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# One Size Does Not Fit All: A Framework for Tailoring Intellectual Property Rights

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# One Size Does Not Fit All: A Framework for Tailoring Intellectual Property Rights

MICHAEL W. CARROLL\*

*The United States and its trading partners have adopted cultural and innovation policies under which the government grants one-size-fits-all patents and copyrights to inventors and authors. On a global basis, the reasons for doing so vary, but in the United States granting intellectual property rights has been justified as the principal means of promoting innovation and cultural progress. Until recently, however, few have questioned the wisdom of using such blunt policy instruments to promote progress in a wide range of industries in which the economics of innovation varies considerably.*

*Provisionally accepting the assumptions of the traditional economic case for intellectual property, this Article scrutinizes the presumption of uniformity in patent and copyright law and makes three contributions. First, it suggests three overarching metrics policymakers should use when choosing among innovation-related policies: (1) the government's comparative ability to direct resources toward innovation likely to lead to success; (2) the policy's "administrability;" and (3) the questions of political economy likely to effect a policy's success. From this analysis, the case for intellectual property rights emerges as a second-best solution based on the uncertainty of innovation and the comparatively better information possessed by private innovators.*

*Second, this Article shows that these same three metrics supply the case for uniform intellectual property rights within the distinct domains of patent and copyright law as a default initial domestic policy. Third, intellectual property law is part of a dynamic system, and information obtained over time will support proposals to tailor patents and copyrights to improve their performance as innovation policy. Indeed, the distinction between patent and copyright law is a form of high-level tailoring, and in addition patent and copyright law each has been tailored in a number of ways by Congress, the federal courts, and administrative agencies. Intellectual property*

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*scholarship lacks a framework for assessing existing and proposed tailoring measures. This Article proposes such a framework derived from the logic of the traditional economic case for intellectual property. This framework applies to a wide range of pending policy questions, such as whether, or to what extent, software, business methods, tax shelters, or living organisms should be patentable and whether, or to what extent, statutory licenses should be granted for certain types of copyrighted works or for certain types of use, and whether fashion design should receive sui generis protection.*

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## I. INTRODUCTION

The legal literature concerning intellectual property rights has grown in recent years to advance our understanding of the history of copyright law and the patent system, the economic functions of patents and copyrights, and the conceptual frameworks used by courts, legislatures, and the general public to understand intellectual property. It is generally accepted that the government grants patents to inventors and copyrights to authors to promote innovation and the development of culture and education.<sup>1</sup> Nonetheless, two yawning gaps remain in the analysis of intellectual property as a means to achieve innovative and creative ends.

First, when and why grant intellectual property rights? Granting exclusive rights is only one of a number of options available to stimulate investments in innovation and cultural production. Direct investments through grant awards is another.<sup>2</sup> There is no generally accepted framework—even within the subdiscipline(s) of economic analysis of law—for assessing the trade-offs between granting intellectual property rights, investing public funds directly in innovation through grants or prizes or indirectly through tax policy, or some combination of these to encourage desired levels of inventive and creative activity.<sup>3</sup>

Second, to the extent that there is good reason to rely on the intellectual property rights strategy, why tailor rights by distinguishing patents, copyrights, trademarks, and trade secrets but then grant patents and copyrights as usually one-size-fits-all bundles of rights when these rights impose significant social costs and the inventors and authors who receive

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<sup>1</sup> See *infra* notes 16–21 & accompanying text (discussing the policy goals for intellectual property rights).

<sup>2</sup> See, e.g., Omnibus Appropriations Act, H.R. 1105, 111th Cong. (2009) (increasing budgets for scientific research through the National Institutes of Health and the National Science Foundation by billions of dollars).

<sup>3</sup> Some commentators have addressed the question and made important contributions, but these have not led to a fully developed policy framework. See Nancy Gallini & Suzanne Scotchmer, *Intellectual Property: When Is It the Best Incentive System?*, in 2 INNOVATION POLICY AND THE ECONOMY 51, 53, 71 (Adam Jaffe, Joshua Lerner & Scott Stern eds., 2002) (sketching in the beginning of such analysis); Joseph E. Stiglitz, *Economic Foundations of Intellectual Property Rights*, 57 DUKE L.J. 1693, 1712–24 (2008) (same).

these rights are quite differently situated?<sup>4</sup> Indeed, the problem of “uniformity cost”—the social cost attributable to the lack of fit between our innovation goals and the blunt means of one-size-fits-all patents and copyrights—is at the heart of most contemporary problems with intellectual property law.

The concept of uniformity cost is somewhat abstract, but it is central to understanding the economics of intellectual property. Uniformity cost is analogous to the more familiar economic concept of opportunity cost—the cost, say, of giving up option *A* in favor of option *B*.<sup>5</sup> Patent and copyright law define the range of options or opportunities that inventors and authors on one side, and members of the public on the other, may legally act on with respect to certain forms of information, such as a narrative or the formula for manufacturing a pharmaceutical compound. When choosing whether to assign an information entitlement to inventors/authors or the general public, intellectual property policymakers must take into account, to the extent feasible, the foregone outcomes that result from this choice. One-size-fits-all patents and copyrights effectively bundle a large range of potential uses and make the assignment of information entitlements a decision about assigning very large bundles of activities to one side or the other.

Uniformity cost is the social cost that arises when a particular use has been assigned to the party who is less able to make a socially productive use of the opportunity. In the worst case, the mistaken assignment empowers the entitlement holder to thwart a range of potentially productive activities—whether that is because the assignment to the public scares away capital investment necessary to further develop valuable information or because the assignment of a property right undercuts the productive capacity of a range of innovators or creators in the general public.

While the term “uniformity cost” is of relatively recent vintage, the problem it describes is not new, and the law already deploys a range of strategies to mitigate uniformity cost. Tailoring rights is one such strategy. However, while patent and copyright law already have been tailored in a number of respects, scholars have not developed a general framework for assessing whether these tailoring measures reflect successful rent seeking, successful fine tuning, or both.<sup>6</sup>

This Article analyzes the gaps in the standard economic case for granting intellectual property rights in general and uniform intellectual rights in particular and articulates an evidence-based framework for refining the

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<sup>4</sup> See *infra* Part III (discussing the costs of uniform rights).

<sup>5</sup> Thanks to Brett Frischmann for this insight.

<sup>6</sup> See Glynn S. Lunney, Jr., *Patent Law, the Federal Circuit, and the Supreme Court: A Quiet Revolution*, 11 SUP. CT. ECON. REV. 1, 17 (2003) (advancing a formal model showing the trade-offs).

intellectual property rights strategy and for recognizing when alternative policies would be preferable to intellectual property. For purposes of this Article, I provisionally confine the analysis to the frame imposed by traditional welfare economics, as modified by the new institutional economics, which together dominate the law-and-economics literature on intellectual property. The argument for the tailoring framework emerges as a logical extension of this approach to the field. However, periodically, I point out in text or in the notes certain limitations on, or difficulties with, using this form of economic analysis to support policies aimed at welfare maximization.

With this proviso in mind, the Article argues that three general criteria should frame the comparative analysis of granting intellectual property rights and other policy options. First, policymakers should assess the relative abilities of government officials and potential authors, inventors and their financial backers, to predict innovative success, recognizing that “success” is a value-laden objective and that investments in technological and cultural progress are uncertain however success is measured.<sup>7</sup> Second, they should assess the “administrability” of a proposed policy option. This criterion combines assessments of relative administrative cost and robustness against attempts to game the system.<sup>8</sup> Finally, considerations of political economy should be given due weight. Theoretical models of innovation policy trade-offs have their place, but the historical concentration of innovative and creative production in certain industries has given these industries certain forms of influence with public officials that must be acknowledged when fashioning policy that is supposed to do real and important work in the real world.<sup>9</sup>

On the question of reducing uniformity cost, this Article argues that much more work needs to be done, and it proposes an analytical framework to guide this future work. Currently, economic analysts of intellectual property rights seem resigned to accept the intractability of certain problems posed by unitary patent and copyright systems, a sense best captured by Professor Clarisa Long: “The same might be said of a unitary patent system that Winston Churchill famously said about democracy: It’s the worst form of patent system, except for all the others that have been tried.”<sup>10</sup>

Respectfully, I disagree. As a descriptive matter, neither patent law nor copyright law is entirely unitary. At its most extreme, statutory law has been

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<sup>7</sup> See *infra* note 51 & accompanying text (discussing uncertainty).

<sup>8</sup> See *infra* Section V.B (discussing administrability).

<sup>9</sup> See *infra* Section II.C (discussing political economy).

<sup>10</sup> Clarisa Long, *Our Uniform Patent System*, 55 FED. LAW. 44, 49 (2008) [hereinafter Long, *Uniform Patent System*].

tailored to extend *sui generis* exclusive rights to inventions of new plants, plant varieties, certain designs, semi-conductor chip masks, and boat hull plug molds.<sup>11</sup> As of this writing, certain fashion designers are lobbying to add fashion design to this list of intellectual property misfits.<sup>12</sup> Less extreme are the multiple measures through which Congress has augmented or diminished rights under patent and copyright law with respect to inventions such as pharmaceutical drugs, inventions arising from federally-funded research, and works of authorship in music, architecture, and software, to name a few.<sup>13</sup> Current writing about intellectual property strives to marginalize these measures, and, as Professor Joseph Liu has recognized with respect to copyright law, as a result analysis of tailored intellectual property rights is undertheorized.<sup>14</sup>

As a normative matter, intellectual property rights should be tailored to reduce uniformity cost. While there are less direct strategies—deploying real options and flexible standards that render formally defined uniform rights more pliable in application<sup>15</sup>—these are not a complete answer to the problem of uniformity cost. Tailoring will sometimes be the only solution. The catch is that tailoring intellectual property rights well is not easily done. The practical obstacles are substantial, and it is for this reason that the conceptual frames of unitary patent and copyright systems dominate the literature. But the distinction between patent and copyright is itself a form of tailored protection, and within the domains of each branch of these forms of intellectual property, rights have been tailored before and will be tailored again. It is time to have a framework for analyzing this activity and to recognize its potential value in rendering intellectual property rights better suited to their task(s).

Proposing such a framework is the principal goal of this Article, and here is the roadmap for how the analysis proceeds. Section II shows how three considerations—information asymmetries, administrability concerns, and questions of political economy—explain the dominance of intellectual property rights as the primary innovation and cultural policy in the United States. Section III shows that these same considerations explain the default to

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<sup>11</sup> See Michael W. Carroll, *The Law of Tailoring in Intellectual Property* (June 24, 2008) (unpublished manuscript, on file with author) [hereinafter Carroll, *Law of Tailoring*] (describing each of these tailored provisions).

<sup>12</sup> See *infra* note 256 & accompanying text (discussing the Design Piracy Act).

<sup>13</sup> See Carroll, *Law of Tailoring*, *supra* note 11.

<sup>14</sup> See generally Joseph Liu, *Regulatory Copyright*, 83 N.C. L. REV. 87, 105–06 (2004) (discussing industry-specific provisions of the Copyright Act).

<sup>15</sup> See Michael W. Carroll, *One for All: The Problem of Uniformity Cost in Intellectual Property Law*, 55 AM. U. L. REV. 845, 857–61 (2006) [hereinafter Carroll, *One for All*].

uniform patents and copyrights as an initial matter. Section IV shows, however, that Congress, the federal courts, the United States Patent and Trademark Office (“PTO”) and the Copyright Office have each tailored rights granted by patent and copyright law to some degree. Finally, Section V delivers the proposed framework for gathering and assessing evidence of uniformity cost and deciding whether a tailoring response is desirable and feasible.

## II. WHY INTELLECTUAL PROPERTY?

The standard economic case for patent and copyright law is quite familiar. This Section recites only those aspects relevant to the debate concerning uniform and tailored rights. This Section also calls attention to often overlooked dimensions of the case for intellectual property regarding its history, and the respective roles of comparative administrative costs and considerations of political economy.

The general case for intellectual property starts with the problem. In a competitive economy, we should expect underinvestment in creative and inventive endeavors without some form of government assistance. Once an author, inventor, or their respective financial backers has paid for the creation of a valuable creative or innovative work, competitors can reproduce and distribute that work at prices too low for those who invested in the creation to recoup their investments.<sup>16</sup>

The standard economic solution to this public goods or appropriability problem<sup>17</sup> is government action. In the United States, the Constitution grants Congress a range of powers from which it may fashion solutions. First, Congress has power “[t]o 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.”<sup>18</sup> The idea is simple enough. Copyrights and patents are bundles of rights designed to stimulate investments in the activities that drive progress by excluding direct

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<sup>16</sup> See, e.g., Peter S. Menell & Suzanne Scotchmer, *Intellectual Property*, in 2 HANDBOOK OF LAW AND ECONOMICS 1474, 1476 (A. Mitchell Polinsky & Steven Shavell eds., 2007), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=741424#PaperDownload](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=741424#PaperDownload).

<sup>17</sup> Some commentators argue that the public goods model maps poorly to works of authorship. See Christopher S. Yoo, *Copyright and Public Good Economics: A Misunderstood Relation*, 155 U. PA. L. REV. 635, 693–703 (2008) (arguing that potential for spatial competition alters analysis of the appropriability problem but maintaining fealty to uniform copyright for some of the reasons set forth in Part III *infra*); Glynn S. Lunney, Jr., *Copyright, Private Copying, and Discrete Public Goods*, 12 TUL. L. J. TECH. & INTELL PROP. (forthcoming 2009).

<sup>18</sup> U.S. CONST. art. I, § 8, cl. 8.



competition with the rightsholder in the marketplace. The owner of such rights will enjoy the reward of monopoly pricing if there is sufficient demand in the market for the underlying innovation.<sup>19</sup>

These rights must be limited, however. While solving one problem, intellectual property rights create another by supplying rightsholders with powerful weapons against end-users, direct competitors and follow-on innovators who seek to bring socially beneficial innovations to market.<sup>20</sup> To promote progress, intellectual property law must strike a balance, providing sufficient incentives for innovation without unduly stifling the efforts of follow-on innovators or the liberties of end-users. While many proponents of intellectual property rights treat this move from problem to property as automatic, it is not.<sup>21</sup> Administering an intellectual property regime is socially costly, and the intellectual property strategy is merely one option that policymakers may deploy to encourage investments in creation and invention in the face of competition.

The second power from which Congress can craft a solution to the appropriability problem is “to lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common defence and general Welfare of the United States.”<sup>22</sup> It is fair to assume a correlation between the “promotion of progress” and “provision of the general welfare,” and thus these two powers create in effect two currencies that government may use to spur innovation—exclusive rights, which provide an indirect subsidy through the promise of potential monopoly profits, indirect subsidies through tax expenditure or market regulation through other tax policies, or direct spending on innovation either through direct employment or through a system of grants, rewards or prizes for creators and inventors.

Third, Congress has power to “regulate commerce with foreign nations, and among the several states, and with the Indian tribes.”<sup>23</sup> This power enables direct regulation of markets for information or for information-intensive goods—such as new drugs<sup>24</sup>—and for less direct regulation

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<sup>19</sup> See, e.g., Menell & Scotchmer, *supra* note 16, at 1476–77.

<sup>20</sup> See Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1058–59 (2005) [hereinafter Lemley, *Free Riding*] (tallying the social costs of intellectual property rights).

<sup>21</sup> See Menell & Scotchmer, *supra* note 16, at 1477 (“Whereas the earlier economics literature proceeded as if intellectual property protection was the self-evident solution to the incentive problem, a more recent literature . . . has tried to understand when that is true, and when other incentive mechanisms might dominate.”).

<sup>22</sup> U.S. CONST. art. I, § 8, cl. 1.

<sup>23</sup> *Id.* art. I, § 8, cl. 3.

<sup>24</sup> See, e.g., 21 U.S.C. § 355(a) (2006) (“No person shall introduce or deliver for introduction into interstate commerce any new drug, unless an approval of an application

through the creation of exclusive rights other than patents and copyrights, such as trademarks<sup>25</sup> or rights against circumvention of technological measures protecting works protected under Title 17.<sup>26</sup> Theoretically, Congress could respond to the appropriability problem through a range of ex ante regulations on entry, pricing or on contractual relations in information-intensive markets.<sup>27</sup> In addition, ex post regulation derived from the Commerce power, such as antitrust litigation, interacts with any direct or indirect regulation of these markets. The economic literature on intellectual property generally assumes that exclusive rights will form the basis for markets that will not be subject to additional regulation—with the large and notable exception of the markets for pharmaceuticals and biologics—and that ex post antitrust regulation is the most significant variable that models supporting intellectual property must accommodate.<sup>28</sup> Although one could argue that this assumption reflects a *laissez-faire* bias or a lack of regulatory imagination, this Article accepts the working hypothesis that it would be more efficient to tailor intellectual property rights within the respective domains of patent and copyright law rather than to rely upon targeted Commerce Clause-based regulation, with the exceptions of health and safety regulation and antitrust regulation.

Finally, the scope of the above three grants of power are augmented by the power “[t]o make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof.”<sup>29</sup> In fact, when the options are parsed more closely, policymakers may select from, or combine, six strategies to solve the appropriability problem:

- 1) direct provision of creators or innovators employed by the government;

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filed pursuant to subsection (b) or (j) of this section is effective with respect to such drug.”).

<sup>25</sup> See *In re Trade-Mark Cases*, 100 U.S. 82, 96–97 (1879) (holding that Commerce Clause supports trademark legislation regulating interstate commerce but holding that Act under review not so limited).

<sup>26</sup> See 17 U.S.C. §§ 1201–05 (2006).

<sup>27</sup> Thanks to Josh Sarnoff for this insight.

<sup>28</sup> See, e.g., MICHAEL CARRIER, *INNOVATION FOR THE 21ST CENTURY: HARNESSING THE POWER OF INTELLECTUAL PROPERTY AND ANTITRUST LAW* (2009) (summarizing literature and proposing model for relationship between intellectual property rights and antitrust law).

<sup>29</sup> U.S. CONST. art. I, § 8, cl. 3; see also *McCulloch v. Maryland*, 17 U.S. 316 (1819) (generously construing scope of laws that are “necessary and proper”).

- 2) direct compensation ex ante to the innovator for producing the information (leaving the costs of reproduction and distribution to be borne by participants in a competitive market), such as a grant to a promising innovator;
- 3) direct compensation to the innovator ex post through a reward or prize system for innovations already created, such as prizes awarded by a number of federal government science agencies;
- 4) indirect compensation to the innovator through tax policy, by for example giving tax credits for investments in research and development;
- 5) protection of innovators from competition through the grant of exclusive production and distribution rights (thereby encouraging monopoly pricing), by creating patent and copyright law; or
- 6) other forms of protection from competition or misappropriation by increasing excludability of valuable information, by for example prohibiting circumvention of technological protection measures.<sup>30</sup>

These strategies can be, and usually are, combined in a number of ways, but the intellectual property strategy must compete with these others for its place in the policy mix. Theoretically, direct investment strategies are superior to intellectual property because once the costs of creating and commercializing a creative or inventive work have been financed, the information should be in the public domain and goods incorporating this information can be commoditized.<sup>31</sup> Competitive markets efficiently produce and distribute commodity goods, such as personal computers, generic drugs or books that are no longer under copyright.<sup>32</sup> Why, then, is not direct payment to innovators the dominant innovation policy in the United States and in most other industrialized economies? Direct payment to authors, inventors or their creditors is impractical in many circumstances, and the intellectual property strategy emerges as a second-best solution to the appropriability problem.

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<sup>30</sup> See WILLIAM W. FISHER III, PROMISES TO KEEP: TECHNOLOGY, LAW, AND THE FUTURE OF ENTERTAINMENT 200–01 (2004); LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A NETWORKED WORLD 96 (2001); Brett M. Frischmann, *Innovation and Institutions: Rethinking the Economics of U.S. Science and Technology Policy*, 24 VT. L. REV. 347, 392–95 (2000) [hereinafter Frischmann, *Innovation and Institutions*] (analyzing trade-offs among policy approaches).

<sup>31</sup> See Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 132–33 (2004) [hereinafter Lemley, *Ex Ante Versus Ex Post*].

<sup>32</sup> See *id.* at 135–39 (explaining benefits of competition to promote widespread distribution).

The case for intellectual property has had its ups and downs over time, but in recent years it has enjoyed something of a free ride. The case faced difficulties in Europe during the latter half of the nineteenth century, where the patent system had become tainted with the stink of monopoly.<sup>33</sup> Again, in the late 1950s, Congress asked an eminent economist to study whether continuing to support the patent system was worth its cost. The best he could do was to shrug his shoulders: “[I]f we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.”<sup>34</sup>

By the 1960s, however, in the depths of the Cold War, the pioneers of modern law and economics wrapped the case for intellectual property in the flag. Professor Kenneth Arrow, for one, declared that “[i]n an ideal *socialist* economy, the reward for invention would be completely separated from any charge to the users of the information” whereas “[i]n a *free enterprise* economy, inventive activity is supported by using the invention to create property rights.”<sup>35</sup> Arrow recognized that the cost of a system of property rights is that “precisely to the extent that it is successful, there is an underutilization of the information.”<sup>36</sup> But by framing the choice as between socialism and “free enterprise,” readers were instructed that a reward system for invention and a free enterprise economy are incompatible options.

Today, the case for intellectual property rights cannot disregard the direct-compensation alternatives so summarily. As Arrow acknowledged, direct compensation to innovators appears to be preferable to intellectual property rights at first glance because this strategy avoids the social costs of underutilization.<sup>37</sup> In the modern context an emerging literature supports this

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<sup>33</sup> See ERIC SCHIFF, *INDUSTRIALIZATION WITHOUT NATIONAL PATENTS: THE NETHERLANDS 1869–1912, SWITZERLAND 1850–1907* 40–41 (1971); STEVEN SHAVELL, *FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW* 164–65 (2004). See generally Mark D. Janis, *Patent Abolitionism*, 17 *BERKELEY TECH. L.J.* 899 (2002) (discussing arguments for patent abolition); Fritz Machlup & Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 *J. ECON. HIST.* 1, 1–6 (1950).

<sup>34</sup> SUBCOMM. ON PATENTS, TRADEMARKS & COPYRIGHTS OF THE S. COMM. ON THE JUDICIARY, 85TH CONG., *ECONOMIC REVIEW OF THE PATENT SYSTEM* 18 (Comm. Print 1958) (authored by Fritz Machlup), available at <http://mises.org/etexts/patentsystem.pdf>.

<sup>35</sup> Kenneth J. Arrow, *Economic Welfare and Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 614, 623–24 (Nat’l Bureau Comm. for Econ. Research, ed., 1962) (emphasis added) (recognizing valuation problems and explaining government choice to procure defense research directly by contract rather than through reliance on patent system).

<sup>36</sup> *Id.*

<sup>37</sup> For early work along these lines, see Michael Polanyi, *Patent Reform*, 11 *REV.*

view, advocating for a range of institutional forms of direct compensation.<sup>38</sup> A leading economist, Professor Joseph Stiglitz, has endorsed the use of prizes in the drug discovery context,<sup>39</sup> and Professor Steven Shavell further observes that “in many plausible situations, the reward system would be superior to the property rights system.”<sup>40</sup> For example, using the abstract, formal methodology generally used to support the case for exclusive rights, Professors Shavell and Ypersele show that giving the innovator the option to choose either a reward calculated from ex post data, such as sales figures, or exclusive rights would be preferable to the current patent system. Some legislators also have been attracted to this approach.<sup>41</sup> This pressure on the traditional case for intellectual property is most welcome, and there are reasons to expect that this analysis may help alter the mix of government policies in favor of direct compensation to some extent. More radical economists have concluded that Malchup was too timid and that the absence of historical data sufficient to support the case leads to the conclusion that “intellectual property is an unnecessary evil.”<sup>42</sup>

Nonetheless, the case for intellectual property rights retains its vitality in light of three practical considerations necessary to assessing the feasibility and desirability of the various strategies for solving the appropriability

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ECON. STUD. 61 (1944).

<sup>38</sup> See, e.g., Michael Kremer, *Patent Buyouts: A Mechanism for Encouraging Innovation*, 113 Q. J. ECON. 1137, 1146–48 (1998) (discussing auction model as superior to patent system); Douglas Gary Lichtman, *Pricing Prozac: Why the Government Should Subsidize the Purchase of Patented Pharmaceuticals*, 11 HARV. J.L. & TECH. 123, 124–25 (1997) (subsidizing buyouts by using a coupon scheme); Steven Shavell & Tanguy van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 J.L. & ECON. 525, 526 (2001) (arguing in favor of optional system that allows innovators to be compensated under current patent regime or reward system). A thorough and thoughtful contribution to this literature is Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND. L. REV. 115 (2003).

<sup>39</sup> See Joseph Stiglitz, *Scrooge and Intellectual Property Rights: A Medical Prize Fund Could Improve the Financing of Drug Innovations*, 333 BRIT. MED. J. 1279 (2006); Joseph Stiglitz, *Give Prizes Not Patents*, NEW SCIENTIST, Sept. 16, 2006, at 21.

<sup>40</sup> STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 163 (2004).

<sup>41</sup> See Medical Prize Innovation Act of 2005, H.R. 417, 109th Cong. (2005) (proposing to prohibit ownership of exclusive rights in drugs or biological products and creating a fund for Medical Innovation Prizes that would compensate medical innovators). For the full-throated argument, see James Love & Tim Hubbard, *The Big Idea: Prizes to Stimulate R&D for New Medicines*, 82 CHI.-KENT L. REV. 1519, 1528–34 (2007). A large bibliography of the relevant literature can be found at Knowledge Ecology International, Scholarly and Technical Articles and Books on Innovation Prizes, <http://www.keionline.org/content/view/82/1> (last visited Mar. 10, 2009).

<sup>42</sup> See MICHELE BOLDRIN & DAVID LEVINE, AGAINST INTELLECTUAL MONOPOLY 11 (2008).

problem. These are: (1) the government's ability, relative to private actors, to value<sup>43</sup> certain types or classes of creation or innovation;<sup>44</sup> (2) the comparative administrative cost of a strategy; (3) and considerations of political economy associated with a particular strategy. By testing the case for intellectual property in relation to these practical metrics, the empirical and practical premises of the case are laid bare. Once exposed, the case for uniform intellectual property rights articulated in Section III, the responsive case for tailoring in Section IV, and the framework for tailoring in Section V follow as the logical extensions.

#### A. *The Innovation Lottery—Ignorance and Risk Spreading*

What creative works or inventions will most benefit society? Who will create or invent them? Must the government promise some form of reward to induce these creators, inventors or their financial backers to bring these creations or inventions into being and to share them with the public or find a distributor to do so?<sup>45</sup> What kind of reward and how much of it is needed?

Policymakers can answer some of these questions some of the time, but usually they must respond that they do not know. For example, within the domain of technological innovation, the government can identify certain research priorities, such as cures for disease, development of alternative fuel sources, or the desire for a better glove for use in outer space.<sup>46</sup> But even after this is done, identifying who should work on solutions and how much to invest remain daunting challenges. In particular the challenge is exacerbated because the distribution of returns to investments in research and development is highly skew.<sup>47</sup> Thus, creativity and innovation usually are

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<sup>43</sup> Measuring value in this context is more complicated than space allows for full discussion, but I recognize that value as measured by price is a relevant but hardly exhaustive consideration.

<sup>44</sup> Cf. Shavell & van Ypersele, *supra* note 38, at 534, 541–42 (“[T]he government’s knowledge about the social value of innovations . . . is important to the performance of the reward system.”). Shavell & van Ypersele argue that the government’s *ex ante* valuations are irrelevant because a reward system can be tied to *ex post* data reflecting demand for the innovation such as sales data. *See id.* at 541–42.

<sup>45</sup> This question assumes current conditions concerning the relations between government and the private sector remain intact. Changes in this relationship—through changes in tax policy or market regulation, for example—would alter the range of relevant responses as well.

<sup>46</sup> See Jack Hitt, *The Amateur Future of Space Travel*, N.Y. TIMES, July 1, 2007, (Magazine), at 152 (describing NASA contest for space glove design).

<sup>47</sup> See F. M. Scherer, *Economics of Innovation and Technological Change*, in INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL & BEHAVIORAL SCIENCES 7530, 7535 (Neil J. Smelser & Paul B. Baltes eds., 2001) (“So skew is the distribution of rewards that

*uncertain*.<sup>48</sup> These observations limit the utility of any *ex ante* compensation policy.<sup>49</sup> While, in theory, the government can manage this uncertainty through post hoc rewards or prizes, the government will have difficulty in many circumstances calibrating the reward to the social value contributed by the creator or inventor.

These observations give rise to the *ignorance justification* for intellectual property rights. On this view, government's relative ignorance about the incentives required to lure particular creators or innovators into the information production and distribution game and to keep them in it justifies the social costs imposed by intellectual property rights. These rights of exclusion underwrite a system of innovator control that finances innovation through the prospect and the occasional reality of supracompetitive profits in the marketplace.

Information theory supplies the reason. While the ignorance justification holds that the government is largely in the dark about the value of any particular invention or creation, the inventors or creators will have, on average, marginally better information about their potential success in the markets for their respective intellectual outputs, and government strategies for socializing this private information through some form of mechanism design or otherwise are not likely to fully succeed. For this reason, the consensus view among economically-oriented commentators is that increasing an innovator's ability to exclude (or at least deter) competitors through exclusive rights is superior to reward because the system is driven by the marginally superior private information that innovators enjoy.<sup>50</sup>

Intellectual property rights are also supported by the cognate *risk-spreading* justification. Uncertainty about innovation poses unquantifiable risks for whomever chooses to venture labor and capital in pursuit of creative or innovative success, however measured. If the government opts for direct procurement of innovation through employment or grants, the government

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it is difficult to make profits converge toward fairly stable averages by supporting feasibly large project portfolios.”).

<sup>48</sup> See generally FRANK H. KNIGHT, *RISK, UNCERTAINTY AND PROFIT* (1921) (explicating the difference between conditions of “risk”—randomness with known probabilities—and “uncertainty”—randomness with unknowable probabilities).

<sup>49</sup> See Menell & Scotchmer, *supra* note 16, at 1477 (“Probably the most important obstacle to effective public procurement is in finding the ideas for invention that are widely distributed among firms and inventors.”).

<sup>50</sup> See, e.g., Edmund W. Kitch, *Elementary and Persistent Errors in the Economic Analysis of Intellectual Property*, 53 VAND. L. REV. 1727, 1728 (2000); Lunney, *supra* note 6, at 3, 5 n.9 (“[T]he principal advantage of a regime of exclusive rights is that such a regime . . . tends to decentralize the decision-making process, assigning decision-making responsibility to those likely to possess the relevant, but otherwise private, information.”); Shavell & van Ypersele, *supra* note 38, at 528.

concentrates the risk of failure in itself. As against this strategy, intellectual property rights spread the risk of failure among potential rightsholders who either may fail to produce information that qualifies for protection or who may succeed in acquiring rights only to have the market deem these worth less than the cost of acquisition. From the resource allocation perspective, spreading the risk of failure among investors with private information is likely to be marginally more efficient than concentrating this risk in the government. For, while potential innovators may, on average, enjoy better information than the government about potential success, the risks to private investors are quite substantial. Indeed, as anyone who watches *American Idol* or any of the other talent competitions currently in vogue on television knows, in individual cases, many artists or inventors are mistaken if not deluded about the market potential of their talent, their newly composed song or new invention.<sup>51</sup>

The risk spreading justification for intellectual property operates differently with respect to the reward or prize strategy, which enables the government to spread the risk of failure among potential innovators while also avoiding the social costs of intellectual property rights. Prizes or rewards must be designed to produce the desired expected value in the mind of innovators and creators, and there are three types of risk that the government must manage: (1) identifying the kinds of inventions and creative works eligible for reward; (2) identifying the stage of development at which to grant rewards; and (3) quantifying the reward. The prize or reward strategy concentrates the risk of error in any of these three decision points in the government.

When designing intellectual property rights, the government still risks error at each of these same decision points, but the magnitude of risk is reduced because, as is discussed in greater detail below, markets enabled by intellectual property rights have flexible features that correct to some degree for misallocation of rights. These markets also potentially spread decisions about which risks should be undertaken and who should bear them.<sup>52</sup> Markets also spread discipline for those who waste assets in pursuit of creative or innovative goals. Finally, a less tangible risk that intellectual property rights spreads is the risk of cheating by counterparties. For a prize or reward strategy to succeed, potential innovators must trust that the

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<sup>51</sup> Our reliance on the allegedly superior information of private innovators is a subject warranting further study. We know from experience that innovators often misjudge the likely market value of their innovations. For example, a number of pioneering inventors undervalued their innovations. See, e.g., Lemley, *Ex Ante Versus Ex Post*, *supra* note 31, at 139 (collecting sources).

<sup>52</sup> See *infra* Section V.A.6 (discussing relation between design of intellectual property rights and decision architecture).



government will pay when a reward has been earned. In the markets enabled by intellectual property rights, the potential sources of revenue are spread among consumers, and the risks that they will take valuable information without paying also is spread. Whether spreading this risk through copyright law remains an efficient form of cultural policy has become the subject of intense debate in light of the changed circumstances known as the Internet. Digital networks have greatly increased the capacity for counterparties to cheat on the copyright bargain, and rights owners have pursued a range of public and private strategies to improve their enforcement capacity that often entail a range of collateral consequences for digital communication.<sup>53</sup>

In light of the current state of research about, and experience with, alternatives to intellectual property, the risk spreading justification generally remains persuasive. But it is weakest when applied to the prize or reward strategy. More research and experimentation with this approach is warranted because the value of eliminating or reducing the social costs of intellectual property rights could be significant, particularly in the fields of health and agriculture with respect to patents and in the domain of digital communication with respect to copyright.<sup>54</sup> This research should take into account developments in the cognitive sciences about risk perception and expected value.

An additional feature of decentralization supports exclusive rights over direct compensation with respect to culture. It might be possible for the government to overcome its ignorance by identifying those creators most likely to produce valuable works and rely on their superior skills and private information to direct initiatives to develop new artistic and educational works. The government has partially adopted this option in the sciences through grants administered by the National Institutes of Health<sup>55</sup> and the National Science Foundation.<sup>56</sup> The cultural output of creative laborers hired

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<sup>53</sup> See generally Julie E. Cohen, *Pervasively Distributed Copyright Enforcement*, 95 GEO. L.J. 1 (2006) (describing actual and potential consequences of digital enforcement initiatives); Mark A. Lemley & R. Anthony Reese, *Reducing Digital Copyright Infringement Without Restricting Innovation*, 56 STAN. L. REV. 1345 (2004) (proposing cheaper enforcement procedure to limit potential collateral damage from other enforcement initiatives).

<sup>54</sup> See generally FISHER, *supra* note 30, ch. 6 (proposing a reward-like compensation scheme for creators in exchange for authorizing file sharing of music and film); Neil W. Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1 (2003) (making similar proposal).

<sup>55</sup> See National Institutes of Health, Office of Extramural Research, U.S. Dept. of Health & Human Servs., Types of Grant Programs, [http://grants.nih.gov/grants/funding/funding\\_program.htm](http://grants.nih.gov/grants/funding/funding_program.htm) (last visited July 3, 2009) (describing types of grants provided by NIH).

<sup>56</sup> See National Science Foundation, About Funding, <http://www.nsf.gov/funding/>

by the Works Progress Administration during the Depression indicates that this option is not entirely fanciful even in the realm of cultural production.<sup>57</sup> However, precisely because the government lacks a common metric by which to value *ex ante* and *ex post* cultural works in particular, it is better to reject a policy that relies principally on direct government investment in the arts.<sup>58</sup>

While this Article generally remains within the confines of standard economic analysis, here it is necessary to call attention to the problem of the gap between willingness-to-pay (WTP) and ability-to-pay (ATP). This gap poses a significant obstacle for the standard argument favoring decentralization through private investment and market exchange and is a drawback that receives insufficient attention in the literature.<sup>59</sup> The information and product markets supported by intellectual property rights operate on the basis of users' ability to pay rather than willingness to pay to reflect the social value of innovation. As a result, the innovations or innovators selected for reward by "the market" will skew toward the interests of those with an ability to pay, who more often than not are the relatively rich.<sup>60</sup> Using prices to allocate access to goods and services does not accurately reflect how relatively important that access is to different individuals because what a dollar is "worth", and therefore the value of what a dollar buys, sometimes depends on how many dollars one has. For example, a devoted fan of a particular musical group may scrimp and save to purchase a \$100 concert ticket; whereas, a wealthy individual may attend the concert at that price on a lark because the cost is relatively negligible to that

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aboutfunding.jsp (last visited July 3, 2009) (describing range of NSF funding).

<sup>57</sup> See generally WILLIAM F. McDONALD, FEDERAL RELIEF ADMINISTRATION AND THE ARTS: THE ORIGINS AND ADMINISTRATIVE HISTORY OF THE ARTS PROJECTS OF THE WORKS PROGRESS ADMINISTRATION (1969) (describing federal government support for the arts as part of the New Deal).

<sup>58</sup> See, e.g., Julie E. Cohen, *Copyright and the Perfect Curve*, 53 VAND. L. REV. 1799, 1809–10, 1814 n.43 (2000) ("[B]ecause judging the 'value' of most cultural works is an inherently subjective exercise, it is not clear that we want any one individual or entity to control decisions about which uses of a work are valuable."); Neil Weinstock Netanel, *Copyright and a Democratic Civil Society*, 106 YALE L.J. 283, 352–59 (1996).

<sup>59</sup> See Brett Frischmann, *Spillovers Theory and Its Conceptual Boundaries*, 51 WM. & MARY L. REV. (forthcoming 2009) [hereinafter Frischmann, *Spillovers Theory*], available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1357688](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1357688) ("[T]here are good reasons to question whether willingness to pay is a consistently effective mechanism for assessing demand where information systems are involved because of the prevalence of spillovers.").

<sup>60</sup> On the difficulties of measuring the gap between willingness-to-pay and ability-to-pay in the health care context, see, e.g., Steven Russell, Julia Fox-Rushby & Dyna Ahrin, *Willingness and Ability to Pay for Health Care: A Selection of Methods and Issues*, 10 HEALTH POL'Y & PLANNING 94 (1995).

person. There are likely many other potential fans who, if wealthier, would be willing to pay more than the wealthy concert-goer for the privilege of attending the show, but the market does not have an effective means for reflecting and valuing these poorer fans' interests and is therefore a poor proxy for social value.

The starkest example of the ways in which relying on ability to pay as a measure of improving human welfare misallocates resources is in the financing of drug discovery. The patent system directs significant resources to the discovery and development of so-called "me-too" and "lifestyle" drugs for which wealthy consumers in industrialized economies are able to pay a hefty premium.<sup>61</sup> These resources are not directed toward discovery and development of cures for tropical diseases because the likely beneficiaries lack the ability to pay such premiums,<sup>62</sup> even though their willingness to pay for a drug that would keep a child alive almost certainly is greater than what an aging consumer in the industrialized world would be willing to pay to enhance his (and perhaps soon, her) sexual performance. The likely distortionary effects on resource allocation that follow from the gap between willingness-to-pay and ability-to-pay for innovation should serve as a signal for policymakers when choosing the right mix of intellectual property and direct compensation approaches. For fields of creativity or innovation in which the gap is significant, the direct compensation strategy, coupled perhaps with a tax strategy,<sup>63</sup> is likely to perform better.<sup>64</sup>

In sum, as against a centralized government compensation scheme or prize fund, the intellectual property strategy offers the benefits of decentralization.<sup>65</sup> This strategy harnesses the sometimes superior private

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<sup>61</sup> See, e.g., Love & Hubbard, *supra* note 41, at 1523–24 (describing incentives and costs associated with "me too" drugs).

<sup>62</sup> See generally WILLIAM FISHER & TALHA SYED, *DRUGS, LAW, AND THE GLOBAL HEALTH CRISIS* (2007) (describing economics of drug discovery for tropical disease and proposing method for creating incentives to invest in such discovery).

<sup>63</sup> Analyzing the range of tax policies that could be deployed to solve the appropriability problem, alone or in combination, is beyond the scope of this Article but is an inquiry worthy of further study.

<sup>64</sup> See, e.g., Eleanor C. Saulo et al., *Willingness and Ability to Pay for Artemisinin-Based Combination Therapy in Rural Tanzania*, 7 *MALARIA J.* 227 (2008) (finding gap between willingness-to-pay and ability pay for antimalarial drug in Tanzania and concluding that data support government policy to subsidize purchases of the drug).

<sup>65</sup> See Lunney, *supra* note 6, at 3. Decentralization is relative. In a dynamic environment, intellectual property limits market entry, which has the effect of centralizing some decisions that would be better distributed among competitors. See Tim Wu, *Intellectual Property, Innovation, and Decision Architectures*, 92 *VA. L. REV.* 123, 127–31 (2006) (arguing that intellectual property law should be tailored to encourage hierarchical or polyarchical decisionmaking about innovation depending upon industry

information that creators and innovators have about the value of their cultural or technological contributions and spreads the risk that they and their financial backers may be mistaken about the practical feasibility of a creative or innovative idea and about its market valuation if realized. It also spreads the risk of mismeasuring the timing or amount of reward necessary to induce desired innovations and creative works. The social cost of this strategy is that resources are channeled to innovations likely to serve those with an ability to pay, and these innovations are likely to be underutilized by those who are priced out of the market by monopoly prices or by those who are denied licenses because the transaction costs are too high or the rightsholder refuses to license.<sup>66</sup> The market also is likely to skew toward production of consumption information goods rather than productive information goods because of the problem of valuing positive spillovers.<sup>67</sup> After balancing these costs and benefits, policymakers must then assess whether whatever net benefits this strategy yields are comparatively worth the administrative cost.

### B. Administrative Cost

Any strategy for financing innovation comes with a price. Someone must be paid to perform an adjudication function to identify those deserving to receive entitlements or to enforce entitlements already granted. In addition, a policy must support a transaction structure. Since the focus of comparative institutional analysis is on the total social benefits and costs, it is important to assess the efficiencies associated with how a strategy performs these functions without regard to whether they are financed directly by taxpayers or indirectly by consumers who pay supracompetitive prices.

Under a direct compensation strategy, the government directly finances a greater share of total administrative costs by supplying one or more agencies responsible for identifying and rewarding innovators. Some of these personnel costs would be borne by existing agencies, such as those who administer the tax system,<sup>68</sup> while others might be borne by agencies that would have to be created to implement a particular approach. If the compensation scheme is *ex ante*, then a grants mechanism would be required similar to that used by granting agencies such as the National Institutes of Health. If a reward or bounty were offered for innovation, an agency would

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maturity and other factors).

<sup>66</sup> See, e.g., Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 278–79 (2007).

<sup>67</sup> *Id.*

<sup>68</sup> See Kremer, *supra* note 38, at 14 (explaining that taxation of pharmaceuticals will have “benign consequences”); Lichtman, *supra* note 38, at 130–31; Shavell & Ypersele, *supra* note 38, at 544 (noting simply that taxation is required).

be required to determine the parameters under which rewards are available and whether a reward had been earned. Under post hoc compensation schemes, the agency would also be responsible for metering value to calculate the reward. These direct administrative adjudication or examination costs would likely be higher than those associated with an intellectual property strategy, even if the government were to deploy some form of examination prior to granting rights.

In exchange for substantial direct administrative costs associated with identifying those innovators deserving financial reward and administering the associated financing, direct compensation policies involve minimal costs associated with supporting a transaction structure. Information would be in the commons and would not require administrative support for licensing and litigation. Taking these trade-offs into consideration, some proponents have argued that their proposals are no more, and may prove far less, expensive to administer than the intellectual property system.<sup>69</sup>

In contrast, the intellectual property strategy leaves most of the total administrative costs in private hands.<sup>70</sup> Traditionally, the costs of deciding which innovators deserve financial reward has been borne by intermediaries with access to capital who fund a variety of screening mechanisms through which a creative work or innovation must pass before gaining access to substantial capital. In the creative fields, this screening function has been performed by literary agents and editors at book publishing houses, managers and artists-and-repertoire employees in the recording business, agents and an array of “suits” at movie studios, and their counterparts in the performing and visual arts.

In the inventive fields, the function of judging innovations deserving reward reflects a different mix of ex ante and post hoc decisionmaking. In a number of fields, those who fund innovation bet on innovators, who they bring inside the boundary of the firm through employment, rather than on innovations. This strategy often depends upon the number of competitors and whether short-term or longer-term rewards are sought.<sup>71</sup> In other fields that rely on innovation, such as the toy business, companies rely on independent

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<sup>69</sup> See Lichtman, *supra* note 38, at 129–32 (discussing administrative costs of proposed system); Shavell & Ypersele, *supra* note 38, at 543–44 (noting simply that taxation is required).

<sup>70</sup> One reason for private administration is lack of transparency in the operation of the property system, particularly with respect to licensing activities. The lack of readily available data about patent and copyright licensing raises the information costs for government regulation of markets in which such licensing takes place. Thanks to Josh Sarnoff for this point.

<sup>71</sup> See S. Kurokawa, *Make or Buy Decisions in R&D: Small Technology Firms in the United States and Japan*, 44 IEEE TRANSACTIONS ON ENGINEERING MGMT. 124, 124–34 (1997).

inventors, who pass through screens similar to those employed to sort copyrighted works.<sup>72</sup>

The intellectual property strategy also requires courts to enforce rights and licenses, and, in the case of patents, for an agency to administer the examination scheme through which the entitlement vests.<sup>73</sup> In addition, the total costs of the transaction structure are far higher than under a direct compensation scheme because users must obtain licenses or permissions, and the boundaries of these transactions must be policed.<sup>74</sup> Measuring these transaction costs is quite difficult because they are borne by a substantial number of persons and entities. However, because the parties with superior information about the value of their innovations must bear a portion of these costs, they will have strong incentives to seek administrative efficiency.<sup>75</sup> For example, the percentage of patents that parties consider valuable enough to enforce through litigation is quite low.<sup>76</sup>

In the end, the direct compensation strategy likely involves lower total administrative costs than the intellectual property strategy. Both require financing of an adjudication function to identify which creators or innovators deserve financial reward. With respect to this cost component, the intellectual property strategy probably performs in a more cost-effective manner, leaving aside for the moment the normative differences in the criteria for selecting which innovators or innovations should receive financing. Although some arbitrariness and corruption may occur in the process by which books are selected for publication, movies for production, or music for recording, the financiers are by-and-large publicly traded multinational companies subject to discipline in the global capital markets. So it is likely that these actors are likely to perform the identification function more cost-effectively than government employees subject to public fiscal oversight, although this faith

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<sup>72</sup> See, e.g., Cynthia Wagner Weick & Cynthia F. Eakin, *Independent Inventors and Innovation: An Empirical Study*, 6 INT'L J. ENTREPRENEURSHIP & INNOVATION 5, 5–14 (2005) (finding that independent inventors surveyed invented primarily household products, hardware and tools, industrial products, and novelty items and toys).

<sup>73</sup> See 35 U.S.C. § 111 (2006) (requiring application for patent).

<sup>74</sup> See, e.g., *Storage Tech. Corp. v. Custom Hardware Eng'g & Consulting, Inc.*, 421 F.3d 1307, 1315–17 (Fed. Cir. 2005) (reviewing case law on claims of copyright infringement resulting from exceeding scope of software license).

<sup>75</sup> See Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293, 1302–07 (1996) (using new institutional economic theory to justify use of property rule to encourage bargaining toward a liability rule equilibrium).

<sup>76</sup> See John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435, 437–39 (2004) (reporting the results of an empirical study of litigated patents).

in comparative private sector efficiency is based as much on theory as data in this context.

However, when the total costs of intellectual property licensing and litigation are added to the equation, the intellectual property strategy becomes quite expensive. With respect to total transactional costs, only the roughest of estimates can be ventured. This is particularly true because for comparative purposes; it is necessary to tease out those aspects of a transaction that are necessary because of the presence of intellectual property rights even though there may well be other parts of the deal which would be present in analogous transactions in the shadow of the direct compensation strategy. This is an important and largely intractable analytic task. I am not aware of any studies that isolate the role of intellectual property rights in the transactional setting, and it is hard to imagine how this might be measured or tested directly. Litigation costs are somewhat easier to estimate,<sup>77</sup> although the costs of pre-litigation threats and responses are fairly elusive.<sup>78</sup>

Even with this uncertainty about the precise magnitude of licensing and litigation costs, it is enough for present purposes to know that these are significant. When compared to the very minimal costs to support a transaction and litigation structure under a pure direct compensation strategy, it is almost certain that the direct compensation strategy is less expensive to administer, assuming that information produced by this strategy is in the public domain and not amenable to contractual fencing.

### C. Political Economy

Leaving the realms of theory and empirical analysis, analysts must acknowledge that even when direct financing of innovation is more efficient, three political considerations render the intellectual property strategy more attractive to policymakers than the direct compensation strategies. First, imposing taxes on the public indirectly through the creation of exclusive rights is politically far cheaper than having to justify direct taxation and direct expenditure of government funds on innovation. The grant of

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<sup>77</sup> See, e.g., JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 132 (2008) (combining data from the American Intellectual Property Law Association with authors' data); Jean O. Lanjouw & Josh Lerner, *The Enforcement of Intellectual Property Rights: A Survey of the Empirical Literature*, in THE ECONOMICS AND ECONOMETRICS OF INNOVATION 201, 202 (David Encaoua et al. eds., 2000) (finding that "the need to defend patents through costly litigation can have significant impact on their value").

<sup>78</sup> While prelitigation costs are elusive, event studies enable some measure of the costs of early stage litigation for public firms. See BESSEN & MEURER, *supra* note 77, at 132–38 (summarizing event study methodology and data for patent infringement suits filed against publicly traded firms).

intellectual property rights taxes the public in an indirect means to an uncertain magnitude *ex ante*, causing the rights to be spent with far less administrative evaluation of the social return on investment than is the case with direct procurement. For example, in the current climate, increasing income taxes has become politically very difficult. However, from an economic perspective, when Congress extended the term of existing copyrights by 20 years,<sup>79</sup> it passed a tax increase. Consumers of those copyrighted works subject to the term extension will pay a copyright premium that is analogous to the prize or reward that would be paid had the government collected the funds through taxation and paid out directly.<sup>80</sup> This dynamic suggests that, on the one hand, it could be politically difficult to pay directly for innovations that improve social welfare and currently are induced by the promise of intellectual property rights, and, on the other hand, that the political costs of expanding intellectual property rights in response to rent seeking are substantially lower than would be the case if the government increased income taxes, or imposed more targeted use taxes, in order to pay out to particular private interests.

In patent law, for example, patent examiners *theoretically* serve the function of government contracting officers.<sup>81</sup> According to the terms of the patent bargain, their role is to procure for the public only those inventions worthy of a patent according to the law. The examiner must ensure that the scope of any patent that issues is limited to that which the inventor has contributed to the art. Although the actual interactions between patentees and examiners is quite different from public procurement processes, in economic effect, this negotiation is much like a contracting officer negotiating with a government contractor over price.<sup>82</sup> Public pressure is much greater with respect to contracts that impose direct costs on the public fisc—say, in the

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<sup>79</sup> Sonny Bono Copyright Term Extension Act of 1998, Pub. L. No. 105-298, 112 Stat. 2827 (codified as amended at 17 U.S.C. §§ 108, 203(a)(2), 301(c), 302–304 (2006)).

<sup>80</sup> *See, e.g., Eldred v. Ashcroft*, 537 U.S. 186, 244–45, 248–49 (2003) (Breyer, J., dissenting) (emphasizing copyright’s function as a tax on readers and surmising that “one might conservatively estimate that 20 extra years of copyright protection will mean the transfer of several billion extra royalty dollars to holders of existing copyrights—copyrights that, together, already will have earned many billions of dollars in royalty ‘reward.’”).

<sup>81</sup> The gap between theory and practice on this point is significant. Those who study the institutional arrangements and the incentives they produce inside the U.S. Patent and Trademark Office tell a story of an organization funded by application fees that treats patent applicants as customers rather than suppliers. *See, e.g., Clarisa Long, The PTO and the Market for Influence in Patent Law*, 157 U. PA. L. REV. 1965, 1988 (2009).

<sup>82</sup> *See, e.g., Kelly Casey Mullally, Patent Hermeneutics: Form and Substance in Claim Construction*, 59 FLA. L. REV. 333, 346 (2007) (describing patent prosecution and analogizing it to contract negotiation).



form of a hammer that, for regulatory compliance reasons, appeared to cost \$435<sup>83</sup>—than it is with respect to issued patents that are invalid or overly broad in scope.<sup>84</sup> This is not to say that the Patent and Trademark Office never receives public rebuke for giving away the store when negotiating with applicants.<sup>85</sup> But, from a comparative perspective, when they pay too much or grant rights that are too broad, public officials are likely to receive much greater negative publicity and public pressure with respect to procurement of innovation through the direct expenditure of public dollars rather than the granting of private rights through which dollars are indirectly extracted from the public.

A related feature of public attention to price under the direct compensation strategy—either by a mandatory reward system or through exercise of eminent domain—is the Pied Piper problem in which the public’s ex ante and ex post valuations shift. As most will recall, in Robert Browning’s poem, *The Pied Piper of Hamlein*,<sup>86</sup> the piper agrees to rid Hamlein of its rat infestation with his magic pipe for one thousand guilders. After receiving the benefit of its bargain, however, the town council breaches, claiming the contract price was a joke and offers the piper a mere fifty guilders. We can imagine a similar set of circumstances occurring with particularly valuable inventions, for which budget-strained administrators would be tempted to manipulate the reward formula.

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<sup>83</sup> See James Fairhall, *The Case for the \$435 Hammer—Investigation of Pentagon’s Procurement*, WASH. MONTHLY, Jan. 1987, at 47–52 (“In the three years since the story broke, the \$435 hammer has become synonymous with waste in the Department of Defense (DOD). From Beetle Bailey to Walter Mondale, everyone has expressed outrage at this apparent swindle.”).

<sup>84</sup> Academic commentators agree that invalid patents are granted with some routine frequency, but there is a division of opinion about what to do in response. See, e.g., Shubha Ghosh & Jay Kesan, *What Do Patents Purchase? In Search of Optimal Ignorance in the Patent Office*, 40 Hous. L. Rev. 1219, 1224–36 (2004) (arguing that issued patents that are invalid are more costly than Lemley estimates and arguing for greater expenditure in response); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U. L. Rev. 1495 (2001) (arguing that it is rational for the patent system to accept relatively high error rate in granting patents); Arti K. Rai, *Emerging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 Colum. L. Rev. 1035, 1080–84 (2003) (agreeing in part but advocating some greater expenditure through opposition proceedings to improve patent quality).

<sup>85</sup> See, e.g., Ghosh & Kesan, *supra* note 84, at 1220 (“Reports of the [PTO] granting absurd patents are rampant. Peanut butter sandwiches, pet toys on a stick, hammocks for cats, and one-click shopping have each been the subject of a newspaper or magazine story, and each serve as evidence of how ‘patently absurd’ the work of the [PTO] is.” (citations omitted)).

<sup>86</sup> See generally ROBERT BROWNING, *THE PIED PIPER OF HAMELIN* (1888), reprinted at <http://www.indiana.edu/~librcsd/etext/piper/>.

Consider, for example, the political viability of a reward scheme in the case of operating system software. Whatever public disapproval of the wealth Bill Gates has amassed in the market his company controls pales in comparison to that which would ensue were he and his fellow shareholders to receive a multibillion-dollar payout from the public fisc as a reward for Windows—especially for Windows Vista! It appears that taxpayers in industrialized economies generally are far more comfortable with winners in the marketplace than with winners of government largesse even when the government supplies the rights that make the market possible.

Second, the risk-spreading rationale reappears in a new guise. Recall that this argument holds that some failure in attempted innovation is certain and that markets are better suited to finance the costs of failure. Government can withstand a fair degree of criticism for failed investments in biomedicine or national defense technologies, but, at least in the United States, taxpayers would be far more skeptical of a scheme in which the government hired inventors of consumer goods or storytellers (such as filmmakers) and songwriters to supply the public's needs. (Although, the Walker Evans photographs and folk music produced with support from the Works Progress Administration are evidence to the contrary.)<sup>87</sup> Taxpayers in other industrial economies have shown far greater acceptance of direct government funding of cultural production and cultural institutions,<sup>88</sup> and thus some of the observations about comparative political economy made herein are necessarily culturally specific to the United States.

Nonetheless, however financed, we know that these investments will sometimes be wasted.<sup>89</sup> The direct compensation strategy invites greater negative political pressure from failure because it will be more visible and palpable to voters and because they are likely to react far more negatively to the centralization of risk in a set of government agencies than they are to the consequences of self-deluded or mistaken inventors and creators who seek wealth through intellectual property rights. Proponents of the direct compensation strategy recognize and respond to the risk-spreading concern by arguing that post hoc compensation schemes, such as rewards and prizes,

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<sup>87</sup> See, e.g., THOMAS NAU, WALKER EVANS: PHOTOGRAPHER OF AMERICA 35–37 (2007) (describing arrangement by which Evans as government employee took temporary leave from government employment to take famous photographs of tenant farmers for *Fortune* magazine but with copyright rights owned by the U.S. Government).

<sup>88</sup> See, e.g., J. MARK DAVIDSON SCHUSTER, SUPPORTING THE ARTS: AN INTERNATIONAL COMPARATIVE STUDY. CANADA, FEDERAL REPUBLIC OF GERMANY, FRANCE, ITALY, GREAT BRITAIN, NETHERLANDS, SWEDEN, UNITED STATES, NATIONAL ENDOWMENT FOR THE ARTS 42–47 (1985), available at <http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED257740>.

<sup>89</sup> See Scherer, *supra* note 47, at 7535.

avoid the problem of paying for what is unwanted.<sup>90</sup> Prizes risk being set too high or too low to induce the desired level of investment in innovation, however. Rewards tied to market success are the closest approximation to the beneficial risk allocation features of the intellectual strategy.

Third, while reward tied to market success would effectively neutralize the risk-spreading concern, this design choice for direct compensation highlights the most politically troublesome comparative disadvantage for the direct compensation strategy—agency costs. A mechanism for direct government pay-outs to innovators could be attractive to policymakers as a means of personal enrichment or as a means to reward political supporters or to threaten opponents. Experience with existing government grants to science, education, and culture suggest that this concern may be overstated. In the United States, political considerations undoubtedly play a role in setting research priorities and in causing investments to be geographically spread across congressional districts even if they might be more efficiently concentrated in large urban research centers, but there has been little evidence of outright self-dealing by politicians. Nonetheless, even if direct investment were adopted for public-spirited reasons, administrative corruption or incompetence could lead to manipulation for personal gain by private actors. Finally, for rewards to be tied to market success, some form of metering of use or other proxy for value must be created to measure how strong the winners in the innovation game are. Any metering regime would be susceptible to self-interested manipulation by the innovator and would be likely to require widespread deployment of privacy-invasive technologies and systems.<sup>91</sup>

With respect to the intellectual property strategy, public sector agency costs (in the economic sense of the term) are of two types. The first and most often discussed is the problem of legislative and administrative capture.<sup>92</sup> This phenomenon results from the frequency and energy with which

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<sup>90</sup> See, e.g., George Johnson, *Eureka! Where Do I Cash the Check*, N.Y. TIMES, Jun. 29, 2008 (Week in Review) (summarizing history of prizes as incentive for scientific innovation and remarking, “Best of all, the prize has to be paid only if there is a winner.”).

<sup>91</sup> Cf. Julie E. Cohen, *Pervasively Distributed Copyright Enforcement*, 95 GEO. L.J. 1, 3–19 (2006) (describing current privacy-invasive enforcement strategies by rightsholders facing similar challenges).

<sup>92</sup> According to this theory, legislative outcomes will be inefficient where discrete groups with common interests can manipulate the legislative process so as to secure redistributive legislation at the expense of large, heterogeneous groups that do not protect their interests because the costs of collective action are too high. 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.”).

rightsholders can make their case, which can lead to skewed perspectives about the interests at stake. Legislators, administrators and their staff members may favor proposals by rightsholders for self-interested reasons, such as the hope or expectation of well-compensated employment by a rightsholder or rightsholder organization, even when such proposals effectively increase taxes on the public without a corresponding return in creation or innovation. While interest groups clearly have outside influence on intellectual property legislation and administration,<sup>93</sup> there are countervailing checking forces in the process. The relative independence of the judiciary limits the agency costs associated with interpretation of the law.<sup>94</sup>

Less well-recognized is the fact that the capacity for more directly corrupt self-dealing by administrative officials in an exclusive rights regime is cabined. Copyrights are granted without any government intervention, eliminating opportunities for self-dealing at the entitlement-granting stage.<sup>95</sup> (However, the ready grant of such rights also affects the political economy of intellectual property by enlarging the class of incumbents.) While a copyright owner of a U.S. work must attempt to register her claim to copyright before enforcing her rights, the rules are designed so that even if registration were refused by a corrupt official seeking a bribe or other benefit from the copyright owner, such a strategy would likely be unsuccessful.<sup>96</sup>

The current design of the patent system entails somewhat greater risk of self-dealing or corruption, but this risk is still relatively minimal. The potential entry points for corruption are in the processes of patent examination, re-examination, continuation, or re-issue.<sup>97</sup> Certain obvious

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<sup>93</sup> See, e.g., Robert Patrick Merges & Glenn Harlan Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. ON LEGIS. 45, 53–56 (2000) (summarizing public choice literature and providing examples of legislative capture in the intellectual property context).

<sup>94</sup> There is a large literature on public choice theory and the role of an independent judiciary that need not be parsed here. The point is simply that because the federal courts have exclusive jurisdiction over patent and copyright law, 28 U.S.C. § 1338 (2006), and federal judges have life tenure, they are less likely to use the discretion inherent in statutory interpretation for economically self-interested reasons than would be other decisionmakers more dependent on industry largesse. For this elementary point, see generally William M. Landes & Richard A. Posner, *The Independent Judiciary in an Interest-Group Perspective*, 18 J.L. & ECON. 875 (1975).

<sup>95</sup> See 17 U.S.C. §§ 102(a), 201 (2006) (describing eligibility for copyright and rules for vesting).

<sup>96</sup> See 17 U.S.C. § 411(a) (2006) (Copyright owner may bring an infringement action even after refusal to register by Copyright Office).

<sup>97</sup> For example, in the litigation that threatened to render the Blackberries on which many offices in Washington depend useless, the patent owner, NTP, alleged that the PTO

risks, such as patent examiners' potential conflicts of interest are addressed by PTO rules, and these rules generally appear to be followed. Other forms of graft or corruption in which patent examiners or other officials in the PTO accept cash or in kind payments to deviate from their duties appear to be rare. Finally, the risk of insider trading by officials also seems to be in check. This risk is probably more significant among private sector insiders.<sup>98</sup>

### III. WHY ONE-SIZE-FITS-ALL PATENTS AND COPYRIGHTS?

Accepting that intellectual property rights have a place in any overarching innovation policy, this Section now turns to the question of how the ignorance and risk-spreading rationales influence the definition of the subject matter, scope, and duration of these intellectual property rights.

Conceivably, a single right or bundle of rights might do the job.<sup>99</sup> But, since the eighteenth century rights granted to inventors and authors have been tailored for historical reasons and to reflect economic differences between functional innovation and creative progress.<sup>100</sup> Having tailored

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had bent the rules with respect to a request for reexamination in order to respond to pressure from Members of Congress who did not want to lose their connectivity. *See* NTP, Response to Final Office Action of Feb. 24, 2006, Docket No. 49671.000006, available at <http://www.patenthawk.com/rulings/NTP-Reexam-Response.pdf>. For present purposes, the truth or falsity of these allegations is immaterial insofar as the allegations illustrate the opportunities for self-interested officials to depart from established rules and procedures.

<sup>98</sup> *See, e.g.*, Gautam Ahuja, Russell W. Coff & Peggy M. Lee, *Managerial Foresight and Attempted Rent Appropriation: Insider Trading on Knowledge of Imminent Knowledge Breakthroughs*, 26 STRATEGIC MGMT. J. 791, 805 (2005) ("Our results suggest that managers do anticipate breakthrough innovations and trade on that information before patent applications have been filed.").

<sup>99</sup> Some efforts during the first decade of the new millennium sought to merge the branches of intellectual property into a single exclusive right on the grounds that businesses no longer differentiate forms of intellectual property in practice. *See* Graeme B. Dinwoodie, "One Size Fits All": *Consolidation and Difference in Intellectual Property Law* (July 21, 2008) (working paper presented at ATRIP Conference, Munich, available at <http://www.docstoc.com/docs/5801021/one-size-fits-all>). In some senses, the idea is not new. The precursors to modern patents and copyrights were royal privileges or letters patent granted into the eighteenth century that were ad hoc in scope and duration but "uniform" insofar as they did not systematically differentiate rights based on whether the subject was an invention or creative expression. *See, e.g.*, Michael W. Carroll, *Whose Music Is It Anyway?: How We Came To View Musical Expression As A Form Of Property*, 72 U. CIN. L. REV. 1405, 1405, 1452, 1465 (2004).

<sup>100</sup> *See, e.g.*, Dennis S. Karjala, *Distinguishing Patent and Copyright Subject Matter*, 35 CONN. L. REV. 439, 524 (2003) (arguing that digital technology creates pressure on the expression/function distinction between copyrightable and patentable subject matter); Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV.

rights at this high level of generality, the law in the United States and in most other nations then delineates patents and copyrights uniformly without regard to context of invention or creation. Under U.S. patent law, an invention is eligible for protection if it is a new, useful, and non-obvious “process, manufacture, machine, or composition of matter.”<sup>101</sup> Each patentee receives the same package of rights—to exclude others from making, using, selling, offering to sell, or importing the invention<sup>102</sup>—for the same period of time—20 years after the date an application was filed in the Patent and Trademark Office.<sup>103</sup>

Under U.S. copyright law, any “original work of authorship” that has been “fixed in a tangible medium of expression” automatically gets a copyright.<sup>104</sup> The owner of a copyright has the exclusive rights to reproduce, publicly distribute, and adapt the work.<sup>105</sup> In addition, for most classes of work for which it would matter economically, the owner also has the exclusive rights to publicly perform and publicly display the work.<sup>106</sup> The initial grant of rights has been tailored for the music industry by limiting the performance right in sound recordings to digital audio transmissions.<sup>107</sup> A range of other provisions tailor the scope of copyright.<sup>108</sup>

In previous work, researchers, including me, have shown that from a theoretical perspective this policy of one-size-fits-all patents and copyrights necessarily is inefficient.<sup>109</sup> The magnitude of the appropriability problems that these rights are designed to remedy varies considerably across and even within industries.<sup>110</sup> In particular, this policy imposes *uniformity cost* on society by failing to supply fine-grained rights tailored to the economic circumstances of different classes of authors and inventors.<sup>111</sup>

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465, 466–71 (2004) (making economic argument for tailoring subject matter of patent and copyright).

<sup>101</sup> See 35 U.S.C. §§ 101–03 (2006).

<sup>102</sup> See *id.* § 271(a).

<sup>103</sup> 35 U.S.C. § 154(a)(2) (2006).

<sup>104</sup> See 17 U.S.C. § 102(a) (2006).

<sup>105</sup> See *id.* § 106.

<sup>106</sup> See *id.*

<sup>107</sup> See *id.* § 106(6).

<sup>108</sup> See, e.g., *id.* §§ 107–22.

<sup>109</sup> Carroll, *One for All*, supra note 15 (citing sources).

<sup>110</sup> See, e.g., Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1581–83 (2003) [hereinafter Burk & Lemley, *Policy Levers*] (comparing the pharmaceutical industry, which requires a large research and development (R&D) budget, to the computer software industry which can operate on a much smaller budget).

<sup>111</sup> See *id.*

Two recent books bring the problem of uniformity cost in patent law to the fore. Professors Dan Burk and Mark Lemley argue that the social costs and benefits of nominally uniform patent rights vary significantly along industry- and technology-specific lines, giving rise to a crisis in the patent system that can be, and should be, solved through judicial tailoring.<sup>112</sup> Professors James Bessen and Michael Meurer analyze whether patents perform as economic theory expects property rights to do, and they conclude that there is a significant gap between the patent system and a model property system and that “[e]conomics research confirms that the effectiveness of patents varies by type of invention.”<sup>113</sup> Strikingly, both books provide a stark depiction of uniformity cost by describing a system of one-size-fits-all patents that works well for the chemical and pharmaceutical industries while imposing a drag on innovation in the information technology industries.<sup>114</sup> How, then, does the proponent of uniform intellectual property rights defend a system design that imposes this cost on society?

The argument for uniform rights is grounded in the same ignorance and risk-spreading justifications as the intellectual property rights strategy. These same asymmetries supply the basis for one-size-fits-all as an initial *domestic* policy. The same uncertainty about innovation that justifies copyright and patent in general also means that policymakers lack a solid basis for tailoring rights to particular forms of expression, types of technology or to specific industries. Whether uniform rights outperform tailored rights with respect to administrative costs or public choice distortions depends on the context.

### A. *Public and Private Information*

For the government to tailor rights according to subject matter or the status of the innovator (such as a university researcher), the government would require some basis for distinguishing among classes of innovation or innovators. The ignorance justification for intellectual property rights also justifies adopting uniform rights targeted at the average level of exclusion needed to stimulate the desired level of investment in innovation throughout

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<sup>112</sup> DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* (Univ. of Chi. Press 2009).

<sup>113</sup> See BESSEN & MEURER, *supra* note 77, at 256.

<sup>114</sup> See *id.* at 16 (summarizing findings that “chemical and pharmaceutical firms earn far more from their patents than they lose to litigation[,] [b]ut for other [public] firms . . . [b]y almost any interpretation, the United States patent system could not be providing overall positive incentives . . . by the end of the 1990s”); BURK & LEMLEY, *supra* note 112, at 3–4 (stating that “[i]n the pharmaceutical industry, there seems to be a strong consensus . . . that patents are critical to innovation . . . [whereas] [l]awyers and executives in the information technology industries . . . almost invariably see the patent system as a cost rather than a benefit to innovation.”).

the economy. The government initially lacks the information necessary to make principled distinctions among innovators or classes of innovation.

Moreover, innovation is inherently dynamic.<sup>115</sup> The case for uniformity argues that even if the government were able to gather information sufficient to make a principled distinction between the rights accorded to innovation category *A* and innovation category *B*, the boundaries of those categories are likely to change.<sup>116</sup> Technology-specific or subject matter-specific laws will become outdated quickly and therefore fail to provide the efficiency gains sought by tailoring. These practical obstacles to tailoring provide support for uniform rights as a second best solution. Thus, uniform patents and copyrights are second-order second best, or, in other words, a second-best solution nested within the second-best solution of intellectual property rights.

### 1. Tailoring Through Market Exchange

The case for one-size-fits-all also holds that the intellectual property strategy has built-in features to reduce uniformity cost. The argument starts with a general proposition that generally-defined rights are easy to ascertain *ex ante* and that any social costs arising from the choice of uniform rights do not warrant concern because once the rights vest, private ordering ensures that rewards generated by ownership of intellectual property rights flows to those who deserve the rewards.

The magnitude of social costs incurred when the government rewards all innovators with the same entitlement depends on the currency used. If the government were to grant a uniform monetary entitlement to all inventors—say a bounty of \$1 million—whether their invention was a life-saving biomedical device or a novelty toy, the social costs of uniformity would be apparent and such a system would be grossly inefficient.

As I previously have discussed at greater length, intellectual property rights harness three market-based features that

reduce uniformity cost: demand elasticity, price discrimination, and Coasean bargaining.<sup>117</sup> The social costs of intellectual property rights arise only when there is demand for protected information. If demand for a novelty toy that would have been invented in the absence of protection is zero, then even though granting uniform patent rights was unnecessary,

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<sup>115</sup> See, e.g., Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 880–908 (1990) (categorizing stages of innovation in different industries).

<sup>116</sup> See, e.g., Burk & Lemley, *supra* note 110, at 1635–36 (making this argument with respect to legislative tailoring).

<sup>117</sup> This discussion summarizes Carroll, *One for All*, *supra* note 15, at 857–61.



uniformity cost is zero because no potential buyers have been excluded.<sup>118</sup>  
Uniformity costs rise with demand.<sup>119</sup>

Even when uniformity cost arises, under traditional economic analysis, perfect price discrimination *theoretically* would eliminate the underdistribution of protected information. That is, if intellectual property owners are able to engage fully in first-degree price discrimination—selling or licensing to each user willing to pay more than marginal cost—static deadweight loss would be zero.<sup>120</sup>

As others have shown, however, even as a matter of theory, perfect price discrimination would not eliminate all social costs of intellectual property rights.<sup>121</sup> Moreover, even if perfect price discrimination would theoretically

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<sup>118</sup> *Id.* at 858 n.44 (“Of course, demand for the invention does not refer to only demand in product markets. Any potential user of information for which a patent owner might make a credible threat must be plotted on the invention’s demand curve.”). For a site dedicated to identifying such low-demand inventions, see Patently Silly, *available at* <http://www.patentlysilly.com>.

<sup>119</sup> Carroll, *One for All*, *supra* note 15, at 858 n.45 (“Increases in demand for a work also attract free riding competitors so that increases in demand increase both the magnitude of the appropriability problem and the magnitude of social cost.”); *cf.* Glynn S. Lunney, Jr., *Reexamining Copyright’s Incentives-Access Paradigm*, 49 VAND. L. REV. 483, 557 (1996) (incentives and access are both functions of degree of market power conferred by exclusive rights). “Although we should expect rising demand to generate correlated offsetting effects in many cases, when creators of popular works do not require the power over price that patent or copyright promise, uniformity costs rise.” Carroll, *One for All*, *supra* note 15, at 858 n.45.

<sup>120</sup> See HAL VARIAN & CARL SHAPIRO, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY 39 (1999); Harold Demsetz, *The Private Production of Public Goods*, 13 J.L. & ECON. 293, 303–04 (1970).

<sup>121</sup> See, e.g., V. Bhaskar & Ted To, *Is Perfect Price Discrimination Really Efficient? An Analysis Of Free Entry*, 35 RAND J. OF ECON. 762, 775 (2004); Aaron S. Edlin, Mario Epelbaum & Walter P. Heller, *Is Perfect Price Discrimination Really Efficient? Welfare and Existence in General Equilibrium*, 66 ECONOMETRICA 897, 897–99 (1998); see also Julie E. Cohen, *Copyright and the Perfect Curve*, 53 VAND. L. REV. 1799, 1799–1808 (2000); Brett M. Frischmann, *An Economic Theory Of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 978–80 (2005) (discussing distortionary effects of promoting price discrimination); Glynn S. Lunney, Jr., *Copyright’s Price Discrimination Panacea*, 21 HARV. J.L. & TECH. 387, 393 (2008) (explaining shortcomings of conventional legal analysis of price discrimination); Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55, 57–58 (2001) [hereinafter Meurer, *Price Discrimination*].

avoid reduction in social value, perfect first-degree price discrimination in the intellectual property context is a practical impossibility . . . .<sup>122</sup>

“Finally, when demand is positive and price discrimination is imperfect, the Coase Theorem asserts that uniformity cost will affect *allocative* efficiency only if reallocation or reapportionment of uniform entitlements by contract is too costly.”<sup>123</sup> Through licensing and non-enforcement of intellectual property rights, those who need to use another’s information will obtain access and the practical ability to use it. Consequently, the theoretical advantages of publicly tailored rights are minimized by tailoring through private ordering supported by judicial and other public enforcement.

While licensing and enforcement practices undoubtedly relieve some of the pressure that a one-size-fits-all approach produces, these are not complete solutions. Most commentators agree that difficulties in valuing patents and copyrights raise transaction costs to the point that allocative efficiency will depend upon the subject matter, scope and duration of intellectual property entitlements.<sup>124</sup> This is particularly true because the externalities that justify patent and copyright law differ fundamentally from those that inspired Coase,<sup>125</sup> and the law’s choice is not between granting an entitlement to party A or to party B but between granting an entitlement to party A or to the

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<sup>122</sup> Carroll, *One for All*, *supra* note 15, at 857–59; *see, e.g.*, Daniel A. Farber & Brett M. McDonnell, *Why (and How) Fairness Matters at the IP/Antitrust Interface*, 87 MINN. L. REV. 1817, 1867 (2003) (noting that perfect price discrimination is impossible); Lemley, *supra* note 20, at 1059 n.115; Christopher S. Yoo, *Copyright and Product Differentiation*, 79 N.Y.U. L. REV. 212, 255, 255–56 (2004) (same).

<sup>123</sup> Carroll, *One for All*, *supra* note 15, at 857–59; *see* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 16 (1960) (“In these conditions [of high transaction costs] the initial delimitation of legal rights does have an effect on the efficiency with which the economic system operates.”). While arguing that policymakers should recognize the effects they have on allocative efficiency when fashioning legal rights for high-transaction-cost environments, Coase also recognized that distributional justice matters and that “the choice between different social arrangements for the solution of economic problems should be carried out in broader terms than this [maximizing total output] and that the total effect of these arrangements in all spheres of life should be taken into account.” Coase, *supra*, at 43.

<sup>124</sup> *See, e.g.*, James Bessen, *Holdup and Licensing of Cumulative Innovations With Private Information*, 82 ECON. LETTERS 321, 326 (2004) (showing that “[t]he possibility of ex ante licensing does not eliminate the problem of holdup in cumulative innovation”); Clarisa Long, *Proprietary Rights and Why Initial Allocations Matter*, 49 EMORY L.J. 823, 831–36 (2000) (arguing that uncertainty in valuation of patents on basic research tools is likely to block efficient licensing of such tools).

<sup>125</sup> *See* Lemley, *Free Riding*, *supra* note 20, at 1031; Mark A. Lemley, *What’s Different About Intellectual Property?*, 83 TEX. L. REV. 1097, 1098–1100 (2005) (reply essay); Lemley, *Ex Ante Versus Ex Post*, *supra* note 31, at 129–35.

public at large, comprised of an unknown and often unknowable proportion of higher- and lower-valued users. Consequently, allocative inefficiency in intellectual property law potentially imposes a far more significant social cost than it does with respect to tangible property.<sup>126</sup> Uniformity cost is then a real problem in intellectual property law.

The proponent of uniform intellectual property rights would be likely to be a transaction cost optimist. Such a proponent would argue in the alternative that if transaction costs are high enough to distort allocative efficiency, this is simply the price society must pay for reliance on the imperfect institution of rights of exclusion.

## 2. Tailoring Through Real Options and Standards

Recognizing uniformity cost, the proponent for one-size-fits-all patents and copyrights also is likely to call attention to two strategies that I have discussed more fully elsewhere that patent and copyright law currently deploy to reduce the costs of one-size-fits-all rights.<sup>127</sup> First, both bodies of law use real options by placing conditions on the full enjoyment of these rights. These options force potential rights owners to self-sort, thereby reducing social costs by tailoring the number of entitlements granted and producing coarse-grained information about the private valuation of the entitlement. Patent law uses the strategy more vigorously, requiring an inventor to undergo examination prior to acquiring a patent<sup>128</sup> and further requiring payment of maintenance fees at three intervals to retain rights during the full statutory duration of a patent.<sup>129</sup> By placing an option filter at both the front and back ends of the patent term, the law causes many inventions that satisfy the statutory subject matter criteria either not to be patented or to enter the public domain prior to expiration of the full term of protection.

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<sup>126</sup> See Frischmann & Lemley, *supra* note 66, at 275.

<sup>127</sup> Carroll, *One for All*, *supra* note 15, at 878–900.

<sup>128</sup> See, e.g., Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 639 n.44 (2002) [hereinafter Long, *Patent Signals*] (listing several differing sources that estimate the range of production costs and noting that \$20,000 is a conservative estimate).

<sup>129</sup> Utility patents that issue from applications filed on and after December 12, 1980, are subject to the payment of maintenance fees necessary to maintain the patent in force. Fees are due 3 1/2, 7 1/2 and 11 1/2 years from the date the patent is granted. 35 U.S.C. § 41(b) (2006). A 6-month grace period is provided during which the maintenance fee may be paid with a surcharge. 37 C.F.R. § 1.362(e) (2005). Failure to pay the current maintenance fee on time may result in expiration of the patent. 37 C.F.R. § 1.362(g) (2005).

Regrettably, copyright law has abandoned the so-called “formalities” and renewable terms that served as analogous real options with regard to the acquisition and retention of the entitlement.<sup>130</sup> All that remain are the registration requirement for initiating an infringement action with respect to a U.S. work and the conditional remedies tied to registration.<sup>131</sup> For this reason, the problem of uniformity cost has intensified in copyright law.

Second, when taken off the rack, a patent or a copyright appears to be only one size. But the fabric of both entitlements is elastic because the rights are defined by standards rather than rules. Thus, when measured by a court in the context of a particular case, the scope or size of a patent or copyright is necessarily tailored in some respects to conform often to industry-specific, technology-specific, or innovator-specific characteristics. Legal standards confer interpretive discretion on adjudicators. This interpretive discretion can be deployed ad hoc or systematically. With respect to the scope of intellectual property rights, courts can choose to use flexible doctrines to strike the incentives-access balance either on a per-work<sup>132</sup> or per-invention basis, or more broadly along industry-specific or technology-specific lines.<sup>133</sup> In the case of patent injunctions, for example, the flexibility in the standard for relief should lead to industry-specific patterns because of industry-specific differences in facts that are salient under the standard.<sup>134</sup>

Burk and Lemley argue that this is where the solution to the problem of uniformity costs lies—at least in patent law. In sum, they argue

- (1) that a purely unitary patent system no longer fits the extraordinarily diverse needs of innovators in today’s technology industries; (2) that the solution is not to split the patent system into industry-specific statutes, but to tailor the unitary patent rules on a case-by-case basis to the needs of

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<sup>130</sup> Christopher Sprigman, *Reform(aliz)ing Copyright*, 57 STAN. L. REV. 485, 487–88 (2004).

<sup>131</sup> See 17 U.S.C. §§ 411–12 (2006).

<sup>132</sup> One example of this form of tailoring is term extensions for individual patents. See Richard M. Cooper, Esq., *Legislative Patent Extensions*, 48 FOOD & DRUG L.J. 59, 59–62 (1993) (reviewing this practice in the nineteenth century).

<sup>133</sup> See Burk & Lemley, *supra* note 110, at 1630–38 (arguing that courts should use this flexibility to resolve patent crisis); see also R. Polk Wagner, *Of Patents and Path Dependency: A Comment on Burk and Lemley*, 18 BERKELEY TECH. L.J. 1341, 1345–48 (2003) (discussing this distinction).

<sup>134</sup> See generally Michael W. Carroll, *Patent Injunctions and the Problem of Uniformity Cost*, 13 MICH. TELECOMM. & TECH. L. REV. 421 (2007) (explicating this analysis); Joshua D. Sarnoff, *Flexible Application of Injunctive Relief in Intellectual Property Enforcement (with Reference to Lessons from the Emerging US Jurisprudence)*, in INTELLECTUAL PROPERTY ENFORCEMENT (Edward Elgar, Xuan Li & Carlos M. Correa eds., 2009).

different industries; and (3) that it is the courts, not Congress or the PTO, that are best positioned to do this tailoring.<sup>135</sup>

Finally, after acknowledging that uniformity cost is real, and regardless of weight given to the flexibility of standards, the proponent would further defend uniform rights for the following reasons.

### B. *Administrative Cost*

The uniform rights proponent, acknowledging difficulties in measuring the total social costs of intellectual property rights, is likely to have an intuitive sense that evidence of robust intellectual property licensing activity combined with legal entrepreneurship to reduce transaction costs through innovative licensing structures means that the magnitude of uniformity cost is not significant enough to justify very much tailoring. Digging in a little deeper, the proponent is likely to argue that broadly defined uniform rights facilitate licensing and enforcement, and so the policy choice really is one between tailoring through public or private ordering. On this view, the intellectual property system is rendered more administrable through broadly defined rights.

Some support for this point can be drawn from the work of Professors Henry Smith and Clarisa Long, who independently focus on information cost theory as relevant to the delineation of intellectual property rights. Acknowledging the theoretical case in favor of rewards or perfectly tailored rights,<sup>136</sup> Professor Smith argues that once administrative cost enters the picture, broadly defined rights of exclusion perform better, rendering a complex innovation system wieldy by limiting the information required by officials entrusted to administer it.<sup>137</sup> Drawing from his work on real property, Professor Smith argues that the law can deploy rights of “exclusion” or rights of “governance” with respect to resources, and that rights of exclusion create a modular system in which those who administer it must only attend to boundaries and need not gather information necessary to

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<sup>135</sup> See BURK & LEMLEY, *supra* note 112, at 5.

<sup>136</sup> Henry E. Smith, *Intellectual Property As Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742, 1748 (2007).

<sup>137</sup> *Id.* at 1748, 1764 (“Like other property rights, intellectual property rights provide simple ground rules as well as a platform for further contracting and for forming organizations.”); *see also id.* at 1798 (“It may well be that as overall complexity increases in the system of relations between actors using information, the modular feature of property permits a greater degree of overall complexity than do legal regimes more tailored to use.”).

govern activities taking place within the boundaries.<sup>138</sup> This leads him to assert that “[t]he central empirical question in both property and intellectual property is when—and how easily—to overcome the basic presumption in favor of exclusion.”<sup>139</sup>

There are a number of problems with this framing, and explanation of most of these are beyond the scope of this Article.<sup>140</sup> But it is useful to acknowledge that included in the costs of transacting in or enforcing legal rights are the cognitive tasks associated with conceiving the transaction or the enforcement issue, and that broadly defined patents and copyrights may well reduce licensing and enforcement costs under certain circumstances.

Along related lines, Professor Long argues that information goods have information cost profiles facing observers and owners that the law shapes and to which the law should attend.<sup>141</sup> For example, she acknowledges that certain classes of patentable subject matter, such as business methods and software, are qualitatively different from the paradigmatic inventions that informed the structure of patent’s uniform rights, and she recognizes that tailoring might reduce the information costs associated with transactions and enforcement.<sup>142</sup> She nevertheless concludes her analysis with a lukewarm defense of uniformity on the grounds that the trade-offs associated with tailoring rights may not be cost-justified on information-cost grounds.<sup>143</sup>

It is important to note that Professors Smith’s and Long’s respective defenses of uniform intellectual property rights rely on a presumption based on a view about comparative administrative costs. However, each of them acknowledges that much turns on the evidence about the value of the underlying innovation and the relative costs and benefits of tailoring. It is likely that intuitions about how strong any presumptions in favor of uniformity are likely to differ, but the framework in Section V sets forth

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<sup>138</sup> *Id.* at 1781–98.

<sup>139</sup> *Id.* at 1818.

<sup>140</sup> The largest problem stems from Professor Smith’s premise that the boundaries of patented inventions or copyrighted works of authorship are ascertainable to observers, owners or administrators in ways comparable to the boundaries of land or chattel property. For a salient critique on additional grounds, see Michael A. Carrier, *Why Modularity Does Not (and Should Not) Explain Intellectual Property*, 117 YALE L.J. POCKET PART 95 (2007), available at <http://thepocketpart.org/2007/10/10/carrier.html>; see also BESSEN & MEURER, *supra* note 77, at 40–42; Joshua D. Sarnoff, *Abolishing the Doctrine of Equivalents and Claiming the Future After Festo*, 19 BERKELEY TECH. L.J. 1157, 1165–69, 1205–18 (2004).

<sup>141</sup> See Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 466–71 (2004).

<sup>142</sup> *Id.* at 546–47.

<sup>143</sup> *Id.*

standards for how and when such a presumption can be overcome on administrability grounds.

### 1. *Political Economy*

Certain considerations of political economy counsel in favor of uniformity as the default position for *domestic* policy. The strongest argument is that domestic uniformity disciplines or increases the costs of rent seeking by industries and other interest groups. 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.<sup>144</sup> Commentators suggest that interest group involvement in copyright and patent legislation has intensified in recent years.<sup>145</sup>

With uniform patents or copyrights, legislative change must submit to what Tom Olson calls the “iron law of consensus,”<sup>146</sup> by which all industries affected by the law must agree for an amendment to pass through the many veto points in the legislative process. A recent example of the iron law in action was the American Association of Photographers’ successful campaign to torpedo an orphan works bill that had the support of the Copyright Office and all the other traditional interest groups active in copyright policymaking.<sup>147</sup>

The argument then falls back. Even if a particular tailoring measure would have improved the efficiency of copyright law, legislative practice that would routinely grant additional rewards or create special carve-outs for individual interest groups would intensify the problems of rent-seeking already apparent in the process.<sup>148</sup>

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<sup>144</sup> See, e.g., JESSICA LITMAN, DIGITAL COPYRIGHT: PROTECTING INTELLECTUAL PROPERTY ON THE INTERNET 35–65 (2001) (describing history of copyright legislation in the 20th century); 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.”).

<sup>145</sup> See, e.g., Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law, 1900–2000*, 88 CAL. L. REV. 2187, 2234–36 (2000) (“There is abundant evidence that lobbyists are focusing more efforts on IP issues, and that industries with strong interest in IP issues are spending more.”).

<sup>146</sup> Thomas P. Olson, *The Iron Law of Consensus: Congressional Responses to Proposed Copyright Reforms Since the 1909 Act*, 36 J. COPYRIGHT SOC. 109, 117 (1989).

<sup>147</sup> “Orphan Works” Bill Dies in Committee, National Press Photographers Association, News and Events, Sept. 27, 2006, [http://www.nppa.org/news\\_and\\_events/news/2006/09/orphan.html](http://www.nppa.org/news_and_events/news/2006/09/orphan.html).

<sup>148</sup> See, e.g., Long, *Uniform Patent System*, *supra* note 10, at 48–49.

It is very important to note that the topic of geographic or international uniformity should be kept quite distinct from the political economy argument for uniform rights in domestic law. Evidence that would support the discipline argument for domestic legislative policy does not equally support the argument for international harmonization. On the contrary, the average level of exclusion needed in any particular economy will vary in part on the extent to which it is a net importer or exporter of goods or services embodying protected information.<sup>149</sup> Thus, the push for international harmonization, which imposes the same average level of exclusion and is now encoded in the TRIPS agreement, is best understood as successful rent seeking spearheaded by multinational rightsholding corporations headquartered in the United States, Europe, and Japan.

## 2. Summary

The argument for designing intellectual property rights to apply uniformly to all protected subject matter—after tailoring to distinguish between patents and copyrights—and to apply uniformly to all rightsholders recognizes that in theory the rights should be tailored to the specific needs of specific innovators or tightly defined classes of innovator if granting intellectual property rights were the only strategy available for addressing the appropriability problem. The case for uniformity is grounded in pessimism about the practical possibilities for achieving this ideal. The case comes as a bad news/good news story.

The bad news is that designing rights in a tailored fashion is not feasible because policymakers lack an evidentiary basis for tailoring, tailored rights are more complex and not cost-justified on administrative grounds, uniform rights impose political discipline on interest groups that would otherwise use their influence in a tailoring-friendly environment to successfully seek even greater rents than they currently receive.

The good news is first that the markets that intellectual property rights enable have self-correcting features, such as: demand elasticity, price discrimination, and Coasean bargaining. These features enable private ordering to alter the initial design of intellectual property rights to better fit particular circumstances. Second, to the extent that transaction costs limit the scope of effective private ordering, some progress toward the theoretical ideal of tailored rights can be made when rights are defined as formally uniform while incorporating features that yield differential results in how the rights actually function. These features are option filters and standards.<sup>150</sup>

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<sup>149</sup> See Suzanne Scotchmer, *The Political Economy of Intellectual Property Treaties*, 20 J.L. ECON. & ORG. 415, 425–30 (2004).

<sup>150</sup> See *supra* Section III.A.2.



An option filter requires that the potential rightholder take some action in order to acquire or maintain protection under the right.<sup>151</sup> So-called copyright “formalities,” patent examination, and patent maintenance fees all are such option filters that cause rightholders to reveal private information in the course of self-tailoring the effective reach of patents and copyrights.<sup>152</sup> In addition, the legal standards that define the reach of patents and copyrights require considerable contextual information to apply. As a consequence, the incorporation of this contextual information causes administrators, courts, licensing attorneys, and others who must apply the rights to do so with some discernable differences across industries, technologies or classes of rightholder in particular settings.

#### IV. TAILORED RIGHTS IN CONTEMPORARY PATENT AND COPYRIGHT LAW

In a dynamic system, rules change in response to lessons rulemakers learn about the effects of prior decisions. The economic analysis of intellectual property law has thus far failed to supply a general information feedback framework for assessing and adjusting regulation, by, for example, tailoring the law. Indeed, the case for uniform intellectual property rights must confront the law as it is—the numerous multilateral treaties that specify minimum standards for patent and copyright law have tailored standards for certain subject matter, Congress has tailored rights granted by patent and copyright law in the United States along industry- or technology-specific lines in a number of instances, and the federal courts and relevant administrative agencies have further tailored the nominally uniform rights granted by patent and copyright law to apply differently with respect to certain kinds of invention and works of authorship.<sup>153</sup> The argument for uniformity thus far developed acknowledges uniformity cost but reassures that the combination of private ordering and judicious deployment of options and standards has the matter well in hand. If that were true, however, what explains the motivation of international and national policymakers to further tailor patent and copyright law?

A definition is in order. Most lawyers think of tailoring as legislative exceptions or alterations of general standards. But tailoring is not exclusively a matter of amending legislation. Instead, intellectual property law can be, and has been, tailored by (1) legislation, (2) judicial interpretation and evidentiary presumptions, and (3) administrative rules, statutory interpretation and adjudication. The point is important because judges and

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<sup>151</sup> See *supra* Section III.A.2.

<sup>152</sup> See *supra* Section III.A.2.

<sup>153</sup> See generally Carroll, *Law of Tailoring*, *supra* note 11 (describing tailored patents and copyrights).

agency officials do not always view their interpretive practices as having the effect of tailoring the general standards of patent and copyright law, but in practice they have and, as the framework in Section V *infra* suggests, they should. In particular, the considerations of political economy within the framework suggest that judicial tailoring is likely to be the most efficiency-promoting form of tailoring patent and copyright law.

### A. Congress

Of course, tailoring rights by legislation is the most powerful form of adaptation since the legislature is the source of these rights. A few examples make the point. On the one hand, legislative tailoring in its most assertive form disaggregates information from patent or copyright and designates it as subject to *sui generis* rights.<sup>154</sup> On the other hand, legislative tailoring, such as certain provisions of the Patent Act applicable to the term of patent for certain pharmaceutical drugs,<sup>155</sup> is aimed at overcoming differential treatment caused by regulatory approval processes and making uniform the effective term of protection.<sup>156</sup>

In addition, Congress has tailored patent law's rights to exclude others from making, selling, offering to sell, using, and importing an invention in response to specific developments in certain industries. The provision with the greatest economic significance probably is the Hatch-Waxman Act's immunity for a generic drug manufacturer's use of a patented invention to pursue regulatory approval for a drug to compete with a patented drug six months prior to the patent's expiration.<sup>157</sup> Also significant is the Bayh-Dole Act, which permits grantees to pursue patent protection for inventions created with the support of federal funds but limits scope by providing the government with "march-in" rights.<sup>158</sup> This tailored measure is specifically aimed at reducing uniformity cost. Federal grantees face differential appropriability problems because the government has supplied both direct financial support and exclusive rights to induce the investment. Congress also

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<sup>154</sup> See, e.g., 17 U.S.C. §§ 901–14 (creating *sui generis* protection for semiconductor chip masks); see also Robert W. Kastenmeier & Michael J. Remington, *The Semiconductor Chip Protection Act of 1984: A Swamp or Firm Ground?*, 70 MINN. L. REV. 417, 438–44 (1985) (describing rationale for *sui generis* approach and legislative process from participants' perspective).

<sup>155</sup> See 35 U.S.C. § 155 (2006).

<sup>156</sup> See Lunney, *supra* note 6, at 47–48.

<sup>157</sup> See 35 U.S.C. § 271(e) (2006).

<sup>158</sup> See *id.* §§ 200–12.

has tailored the scope of process patents for medical method claims and business method claims in response to perceived uniformity costs.<sup>159</sup>

In the Copyright Act, Congress has tailored the scope of protection, primarily by replacing the right to exclude with statutory licenses for certain uses of certain classes of works.<sup>160</sup> Examples of these provisions include one that tailors rights in musical works to permit garage bands and other musicians the right to record cover versions of their favorite songs without the songwriter's permission.<sup>161</sup> Others tailor performance rights to permit cable and satellite companies to retransmit network television programming without prior consent of the copyright owners.<sup>162</sup> In addition, for certain authors, such as recognized visual artists, Congress has granted additional rights,<sup>163</sup> while for other classes of authors, such as architects<sup>164</sup> and authors of sound recordings,<sup>165</sup> Congress has limited the exclusive rights available. Similarly, Congress has limited the scope of rights in functional pictorial, graphical, or sculptural works.<sup>166</sup> Congress also has tailored copyright scope by identifying certain privileged users, primarily librarians, educators, and Internet service providers, who enjoy certain additional limits on liability or available remedies.<sup>167</sup> Recently, some commentators have remarked upon how underanalyzed these features of copyright law have been.<sup>168</sup>

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<sup>159</sup> See *id.* §§ 287(c) (medical methods), 273 (prior inventor defense).

<sup>160</sup> See, e.g., 17 U.S.C. §§ 111 (2006) (cable retransmission license), 114 (2006) (sound recording license); 115 (2006) (musical composition license), 119 (2006) (satellite retransmission license).

<sup>161</sup> See *id.* § 115.

<sup>162</sup> See *id.* §§ 111, 119.

<sup>163</sup> See *id.* § 106A.

<sup>164</sup> See *id.* § 120 (limiting rights of owner of copyright in an architectural work).

<sup>165</sup> See *id.* § 106(6) (limiting public performance right to performances by "digital audio transmission").

<sup>166</sup> See 17 U.S.C. § 113 (2006).

<sup>167</sup> See, e.g., *id.* §§ 110 (privileging certain users of copyrighted works), 504(c)(2) (providing for remission of statutory damages for certain classes of users acting with a good faith belief of fair use), 512 (creating safe harbor from monetary liability for online service providers).

<sup>168</sup> See, e.g., Joseph P. Liu, *Regulatory Copyright*, 83 N.C. L. REV. 87, 90 (2004); Timothy Wu, *Copyright's Communications Policy*, 103 MICH. L. REV. 278, 366 (2005).

## B. *The Federal Courts*

Judicial tailoring is a built-in feature of intellectual property law.<sup>169</sup> As described above, rights under patent and copyright have to be interpreted and applied in context, and therefore the rights always are tailored for particular subject matter to some degree. For purposes of this section, judicial tailoring requires more systematic differentiation in the application or interpretation of formally uniform rights. For example, copyright law treats books and source code as literary works, which can be infringed by other works that are “substantially similar” where there is evidence of copying.<sup>170</sup> But the scope of how much expression the other work must borrow to fall within the zone of substantial similarity is noticeably different between the two types of literary work.<sup>171</sup>

The effectiveness of judicial tailoring for making intellectual property law more context-sensitive depends on the dimension of rights being adapted. With regard to subject matter in copyright law, for example, courts have a certain amount of discretion to determine whether a work is sufficiently original<sup>172</sup> or to draw the line between an unprotected idea and protected expression. Similarly, determining whether a process is protectable<sup>173</sup> or whether a biological organism is a machine, a manufacture or composition of matter<sup>174</sup> requires the exercise of interpretive discretion through which the courts can tailor protection.

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<sup>169</sup> The role for judicial tailoring depends to some extent upon whether a legal system adopts the principle of stare decisis. In those systems that do, the binding nature of an appellate interpretation of a patent or copyright statute provides a court with a greater ability to tailor rights prospectively.

<sup>170</sup> See, e.g., *Cavalier v. Random House, Inc.*, 297 F.3d 815, 824 (9th Cir. 2002) (discussing summary judgment standard for substantial similarity in suit for infringement of children’s books by television series); *Shaw v. Lindheim*, 919 F.2d 1353, 1355–56 (9th Cir. 1990) (same in screenplay setting); *Computer Assoc. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 701 (2d Cir. 1992) (setting forth substantial similarity test for source code).

<sup>171</sup> Compare *Shaw*, 919 F.2d at 1362 (“a court applying the extrinsic test must compare ‘the individual features of the works to find specific similarities between the plot, theme, dialogue, mood, setting, pace, characters, and sequence of events’”) (citation omitted), with *Altai*, 982 F.2d at 702–10 (applying abstraction-comparison-filtration methodology to find no substantial similarity).

<sup>172</sup> See, e.g., Trotter Hardy, *The Copyrightability of New Works of Authorship: “XML Schemas” as an Example*, 38 HOUS. L. REV. 855, 861–73 (2001).

<sup>173</sup> See *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375–77 (Fed. Cir. 1998) (holding methods of doing business to be patentable processes).

<sup>174</sup> See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 310 (1980) (five Justice majority holding human-made bacteria not naturally occurring to be patentable subject matter).

As with subject matter, the scope doctrines under both patent and copyright law delegate to courts substantial discretion that can be exercised to tailor the balance of incentives and access for specific types of information. For example, Professors Dan Burk and Mark Lemley have argued in a recent book built upon a prior series of articles that uniformity cost is particularly high in relation to patent law's application to software and biotechnology and that these costs can be reduced by judicial tailoring of the Patent Act.<sup>175</sup> They further assert that the Federal Circuit already has applied the PHOSITA-based eligibility doctrines in technology-specific fashion to software and biotechnology inventions.<sup>176</sup> They argue that the Federal Circuit has not explicitly chosen to tailor patent law in this way, but that it should.<sup>177</sup> Others, however, disagree with their reading of the cases.<sup>178</sup> Leaving aside who has the better of the descriptive argument, it is clear that the flexible subject matter and scope standards described in Section III.A.2 confer sufficient discretion upon the courts to reduce uniformity cost by fashioning rules or presumptions that apply to particular subject matter or classes of innovator where necessary. With regard to duration, however, the courts have little discretion to tailor the term of protection directly. Nonetheless, some commentators have shown that courts can use their discretion over scope to limit or enhance the effective duration of protection.<sup>179</sup>

### C. *The PTO and the Copyright Office*

Administrative tailoring has been implemented to a limited degree. Administrative tailoring has greater potential effect in patent law because

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<sup>175</sup> See Dan L. Burk & Mark A. Lemley, *Biotechnology's Uncertainty Principle*, 54 CASE W. RES. L. REV. 691, 742 (2004) [hereinafter Burk & Lemley, *Biotechnology's Uncertainty Principle*]; Burk & Lemley, *Policy Levers*, *supra* note 110, at 1630–38.

<sup>176</sup> See Burk & Lemley, *Policy Levers*, *supra* note 110, at 1593; Burk & Lemley, *Biotechnology's Uncertainty Principle*, *supra* note 175, at 713–22.

<sup>177</sup> See Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1194–95 (2002) (rejecting tailoring thesis as explanation for technology-specific case law); Burk & Lemley, *Policy Levers*, *supra* note 110, at 1675–95 (proposing judicial tailoring for biotechnology, chemical-pharmaceutical, software, and semiconductor inventions).

<sup>178</sup> See R. Polk Wagner, *(Mostly) Against Exceptionalism*, in PERSPECTIVES ON PROPERTIES OF THE HUMAN GENOME PROJECT 367 (F. Scott Kieff ed., 2003); R. Polk Wagner, *Comment: Exactly Backwards: Exceptionalism and the Federal Circuit*, 54 CASE W. RES. L. REV. 749, 755–56 (2004).

<sup>179</sup> See, e.g., Justin Hughes, *Fair Use Across Time*, 50 UCLA L. REV. 775, 799–800 (2003); Joseph P. Liu, *Copyright and Time: A Proposal*, 101 MICH. L. REV. 409, 409–10 (2002).

protection does not commence until the PTO has issued a patent, and tailoring can be accomplished during the examination process. As with judicial tailoring, mere differential treatment—such as the issuance of patents for obvious software inventions because of the absence of prior art—does not amount to administrative policy to tailor the subject matter or scope of protection to better balance incentives and access. The PTO also arguably applies the Patent Act in tailored fashion. For example, evidence shows that potential patentees in certain industries encounter more demanding prosecution than others, and that this is a relatively recent development.<sup>180</sup> Indeed, the PTO's examination guidelines for biotechnological inventions or business method patents reflect a tailored interpretation of the requirements of patentability.<sup>181</sup>

In copyright law, Congress has delegated limited tailoring authority to the Copyright Office.<sup>182</sup> For example, the Copyright Office's determination that the deposit requirement for source code should be altered to enable copyright owners to enjoy both copyright and trade secret protection<sup>183</sup> is a tailoring of copyright law's disclosure function. The Copyright Office has made the judgment that incentives are more important than access for software and implemented that within the discretion granted by the Copyright Act.<sup>184</sup>

The fact that patent and copyright law have been tailored by all three branches of government suggests that the case for uniform intellectual property rights has some weaknesses. Why have these policymakers tailored the law, and have these measures made the intellectual property strategy more efficient? We can separate causes and effects. The cause for tailoring by policymakers must be either a response to rent-seeking by special interest groups, an ignorant but well-intentioned response to perceived uniformity cost, or an informed response to real and substantial uniformity cost. The effects of these measures must be one of the following: (1) tailoring has increased the social costs of intellectual property rights by harming

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<sup>180</sup> See Burk & Lemley, *Policy Levers*, *supra* note 110, at 1589–90 (collecting sources).

<sup>181</sup> See John R. Allison & Emerson H. Tiller, *The Business Method Patent Myth*, 18 BERKELEY TECH. L.J. 987, 1082 & n.263 (2003) (describing PTO initiative to give extra scrutiny to applications for inventions with International Patent Classification 705).

<sup>182</sup> See, e.g., 17 U.S.C. § 1201(a)(1)(B)–(C) (2006) (exempting classes of users identified by Librarian of Congress through administrative rulemaking from paracopyright prohibition in § 1201(a)(1)(A)).

<sup>183</sup> See 37 C.F.R. § 202.20(c)(2)(vii) (2009); see also U.S. COPYRIGHT OFFICE, COPYRIGHT REGISTRATION FOR COMPUTER PROGRAMS, CIRCULAR 61 2–3 (May 2005) (differentiating deposit requirement to permit redaction of trade secret material).

<sup>184</sup> See 17 U.S.C. § 408(c) (2006).

incentives, reducing access or imposing additional administrative cost with no offsetting benefit; (2) tailoring has not affected the social costs of intellectual property rights because the tailored rights are of relatively little economic significance or because the degree of tailoring is minor enough to be immeasurable; or (3) tailoring has made the intellectual property strategy more efficient by establishing a better fit between the appropriability problem and its solution either by accident or by design.

The case for uniform intellectual property rights set forth thus far predicts that the motive to tailor is most likely a response to rent-seeking, and that the likely effects have been either to make matters worse or to be relatively meaningless. Grudgingly, the argument for uniformity would make room for the possibility that the government made the system more efficient out of dumb luck. But, perhaps, policymakers in the dynamic intellectual property system have made the law more efficient by responding to evidence of uniformity cost. Analysts currently lack a framework for assessing existing and proposed tailoring measures to ascertain their effects.

#### V. A FRAMEWORK FOR TAILORING

As the social costs of the intellectual property strategy have become more visible, it is clear that tailoring intellectual property rights to reduce uniformity cost is theoretically justified, and the means for tailoring are available. Because tailoring intellectual property rights can be difficult and costly, however, policymakers need a framework for analyzing when tailoring will enhance social welfare. This framework applies prospectively to pending and future legislative proposals and arguments for tailoring through judicial or administrative statutory interpretation and retrospectively to audit the tailoring statutory provisions or interpretations in existing patent and copyright law.

This framework operates at a high level of generality, with the aim of focusing attention on the relevant types of evidence and argument that deserve attention regardless of the institutional setting for the tailoring analysis. This framework requires that three conditions be met for tailoring to be successful. First, the “knowledge corollary” to the ignorance justification for intellectual property rights must be satisfied. Policymakers must have sufficiently reliable information about eliminable uniformity costs. It is likely that tailoring will have to be done on an industry-specific or technology-specific basis.<sup>185</sup> Second, any measures to tailor intellectual property rights

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<sup>185</sup> See Richard C. Levin et al., *Appropriating the Returns from Industrial Research and Development*, 1987 BROOKINGS PAPERS ON ECON. ACTIVITY 783, 818 (“Since the impact of legal protection of intellectual property depends on the strength of other appropriability mechanisms and varies widely among industries, focused efforts to solve

so as to eliminate such uniformity costs should be administratively feasible and cost-effective—i.e., “administrable”. Finally, considerations of political economy should influence the final design of any tailoring proposal with respect to its institutional form.

One goal of this framework is to separate the process of identifying inefficiencies in the operation of the intellectual property system from fashioning solutions. The first step in this analysis focuses on the kinds of economic evidence relevant for measuring the performance of the system. The second and third steps focus on high-level considerations necessary to fashioning a workable tailored solution to problems identified in the first step. However, this framework does not purport to be complete. In particular, further work is needed to analyze the relative information gathering and processing capacities of Congress, agencies and the courts concerning the operation of innovation and cultural policy. Similarly, further comparative analysis is needed to identify the relative strengths and weaknesses of each branch of government’s capacity to tailor intellectual property rights, taking into account a realistic understanding of the policy process. Finally, future work should also examine potential inter-branch collaboration to produce tailored solutions. For example, if courts lack access to legislative facts but have the greatest resistance to rent seekers, a revived Office of Technology Assessment in the executive branch might produce relatively unbiased reports that could inform judicial interpretation of patent and copyright law to take account of relevant industry-specific or technology-specific differences. I hope to wrestle with these issues in future work.

#### *A. Substantial Evidence of Uniformity Cost*

To satisfy the knowledge corollary, what kinds and how much evidence must a tailoring proponent adduce? The answer is that it depends upon the nature of the tailoring proposal and the degree of change for which it calls. This discussion assumes that tailoring proponents take a dynamic view of innovation and creativity, and that any proposal would be based on basic knowledge of the relevant rate and direction of activity in the innovative or creative fields that would be affected by the proposal, and that responsible tailoring proponents would acknowledge their level of uncertainty and anticipate the need for further adjustments through devices such as legislative sunsets or periodic review and reports by administrative agencies.

Under this framework, the tailoring proponent’s burden increases in rough proportion to the degree that a proposal calls for disaggregation of rights. However, it is important not to overstate error costs. Recall that the

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problems in specific markets would be more prudent than a broad attempt to upgrade protection.”).



existing baselines in patent and copyright law rest on a great deal of uncertainty. Unless those likely to be affected by a tailoring measure can predict its impact on expected value with some certainty and predict that the effect will be different than the proponent claims, the risk of error associated with a tailoring proposal is not likely to be substantial.<sup>186</sup>

Consequently, for a proponent to establish a prima facie case that tailoring is appropriate under the first element within this framework, the proponent need only adduce substantial evidence of identifiable uniformity cost. The substantial evidence standard is well established under the Administrative Procedure Act as evidence of a quantity and quality that “a ‘reasonable mind might accept’ a particular evidentiary record as ‘adequate to support a conclusion.’”<sup>187</sup> The quality and quantity of this evidence also will be relevant when assessing whether any added costs associated with administering tailored rights are justified, but these matters should be kept analytically distinct. Before we know when to tailor or whether existing tailoring promotes efficiency, we need a better idea for the kinds of evidence likely to support a particular case for tailoring. This subsection suggests the kinds of evidence likely to support a tailoring argument. The strength of that support varies with the scope of the proposal.

### 1. *Innovator Incentives—When Rights Are Wrong*

The premise underlying patent and copyright law—that creators or innovators must be able to exclude others in order to extract benefits from them to compensate for the costs of creation or innovation<sup>188</sup>—is demonstrably untrue in some cases. Innovative activity appears to have many complicated motivations, and society may receive the benefits of certain forms of innovation even without extending rights sufficient to induce a rational, selfish actor to innovate.<sup>189</sup> Moreover, even when one holds firm to

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<sup>186</sup> I thank Michael Abramowicz for this point.

<sup>187</sup> *Dickinson v. Zurko*, 527 U.S. 150, 162 (1999).

<sup>188</sup> See Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 994 (1997) [hereinafter Lemley, *Economics of Improvement*] (“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.”). 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).

<sup>189</sup> See, e.g., TERESA M. AMABILE, THE SOCIAL PSYCHOLOGY OF CREATIVITY 14–15 (1983); TERESA M. AMABILE, CREATIVITY IN CONTEXT 153–77 (1996); Bruno S. Frey & Reto Jegan, *Motivation Crowding Theory*, 15 J. ECON. SURVEYS 589 (2001) (reviewing evidence that intrinsic motivation can be reduced by prospect of external reward); see also Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV.

the rational actor thesis, in some cases 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.<sup>190</sup> Alternatively, the investment in initial production may serve as a loss leader to increase other revenue streams, such as speaker’s fees.<sup>191</sup> Finally, firms in a competitive economy are under constant pressure to innovate to differentiate their products and services from their competitors even without the promise of exclusive rights.<sup>192</sup>

What are the types of patentable or copyrightable information that might get produced in sufficient quantity that rights could be tailored to exclude these classes from protectible subject matter or reduce the scope of rights? At this stage the bounds of the group can be stated intuitively, although research could improve this knowledge. The explosion of so-called “user generated content” on the Internet calls into question the premise that exclusive rights must be dangled as a lure to creation. Similarly, scholars and researchers do not receive royalties for their journal articles, and it is likely that they would continue to research and to write even without copyright in their articles because they receive direct compensation to do research and there are a variety of indirect benefits that flow from publication.<sup>193</sup> In the world of patents, there’s a real question about whether the recent extension of patent rights to business methods was necessary on incentive grounds.<sup>194</sup>

Using this kind of evidence to support a tailoring proposal may be difficult, however. One complication for the next stage of the analysis—administrability—is that there may be no feasible way to differentiate

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1151, 1198–1204 (2007) (proposing a decentered model of creativity derived in part from empirical studies of creative processes and showing how copyright law could be judicially tailored in the context of narrative retellings).

<sup>190</sup> See, e.g., Burk & Lemley, *Policy Levers*, *supra* note 110, at 1586 (describing alternative incentives to innovate).

<sup>191</sup> See, e.g., William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 333 (1989) (describing forms of non-pecuniary income authors derive from publication).

<sup>192</sup> See, e.g., Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST L.J. 575, 590–92 (2007) (reviewing longstanding debate about how much incentive competition provides to innovate and situating antitrust law within this debate).

<sup>193</sup> See, e.g., Howard P. Tuckman & Jack Leahy, *What Is an Article Worth?*, 83 J. POL. ECON. 951, 951–52 (1975) (making the classic argument about indirect compensation from scholarship). Of course, copyright also stimulates investments in journal publication, and so any tailoring measure would have to take these incentives into account as well.

<sup>194</sup> See Michael Meurer, *Business Method Patents and Patent Floods*, 8 WASH. U. J.L. & POL’Y 309, 322–27 (2002).

between those who would have created or innovated in a particular field without the promise of exclusive rights and those who require such a promise. Compare and contrast for example, the numerous musicians who would compose and perform in a world without copyright with those creators driven by the thought of riches and fame underwritten by copyright.<sup>195</sup> Similarly, consider those free and open source software programmers motivated by nonpecuniary factors—and these are not all such programmers—and those who rely on a proprietary strategy as their motivation.<sup>196</sup> With this kind of evidence of uniformity cost, the solution may be to place an option filter on otherwise uniform rights rather than seek to differentiate legislatively or judicially. Alternatively, policymakers could tailor the real options to apply only to certain classes of work.

## 2. *Alternative Appropriability Mechanisms*

Even for those creators and innovators who seek control over others' use of their creations and innovations as a means of extracting compensation, patents and copyrights usually supplement a range of other tools or strategies. Evidence that these other tools are particularly effective or ineffective in light of relevant cost structures would tend to show that uniform intellectual property rights are misaligned. In particular, evidence related to the following alternative mechanisms is likely to be highly probative.

### a. *Direct Cost Subsidies*

Although granting exclusive rights remains the dominant policy tool, the government also directly and indirectly subsidizes some forms of information production through grants, rewards, and tax incentives.<sup>197</sup> In the United

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<sup>195</sup> Cf. Susana Juniu, Ted Tedrick & Rosangela Boyd, *Leisure or Work?: Amateur and Professional Musicians' Perception of Rehearsal and Performance*, 28 J. LEISURE RES. 44, 44 (1996) (finding marked differences between amateur and professional musicians toward rehearsal).

<sup>196</sup> See, e.g., Jürgen Bitzer, Wolfram Schrettl & Philipp J. H. Schröder, *Intrinsic Motivation in Open Source Software Development*, 35 J. COMP. ECON. 160, 160–61 (2007); Joshua Lerner & Jean Tirole, *Some Simple Economics of Open Source*, 50 J. INDUS. ECON. 197, 197–99 (2002).

<sup>197</sup> 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. See, e.g., Jacek Warda, *Tax Treatment of Business Investments in Intellectual Assets: An International Comparison* 13–19 (OECD Directorate of Sci. Tech. and Industry, Working Paper No. 2006/4, 2006) (cataloging tax incentives for R&D investments), available at <http://www.oecd.org/dataoecd/>

States, the federal government funds approximately 25% of research and development, and in OECD countries, public sector investment approaches 50%.<sup>198</sup> 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.<sup>199</sup> Federal funding agencies have come under some pressure along these lines after some results show that these agencies did little to condition the use of patents arising from publicly financed research.<sup>200</sup>

The Bayh-Dole amendments to the Patent Act<sup>201</sup> are the clearest signal that policymakers are at least nominally responsive to evidence-based arguments concerning the effects of direct subsidies. Prior to 1980, federal grantees—primarily universities and research centers—faced uncertainty about seeking patent protection for inventions discovered under the auspices of a federal grant.<sup>202</sup> Responding to arguments that commercializers lacked sufficient incentives to build on unpatented discoveries made by federal grantees, Congress made clear that these grantees could seek and receive patent protection subject to some tailoring of scope to reduce the social costs of monopoly under particular conditions.<sup>203</sup>

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53/4/36764076.pdf.

<sup>198</sup> See Menell & Scotchmer, *supra* note 16, at 1530–31.

<sup>199</sup> 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 L. & CONTEMP. PROBS. 289, 290–91 (2003); see also John M. Golden, *Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System*, 50 EMORY L.J. 101, 109 (2001) (arguing that patent analysts often overlook the role of multibillion-dollar public investments in research in biotechnology industry).

<sup>200</sup> See, e.g., U.S. GENERAL ACCOUNTING OFFICE, TECHNOLOGY TRANSFER NIH–PRIVATE SECTOR PARTNERSHIP IN THE DEVELOPMENT OF TAXOL, REPORT TO THE HONORABLE RON WYDEN, U.S. SENATE 3 (June 2003) (finding that “NIH made substantial investments in research related to [cancer drug] Taxol, but its financial benefits from the collaboration with BMS [Bristol Meyers Squibb] have not been great in comparison to BMS’s revenue from the drug.”).

<sup>201</sup> 35 U.S.C. §§ 200–12 (2006).

<sup>202</sup> See Rai & Eisenberg, *supra* note 199, at 303–04 (describing situation in 1980).

<sup>203</sup> See *id.* at 304. The story Congress heard was that universities cared only about scientific recognition and were indifferent to patents, that private industry needed exclusive rights under university-owned patents to make product development profitable, and that government funding agencies had to be restrained from indulging their anti-patent reflexes so that universities and private industry could join forces to develop new technologies for the benefit of the U.S. economy. *Id.*

In response to these developments, the patent literature has seen the emergence of two related cottage industries. One is specifically focused on proposals to revise Bayh-Dole,<sup>204</sup> and the other embraces a range of related proposals to tailor patent law for universities.<sup>205</sup> The argument here is that the fact of direct subsidies is the kind of evidence likely to give rise to substantial uniformity cost because baseline patent rights are premised on an assumption that innovators need to recoup most of their costs in the market through the promise of monopoly pricing.<sup>206</sup>

The focus of debate about university patenting should be on the source of uniformity cost. In what ways do the direct subsidies supply sufficient incentives for innovation? Are there gaps? If so, where? If the premise of Bayh-Dole is correct, would it be more effective to tailor the law to provide a limited commercialization right rather than patents to directly subsidized inventors? These are the kinds of economic analyses that the uniformity cost perspective suggests will most usefully inform debates about patenting by federally funded researchers inside and outside of the university setting.

The other form of direct subsidy that should be squared with uniform intellectual property rights is prizes and rewards. As discussed above, direct

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<sup>204</sup> See, e.g., DAVID C. MOWERY ET AL., *IVORY TOWER AND INDUSTRIAL INNOVATION: UNIVERSITY-INDUSTRY TECHNOLOGY TRANSFER BEFORE AND AFTER THE BAYH-DOLE ACT* 166 (2004); Katherine J. Strandburg, *Curiosity-Driven Research and University Technology Transfer*, in *UNIVERSITY ENTREPRENEURSHIP AND TECHNOLOGY TRANSFER: PROCESS, DESIGN, AND INTELLECTUAL PROPERTY* 93 (Gary D. Libecap ed., 2005); Rebecca S. Eisenberg, *Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663, 1665–71 (1996); F. Scott Kieff, *Facilitating Scientific Research: Intellectual Property Rights and the Norms of Science—A Response to Rai and Eisenberg*, 95 NW. U. L. REV. 691, 692 (2001); Lorelei Ritchie de Larena, *The Price of Progress: Are Universities Adding to the Cost?*, 43 HOUS. L. REV. 1373, 1412 (2007); Michael S. Mireles, Jr., *States as Innovation System Laboratories: California, Patents, and Stem Cell Technology*, 28 CARDOZO L. REV. 1133, 1136 (2006) (characterizing Bayh-Dole as controversial); Rai & Eisenberg, *supra* note 199, at 289–91; Arti Kaur Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Science*, 94 NW. U. L. REV. 77, 147–51 (1999).

<sup>205</sup> See, e.g., Margo A. Bagley, *Academic Discourse and Proprietary Rights: Putting Patents in Their Proper Place*, 47 B.C. L. REV. 217, 217 (2006); Ron A. Bouchard, *Balancing Public and Private Interests in the Commercialization of Publicly Funded Medical Research: Is There a Role for Compulsory Government Royalty Fees?*, 13 B.U. J. SCI. & TECH. L. 120, 125–26 (2007); Mark A. Lemley, *Are Universities Patent Trolls?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 611, 622–24 (2008) (“The need for university patents, in short, depends critically on the technology at issue”); Kristen Osenga, *Rembrandts in the Research Lab: Why Universities Should Take a Lesson from Big Business to Increase Innovation*, 59 ME. L. REV. 407, 408–11 (2007); Elizabeth A. Rowe, *The Experimental Use Exception to Patent Infringement: Do Universities Deserve Special Treatment?*, 57 HASTINGS L.J. 921, 942–44 (2006).

<sup>206</sup> See, e.g., Menell & Scotchmer, *supra* note 16, at 1476–77.

compensation in the form of prizes or rewards is a well-established policy option.<sup>207</sup> Many of the modern implementations of this option, however, use it as a supplement rather than a substitute for intellectual property protection. Should the government respond to the challenges of climate change by offering a \$300 million prize for an improved car battery that will reduce carbon emissions, as presidential candidate John McCain proposed during the 2008 election season?<sup>208</sup> Under the uniformity cost approach, one would ask what the evidence is that fluctuating fuel prices and other competitive circumstances do not already suggest that the value of a patent on such an invention would be sufficient to induce sufficient investments in this direction.<sup>209</sup>

This is not to say that prizes or rewards should never be used as supplements to patent and copyright protection. The uniformity cost perspective suggests that this approach makes sense if uniform rights are insufficiently robust to attract certain types of creative or innovative activity. One caution, however, is that policymakers should also experiment with using prizes and rewards as substitutes for exclusive rights to ensure that they are not overcompensating innovators and creators. As a middle ground, policymakers might permit winners to pursue or to retain intellectual property rights but might either require that the government receive a license to use and to sublicense or require the winner to agree to pursue open licensing.<sup>210</sup>

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<sup>207</sup> See *supra* Section II (discussing policy of using prizes and rewards as compensation for intellectual property rights).

<sup>208</sup> Michael Cooper, *McCain Proposes a \$300 Million Prize for a Next-Generation Car Battery*, N.Y. TIMES, June 24, 2008, at A20.

<sup>209</sup> See, e.g., Jonathan Rauch, *Electro-Shock Therapy*, ATLANTIC MONTHLY, July/Aug. 2008, at 84 (describing General Motors's aggressive approach to producing a battery-powered hybrid in response to eroding market share).

<sup>210</sup> A recent report by the National Research Council recommends that the National Science Foundation increase the number of innovation prize funds it administers, tailored to particular innovations, and that its policy toward intellectual property should be:

We recommend that the federal government not seek to own or control the disposition of intellectual property developed by contestants in the course of seeking NSF innovation inducement prizes, with one exception. The exception would be that if the winner of a prize chooses not to put the winning innovation into commercial practice within a reasonable time period and if it declines to license it to another U.S.-based entity wishing to commercialize the invention, the winner would be required, as a condition of the award, to enter into good faith negotiations with the other party for a license to be awarded under terms and conditions typical for the industry or technology sector.

## b. *Industry- or Market-Specific Features*

Lead time advantage and network effects are two market-specific economic phenomena that affect appropriability and innovator incentives and would therefore independently provide evidence relevant to a tailoring proposal.

### i. *Lead Time*

Leadtime or first-mover advantage is the most common market-specific appropriability feature that could be the basis for tailoring. For at least some period of time, information will be excludable where its creation is unobserved and when the information has not been otherwise communicated.<sup>211</sup> If the producer invests in information security procedures and measures, he or she can capitalize on this limited-duration excludability by being first to market with the goods incorporating the valuable information.<sup>212</sup> During the lead time, then, the producer will be the sole source of the information good and will be able to charge supracompetitive prices before competitors acquire the good, reproduce it and enter the market with cheaper alternatives.<sup>213</sup> Research indicates that the value of lead time often is industry-specific,<sup>214</sup> and that in product markets with patentable goods incumbents often enjoy significant market share advantages even after competitors have entered a market.<sup>215</sup>

The value of the lead-time advantage is affected not only by its duration but also by competitors' copying costs. The competitor does not bear the

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<sup>211</sup> See ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, OECD PATENT STATISTICS MANUAL 21–22 (2009).

<sup>212</sup> Trade secret law is concerned with keeping valuable information excludable where the producer does not to seek to sell the information directly. See, e.g., Jerome. H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2520–21 (1994).

<sup>213</sup> See Frischmann, *Spillovers Theory*, *supra* note 59, at 369 (“Lead time advantage is primarily dependent on secrecy, timing, and the ease of copying or reverse engineering.”).

<sup>214</sup> See generally William T. Robinson et al., *First-mover Advantages from Pioneering New Markets: A Survey of Empirical Evidence*, 9 REV. INDUS. ORG. 1 (1994) (surveying literature showing first-mover advantages, including industry-specific results). Of course, it is not an ironclad rule that being first is always best. See generally Marvin B. Lieberman & David B. Montgomery, *First-Mover (Dis)Advantages: Retrospective and Link with the Resource-Based View*, 19 STRATEGIC MGMT. J. 1111 (1998) (summarizing literature on relative first mover advantages).

<sup>215</sup> See Jonathan M. Barnett, *Private Protection of Patentable Goods*, 25 CARDOZO L. REV. 1251, 1257 n.18 (2004).

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, or manufacturing and marketing competing goods. One study shows that imitation costs for patentable goods can run about 65% of the costs of innovation.<sup>216</sup> However, about 70% of the goods studied were patented and “imitation costs” included the costs of inventing around the patent.<sup>217</sup> Consequently, this data does not translate immediately into the costs of competition in markets without intellectual property rights. Additionally, when one accounts for the monetary value of time, reflected as a competitor’s opportunity costs, the necessary level of protection would be further reduced. If expected profits derived from this lead-time or first-mover advantage are sufficient to recoup the costs of initial production, the case for government intervention largely disappears.<sup>218</sup>

However, evidence that the prospect of lead time profits provides sufficient incentives for creation or innovation is not by itself evidence of uniformity cost. Even in cases in which granting intellectual property rights is unnecessary because lead time supplies the right incentive, the rights would be merely superfluous and the social harm from uniformity would be negligible since this class of creator or innovator would enjoy market power even without the rights.<sup>219</sup> Consequently, a tailoring proponent would need to further investigate evidence of lead time profits to determine whether exclusive rights effectively layer on an additional margin unnecessary to stimulate the desired levels of investment. The best case for tailoring based on lead time profits would be one in which intellectual property rights should be treated as superfluous on both sides of the ledger, but rightsholders use the rights to engage in strategic litigation that squeezes additional rents from competitors and consumers with no offsetting social benefits.<sup>220</sup>

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<sup>216</sup> Edwin Mansfield et al., *Imitation Costs and Patents: An Empirical Study*, 91 *ECON. J.* 907, 909–10 (1981).

<sup>217</sup> *See id.*

<sup>218</sup> *See, e.g.*, Jerome H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 *COLUM. L. REV.* 2432, 2504–05 (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.

<sup>219</sup> Thanks to Michael Abramowicz for helping to sharpen this point in an email exchange.

<sup>220</sup> *See* Bessen & Meurer, *supra* note 77, at 130–38 (tallying the costs of patent litigation and the chilling effect that the risk of incurring such costs has on innovation).



*ii. Network Effects*

A second market-based feature that might justify tailoring is the presence of strong network effects. A tailoring proponent relying on evidence of network effects would likely argue that 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.<sup>221</sup> As a general matter, these are effects that alter (usually increase) the value of a purchased good or service because others have chosen to purchase or use the same good or service. The classic example is the telephone. It becomes more valuable as others acquire them. Economists distinguish between markets involving actual networks, virtual networks, and positive feedback effects, and these distinctions could impact the strength of a tailoring proposal.<sup>222</sup>

Evidence of network externalities may support shift from a property to a liability rule to provide a form of rate-of-return regulation of a “natural” monopoly.<sup>223</sup> Unauthorized copying can serve to strengthen the market share of an information provider in a “tippy” market.<sup>224</sup> 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.<sup>225</sup> Professors Lemley and McGowan suggest that

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<sup>221</sup> Network effects, as manifested by the “superstar” effect is a version of the phenomenon. *See, e.g.*, Sherwin Rosen, *The Economics of Superstars*, 71 AM. ECON. REV. 845, 845 (1981). Although Rosen explains the skew distribution of popularity in the cultural sphere as reflecting a skewed distribution of talent in the population, *id.* at 846, 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 generally* 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* (1995).

<sup>222</sup> *See* Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 488 (1998).

<sup>223</sup> Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 836 (2007).

<sup>224</sup> *See* VARIAN & SHAPIRO, *supra* note 120, at 45; Lisa N. Takeyama, *The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities*, 42 J. INDUS. 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.”).

<sup>225</sup> *See* Lemley, *Economics of Improvement*, *supra* note 188, at 1066–67 (stating that intellectual property rights reinforce market power where there are strong standardization effects).

evidence of a market exhibiting strong network effects because of demand for standardization may support proposals to permit reverse engineering to allow competitive entry.<sup>226</sup> Patent law currently does not recognize a reverse engineering defense, although some scholars have offered proposals either for a generalized fair use defense that could be adapted to market circumstances<sup>227</sup> or more tailored proposals to permit reverse engineering.

Evidence of strong network effects pose one particular challenge to tailoring proponents, however. If network effects, coupled with exclusive rights confer substantial market power, is tailoring intellectual property rights superior to policing abuses of such market power through competition law? The answer to this question is difficult because antitrust doctrine is in flux. A number of scholars have advanced arguments about the appropriate relationship between intellectual property and antitrust,<sup>228</sup> but further discussion of that intersection is beyond the scope of this Article. In any event, a tailoring proponent would have to account for the role of antitrust in network markets, and, if the law were to move in the direction some of these theories suggest, it may be more efficient to leave uniform intellectual property rights in tact and to adapt their actual reach through judicial application coupled with enforcement under competition law.

### 3. *Overlapping Rules and Rights*

Two common legal features that intellectual property owners factor into their appropriability calculus is the availability of other legal rights of exclusion, such as trade secret, trademark, or contract law, and regulatory requirements in the marketing and distribution of creations or innovations. Patent and copyright law already have been tailored to respond to these features in some respects. For example, with respect to overlapping rights, Professor Jerry Reichman has pointed out, trade secret law provides a liability-rule substrate to the property-rule regimes of patent and copyright.<sup>229</sup>

As important, product differentiation strategies supported by trademark law supply an important source of power over price. The effects of trademark and trade secret protection may be sufficient to induce the desired level of

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<sup>226</sup> See Lemley & McGowan, *supra* note 222, at 525, 527.

<sup>227</sup> See Maureen A. O'Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 COLUM. L. REV. 1177, 1249–50 (2000); see also Pamela Samuelson & Suzanne Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575, 1638 (2002).

<sup>228</sup> See Baker, *supra* note 192, at 575 (collecting sources).

<sup>229</sup> See Reichman, *supra* note 218, at 2438–41 (explaining liability rule structure of trade secret law).

investment even in the absence of copyright or patent rights in some cases.<sup>230</sup> Moreover, the exclusivity provided by copyright or patent rights facilitates the producer's ability to establish strong, highly distinctive marks.<sup>231</sup> This effect likely explains why consumers continue to purchase branded over-the-counter drugs such as Tylenol® or Advil® at a significant premium even when they have available cheaper generic drugs that are chemically perfect substitutes.<sup>232</sup> 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.<sup>233</sup>

In addition to overlapping rights, the pharmaceutical industry faces overlapping regulation because to take a patented medicine to market, a firm must satisfy health and safety standards as well as the standard for patentability.<sup>234</sup> The health and safety regulatory process diminishes the effective period of market exclusivity offered by the patent.<sup>235</sup> Patent law already has been tailored in response in two ways. The term of patent protection can be extended based on regulatory delay,<sup>236</sup> but also generic entry at the end of patent protection has been facilitated by Hatch-

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<sup>230</sup> See F. Scott Kieff, *Coordination, Property and Intellectual Property: An Unconventional Approach to Anticompetitive Effects and Downstream Access*, 56 EMORY L.J. 327, 432–34 (2006) (arguing that trademark, and to a lesser extent patent, could provide entertainment industry sufficient incentives even without copyright).

<sup>231</sup> 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.”).

<sup>232</sup> Robert Barsky, Mark E. Bergen, Shantanu Dutta & Daniel Levy, *What Can the Price Gap Between Branded and Private-Label Products Tell Us About Markups?*, in SCANNER DATA AND PRICE INDEXES 165, 218–22 (Robert Feenstra & Matthew Shapiro eds., 2003) (showing that branded analgesics enjoy a high markup over generic competitors).

<sup>233</sup> 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 (2006).

<sup>234</sup> See *supra* note 27.

<sup>235</sup> *Outlook 2009*, TUFTS CTR. FOR THE STUDY OF DRUG DEV., OUTLOOK 2009 1 (Jan. 2009) (reporting that regulatory approval for new drugs averaged 1.1 years during 2005–2007 but that combined approval and clinical phase time was about 8 years), available at <http://csdd.tufts.edu/InfoServices/OutlookPDFs/Outlook2009.pdf>.

<sup>236</sup> See 35 U.S.C. §§ 155–56 (2006).

Waxman.<sup>237</sup> The pharmaceutical industry has deployed two strategies to extend the period of monopoly on a patented medicine. First, it has chosen to appropriate the limited exclusive right that the law offers to first-moving generic manufacturers.<sup>238</sup> Second, it has sought and obtained a new exclusive right on the clinical trial data necessary for regulatory approval of generic equivalents of patented medicines. This tailored right of “data exclusivity” has been written into bilateral “free trade” agreements between the United States and a number of trading partners, and in the European Union.<sup>239</sup>

#### 4. *Fragmentation and Market Failure*

The flipside of overlapping rights are rights that are too finely grained to support the innovative investments or activities in a particular industry or context. In such cases, problems of anticommons may emerge. Tailoring proponents may propose measures that consolidate rights, increase limitations or exceptions to the rights, or tailor remedies to offer only liability rule protection of the rights.

#### 5. *Demand-Side Features—Positive Spillovers*

Even if uniform rights suited information producers to a tee, a good argument for tailoring rights could be derived from evidence of certain positive externalities, or spillovers, on the demand side. Professors Brett Frischmann and Mark Lemley argue separately and together that efficient patent and copyright law must be limited and leaky in order to encourage or allow certain types of uncompensated demand-side sharing of valuable information.<sup>240</sup> Their arguments call for tailoring to ensure that the law is particularly permissive with respect to patented or copyrighted information that functions as “infrastructure.”<sup>241</sup> In particular, Frischmann argues that

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<sup>237</sup> See *Schering-Plough Corp. v. FTC*, 402 F.3d 1056, 1058 n.2 (11th Cir. 2005) (describing purpose of Hatch Waxman Act, as amended).

<sup>238</sup> See *id.* at 1058 (vacating FTC order finding such a settlement to be anti-competitive).

<sup>239</sup> See, e.g., Carlos M. Correa, *Implications of Bilateral Free Trade Agreements on Access to Medicines*, 84 BULL. OF WORLD HEALTH ORG. 399, 401 (2006), available at [http://www.scielosp.org/scielo.php?pid=S0042-96862006000500021&script=sci\\_arttext&tlng=en](http://www.scielosp.org/scielo.php?pid=S0042-96862006000500021&script=sci_arttext&tlng=en).

<sup>240</sup> See Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 922–23 (2005) [hereinafter Frischmann, *Economic Theory*]; Frischmann & Lemley, *supra* note 66, at 257, 282.

<sup>241</sup> See Frischmann & Lemley, *supra* note 66, at 271.

information should be managed as a commons rather than through private, exclusive rights when:

- (1) The resource may be consumed nonrivalrously; (2) Social demand for the resource is driven primarily by downstream productive activity that requires the resource as an input; and (3) The resource may be used as an input into a wide range of goods and services, including private goods, public goods, and nonmarket goods.<sup>242</sup>

Patent and copyright law already reflect this view, in part, through general exclusions of protection for ideas or facts (in the case of copyright) or discoveries of products of nature (in the case of patent).<sup>243</sup> But some information that would fall within the subject matters of patent and copyright, respectively, also may function as nonrivalrous, generic inputs that supply social and public goods, such as public health or public education, for which markets are either absent or incomplete. In such cases, “the opportunity cost of an exclusive right may be greater than its benefit.”<sup>244</sup> In these cases, the argument for solving the appropriability problem through some combination of prize, reward, or tax strategy is likely to be particularly strong.

Alternatively, where the evidence shows that patented or copyrighted information serves as an input to a range of private and public goods, a tailoring proponent may seek to propose limitations or exceptions for the producers of public goods while leaving exclusive rights intact as against the producers of private goods. Much of the recent commentary calling for a revitalized experimental use exception to patent infringement or for tailoring of patent law with respect to university researchers follows this line.<sup>245</sup> The proponent should also be prepared to answer the argument advanced by Professor Polk Wagner that even “complete” rights of exclusion are unable to prevent positive spillovers, and—to the extent that more robust, uniform rights encourage production of additional information—the total amount of spillovers will increase with broad exclusive rights.<sup>246</sup> In my own view, even

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<sup>242</sup> See Frischmann, *Economic Theory*, *supra* note 240, at 956.

<sup>243</sup> See 17 U.S.C. § 102(b) (2004) (excluding ideas from subject matter of copyright).

<sup>244</sup> Lawrence Lessig, *Re-Marking the Progress in Frischmann*, 89 MINN. L. REV. 1031, 1035 (2005) (recasting Frischmann’s argument).

<sup>245</sup> See, e.g., Ted Hagelin, *The Experimental Use Exemption to Patent Infringement: Information on Ice, Competition on Hold*, 58 FLA. L. REV. 483, 523–40 (2006) (collecting sources and summarizing range of law reform proposals for experimental use).

<sup>246</sup> See R. Polk Wagner, *Information Wants to Be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995, 995 (2003).

setting aside distributional concerns, I am skeptical about the degree to which increases in a rightsholder's power of exclusion beyond a certain point induce increased production and distribution of useful information, but the tailoring proponent should be prepared with a more detailed argument along these lines.

### 6. *Industrial Innovation Decision Structures*

Economic analysis to date suggests that the magnitude of appropriability problems varies by industry,<sup>247</sup> and we would therefore expect that tailoring proposals are likely to call for line drawing along industry lines. In prior work, Professors Robert Merges, Richard Nelson,<sup>248</sup> and Professor Tim Wu<sup>249</sup> independently suggest that policymakers should recognize the effect on industry structure and degree of competitive entry influenced by the subject matter and scope of intellectual property rights and that policymakers should tailor rights to modulate the degree of entry depending upon industry maturity and other competitive conditions.

Merges and Nelson made a significant contribution to the patent literature first by calling attention to the role courts must play in tailoring the scope of patents through application of the law's flexible scope doctrines and second by "show[ing] that the issues at stake regarding patent scope depend on the nature of technology in an industry. This dependence includes two characteristics: the relationship between technical advances in the industry, and the extent to which firms license technologies to each other."<sup>250</sup>

By studying and categorizing the effects of patent scope on follow-on invention, Merges and Nelson generally reject the "prospect" theory of patent scope that would delegate control over follow-on innovation to early inventors in favor of greater entry tailored to the characteristics of what they label "cumulative technologies," "chemical industries," and "science-based industries."<sup>251</sup> They argue that the PTO and courts should be attentive to the dynamic development of technology within specific industries or fields of invention and recognize that their respective decisions about patent scope also have dynamic effects.

Professor Wu makes a related argument concerning the role that the presence or absence of intellectual property rights and the delineation of their

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<sup>247</sup> See *supra* Section V.A.2.b. (discussing industry-specific appropriability problems).

<sup>248</sup> See generally Merges & Nelson, *supra* note 115.

<sup>249</sup> See generally Wu, *supra* note 65.

<sup>250</sup> Merges & Nelson, *supra* note 115, at 843.

<sup>251</sup> See *id.* at 908–16 (summarizing conclusions).

scope will shape the “decision architecture” for innovation within particular industries. In short, he argues that where intellectual property rights are robust, innovation decisions are likely to be made within hierarchal firms that own these rights, and the willingness of these firms to grant licenses to follow-on innovators who may become competitors is suspect.<sup>252</sup> In contrast, where intellectual property rights are subject to significant limitations or exceptions, innovation decisions are likely to be made polyarchically.<sup>253</sup> He argues that policymakers should employ presumptions that favor limited intellectual property rights in new industries to favor decentralized development unless the risk of misappropriation is so significant that investments in new development will be deterred.<sup>254</sup> In contrast, he argues that policymakers should be more solicitous of claims for more robust rights applicable to “dead” industries unless overprotection was one of the causes of death.<sup>255</sup>

The take-away from this work is that policymakers should be receptive to tailoring arguments that rely on industry-wide evidence concerning the effects of intellectual property rights on the pace and direction of innovation. This evidence and the decisions that it supports will be most significant when an industry or field or endeavor is in its early stages. Professors Merces and Nelson stress the importance of rewarding pioneers with relatively broad patents, but they and Professor Wu also show that the PTO, the Federal Circuit, and Congress should guard against overreaching by early innovators who are likely to use the control that robust intellectual property rights confer to choke off socially beneficial follow-on innovators.

### 7. *Summary and Examples*

Decisions about intellectual property policy should be evidence-based. Judge Posner is correct to say that gathering and assessing evidence about the performance of uniform patents and copyrights is difficult. But gathering and assessing evidence about the social costs of uniform rights and how these could be tailored to perform better is far more plausible and effective. This should be a primary focus for the economic analysis of intellectual property. The types of evidence most likely to support a tailoring proposal are those showing innovator incentives that depart from the standard rationale for

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<sup>252</sup> Wu, *supra* note 65, at 140–41.

<sup>253</sup> *See id.* at 143–45 (“The analysis here suggests that copyright and patent exceptions have a particular urgency when they can open markets to decentralized improvement without permitting misappropriation of the primary owners’ investments.”). *Id.* at 145.

<sup>254</sup> *See id.* at 145.

<sup>255</sup> *See id.* at 146–47.

intellectual property rights, the availability of alternative appropriability mechanisms, the role of overlapping legal rights that influence appropriability, the magnitude of positive spillovers generated by certain types of innovative activity, and industry-specific effects on follow-on innovation from uniform rights.

A few recent examples of tailoring debates highlight the relevance of this evidentiary taxonomy. The availability of alternative appropriability mechanisms, lead time in particular, is the focus of a current policy debate concerning fashion design. A group of fashion designers have petitioned Congress for a *sui generis* three-year right of exclusivity on the grounds that globalized markets and the Internet have eroded the designer's traditional lead-time advantage.<sup>256</sup> They assert that factories in India use photographs taken when new lines of clothing are first displayed and have knock-offs in the stores before the designers have even shipped their own lines.<sup>257</sup> Some members of Congress agreed to introduce legislation creating a *sui generis* right for apparel, bags, belts, and eyeglass frames.

Evidence of erosion of lead time is not by itself sufficient evidence to support a tailored measure of this sort. Proponents must provide evidence that the erosion of lead time reduces investment incentives below desired levels. Critics of the Design Piracy Prohibition Act argue that successful designers still enjoy sufficient rewards to provide sufficient incentives to create and that the social costs of the proposed expansion of intellectual property rights would mire the industry in socially wasteful litigation without any offsetting benefits in "better" or more fashion designs.<sup>258</sup>

In a related vein, Professors Michael Abramowicz and John Duffy implicitly incorporate the evidentiary framework proposed herein to argue that the economic incentives provided by lead-time advantage may be systematically insufficient to reward otherwise unpatentable market experimentation. Their model suggests that the subject matter of intellectual property law should be tailored to reward commercialization rather than invention where lead time is insufficient to induce optimal market experimentation. Using new business models, such as that of Netflix, as an

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<sup>256</sup> Memorandum from Jessica G. Jacobs, Law Clerk, Am. Law Div., Copyright Protection for Fashion Design: A Legal Analysis of the Design Piracy Prohibition Act, H.R. 2033 6 (June 28, 2007), available at [http://assets.opencrs.com/rpts/RS22685\\_20070628.pdf](http://assets.opencrs.com/rpts/RS22685_20070628.pdf) (last visited July 27, 2008).

<sup>257</sup> See Susan Scafidi, *F.I.T.: Fashion as Information Technology*, 59 SYRACUSE L. REV. 69, 87 (2008) ("While the immediate online availability of photographs of new styles from the runway or the red carpet contributes to consumer interest in cutting-edge fashion, it also enables design pirates to offer fast, cheap knockoffs—often before the original versions are available in stores.").

<sup>258</sup> See, e.g., James Surowiecki, *The Piracy Paradox*, THE NEW YORKER, Sept. 24, 2007 ("There's little evidence that knockoffs are damaging the business.").



example, they then admit that drawing an administrable line to cover unobvious commercialization efforts is likely infeasible without development of new institutions.<sup>259</sup>

Evidence of the power of overlapping rights can be found in the power that the PENGUIN CLASSICS mark gives Penguin Group, USA in the market for books in the public domain.<sup>260</sup> Even in the absence of copyright protection, publishers find it profitable to invest in competing publications. 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.

In at least one policy debate, however, the availability of alternative protection through trade secret and contract and other means has been taken into account. For more than a decade, compilers of non-copyrightable databases have sought special legislation to give them *sui generis* exclusive rights.<sup>261</sup> They made their case successfully to the European Commission,<sup>262</sup> but have thus far failed to persuade the United States Congress.<sup>263</sup> The Commissioners appear to have a certain amount of buyer’s remorse.<sup>264</sup>

## B. Administrability

Tailored provisions of the law succeed when the distinctions drawn are jurisprudentially stable and administratively cost-effective. I combine these

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<sup>259</sup> See Michael Abramowicz & John F. Duffy, *Intellectual Property for Market Experimentation*, 83 N.Y.U. L. REV. 337, 410 (2008) (“A likely reason for the law’s relative lack of attention to market experimentation is that the relevant institutional players, such as patent examiners, legislators, and judges, are not well positioned to make judgments about which market experiments deserve protection.”).

<sup>260</sup> See Bill Goldstein, *Publishers Give Classics a Makeover*, N.Y. TIMES, Feb. 10, 2003, at C9.

<sup>261</sup> See Daniel J. Gervais, *The Protection of Databases*, 82 CHI.-KENT L. REV. 1109, 1139 (2007) (describing and analyzing the international and national protection of non-original databases in United States and Europe).

<sup>262</sup> See Council Directive 96/9, *Legal Protection of Databases*, 1996 O.J. (L 77) 20–28 (EC), available at [http://eur-lex.europa.eu/smartapi/cgi/sga\\_doc?smartapi!celexapi!prod!CELEXnumdoc&numdoc=31996L0009&model=guichett&lg=en](http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&numdoc=31996L0009&model=guichett&lg=en).

<sup>263</sup> See Gervais, *supra* note 261, at 1142.

<sup>264</sup> Internal Market Services Directorate General, *First Evaluation of Directive 96/9/EC on the Legal Protection of Databases* 23–25 (Comm’n of the European Cmtys., Working Paper, 2005), available at [http://ec.europa.eu/internal\\_market/copyright/docs/databases/evaluation\\_report\\_en.pdf](http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf).

two measures into the metric of administrability. If the economic evidence from the first step of the analysis shows that uniformity cost is particularly problematic with respect to certain subject matter, a particular industry, or a particular class of innovator, such as employees of universities, then the legal analysis turns to the question of institutional form.

This is the part of the analysis for which lawyers are uniquely qualified. The administrative costs of intellectual property schemes are incurred largely in domains dominated by lawyers. These costs include bargaining costs, such as the costs of drafting licenses, litigation costs, and, in the case of patent, prosecution costs. These costs matter. For example, the substantial costs of patent prosecution and litigation reduces the expected value from a patent because there will be some markets in which the surplus available is small enough that obtaining or enforcing exclusive rights will not be cost-justified.<sup>265</sup> Inventors faced with such costs may choose not to invest in socially beneficial innovation or may opt for trade secret protection where the disclosure given by an issued patent would be preferable.

Turning now to the proponent's burden, once specific uniformity costs have been identified, the proponent must also show that it would be administratively feasible to tailor rights and that doing so would be cost-justified. Demonstrating feasibility means showing (1) that the law can adequately delineate the subject matter governed by tailored rights and (2) that such distinctions will be stable enough in practice to defeat arbitrage by clever attorneys.<sup>266</sup>

If tailored rights result in significantly differential treatment of works under copyright law or inventions under patent law, parties would have an incentive to characterize works in a less protected category as works belonging to a category with greater protection.<sup>267</sup> Along these lines, the

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<sup>265</sup> See Lanjouw & Lerner, *supra* note 77, at 215–16 (surveying empirical literature showing reduction in patent value from high enforcement costs).

<sup>266</sup> The few economists who have considered the matter are relatively optimistic about the stability of tailored protections. See, e.g., Nancy Gallini & Suzanne Scotchmer, *Intellectual Property: When Is It the Best Incentive System?*, in 2 INNOVATION POLICY & THE ECONOMY 51, 53, 71 (Adam Jaffe, Joshua Lerner & Scott Stern eds., 2002) (“[I]ntellectual property regimes should be designed so that the subject matter of each one has relatively homogeneous needs for protection.”).

<sup>267</sup> The phenomenon of legal arbitrage is most familiar in the context of applying intellectual property laws to new technologies. See, e.g., *NBC v. Satellite Broad. Networks, Inc.*, 940 F.2d 1467, 1471 (11th Cir. 1991) (holding that satellite television network was a “cable system” eligible to retransmit broadcast television programs under a statutory license) (superseded by regulation); *Satellite Broad. and Comm’n. Ass’n v. Oman*, 17 F.3d 344, 348 (11th Cir. 1994) (upholding Copyright Office regulation rejecting satellite system eligibility for “cable system” license); see also 17 U.S.C. §§ 119, 122 (2000) (providing separate statutory licenses for satellite retransmissions of

Court's holding in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc.*<sup>268</sup> can be viewed as successful legal arbitrage of the statutory distinction drawn for patent protection of plants and plant varieties.<sup>269</sup> The manipulability of language does have its limits however, and relatively stable definitions of subject matter are possible. Consider, for example, the distinct treatment that "musical works" and "sound recordings" receive under copyright law.<sup>270</sup>

It is important to stress the pragmatism necessary for the jurisprudential stability inquiry. A tailoring opponent cannot defeat a proposal merely because a proposed distinction is not watertight. Most legal distinctions leak. The pragmatic question in assessing whether the boat can stay afloat is how bad the leaks are likely to be. Consider the case of patents in methods of doing business. Congress already has tailored patent law by creating a defense specific to patents teaching a "method of doing or conducting business."<sup>271</sup> How stable is this category? According to Professors Allison and Tiller, not very. They argue:

Although it is not entirely unheard of for Congress to single out a particular field for different protective scope under patent law, it is quite rare. In 1996, Congress granted immunity to medical practitioners and health-care entities so that they are no longer liable for infringing medical and surgical procedure patents. That action by Congress has been criticized, though not widely, because of the difficulties likely to be encountered in defining "medical or surgical procedures." Even if one believes that it was socially optimal to remove the threat of an infringement action so as to give physicians the freedom to use any procedure they choose, it is unlikely that a reasonable estimate of costs and benefits would lead to the same conclusion for business methods. Business practices lack the social imperative of medical treatments. Moreover, treating different technologies differently places too great a premium on ex ante definitions, such that the definitional scheme will be at least partially defeated because of the significant transaction costs associated with attorney efforts to opt into or

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broadcast signals).

<sup>268</sup> 534 U.S. 124, 145–46 (2001).

<sup>269</sup> See, e.g., Plant Variety Protection Act of 1970, Pub. L. No. 91-577, 840 Stat. 1542 (codified in various sections within 7 U.S.C. § 2321); Plant Patent Act of 1930, 35 U.S.C. §§ 161–64 (1994 & Supp. 2000); *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995) (rejecting Federal Circuit's "crop-by-crop" reading of the PVPA). TRIPS Article 27.3 permits adherents to adopt *sui generis* protection for plant varieties.

<sup>270</sup> See 17 U.S.C. §§ 101 (2006) (definitions), 106 (2006) (providing differential public performance rights to owners of copyrights in musical works and sound recordings).

<sup>271</sup> 35 U.S.C. § 273 (2006).

out of a definition by carefully tailoring invention descriptions and patent claims.<sup>272</sup>

Allison and Tiller's assertions are insufficient to make the case that a tailoring proposal with respect to business methods must fail on the grounds of administrability. Assume for the moment that a proponent has shown that patents on business methods generate substantial uniformity cost either because they exist or because of their scope. What is the likely magnitude of transaction costs associated with attempted legal arbitrage? How likely are those attempts going to succeed? The first point to keep in mind is that this inquiry is specific to the tailoring proposal that emerges from the first step of the inquiry.

A principle of proportionality governs the relationship between the first and second steps of the inquiry: The larger the distinction drawn by a proposal, the more pressure that distinction must be able to endure. With respect to business methods, if the proponent is merely trying to promote the prior user defense in Section 273,<sup>273</sup> the risk of legal arbitrage is relatively low because a court engaged in the ex post infringement inquiry should be able to assess whether a particular method claim is of the sort that motivated the distinction.

What if, instead, Congress or the Federal Circuit were to disaggregate business methods from patentable subject matter, perhaps by reinstating de jure what was once a de facto limit on business method patents prior to the Federal Circuit's decision in *State Street Bank*?<sup>274</sup> Professors Allison and Tiller are right to predict that under such a rule, patent prosecutors would engage in clever drafting to avoid the subject matter bar. But the relevant question is what would their likelihood of success be, factoring in a reasonable period of time for the courts and the PTO to gain experience to apply the distinction? Are there types of method claims that could be disguised more readily than others such that the tailoring proponent might be forced to amend the proposal to exclude only a subset of business method patents on administrability grounds? Some evidence relevant to these questions could be drawn from the experience in Europe, and perhaps in particular in the United Kingdom, which explicitly tailors patentable subject matter to exclude business methods.<sup>275</sup>

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<sup>272</sup> Allison & Tiller, *supra* note 181, at 1020–21 (internal citations omitted)

<sup>273</sup> 35 U.S.C. § 273 (2006).

<sup>274</sup> *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

<sup>275</sup> See Convention on the Grant of European Patents art. 52(2)(c), Oct. 5, 1973, 1065 U.N.T.S. 199 (tailoring patentable subject matter to exclude “schemes, rules and methods for performing mental acts, playing games or doing business, and programs for

Whether business methods are patentable subject matter remains a relevant question even after the recent course correction by the en banc decision of the Federal Circuit and the Supreme Court's grant of certiorari in *In re Bilski*.<sup>276</sup> In *Bilski*, the Federal Circuit was asked by various amici to interpret the criteria for patentable processes to exclude methods of doing business<sup>277</sup> or software.<sup>278</sup> Rejecting these arguments for the time being, the court chose instead to tailor patentable subject matter at what appears to be a higher level of abstraction. Acknowledging that some form of tailoring would be required because not every process could be eligible for patent protection,<sup>279</sup> the court resolved to limit method patents to those that pass the "machine-or-transformation" test.<sup>280</sup>

The court explicitly left open the likelihood of future judicial development through which categories of excluded subject matter may emerge.<sup>281</sup> This Article's framework suggests an analytical guide for the Supreme Court's review and future developments that follow therefrom.

Moving to the next stage of the inquiry, demonstrating that tailored rights are cost-justified requires attention to the costs of complexity,<sup>282</sup> impacts on licensing, and litigation as the parties and the courts incur greater education

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computers"); Patents Act, 1977, c. 37, § 1(2) (Eng.), available at <http://www.ipo.gov.uk/2006ewcaciv1371.pdf> (excludes same patentable subject matter and announces a new administrative procedure to implement the *Aerotel* judgment, noting that "[i]t is the Office's view that the change in approach does not fundamentally change the boundary between what is and is not patentable in the UK although we recognise that there will inevitably be the odd case right on the boundary that may be decided differently under different tests."); see also *Aerotel Ltd. v. Telco Holding Ltd.* [2006] EWCA 1371 (Civ), at ¶ 8–49 (discussing challenges to application of exclusions and providing methodology for administrative and judicial application in future cases).

<sup>276</sup> 545 F.3d 943 (Fed. Cir. 2008).

<sup>277</sup> See *id.* at 960 n.22 (quoting brief of amicus Financial Services Industries).

<sup>278</sup> See *id.* at 960 n.23 ("[A]lthough invited to do so by several amici, we decline to adopt a broad exclusion over software or any other such category of subject matter beyond the exclusion of claims drawn to fundamental principles set forth by the Supreme Court.").

<sup>279</sup> *Id.* at 952 ("But the Supreme Court has held that the meaning of 'process' as used in § 101 is narrower than its ordinary meaning.").

<sup>280</sup> See *id.* at 954 ("A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.").

<sup>281</sup> *Id.* at 956 (anticipating future developments).

<sup>282</sup> For a vigorous argument against legal complexity in copyright law, see generally JESSICA LITMAN, *DIGITAL COPYRIGHT* (2001) (surveying history of copyright legislation as business-to-business negotiations leading to ever more complex statutory provisions).

costs to master the more complex rules.<sup>283</sup> At first glance, tailored rights would appear to be more complex and more administratively expensive than uniform rights. The working assumption for many lawyers appears to be that greater complexity in the law necessarily leads to greater administrative costs. This easy syllogism, however, is open to question because complexity does not necessarily equate with greater administrative costs.

Where a proponent has shown that the risk of arbitrage can be minimized because legal terminology has relatively stable meanings, greater complexity may actually reduce licensing and litigation costs by creating better-tailored default rules. To the extent that one is persuaded by the Demsetz theory of property rights,<sup>284</sup> one might agree. With intellectual property the Demsetz theory must admit a corollary which is that as the magnitude of identifiable deadweight loss caused by intellectual property rights increases, pressure will mount to greater specify rights so as to avoid those losses.<sup>285</sup> This view might explain why the most arcane and complex portions of the Copyright Act, for example, are not the provisions over which most litigation resources are expended. The greater specificity may lead to less costly assessments of the value of particular transactions or disputes. Indeed, it is the effort to apply broad standards such as the idea/expression dichotomy or general standards embedded in the fair use doctrine that generate the uncertainty on which litigious impulses feed.<sup>286</sup> To the extent that today's meanings are destabilized by technological advance, greater industry-specificity may

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<sup>283</sup> This analysis implicates—or is a species of—larger conversations about the choice between rules and standards or the optimal specificity of law. *See, e.g.*, Colin S. Diver, *Regulatory Precision*, in *MAKING REGULATORY POLICY* 200 (K. Hawkins & J. Thomas eds., 1989); Colin S. Diver, *The Optimal Precision of Administrative Rules*, 93 *YALE L.J.* 65, 65–66 (1984); *see generally* Francisco Parisi, *Rules Versus Standards*, in 2 *THE ENCYCLOPEDIA OF PUBLIC CHOICE* 510–15 (Charles K. Rowley & Friedrich Schneider eds., 2006) (summarizing traditional economic analysis of issue of optimal specificity).

<sup>284</sup> *See* Harold Demsetz, *Toward a Theory of Property Rights*, 57 *AM. ECON. REV.* 347, 350 (1967) (arguing that property rights emerge when the benefits of internalization are greater than administrative costs); *see also* Harold Demsetz, *Frischmann's View of "Toward a Theory of Property Rights"*, 4 *REV. L. & ECON.* 127, 127 (2008) (response); Robert C. Ellickson, *Property in Land*, 102 *YALE L.J.* 1315, 1317–21 (1993) (surveying literature); Brett M. Frischmann, *Evaluating the Demsetzian Trend in Copyright Law*, 3 *REV. L. & ECON.* 649, 652–53 (2007) (arguing against expansion of copyright as a means of internalizing all externalities).

<sup>285</sup> *Cf.* Smith, *supra* note 136, at 1789–90 (arguing that as information costs concerning uses governed by intellectual property rights fall, demand for greater specificity of rights will increase).

<sup>286</sup> *See* Michael W. Carroll, *Fixing Fair Use*, 85 *N.C. L. REV.* 1085, 1098–1106 (2007) (documenting fair use uncertainty and proposing administrative remedy).

actually facilitate better policymaking by forcing decisionmakers to confront the economics of the new technology.

Nonetheless, concerns about greater administrative costs and legal arbitrage rightly counsel caution when analyzing the desirability of tailoring. These concerns also lead one to favor the more flexible approach of judicial tailoring when a desirable change in the law can be accomplished either judicially or legislatively. But some dimensions of the current rights structure can be altered only legislatively, and we should opt for this approach when the costs of uniformity are particularly high in a given context.

### C. *Political Economy*

The framework proposed in Subsections V.A and V.B sketches a model for the respective legal and economic analyses of intellectual property rights as aspects of national innovation policy. Scholars can make their greatest contributions by gathering evidence and focusing analysis on the sources of uniformity cost and administratively feasible solutions. However, because the proposed framework is designed to be practical and effective, policymakers and advocates must also consider the question of political economy when assessing potential tailoring measures and the institutional form that they should take.

As signaled at the opening of this Section, the question of comparative institutional analysis is a large one requiring book-length treatment.<sup>287</sup> In their book, Professors Burk and Lemley strongly favor judicial tailoring over other institutional solutions.<sup>288</sup> While I sympathize with their intuitions, for purposes of this framework, the institutional form of tailoring should remain flexible and be based on evidence of likely efficacy. Space allows room for only a few preliminary observations to defend this point. As Burk and Lemley's analysis suggests, tailoring proposals are likely to hit their toughest sledding when faced with the political economy defense for uniformity. On balance, considerations of political economy support an argument that tailoring through judicial or administrative interpretation is more likely to succeed than legislative tailoring. That said, some specific responses to the reflexive argument that legislative tailoring will necessarily lead to greater inefficiency in intellectual property law need to be made.

First, consider the special industry-specific deals encoded in Sections 108–122 of the Copyright Act.<sup>289</sup> It cannot be categorically stated that each of these measures makes the law less efficient than a law with strictly

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<sup>287</sup> See, e.g., NEIL K. KOMESAR, *IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS AND PUBLIC POLICY* (1997).

<sup>288</sup> See Burk & Lemley, *supra* note 110, at 95–108.

<sup>289</sup> 17 U.S.C. §§ 108–22 (2006).

uniform rights. On the contrary, a quick run through of the first two prongs of this framework suggests that many of these measures were drafted in response to arguments about market failure or other forms of what we now recognize to be uniformity cost and that even as enacted these either reduce uniformity cost or are simply superfluous. Perhaps the strongest example of a measure that reduces uniformity cost is the limit on copyrightability of useful articles in Section 113. In the absence of this limit, parties could readily evade the more stringent requirements of patentability and receive patent-like protection for articles that patent law would designate as part of the public domain. It is useful to note that this limit entered the law through judicial tailoring under the Copyright Act of 1909 and was subsequently ratified by Congress in the Copyright Act of 1976.

Second, those who would argue that a legislative environment more conducive to special pleading by industry groups would increase the social costs of intellectual property rights must take full account of the evidence. Consider the extreme cases of those industries that have sought *sui generis* rights. The record indicates that in the United States in recent history they are two for four. The semiconductor chip industry received protection for mask works,<sup>290</sup> and the boat manufacturers received a special deal in the wake of *Bonito Boats*.<sup>291</sup> Neither of these deals appear to have imposed significant social costs, although the record on boat hulls is harder to parse. By contrast, the database industry is internally divided as is the fashion industry. These internal divisions have undermined their respective legislative campaigns for *sui generis* rights. These internal divisions reflect the realization that expanded intellectual property rights would impose significant private costs as well as social costs.

As public choice theory suggests, the risk of an environment more conducive to special pleading is highest when expanded rights would increase private profits for the majority of industry players while increasing social cost. The fear that this will routinely be the case should be diminished by recognition that all information-intensive sectors treat information as both input and output. As long as a substantial subset of industry players is more concerned about access to inputs than control over outputs, the public choice risks associated with a more tailoring-friendly legislative environment are lower than advertised.<sup>292</sup>

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<sup>290</sup> See 17 U.S.C. §§ 901–14 (2006).

<sup>291</sup> See *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 168 (1989) (holding state law protection of boat hull designs preempted by federal law); 17 U.S.C. § 130(a)(2) (2006) (granting federal *sui generis* protection to boat design features).

<sup>292</sup> Cf. Smith, *supra* note 136, at 1813–14 (recognizing that likely success of legislative tailoring initiative depends on specificity of uses governed by proposed measure).



Since overall the legislative record shows a trend toward expansion of the subject matter, scope, and duration of intellectual property rights resulting from consensus among information-intensive industry groups that greater control is worth more than easier access, the discipline argument must show that this trend would be steeper in a tailoring-friendly environment. As with the rest of the framework, arguments about the likely effects of political economy on any particular tailoring proposal or class of proposals should be based on evidence. Categorical dismissal of legislative tailoring as efficiency-promoting is not supported by the evidence.

The reason to be skeptical about the likelihood that legislative tailoring will succeed is not so much that industry groups will more successfully seek rents, but that interest groups will be more successful than the courts at killing or diluting tailoring measures that would improve the efficiency of the law by constraining subject matter, scope, or duration. This is because the current subject matter, scope, and duration provisions of patent and copyright law indicate that most uniformity costs result from overprotection rather than underprotection. Starting from this statutory baseline, industry-specific legislative tailoring pursuant to the knowledge corollary would likely involve reducing protection for given industries. Some measures that would do so have been introduced into Congress, but they are given little hope of enactment.

Unlike most commentators, I am less pessimistic about the long-term prospects for legislative tailoring. Heightened attention to the economic importance of intellectual property includes attention to the costs of intellectual property rights generally. In particular, the patent premium reflected in the prices of pharmaceutical drugs is of front-burner legislative interest. In addition, as the costs of intellectual property rights become more apparent, users and interested third parties who bear those costs will be more willing to pay the price for collective action. Finally, because valuable information is an input to the creation of other valuable information, industry-specific rent-seeking by one industry may well align the interests of other industries with consumers more generally, reducing the threat of successful overreaching.

Because political economy raises particular risks for legislative tailoring, a more immediately attainable goal for using the knowledge corollary to reduce deadweight loss is to improve industry-specific tailoring in the courts. The most successful example of this kind of judicial response has been two aspects of copyright for software.

## VI. CONCLUSION

When Justice Stephen Breyer was a young law professor, he made an unconventional choice for the topic of his tenure piece—copyright law.<sup>293</sup> At the time, the dynamic field we now call “intellectual property” was not generally considered a unified field within American law schools, and its separate branches of copyright, patent, trademark, and trade secret were not generally considered subjects for keen interest among rising scholars. Anticipating the growth of the field, however, Breyer had chosen his topic in part because a decades-long legislative process to revise the Copyright Act appeared close to fruition.

While Breyer’s contribution to a tradition of copyright skepticism<sup>294</sup> caused quite a stir at the time among lawyers for the copyright-dependent industries,<sup>295</sup> Congress chose to proceed with the planned expansion of copyright. Breyer’s article offers a more lasting contribution in the form of a more general pragmatic, evidence-based approach to the economic analysis of intellectual property law. In particular, by analyzing the economics of book publishing, Breyer expressed unease about the need for copyright as a tool for encouraging dissemination of knowledge, and he argued from his data that arguments for the benefits of an expanded copyright law were largely unfounded.

Using the emerging tools of economic analysis applied to law, Breyer summarized his “fairly comprehensive method for analyzing copyright problems,”<sup>296</sup> by first reminding his critics 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 creating the work.<sup>297</sup> Rather, he argued, one should first ask (1) what market-based advantages might creators have from which they can recoup the costs of creation; (2) does the government subsidize the costs of creation; and (3) might consumers find ways to channel funds to the creator to finance creation costs?<sup>298</sup> The answers to these inquiries would set the baseline from which one would measure the marginal benefits that any level of copyright

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<sup>293</sup> Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281 (1970).

<sup>294</sup> See, e.g., Arnold Plant, *The Economic Aspects of Copyright in Books*, 1 ECONOMICA 167, 167–68 (1934).

<sup>295</sup> PAUL GOLDSTEIN, COPYRIGHT’S HIGHWAY: FROM GUTENBERG TO THE CELESTIAL JUKEBOX 22–26 (1994) (describing the impact of Breyer’s article).

<sup>296</sup> See Stephen Breyer, *Copyright: A Rejoinder*, 20 UCLA L. REV. 75, 75 (1972).

<sup>297</sup> *Id.* at 75–76.

<sup>298</sup> *Id.* at 76.

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.<sup>299</sup> Subsequent economic analysis of intellectual property law has largely eschewed evidence-based analysis for more abstract modeling. However, as policy debates around intellectual property continue to intensify, and as abstract economic models offer little guidance about how to resolve these debates, Breyer's methodological approach is ripe for revival.

This Article builds on more recent learning from the economic analysis of intellectual property law to refine and extend Breyer's approach. In particular, the framework proposed herein generalizes to incorporate both copyright and patent law within its scope and refines the empirical questions that should be asked and answered to improve intellectual property policy. One-size-fits-all patents and copyrights are necessarily inefficient even if one accounts for the various ways in which market measures, real options, and flexible standards can be used to reduce uniformity cost. Ultimately, intellectual property law still needs tailoring. Legislative distinctions between patents and copyrights reflects tailoring at a high level of abstraction, and these rights have been further tailored by Congress, the federal courts, the PTO, and the Copyright Office over time. This Article proposes a practical framework for analyzing the merits of existing and proposed tailoring measures. The framework focuses analysis on the relative abilities of government officials or private creators or innovators to pick winners in the innovative and creative fields of endeavor, the administrability of a particular policy, and the considerations of political economy that should influence any ultimate policy proposals.

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<sup>299</sup> *Id.*