lessig, *Future of Ideas*, *supra* n. X, at 250.

In our current position, policy makers can look to four sources of information to identify relevant sectors: (a) historical experience; (b) sectoral self-identification; (c) current law; and (d) current market data.

a. Historical Experience

Historically, technological innovation has been a significant source of sectoral differentiation. For example, the development of the printing press gave birth to a new industry, members of which quickly made claims on the state for protection from competition by new entrants. Other technological developments shifted the incentive baseline with respect to the creation of information such as motion pictures, recorded music, and software. Assembly-line production techniques also changed substantially the economic importance of patent rights in affected industries. [CHECK] When identifying sectors, policy makers should consider which technologies have given birth to distinct industries over time and use this information as a factor in determining what the scope of sectoral rights may be.

b. Sectoral Self-Identification

Information producers often form trade associations and/or interest groups to lobby policy makers and communicate with the general public with respect to members' common interests. For example, the Motion Picture Association of America (MPAA) represents the large movie studios, and its head, Jack Valenti, is considered by some to be the most powerful lobbyist in Washington.¹³⁶ Other prominent trade associations of information producers include the Pharmaceutical Research and Manufacturers of America (PhRMA), representing the largest pharmaceutical firms, the Recording Industry Association of America (RIAA), representing

¹³⁶ Cite

producers and distributors of recorded music, the Business Software Alliance, representing large software producers, the Association of American Publishers (AAP), representing the large book publishers, and the Interactive Digital Software Association (IDSA), representing the computer games industry. By forming such associations, members identify themselves as sharing interests. To the extent that these common interests relate to the effects that patent or copyright law have on members, policy makers can look to such organizations as representing sectoral demarcations.

The presence of distinct interest groups should be only a factor in identifying relevant sectors because some of the interests that have brought members together may be unrelated to exclusive rights policy – such as Phrma’s interests in influencing the Food and Drug Administration or the MPAA’s and RIAA’s interests in responding to threatened congressional regulation of sexual and violent expression in motion pictures and recorded music, respectively. Members of distinct trade groups also may be members of broader groups such as the International Intellectual Property Alliance (IIPA), which focuses on international trade matters of common interest. Legislators’ experience has been that these groups have distinct agendas with respect to exclusive rights policy.¹³⁷

Nonetheless, members of such information-producer trade associations represent themselves to policy makers as sharing distinct economic interests, and policy makers traditionally have looked to such groups as collectively representing the interests most directly

¹³⁷ For example, PhRMA plans to seek a lengthened patent term for valuable pharmaceuticals. *Listen to Peter Overby, Pharma Lobby*, NATIONAL PUBLIC RADIO, Mar. 6, 2003, available at <http://www.npr.org/dmg/dmg.php?prgCode=ME&showDate=06-Mar-2003&segNum=6&NPRMediaPref=RM>. Also, the RIAA and the MPAA have parted ways – for the time being – on whether to seek legislation that would force digital equipment manufacturers to build in content-security features. The RIAA dropped its support for such a measure in exchange for the equipment manufacturers’ agreement to drop support for legislation that would clarify consumers’ fair use with respect to copyrighted works such as music.

affected by amendments to copyright or patent rights.¹³⁸ In some cases, trade groups have sought and received distinctly sectoral treatment to avoid having to satisfy the iron law of consensus among these groups. The semi-conductor chip industry and the boat hull manufacturers are the most prominent examples. Similarly, the Audio Home Recording Act, represents a similar approach by the recorded music industry.¹³⁹

c. Current Law

The presence of facially sectoral treatment in current law reflects the combined effects of historical experience – which includes the underlying economic changes that gave rise to distinct sectors – and the formation of industry groups to have these distinct economic interests reflected in law. Existing sectoral rights should remain subject to sectoral analysis. Significant changes in the markets enabled by such rights should be cause for policy makers to revisit the scope and duration of such rights so as to reflect changes in the economics of production or distribution.

d. Market Data

Information outputs are the touchstone for identifying sectors. Because the sectoral approach asks whether society benefits by extending exclusive rights to specific types of information, policy makers must begin by examining existing markets for such information. Markets will exist both for information end products as well as outputs that are useful only as inputs to other information production processes.

To identify markets, policy makers should look at information outputs from the varied perspectives of consumers, producers, and investors. One could begin the search at Wal-Mart,

¹³⁸ See, e.g., Thomas P. Olson, *The Iron Law of Consensus: Congressional Responses to Proposed Copyright Reforms Since the 1909 Act*, 36 J. COPYRIGHT SOC'Y 109, 120 (1989).

¹³⁹ See Goldstein, *supra* n. X., at ____.

the largest retailer in the world. The store's organization reflects/dictates how consumers group items for purchase, and we would do well to survey this organization in search of information markets. Valuable information will have been an input into the production processes behind nearly every item in the store. We might start with the assumption that each type of information trades in its own market. This assumption may prove true for some goods, such as the recorded music found on compact discs or the motion pictures found on digital versatile discs, but false for information such as the processes by which assembly-line production is accomplished.

To test this hypothesis, we might shift perspectives and consider matters from the producers' perspective. Where we find a one-to-one match between products and suppliers, that is, firms that produce only one good, we can be quite certain that a distinct market exists for that good. We must then determine whether the value of the good derives primarily from the information embedded in the good – such as a book – rather than from the physical container for the information. Most firms, however, diversify their risk by producing more than one product. Among large corporations, we have seen a see-saw process by which unrelated goods and services have been brought under a single conglomerate's roof, as in the 1970s, only to be broken up and sold for parts, as in the 1980s, only to be followed by a new wave of mergers and acquisitions, as in the 1990s. Among certain information-intensive industries, we are in the midst of another round of conglomeration.¹⁴⁰

Finally, we may look at matters from an investor's point of view. When deciding whether to place a bet on an information producer, an investor will consider factors such as the producer's business model, sales potential, and the presence and strength of potential

¹⁴⁰ String cite on media concentration.

competitors. When analyzing how an information producer will compete, the considerations listed in Part II, *supra*, will be quite important. Where investor analysis reveals distinct features of an information market under those factors, policy makers can rely on such analysis to consider whether exclusive rights should be sectorally determined for such a market. One example of investor analysis that could be used for sectoral identification is the way investors view biotechnology and pharmaceutical firms. Investors recognize these two industries as closely related and potentially mutually competitive.¹⁴¹ Biotechnology and pharmaceutical firms both have considerable research and development expenses and both claim the need for strong exclusive rights to induce investments in such socially beneficial research. However, this research involves technologies at different stages of commercialization. This distinction has led some commentators to suggest that patent rights to upstream biotechnology inventions ought to be treated differently – by, for example, protecting such rights with only a liability rule to avoid costly holdout problems – than downstream chemical compounds sold by pharmaceutical manufacturers.¹⁴²

2. Using Data to Identify the Public Goods Problems per Sector

Once policy makers have identified distinct information sectors, information producers within each sector should be called upon to supply policy makers with the relevant information concerning the incentive baseline within the sector. First, policy makers should request reliable data about the costs of production, distribution, and marketing. For example, pharmaceutical

¹⁴¹ See, e.g., http://biotech.equityresearchcenter.com/idx_pharma.php or Michael Murphy, *Why Big Pharma and Biotech are Star-Crossed Lovers* available at http://biotech.equityresearchcenter.com/idx_pharma.php

¹⁴² See, e.g., Gitter, *supra* n. X, at ___ (advocating statutory license for human DNA sequences).

firms should supply reliable data concerning the costs of research and development.¹⁴³ In some sectors, such as the recorded music industry, advances in digital technology have potentially reduced recording costs.¹⁴⁴ Digital technology also could substantially reduce film distribution costs if the studios can persuade theater owners to invest in digital projectors.¹⁴⁵ Finally, as Mark Nadel points out, marketing is a considerable cost for those who sell useful information.¹⁴⁶ The exclusive rights of patent and copyright indirectly underwrite these expenditures, and policy makers should consider whether exclusive rights may be being used to subsidize expenditures that affect the distribution of wealth among competitors but return no net social benefit. For example, a recent decision by the Food and Drug Administration to permit television advertising by pharmaceutical manufacturers has led to a noticeable shift of funds away from research and development and into marketing.¹⁴⁷ The exclusive rights provided by patent law make these marketing expenditures worthwhile to manufacturers. In the absence of such rights, such marketing expenditures would not likely be worthwhile because competitors would be able to free ride off the growth in the market, unless some other source of supracompetitive profits, such as trademark protection, would allow the manufacturer to enjoy increased revenues from such advertising. If the effects of pharmaceutical mass media advertising are deemed socially

¹⁴³ See, e.g., Russell Mokhiber and Robert Weissman, *Stripping Away Big Pharma's Figleaf*, Jun. 13, 2002, available at <http://www.commondreams.org/views02/0613-07.htm> (consumer advocates asserting that large pharmaceutical firms invest significantly less than they claim in research and development).

¹⁴⁴ See Ku. In some cases, record labels continue to spend considerable amounts on production, as was the case with Michael Jackson's most recent album. Policy makers should seek data from a range of information producers to assess production costs.

¹⁴⁵ Cites.

¹⁴⁶ See Mark S. Nadel, *Questioning the Economic Justification for (and Thus Constitutionality of) Copyright Law's Prohibition Against Unauthorized Copying: § 106* at 17-22 (unpublished manuscript available at www.ssrn.com/abstract=322120).

¹⁴⁷ Cite N.Y. Times article on this.

detrimental, policy makers should consider either prohibiting such expenditures – to the extent that it is constitutional to do so – or altering the rights structure to discourage such expenditures.

Similarly, authors and book publishers should be asked for data concerning the length of the lead-time advantage they have over competitors and the effect of network effects, such as blockbuster sales, on the incentives to write and publish books.¹⁴⁸

The data that policy makers should seek should illuminate not only the incentives to create individual works or technologies, but the incentives to participate in the sector over time. As Merges and Nelson have pointed out, models that conceive of innovation incentives as a one-shot game ignore the reality that innovation involves multiple economic agents interacting over time, and that rights granted in one period affect the incentives to innovate in a later period.¹⁴⁹ The challenge is not simply to identify the incentives the exclusive rights create to write a novel in one's spare time but to identify the incentives to invest in becoming an author, inventor, or publisher and to stay one over time.¹⁵⁰

3. Possible Sectoral Variations

a. Subject Matter

– This has been the traditional inquiry. Is a specific form of information likely to be produced in desired quantity and quality without exclusive rights? If not, for present purposes, we assume that some form of exclusive rights should be extended. What protection?

¹⁴⁸ For some indication of the importance of network effects, see Frank & Cook, *supra* n. X, at ____ (detailing the growing amounts advanced to select, highly successful authors).

¹⁴⁹ Merges & Nelson, *supra* n. X, at 869-70.

¹⁵⁰ *See, e.g.*, FRANK & COOK, *supra* n. X, at ____ (discussing the lottery-like effect of winner-take-all markets and the propensity of such effect to attract too many entrants in such markets).

a. Duration

The term of protection under a patent is significantly shorter than the duration of a copyright, but within their respective domains, patent and copyright rights have generally been of respectively uniform duration. (Some variation has existed when Congress has granted private bills to extend rights in individual works.¹⁵¹) The efficiency of a uniform term has largely been assumed rather than analyzed. If it is possible to delineate sectoral subject matter in a manner that does not invite substantial litigation over the contours of the boundaries, it may well be in society's interests to vary the terms. For example, if some pharmaceutical drugs would remedy a condition or illness suffered by a relatively small number of people, a longer term of patent protection for such inventions might be necessary to induce innovators to make expenditures on research and development or commercialization. This is a feasible approach if we can create a sufficiently stable definition of a pharmaceutical drug and delimit the criteria for drugs eligible for a longer term of protection.

Some sector-specific terms exist and have been proposed. For example, the term of protection for a semi-conductor chip mask is only 10 years.¹⁵² The term for the *sui generis* right in databases created by the European Union Database Directive is 15 years, and proposed legislation in the United States adopts that term as well.¹⁵³

A number of commentators have identified software as the potential subject of its own term of protection.¹⁵⁴ Software may well be a good candidate for sectoral treatment because it

¹⁵¹ Cites from Eldred briefs

¹⁵² See 17 U.S.C. § 904(b).

¹⁵³ Cites

¹⁵⁴ See, e.g., *Manifesto*, *supra* note X, at ____, Lessig, *Future of Ideas*, at ____ (proposing 5-year renewable term for software).

already is subject to overlapping protection by patent and copyright, with their radically different terms of protection. “Software,” however, is likely too broad a category to be captured in a stable legislative definition.¹⁵⁵ This is particularly true after the Federal Circuit has broadened the scope of patentable subject matter to include processes that use software to achieve useful results.¹⁵⁶ Greater success may be had in sectoral differentiation depending on the function or target market for types of computer programs (e.g., operating systems, middleware, end-user applications, etc.).

sector-specific [**CHECK, technically subject-specific**] patent terms.¹⁵⁷

– Vary Scope of Protection

– Property v. Liability Rule

– Exceptions

Prior economic analysis has implicitly demonstrated the importance of sectoral considerations with respect to the scope of rights needed to improve, if not optimize, information production and distribution. For example, whether a copyright owner should have control over “private copying” may be sector-dependent. Prior work has demonstrated that the welfare effects of unauthorized copying will differ depending on considerations such as the marginal costs of producing the copies sold by the owner and the copies made “privately” and the substitutability of

¹⁵⁵ Cf. UCITA’s unsuccessful attempt to cabin the scope of “computer information.”

¹⁵⁶ See *State Street*

¹⁵⁷ See F.M. Scherer, *Nordhaus’ Theory of Optimal Patent Life: A Geometric Reinterpretation*, 62 Am. Econ. Rev. 422 (1972); W.D. Nordhaus, *The Optimum Life of a Patent: Reply*, 62 Am. Econ. Rev. 428 (1972).

private copies for the copyright owner's goods.¹⁵⁸ While digital technology has reduced some of the sectoral differences that may have existed before because it reduces the marginal cost of copying and increases the substitutability of unauthorized copies for those sold by the copyright owner, one would still need to analyze whether and how the welfare effects of private copying differ across sectors, paying particular attention to the role of network effects.¹⁵⁹

4. Analyzing Trade-offs Between Uniform and Sectoral Approaches

5. Examples

- sound recording performance right
- software
- biotechnology

V. Conclusion

¹⁵⁸ See Stanley M. Besen & Sheila Nataraj Kirby, *Private Copying, Appropriability, and Optimal Copying Royalties*, 32 J. L. & Econ. 255, 258-59 (1989).

¹⁵⁹ Shapiro & Varian, *Information Rules*, *supra* n. X, at ____.